Scappoose Industrial Airpark
Water Service Feasibility Study

Prepared By:

W&H PACIFIC

Portland, Oregon

December, 1992

W&H PACIFIC
8405 S.W. Nimbus Avenue
P.O. Box 80040
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February 3, 1993

Ms. Jill Monley, City Manager
City of Scappoose
City Hall
52432 S.E. 1st
Scappoose, Oregon 97056

RE: SCAPPOOSE INDUSTRIAL AIRPARK
WATER SERVICE FEASIBILITY STUDY
JOB NO. 4-958-0101

Dear Jill:

W&H Pacific is pleased to submit the Scappoose Industrial Airpark Water Service Feasibility Study to the City of Scappoose. This interesting assignment challenged all who participated in preparing the report. We consider the final recommendations to demonstrate a win-win approach between the City and the Port of St. Helens. We are confident that the study will help you develop water service to the Airpark while enhancing the City's service capabilities.

It has been a pleasure to participate on this project and to assist with its development. We look forward to working with you in the future.

Sincerely,

W&H PACIFIC, INC.

William M. Jabs, P.E.
Project Manager

Phil Pommier, P.E.
Project Engineer

PLP/pb
Enclosures
cc: Ms. Shirley Parsons

Acknowledgements

Preparation of this study would not have been possible without the time and assistance of the following individuals:

Jill Monley, City Manager, City of Scappoose
John Boyd, City Planner, City of Scappoose
Doug Tietze, Director of Public Works, City of Scappoose
Steve Wabschall, Public Works Department, City of Scappoose
Joe Lewis, Public Works Department, City of Scappoose
Shirley Parsons, Operations Manager, Port of St. Helens

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Purpose

The purpose of this study is to evaluate various options for developing water service to the Scappoose Industrial Airpark. The Port of St. Helens acquired the airport in 1972 and has been improving and expanding facilities since. A voluntary moratorium on development at the airpark has been in effect since 1991 due to the lack of available fire flow capacity in the area. In August, 1991, W&H Pacific (W&HP) performed a preliminary study to determine the cost of installing an on-site fire protection system for the Airpark. The study proposed a system which would be constructed in phases, as development occurred, and presented various scenarios and associated costs.

Subsequent discussions with the City of Scappoose led to the development of this study to analyze the cost effectiveness of extending City service to the area. The underlying assumption was that both the City and the Airpark have needs for improving their water systems. If these needs are found to overlap, and an overall strategy can be developed, then coordinated cost-effective improvements can take place which will benefit both the City and the Airpark.

The goal of the study is to determine the best and most cost effective method of providing water to properties located within the Urban Growth Boundary of the City of Scappoose and the Scappoose Industrial Airpark.

Summary Findings

The basic elements of a public water system include source, treatment, storage and distribution. Both the City of Scappoose and the Scappoose Industrial Airpark have deficiencies in their systems which involve some or all of these elements. By identifying common weaknesses, and an overall strategy for making improvements, a phased approach has been developed to meet the needs of the City and the Airpark. The actual implementation of planned improvements will be dictated by available funding and the urgency of the need.

The results of this study indicate that in the short term (0-3 years) the City of Scappoose should extend a 16 inch water main north on West Lane from Crown Zellerbach Logging Road to the Airpark. Initially this main would be served by 12 inch and 6 inch water main extensions on the north side of town. This improvement offers the additional benefit of providing one of the utilities necessary for the development of an industrial corridor in this area and is consistent with the current Land Use Plan for the area. In conjunction with this, the Port should begin constructing a 12 inch distribution system which will ultimately loop around all existing airport improvements. Also, the City should develop a second well as quickly as possible to serve as backup for its existing sources. The Dutch Canyon Aqueduct, the City's primary source, is considered unreliable and subject to failure. A second well to back up the existing well would prevent serious water supply problems in the event of a failure of the Dutch Canyon line during a period of high demand. Finally, short term efforts should include rehabilitation of the 0.3 million gallon (mg) lower level reservoir and development of an emergency water plan in the event of a serious failure with the system.

In the near term (2-5 years), the City should complete the transmission main by tying it to the existing 16 inch main located at 2nd Street and Elm. This connects the Airpark directly to the City reservoirs, enhancing the conveyance capability to the Airpark. The Airpark should continue its program of developing a distribution system around existing improvements.

In the distant future (5-15 years) the City should construct another 1.0 mg reservoir to serve a growing population. Significant improvements to the distribution system, both in town and at the Airpark, should be continuously pursued. The replacement of the City's Dutch Canyon line should receive top priority during this period.

Plan recommendations are summarized below and are shown graphically in Exhibit 1 found in the Appendix.

Plan Recommendations

Short Term (0-3 Years)

	Cost
Airpark	
Phase 1 Distribution Improvements - 12"	$84,000
City	
Transmission Main Improvements - 16" Airpark Extension	$509,600
New Well Source	$325,000
Tank Restoration (0.3 mg)	$ 65,000

Near Term (2-5 Years)

	Cost
Airpark	
Phase 2 Distribution Improvements - 12"	$204,400
City	
Complete Transmission Main Improvements - 16"	$379,260

Long Term (5-15 Years)

	Cost
Airpark	
Phase 3 Distribution Improvements - 12"	$204,400
City	
Distribution Improvements	$197,400
Reservoir Improvements	$650,000
Dutch Canyon Aqueduct	$2,032,800

Notes:
1. See Table 3 in the Appendix for more information.

Study Criteria and Project Outline

On August 5, 1992 the City of Scappoose and the Port of St. Helens issued a request for proposals (RFP) "to consider the best and most cost effective method to provide water to properties located within the Urban Growth Boundary of the City of Scappoose." The study was funded, in part, by the Oregon Economic Development Department and required that specific emphasis be given to the future growth requirements of the Scappoose Industrial Airpark and the surrounding area. In particular, the RFP requested that the selected consultant determine the feasibility of constructing a deep production well versus a line extension to the Airpark.

W&H Pacific was awarded the contract and on September 22, 1992 was authorized to proceed. The scope of work was as follows:

Task 1. Conduct kick-off meeting and project research. Obtain copies of existing City of Scappoose water master plan, as-built information, planning and zoning studies, water use records, growth projections and any other information pertinent to the project.

Task 2. Obtain well logs, City water right permits, water quality reports and other pertinent information from the Water Resources Department and City.

Task 3. Meet with City staff to determine strengths, weaknesses and general capacity of existing system, with specific emphasis on expansion ability to the general area of the Scappoose Industrial Airpark. In conjunction with Scappoose Rural Fire Protection District, determine the desired fire flow for the airport area.

Task 4. Analyze the existing system with respect to source, storage and treatment plant capacity to determine its ability to meet forecasted growth needs and the projected needs of the airport. Look at alternative locations for future required facilities, with and without expansion to the airport. Both well and surface water sources will be evaluated if it is determined that additional source facilities are needed.

Task 5. Review existing water main size and location, and prepare schematic plans to serve the airport area with fire flow protection.

Task 6. Analyze well and groundwater records in the vicinity of the airport and ascertain the feasibility of developing a high yield well for domestic purposes. The analysis will include a discussion of well depth and probable water quality and needed treatment, based on test results of other wells, discussions with local well drillers and existing or proposed EPA drinking water rules. Land ownership will also be documented for potential well sites.

Task 7. Contact Lonestar Industries geological consultant and have them determine what effect the proposed mining activities will have on any existing or proposed high-capacity wells in the vicinity of the airport.

Findings for the City of Scappoose Water System

Source

The City of Scappoose has water rights totaling 15.0 cubic feet per second (cfs) from three surface sources and two wells. The surface water sources include South Scappoose Creek, Lazy Creek and Gourley Creek. Both Lazy Creek and Gourley Creek are tributaries of South Scappoose Creek. All the surface sources are located in the hills west of town. Our request of the Water Resources Department produced the following water right record:

Surface Source	Permit No	Priority Date	Amount
South Scappoose Crk.	25918	11/24/58	2.5 cfs
Lazy Crk.	25918	11/24/58	1.5 cfs
Gourley Crk.	5813	1/24/23	10.0 cfs
Total			14.0 cfs

Groundwater Source	Permit No.	Priority Date	Amount
Oak Street	GR899	12/31/50	0.11 cfs
Dutch Canyon	G8615	4/30/79	0.89 cfs
Total			1.00 cfs

While the City appears to have surface water rights of 14.0 cfs, actual measured stream flows have averaged less than 4.0 cfs. Several measurements are available over the period from 1952 to 1976 and may be found on Table 7 (p 7-3) of the City of Scappoose Water System Master Plan prepared by Barrett & Associates. Interviews with Steve Wabschall and Doug Tietze from the City's Public Works Department suggest that a conservative estimate of reliable flow from South Scappoose, Lazy and Gourley Creeks is only about 500 gallons per minute (gpm) or 1.11 cfs. This is based on their observations during the summer of 1992 which was a dry year following several dry years.

Of the ground water rights, the Oak Street well has been abandoned since before 1977 allegedly due to problems with quality and quantity. Therefore, the water right associated with it has been lost due to the long period of non-use. The Dutch Canyon Well was drilled in 1978 and is ordinarily capable of producing its rated capacity of 400 gpm (.89 cfs) continuously. However, during the summer of 1992 it could operate only about eight hours before exceeding its design drawdown. Its reliability under extreme conditions is very questionable.

Water quality of the surface sources is generally considered good. The water is low in hardness and dissolved minerals, although it does contain iron and manganese. Recently, lead has been detected so the testing program has been stepped up to deal with the issue. Also, there have been problems with turbidity during periods of heavy runoff and as a result of logging in the watershed. The quality of the Dutch Canyon well is very good, although it is much higher in total hardness.

Surface water is conveyed to the treatment plant by gravity via the Dutch Canyon Aqueduct. This is a 12 inch diameter steel pipe line approximately five miles long which was constructed in 1955. The capacity of the line has been estimated at approximately 800 gpm. In 1974, the Barrett & Associates Master Plan recommended replacing this line due to its "deteriorating condition." Today, nearly twenty years later, this conduit is still in service and fears of a serious failure are heightened by the belief that Dutch Canyon is a slide prone area.

In 1992 the maximum daily demand for water in the City of Scappoose was measured at 580 gpm. This demand coincides with seasonal summertime lows in surface and subsurface sources. It also exceeds the capacity of either the creek (500 gpm) or the well (400 gpm). Because the Scappoose Creek supply is a gravity system, it is recommended that the City continue to rely on this as its primary source. However, the existing City well, at only 400 gpm, produces significantly less water than the current maximum daily demand. Therefore, it is recommended that an alternative source be developed as quickly as possible.

Earlier studies considered developing new sources on the Multnomah Channel, North Scappoose Creek or the Columbia River. These options appear less feasible and considerably more costly than developing another well. The well should be located on the south and west side of town and tied to the Dutch Canyon line in a manner similar to the existing well. In this way, optimal use can be made of existing conveyance and treatment facilities. Research with a well drilling company suggests that water quality is better on the west side of Highway 30. Because the time required to establish a water right takes years, the effort to develop another groundwater source should receive prompt attention.

Treatment

The City's existing water treatment plant was constructed in 1978 and has a capacity of 1600 gpm. It consists of two 800 gpm modules that would be relatively inexpensive to upgrade in the future if required. At the current maximum daily demand of 580 gpm, however, it is only operating at about 36% of capacity.

The plant was sized based on a 1975 projection by Barrett & Associates that the City's maximum daily demand could reach 1600 gpm by the year 2000. This projection was based on an assumed population growth rate of 4% per year. The actual growth rate since 1975 has been closer to 1-2%. But, any estimate is subject to wide variations depending on factors such as the economy, the growth rate in Portland, and city annexations. The short fall in anticipated growth versus actual growth merely extends the useful planning period and appropriateness of the existing treatment plant. Table 1 in the Appendix presents actual and currently projected demands.

The plant is modern and efficient employing coagulation, flocculation, sedimentation, filtration and disinfection processes. Because of its efficiency and available capacity, City staff have indicated a desire to treat all potable water for the system at this location. This "centralized" treatment approach makes maintenance easier and more economical. Placing additional treatment or disinfection facilities at other locations in the City would mean unnecessary duplication of effort and equipment.

Over the past two decades the trend in public water system regulations has been to require higher and higher standards. In Oregon, new treatment and performance standards became effective beginning January 1, 1992 for all surface water sources or groundwater sources under the direct influence of surface water. These new standards are promulgated by the Oregon Health Division and require that public water systems maintain a minimum residual disinfectant concentration. This new requirement does not effect Scappoose since all water delivered to users is treated and disinfected to present standards. However, it does affect the considerations given to siting a new groundwater source.

For this reason, the location of an additional well source is recommended on the southwest side of town. It should be tied into the Dutch Canyon Aqueduct similar to the existing Dutch Canyon well. This well location is consistent with the recommendations noted above regarding water quality issues, and would allow blending of water from various sources. Blending of water may reduce the impact of potentially undesirable characteristics such as odor or taste and can provide a more uniform product. Also, locating a proposed well near the treatment plant offers the possibility of mitigating any adverse water quality characteristics if necessary.

Storage

Maximum daily demand for 1991 was measured at 580 gpm and instantaneous demand is estimated to exceed 900 gpm. This surpasses the available source supply and the difference is made up with storage. The City owns three reservoirs: a 1.0 mg and a 0.3 mg tank in the lower zone with another 0.3 mg tank serving the upper zone. The tanks in the lower zone are both reinforced concrete, however the 0.3 mg tank is currently off line and needs rehabilitation. The 0.3 mg upper level tank is of steel construction and needs exterior painting.

Distribution storage is provided to supply peak hourly demand or fire flow rates which typically are greater than the capacity of source and treatment facilities. Source and treatment facilities operate efficiently at a constant rate while instantaneous demands on the system are typically supplied by stored water. Distribution storage consists of three elements which must be satisfied simultaneously: equalization storage, fire flow storage and emergency storage.

- Emergency storage is provided to maintain service in the event of a serious disruption in source or treatment capability. In order to protect public welfare, a water system should be as reliable as possible. This is done by designing safeguards and redundancies into the system since water is an essential service. Emergency storage volume is normally taken as the total peak day demand or two times the average day demand, whichever is higher.

- Fire flow storage is that volume of water required by the fire department for fire suppression purposes. Many factors are considered in determining this need including fire department staffing and equipment, communications capability and the availability of water. The Insurance Services Office (ISO) fire protection rating for Scappoose is 5/9 which is an average grade. Theoretically, any enhancement in the above factors will improve the City's fire protection rating. The minimum fire suppression capability considered by ISO, however, is a three hour duration at 3500 gpm.

- Equalization storage is that required to meet the peak daily instantaneous demands. This volume is normally taken as twenty percent of the maximum daily demand.

The total of all these factors is 1.7 mg (see Table 2 in the Appendix). The City currently has 1.3 mg on line with the possibility of having another 0.3 mg in service soon. Even with all existing facilities in service, Scappoose is short of meeting the above criteria. For these reasons, and to provide for the continued growth and development of the City, we recommend that the City pursue rehabilitating the existing 0.3 mg tank in the near future. The City should also begin planning to construct another 1.0 mg tank within the next five to ten years.

Distribution

Many of the improvements recommended in the 1974 Scappoose Water System Master Plan have been incorporated. But many of the same deficiencies are still apparent today. The primary functional deficiency of the distribution system is the delivery of adequate flow and/or pressure for emergency fire flow conditions. For purposes of this analysis, residual pressure below 30 psi was considered inadequate. While this may be higher than state mandated minimums, an informal survey by W&H Pacific in January 1992 revealed that several cities in the Portland area use minimum standards above 40 psi.

The City provided W&H Pacific with current pressure tests on more than 120 fire hydrants located throughout the town. A review of this data reveals many areas with substandard pressure. These include: the residential developments on Dutch Canyon Road, areas immediately west of and including the downtown commercial district, large areas immediately east and southeast of the downtown commercial district, and areas near the top of each pressure zone.

Improving distribution system characteristics will require developing a grid of large diameter water mains (10 inch and larger) and interconnecting these with 6 and 8 inch mains serving local neighborhoods. It will also require the replacement of the constrictions to flow caused by significant amounts of 2 and 4 inch mains throughout the city. These mains are no longer considered adequate for modern water systems. The City should pursue an ongoing program of developing the transmission grid and replacing the small diameter lines with 6 and 8 inch service mains intertied with the transmission grid.

Findings for the Scappoose Industrial Airpark Water System

Source

The Scappoose Industrial Airpark currently has no public water supply system. Domestic water needs are met with a small low-yield well which serves the airport and the adjacent county park. Another low volume well is located on Port property adjacent to West Lane. W&H Pacific, as part of the research for this project, obtained the logs for approximately sixteen wells within a two mile radius of the airport. (See Exhibit 3 in the Appendix). All but four of these are less than 100 feet deep, the deepest being only 125 feet. Most produced 20 gpm or less while only one produced 100 gpm (with 97 foot drawdown in a 120 foot deep well). By far, the largest producing well log obtained by W&HP was the City's Dutch Canyon Road well (400 gpm and 227 feet deep with a 40 foot drawdown).

The quality of the water produced by these wells is uneven. No complaints were noted with the Airpark's wells, but elsewhere evidence was found of poor or deteriorating water quality. Reported problems are related to mineral content, salt water, sand and turbidity. The City's Oak Street well was abandoned allegedly because of poor production and water quality characteristics. St. Helens' Bayport Well, to the north, is rated for 700 gpm (360 feet deep with 120 foot drawdown) but residents complain about water quality whenever it is used. Bayport's problems with odor and taste are blamed, in part, on the high dissolved gases, mineral and salt content. On the other hand, Scappoose's Dutch Canyon Well receives no complaints, although it is significantly higher in dissolved solids than the South Scappoose Creek sources.

Another issue regarding water quality in the vicinity of the Airpark involves gravel mining operations. Public hearings held regarding future Lonestar mining operations produced comments about deteriorating water quality which may be connected to gravel mining operations. W&H Pacific discussed this issue with Dwight Hardin of Geotechnical Resources, Inc. (GRI), Lonestar's geotechnical consultants. GRI indicated that the mining operations should have no adverse effects on ground water below the 200 foot level, although no detailed studies have been performed.

The existing Airpark wells are grossly inadequate for meeting public water supply standards, let alone fire flow demands. For this reason, a voluntary moratorium has been in effect on development there since early 1991. The success of the Airpark and, the economic expansion of the entire area, is dependant on the development of a reliable source of water. The options to improve this situation are:

- Develop a high yield well (1000 gpm or greater)
- Develop a Ranney Collector on the Columbia River
- Extend a water transmission main from the City

W&H Pacific discussed well drilling options with John Stadeli of Stayco Well Drilling and Don Feakin of Turner Drilling Company. Both felt that high capacity wells with reasonable water quality were possible at depths of 400 feet or more. Stadeli recently finished a well (500 feet deep) four miles north of the Columbia River capable of 2000-3000 gpm. Feakin felt that water quality was better at depths greater than four hundred feet and on the west side of U.S. Hwy 30.

A Ranney Collector on the Columbia River was one of the sources considered for the City of Scappoose in the Barrett & Associates 1974 Master Plan. The disadvantage of this approach is the length of piping required to bring the water to the Airpark (over twice the distance to town). The proposal also requires a subaqueous crossing of the Multnomah Channel. And, W&H Pacific was unable to determine if final feasibility studies were ever performed for this option.

Extending a transmission main from the City provides benefits beyond providing a source of water to the Airpark. It would provide sufficient fire flow capacity for all existing airport facilities and most foreseeable projects. This solution also provides fire flow storage to the Airpark, another needed resource. Finally, a transmission main from the City provides the entire West Lane industrial corridor with a water supply. This adds value to these properties, and therefore, the City's tax base. It is estimated that a sixteen inch main could deliver 3500 gpm with over 30 psi residual pressure.

The cost to develop a 16-inch transmission main is estimated at over $500,000. Assuming funds existed today, it would require more than a year to actually complete the project. In the interim, W&H Pacific has received several comments from Michael S. Greisen, Fire Chief with the Scappoose Rural Fire Protection District. (See Exhibit 2 in the Appendix). He suggests that a 30,000 gallon static (i.e. ground level) storage tank with an approved fire department connection would allow some additional building construction if required. Next, he suggests adding a 500 gpm booster pump to the tank to support any future buildings requiring a sprinkler system. If city water still is not available, a high capacity (1000 gpm) well should be added to increase fire flow capabilities. These improvements would be used in conjunction with fire mains placed throughout the Airpark development.

The scenario described above would provide only a minimum level of fire protection at the airport. It would be a stand alone system requiring dedicated labor to operate and maintain it. The risk associated with well drilling, and known water quality problems in the area, are additional factors to be considered. Although a stand alone system at the airport provides a means to phase construction and the associated costs over time, the overall cost is comparable to a city main extension. In addition, fire flow capacity and reliability would be significantly less than a city connection.

The most reliable, cost effective means to provide fire flow capabilities at the airport is to extend a water main from the City. Since funding is a significant problem for either the City or the Port, the availability of economic development grant or loan funds should be investigated. Another option would be to establish a Local Improvement District (L.I.D.) or some other bonding mechanism to generate construction funding and revenue to retire construction bonds.

Treatment

Because the Scappoose Industrial Airpark has no public water supply system, it lacks a treatment system as well. For the Port to develop a potable water source, it would almost certainly fall under the requirements of Oregon Administrative Rules (OAR), Chapter 333, Public Water Systems, 1991. This means the Port would, of necessity, become an operator of a public water system subject to state rules and regulations for these facilities. This option is not desirable to the Port.

Today's public water supplies require at least minimal treatment. Developing a non-potable Airpark source to avoid treatment and public water system regulations means duplicating facilities for potable and non-potable systems. As Airpark improvements expand, demand for both domestic and fire flow capability will grow.

W&H Pacific considered development of a high yield well at the Airpark in the context of ultimately satisfying the City's need for an additional source. The problem with this scenario is that current health division standards require disinfection and chlorination of the water before it contacts City supplies. This again requires facility maintenance by either the Port or the City. It also requires pumping the treated water up to the City's storage reservoir which adds operation and maintenance costs.

The City's existing treatment plant has more than adequate capacity for the small additional demands required by the Airpark. No additional operation or maintenance staff is required since the City is already providing these services. Therefore, any solution which utilizes the City's existing treatment plant makes the most efficient utilization of existing resources.

Storage

The Scappoose Industrial Airpark currently has no storage facilities for water. It was noted above that the Fire Chief has suggested that an interim solution might be the construction of a small (30,000 gallon) tank at the Airpark with an appropriate fire department connection. While this may temporarily end the Port's voluntary building moratorium, it is not a long term solution for providing needed fire flow. As noted above, Insurance Services Office (ISO) considers 3500 gpm for three hours the minimum acceptable fire flow criteria. This amounts to 630,000 gallons or more than twenty times what the Fire Chief is willing to live with in the short term.

Neglecting domestic demand at the Airpark, an efficiently sized tank would be approximately eighty feet in diameter by twenty-two feet tall. It is estimated that a prestressed concrete tank would cost approximately $350,000 to construct (neglecting appurtenances). Fire booster pumps and controls would add approximately $45,000. This option, then, is more expensive than extending a 16 inch main from the City.

Distribution

No significant water distribution facilities currently exist at the Airpark. Any scenario for developing fire flow capacity at the park will ultimately require a distribution system to deliver the water to the place where it is needed. Assuming a needed fire flow of 3500 gpm, preliminary calculations indicate that a 12 inch main will be required. A fire main loop surrounding all existing improvements should be constructed for this purpose. The loop should be configured to allow for extension into future development areas as well.

Conclusions and Recommendations

W&H Pacific recommends extending a 16 inch transmission main from the City to the Airpark as soon as possible. The Port should also begin construction of an Airpark distribution system as well. Short-term stop gap measures acceptable to the Fire Chief should be implemented immediately if funding problems prohibit the implementation of required improvements soon. Except for the fire mains constructed at the Airpark, none of the stop-gap measures approved by the Fire Chief are salvageable for a permanent water system.

A non-potable Airpark fire system involves ultimately constructing two parallel (fire and domestic) systems which is less cost effective than one system. Developing a new Airpark well has the risk that it may not produce the desired fire flow. And, it could not be connected to the City's potable system without providing at least minimal treatment.

Developing a new water supply at the Columbia River for the Airpark is costly due to the distance involved. It would require pumping which is expensive and less reliable than gravity. It has the disadvantage of putting the Port into the water treatment and supply business.

Extension of a 16 inch water line from the City not only provides reliable flow and storage capabilities to the Airpark, but also to hundreds of acres along West Lane. It removes one of the barriers to development of this industrial area and, therefore, promotes the long-term economic expansion of the West Lane corridor.

W&H Pacific understands the financial realities which both the City and the Port must deal with. For this reason, we recommend a phased approach for the ultimate expansion of the City's water system to the Industrial Airpark area. Implementation of the various improvements is based on urgency, need and available funding. The recommended improvements are shown graphically in Exhibit 1 found in the Appendix.

Short Term Improvements (0-3 Years)

Airpark — The Port should begin the funding and development of a fire main distribution system to be constructed with proposed transmission main improvements by the City. The cost for the first phase of this improvement is estimated at approximately $84,000.

City — The City should extend a 16" transmission main from the Crown Zellerbach Logging Road north along West Lane to the Airpark as shown in Exhibit 1. Twelve inch and six inch extensions would also initially be required down Crown Zellerbach and Williams Avenue respectively. This project is estimated to cost approximately $510,000. Ultimately, the City should tie the West Lane transmission main back to the existing sixteen inch at 2nd Street and Elm. Also, the City should begin the process of developing a backup source of

supply to enhance existing source capabilities. This is required since neither of the existing sources (alone) can meet existing peak day demands during the driest summer months. The Dutch Canyon Aqueduct is considered beyond its useful service life, and therefore subject to potential failure. The estimated cost for developing a new City well is $325,000. A method for funding the eventual replacement of the Dutch Canyon Aqueduct should be pursued. The City should also restore, and place back in service, the existing 0.3 mg storage tank at the treatment plant. This is estimated to cost approximately $65,000. A program for distribution system improvements should be developed and a funding source identified so that regular enhancements could begin with near term improvements. Finally, the City should develop an emergency response plan to be used in the event of a significant system failure. The plan should address rationing, notification and enforcement provisions.

Near Term Improvements (2-5 Years)

Airpark — The next phase of distribution system improvements should begin early in the near term. The estimated cost of these improvements is approximately $204,400.

City — The City should tie the West Lane transmission main back to the existing sixteen inch at 2nd and Elm Street. This improvement is estimated to cost approximately $379,000. In the near term, the City should also identify a schedule and funding mechanism for replacement of the Dutch Canyon Aqueduct.

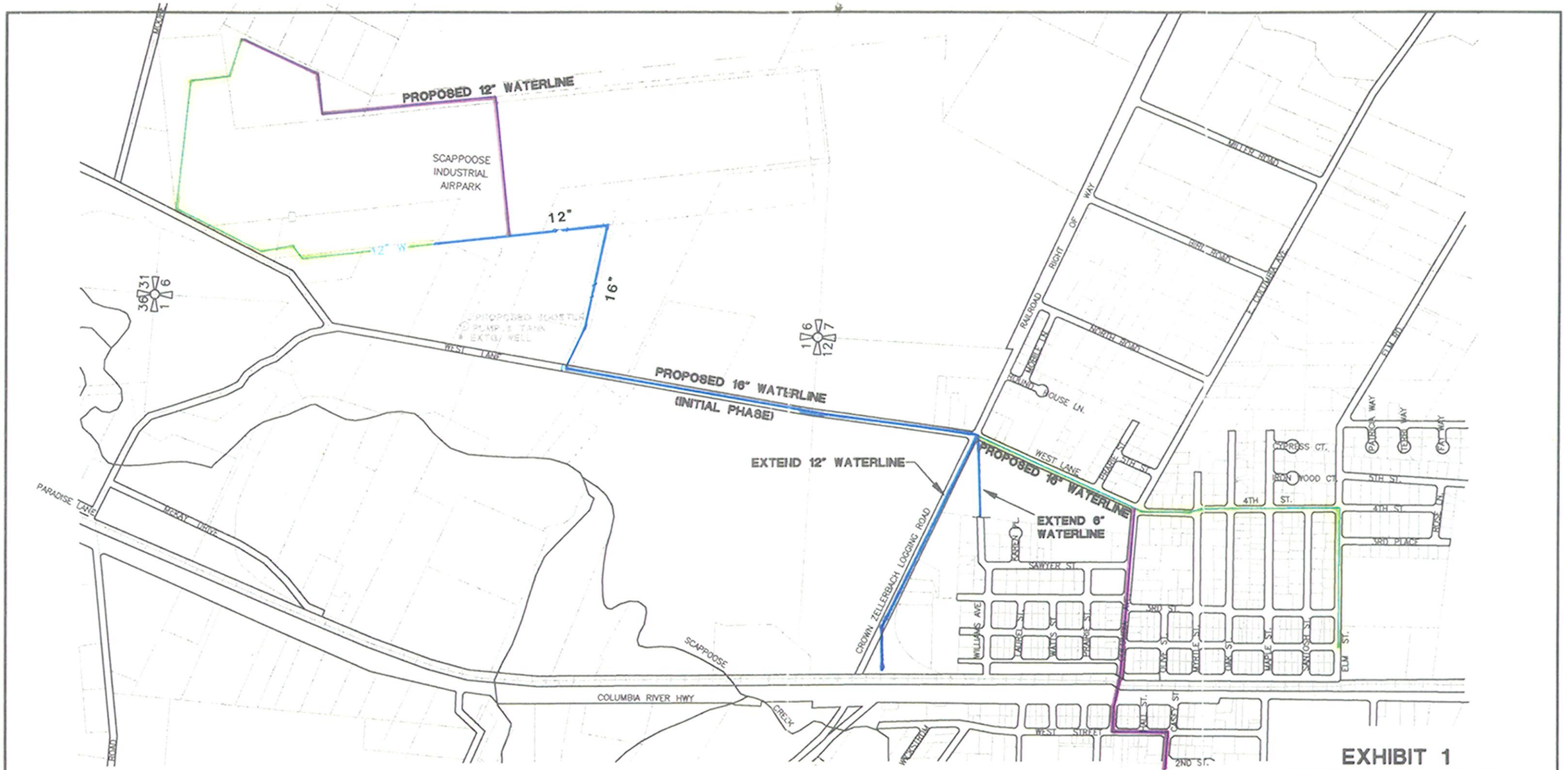
Long Term Improvements (5-15 years)

Airpark — The Port should complete construction of a 12" distribution loop around all existing improvements. This is estimated to cost approximately $204,400. A funding mechanism should be in place to continue developing distribution improvements as needs arise.

City — Significant distribution system improvements should be constructed to improve conveyance to the Airpark and throughout the City. This is estimated at approximately $197,400. In addition, the need for additional storage and aqueduct improvements will increase. The City should plan for these improvements and be prepared to implement them as funding permits. Depending on the actual growth rate experienced, the City should anticipate needing another 1.0 mg storage tank during this period. This improvement is estimated to cost $650,000. Replacing the City's Dutch Canyon Aqueduct is estimated at $2,032,000. Consideration might be given to developing a phased program for its replacement.

Appendix

Exhibit 1
Sketch Showing Proposed Improvements



N.T.S. NORTH

LEGEND:

- SHORT TERM (0 - 3 YEARS)
- NEAR TERM (2 - 5 YEARS)
- LONG TERM (5 - 15 YEARS)

EXHIBIT 1
SKETCH SHOWING PROPOSED IMPROVEMENTS

Prepared by

W&H PACIFIC
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Planning • Engineering • Surveying • Landscape Architecture

CITY OF SCAPPOOSE/SCAPPOOSE INDUSTRIAL AIRPARK WATER SYSTEM ANALYSIS

Job No. 4-958-0101 December 1992

Exhibit 2
Scappoose Rural Fire Protection District Letter Dated March 17, 1992

SCAPPOOSE RURAL FIRE PROTECTION DISTRICT
P.O. Box 625 • 52751 Columbia River Hwy. • Scappoose, Oregon 97056 • Phone: (503) 543-5026

March 17, 1992

William M. Jabs, P.E.
Project Manager
W & H Pacific
1099 S.W. Columbia Street
Portland, OR. 97201

Dear Mr. Jabs,

This letter is in response to your letter written to the Scappoose Fire District proposing a water supply system to assist required fire flow at the Scappoose Airport.

The following are our recommendations or acceptance:

INSTALL RESERVOIR

Installation of a 30,000 gallon static reservoir at a strategic location which will be filled by an existing low volume well. A fire hydrant or other approved fire department connectors will be place adjacent to the reservoir for drafting.

INSTALL BOOSTER PUMP

Installing 500 gallon per minute booster pump may be considered for supporting a sprinkler system for a building. However, fire codes may require a pressure tank on location of proposed building to provide for fire sprinkler support. If a pressure tank is required, then it may be advisable to eliminate the need for the booster pump. Installing a booster pump to the reservoir removes it from a static source to a pressure source reliant upon the booster pump. This will reduce a potential water flow from 1250-1500 gallons per minute with the use of fire apparatus to 500 gallons per minute with the booster pump.

CONSTRUCTION HIGH CAPACITY WELL

Construction of a high capacity well of 1000 gallons per minute is acceptable to assist in meeting part of the required fire flow of the buildings.

EXHIBIT 2

HYDRANT MAIN EXTENSIONS

Any water main extensions from static water source and hydrant locations will be reviewed by the fire chief during that phase of planning. The size of water mains need to be large enough for future building growth and to handle the water source from a municipal system. This will enable the airport water system to be able to supply the required fire flow if later connected to a municipal system.

If you have any other ideas or questions please don't hesitate to contact me.

Sincerely,

Michael S. Greisen
Fire Chief

MSG/msg
cc:file
Shirley Parsons, Port of St. Helens

Exhibit 3
Local Area Well Logs

The original and first copy of this report are to be filed with the STATE ENGINEER, SALEM, OREGON 97310 within 30 days from the date of well completion.

COLL 080

WATER WELL REPORT
STATE OF OREGON

(Please type or print) (Do not write above this line)

RECEIVED AUG 3 1976 WATER RESOURCES DEPT. SALEM, OREGON

State Well No. _____

State Permit No. 3N/1W-6

(1) OWNER:
Name Robert J. Adams
Address P.O. Box 28 Scappoose, Oregon

(2) TYPE OF WORK (check):
New Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐
If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:
Rotary ☒ Driven ☐
Cable ☐ Jetted ☐
Dug ☐ Bored ☐

(4) PROPOSED USE (check):
Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

CASING INSTALLED:
Threaded ☐ Welded ☒
6 " Diam. from 0 ft. to 83 ft. Gage .280
_____ " Diam. from _____ ft. to _____ ft. Gage _____
_____ " Diam. from _____ ft. to _____ ft. Gage _____

PERFORATIONS:
Perforated? ☐ 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.

(7) SCREENS:
Well screen installed? ☐ Yes ☒ No
Manufacturer's Name
Type Model No.
Diam. _____ Slot size _____ Set from _____ ft. to _____ ft.
Diam. _____ Slot size _____ Set from _____ ft. to _____ ft.

(8) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? ☐ Yes ☒ No If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " "
air " " "
Bailer test 13 gal./min. with 20 ft. drawdown after 1 hrs.
Artesian flow g.p.m.
Temperature of water Depth artesian flow encountered _____ ft.

(9) CONSTRUCTION:
Well seal—Material used Bentonite
Well sealed from land surface to 83 ft.
Diameter of well bore to bottom of seal 9 in.
Diameter of well bore below seal 6 in.
Number of sacks of cement used in well seal _____ sacks
Number of sacks of bentonite used in well seal 3 sacks
Brand name of bentonite National
Number of pounds of bentonite per 100 gallons of water 50 lbs./100 gals.
Was a drive shoe used? ☐ Yes ☒ No Plugs _____ Size: location _____ ft.
Did any strata contain unusable water? ☐ Yes ☒ No
Type of water? depth of strata
Method of sealing strata off
Was well gravel packed? ☐ Yes ☒ No Size of gravel: _____
Gravel placed from _____ ft. to _____ ft.

(10) LOCATION OF WELL:
County Columbia Driller's well number
¼ ¼ Section 6 T. 3-N R. 1-W W.M.
Bearing and distance from section or subdivision corner

(11) WATER LEVEL: Completed well.
Depth at which water was first found 60 ft.
Static level 50 ft. below land surface. Date 7-21-76
Artesian pressure lbs. per square inch. Date

(12) WELL LOG:
Diameter of well below casing 6
Depth drilled 85 ft. Depth of completed well 85 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. *Report each change in position of Static Water Level and indicate principal water-bearing strata.*

MATERIAL	From	To	SWL
Top soil	0	1	
Gravel and brown clay	1	63	
Brown sand and gravel	63	85	

Work started 7-21-76 19 Completed 7-21-76 19
Date well drilling machine moved off of well 7-21-76 19

Drilling Machine Operator's Certification:
This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.
[Signed] Ralph Turner (Drilling Machine Operator) Date 7-27-76 19
Drilling Machine Operator's License No. 254

Water Well Contractor's Certification:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Name Ralph Turner Drilling Co. (Person, firm or corporation) (Type or print)
Address Rte 1 Box 141 Hillsboro, Oregon
[Signed] Ralph Turner (Water Well Contractor)
Contractor's License No. 247 Date 7-27-76, 19

(USE ADDITIONAL SHEETS IF NECESSARY)

SP*45656-119

RECEIVED
MAY 13 1959
STATE ENGINEER
SALEM, OREGON

3N/1W-6D

File Original and First Copy with the STATE ENGINEER, SALEM, OREGON

WATER WELL REPORT
STATE OF OREGON

State Well No. 4

State Permit No. [redacted]

(1) OWNER:
Name COLUMBIA CO. ORE.
Address

(2) LOCATION OF WELL:
County Col Owner's number, if any—
NW¼ NW¼ Section 6 T. 3 N R. 1 W W.M.
Bearing and distance from section or subdivision corner
Well IS LOCATED 268 FT. N 11° 00' WEST 53 FT SOUTH 79° 00' WEST FROM THE S.W. CORNER OF JOHN McPHERSON. D. C. SECTION 6 T. 3 N RANGE 1

(3) TYPE OF WORK (check):
New Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐
If abandonment, describe material and procedure in Item 11.

(4) PROPOSED USE (check):
Domestic ☐ Industrial ☐ Municipal ☒
Irrigation ☐ Test Well ☐ Other ☐

(5) TYPE OF WELL:
Rotary ☐ Driven ☐
Cable ☒ Jetted ☐
Dug ☐ Bored ☐

(6) CASING INSTALLED: Threaded ☐ Welded ☒
6" Diam. from 0 ft. to 80 ft. Gage 1/4
" Diam. from ft. to ft. Gage
" Diam. from ft. to ft. Gage

(7) PERFORATIONS: Perforated? ☐ 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.
perforations from ft. to ft.
perforations from ft. to ft.

(8) SCREENS: Well screen installed ☐ Yes ☒ No
Manufacturer's Name
Type Model No.
Diam. Slot size Set from ft. to ft.
Diam. Slot size Set from ft. to ft.

(9) CONSTRUCTION:
Was well gravel packed? ☐ Yes ☒ No Size of gravel:
Gravel placed from ft. to ft.
Was a surface seal provided? ☒ Yes ☐ No To what depth? 20 ft.
Material used in seal— DRILLINGS
Did any strata contain unusable water? ☐ Yes ☒ No
Type of water? Depth of strata
Method of sealing strata off

(10) WATER LEVELS:
Static level 50 ft. below land surface Date 9 AUG 58
Artesian pressure lbs. per square inch Date

Log Accepted by:
[Signed] Col County (Owner) Date 8/12 1958
By D Johnson

(11) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? ☐ Yes ☒ No If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " "
" " " "
Bailer test 30 gal./min. with 5 ft. drawdown after 2 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? ☐ Yes ☒ No

(12) WELL LOG: Diameter of well 6 inches.
Depth drilled 80 ft. Depth of completed well 80 ft.
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
TOPSOIL + GRAVEL	0'	2'
GRAVEL	2'	40'
SAND	40'	55'
GRAVEL	55'	80'

Work started 4 AUG 1958 Completed 9 AUG 1958

(13) PUMP:
Manufacturer's Name
Type: H.P.

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 GUY A. LUTTRELL (Person, firm, or corporation) (Type or print)
Address RT 1, BOX 430 ST. HELENS, ORE
Driller's well number 4
[Signed] G. A. Luttrell (Well Driller)
License No. 238 Date 11 AUG 1958

(USE ADDITIONAL SHEETS IF NECESSARY)

NOTICE TO WATER WELL CONTRACTOR
The original and first copy of this report are to be filed with the STATE ENGINEER, SALEM, OREGON 97310 within 30 days from the date of well completion.

RECEIVED
NOV 1 1968
STATE ENGINEER
SALEM OREGON

WATER WELL REPORT
STATE OF OREGON
(Please type or print) (Do not write above this line)

State Well No. 3N/1W-6

State Permit No. _____

(1) OWNER:
Name Clarence B. Quick
Address Box 9 Scappoose Ore.

(2) TYPE OF WORK (check):
New Well [X] Deepening [ ] Reconditioning [ ] Abandon [ ]
If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:
Rotary [ ] Driven [ ]
Cable [X] Jetted [ ]
Dug [ ] Bored [ ]

(4) PROPOSED USE (check):
Domestic [ ] Industrial [ ] Municipal [ ]
Irrigation [ ] Test Well [ ] Other [ ]

(5) CASING INSTALLED:
Threaded [ ] Welded [X]
6" Diam. from 0 ft. to 70 ft. Gage .17
_____" Diam. from _____ ft. to _____ ft. Gage _____
_____" Diam. from _____ ft. to _____ ft. Gage _____

PERFORATIONS:
Perforated? [ ] Yes [X] 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.
_____ perforations from _____ ft. to _____ ft.
_____ perforations from _____ ft. to _____ ft.

(7) SCREENS:
Well screen installed? [ ] Yes [X] No
Manufacturer's Name
Type Model No.
Diam. Slot size Set from ft. to ft.
Diam. Slot size Set from ft. to ft.

(8) WATER LEVEL: Completed well.
Static level 39'-6" ft. below land surface Date 8-20-68
Artesian pressure lbs. per square inch Date

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? [ ] Yes [X] No If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
Bailer test 30 gal./min. with 10 ft. drawdown after 1 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? [ ] Yes [ ] No

(10) CONSTRUCTION:
Well seal—Material used Bentonite
Depth of seal 18 ft.
Diameter of well bore to bottom of seal 10 in.
Were any loose strata cemented off? [ ] Yes [X] No Depth
Was a drive shoe used? [X] Yes [ ] No
Did any strata contain unusable water? [ ] Yes [X] No
Type of water? depth of strata
Method of sealing strata off
Was well gravel packed? [ ] Yes [X] No Size of gravel:
Gravel placed from ft. to ft.

(11) LOCATION OF WELL:
County Col. Driller's well number 92
¼ ¼ Section 6 T. 3N R. 1W W.M.
Bearing and distance from section or subdivision corner

(12) WELL LOG:
Diameter of well below casing —
Depth drilled 70 ft. Depth of completed well 70 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level as drilling proceeds. Note drilling rates.

MATERIAL	From	To	SWL
Black Soil	0	2	
med & Large Gravel	2	16	
med & Large Gravel & Blue Clay	16	26	
Coarse Gray Sand & fine Gravel	26	70	39-6

Work started 8-10-68 19 Completed 8-20-68 19
Date well drilling machine moved off of well 8-22-68 19

Drilling Machine Operator's Certification:
This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.
[Signed] Svend A. Hald (Drilling Machine Operator) Date 8-22, 1968
Drilling Machine Operator's License No. 144

Water Well Contractor's Certification:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
NAME SVEND A. HALD (Person, firm or corporation) (Type or print)
Address Box 1267 St. Helens Ore.
[Signed] Svend A. Hald (Water Well Contractor)
Contractor's License No. 261 Date 8-22-68, 19

NOTICE TO WATER WELL CONTRACTOR
The original and first copy of this report are to be filed with the
STATE ENGINEER, SALEM, OREGON 97310
within 30 days from the date of well completion.

RECEIVED
OCT 9 1968
STATE ENGINEER
SALEM, OREGON

WATER WELL REPORT
STATE OF OREGON
(Please type or print) (Do not write above this line)

State Well No. 3N/1W-6
State Permit No.

(1) OWNER:
Name Charles Cathcart
Address Scappoose Ore.

(2) TYPE OF WORK (check):
New Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐
If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:
Rotary ☐ Driven ☐
Cable ☒ Jetted ☐
Dug ☐ Bored ☐

(4) PROPOSED USE (check):
Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(5) CASING INSTALLED:
Threaded ☐ Welded ☒
6" Diam. from 0 ft. to 62 ft. Gage 17#
" Diam. from ft. to ft. Gage
" Diam. from ft. to ft. Gage

PERFORATIONS:
Perforated? ☐ 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.
perforations from ft. to ft.
perforations from ft. to ft.

(7) SCREENS:
Well screen installed? ☐ Yes ☒ No
Manufacturer's Name
Type Model No.
Diam. Slot size Set from ft. to ft.
Diam. Slot size Set from ft. to ft.

(8) WATER LEVEL: Completed well.
Static level 30 ft. below land surface Date 9-14-68
Artesian pressure lbs. per square inch Date

(9) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? ☐ Yes ☒ No If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
Bailer test 30 gal./min. with 10 ft. drawdown after 1 hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? ☐ Yes ☒ No

(10) CONSTRUCTION:
Well seal—Material used Bentonite
Depth of seal 18 ft.
Diameter of well bore to bottom of seal 10 in.
Were any loose strata cemented off? ☐ Yes ☒ No Depth
Was a drive shoe used? ☒ Yes ☐ No
Did any strata contain unusable water? ☐ Yes ☒ No
Type of water? depth of strata
Method of sealing strata off
Was well gravel packed? ☐ Yes ☒ No Size of gravel:
Gravel placed from ft. to ft.

(11) LOCATION OF WELL:
County Col. Driller's well number 94
¼ ¼ Section 6 T. 3N R. 1W W.M.
Bearing and distance from section or subdivision corner

(12) WELL LOG:
Diameter of well below casing
Depth drilled 62 ft. Depth of completed well 62 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level as drilling proceeds. Note drilling rates.

MATERIAL	From	To	SWL
Black Soil + Loose Gravel	0	5	
Br. Clay + " "	5	21	
Med. Fine Gravel	21	43	
Course Gray Sand + Med + fine Gravel	43	62	30

Work started 9-5-68 19 Completed 9-14-68
Date well drilling machine moved off of well 9-16-68 19

Drilling Machine Operator's Certification:
This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.
[Signed] Svend A. Hald (Drilling Machine Operator) Date 9-16-68
Drilling Machine Operator's License No. 144

Water Well Contractor's Certification:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
NAME SVEND A. HALD (Person, firm or corporation) (Type or print)
Address BOX 1267 St. Helens Ore.
[Signed] Svend A. Hald (Water Well Contractor)
Contractor's License No. 261 Date 9-16-68 19

RECEIVED

APR 2 3 1990

WATER RESOURCES

SALEM, OREGON

COLU 002 3N/1W/7CK

STATE OF OREGON

WATER WELL REPORT

(as required by ORS 537.765)

(START CARD) # 19280

(1) OWNER:

Well Number

Name Forrest H. Crist

Address 34124 E. Columbia Ave

City Scappoose State OR Zip 97056

(2) TYPE OF WORK:

☐ New Well ☐ Deepen ☒ Recondition ☐ Abandon

(3) DRILL METHOD

☒ Rotary Air ☐ Rotary Mud ☐ Cable

☐ Other

(4) PROPOSED USE:

☒ Domestic ☐ Community ☐ Industrial ☐ Irrigation

☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION:

Special Construction approval Yes ☐ No ☒ Depth of Completed Well 42 ft.

Explosives used Yes ☐ No ☒ Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Amount sacks or pounds
6	0	42				
			no additional Drilling			

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E

☐ Other n/A

Backfill placed from ft. to ft. Material

Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	n/A				☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s)

(7) PERFORATIONS/SCREENS:

☐ Perforations Method

☐ Screens Type Material

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
		n/A				☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
20		35	1 hr.

Temperature of water Depth Artesian Flow Found

Was a water analysis done? ☐ Yes By whom

Did any strata contain water not suitable for intended use? ☐ Too little

☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other

Depth of strata:

(9) LOCATION OF WELL by legal description:

County Columbia Latitude Longitude

Township 3N N or S, Range 1W E or W, WM.

Section 7 NW ¼ SW ¼

Tax Lot 3400 Lot Block Subdivision

Street Address of Well (or nearest address) same

(10) STATIC WATER LEVEL:

12 ft. below land surface. Date 4-18-90

Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:

Depth at which water was first found

From	To	Estimated Flow Rate	SWL
	n/A		

(12) WELL LOG:

Ground elevation

Material	From	To	SWL
Well sanded in at			
bottom. Tools ran			
to bottom and broke			
up crusty sand plug.			

Date started 4-18-90 Completed 4-18-90

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to my best knowledge and belief.

WWC Number

Signed Date

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.

WWC Number 715

Signed Don Feahy Date 4-20-90

ORIGINAL & FIRST COPY - WATER RESOURCES DEPARTMENT SECOND COPY - CONSTRUCTOR THIRD COPY - CUSTOMER 9809C 3

3N/4W/7

STATE OF OREGON

WATER WELL REPORT

(as required by ORS 537.765)

(START CARD) # 2614

(1) OWNER:

Well Number:

Name Richard D. Gilstrap

Address P.O. Box 806

City Scappoose State Oregon Zip 97056

(2) TYPE OF WORK:

☒ New Well ☐ Deepen ☐ Recondition ☐ Abandon

(3) DRILL METHOD

☒ Rotary Air ☐ Rotary Mud ☐ Cable

☐ Other

(4) PROPOSED USE:

☒ Domestic ☐ Community ☐ Industrial ☐ Irrigation

☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION:

Special Construction approval Yes ☐ No ☒ Depth of Completed Well 56 ft.

Explosives used Yes ☐ No ☒ Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Amount sacks or pounds
13	0	18	cement grt	0	18	16 sacks
6	18	60				

How was seal placed: Method ☐ A ☐ B ☒ C ☐ D ☐ E

☐ Other

Backfill placed from ft. to ft. Material

Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	6"	+1'10"			☐	☐	☐	☐
			49'10 ½		☒	☐	☒	☐
ure K-packer	6"	48	48'6"		☐	☐	☐	☐
iser	5"	48'6	51	.250	☐	☐	☐	☐
Liner:					☐	☐	☐	☐

Final location of shoe(s) 49'10"

(7) PERFORATIONS/SCREENS:

☐ Perforations Method

☒ Screens Type telescoping Material stainless steel

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
						☐	☐
51	56	14		6	tele	☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
20	33	48	1 hr.

Temperature of water Depth Artesian Flow Found

Was a water analysis done? ☐ Yes By whom

Did any strata contain water not suitable for intended use? ☐ Too little

☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other

Depth of strata:

(9) LOCATION OF WELL by legal description:

County Columbia Latitude ' " Longitude ' "

Township 3 N N or S. Range 1 W E or W. WM.

Section 7 ¼ ¼

Tax Lot 8313717 Lot 23107 Block 030 Subdivision 01700

Street Address of Well (or nearest address) 52447 Bird Road Scappoose, Ore.

(10) STATIC WATER LEVEL:

15 ft. below land surface. Date 11-10-88

Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:

Depth at which water was first found 30'

From	To	Estimated Flow Rate	SWL
40	56	20	

(12) WELL LOG:

Ground elevation

Material	From	To	SWL
Top soil	0	2	
Clay w/gravels	2	6	
Gravel	6	16	
Silty w/some gravel	16	24	
Clay brown	24	26	
Clay blue	26	29	
Silty - clay blue-gray	29	33	
Sand & gravel	33	53	
Very sandy w/gravel	53	60	

Date started 11-03-88 Completed 11-10-88

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, o abandonment of this well is in compliance with Oregon well constructio standards. Materials used and information reported above are true to my bes knowledge and belief.

WWC Number

Signed Date

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonmer work performed on this well during the construction dates reported above. a work performed during this time is in compliance with Oregon we construction standards. This report is true to the best of my knowledge an belief.

WWC Number 1224

Signed J. Steve McGhee Date 11-14-88

ORIGINAL & FIRST COPY - WATER RESOURCES DEPARTMENT SECOND COPY - CONSTRUCTOR THIRD COPY - CUSTOMER 9809C 3/

3N/1W-7c

STATE OF OREGON

WATER WELL REPORT

(as required by ORS 537.765)

PLEASE TYPE or PRINT IN INK

RECEIVED
AUG 2 1985
WATER RESOURCES DEPT.
SALEM, OREGON

(for official use only)

(1) OWNER:

Name: Arlen Larsen

Address: 34106 Columbia st.

City: Scappoose State: Ore

(2) TYPE OF WORK (check):

New Well ☑ Deepening ☐ Reconditioning ☐ Abandon ☐

If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

Rotary Air ☑ Driven ☐

Rotary Mud ☐ Dug ☐

Cable ☐ Bored ☐

(4) PROPOSED USE (check):

Domestic ☑ Industrial ☐ Municipal ☐

Irrigation ☐ Thermal: Withdrawal ☐ Reinjection ☐

Other: Piezometric ☐ Grounding ☐ Test ☐

(5) CASING INSTALLED:

Steel ☑ Threaded ☐ Plastic ☐ Welded ☑

6 " Diam. from +1 ft. to 49 ft. Gauge .200

" Diam. from ~ ft. to ~ ft. Gauge

LINER INSTALLED:

Steel ☐ Threaded ☐ Plastic ☐ Welded ☐

" Diam. from ft. to ft. Gauge

(6) PERFORATIONS:

Perforated? ☐ Yes ☑ No

Size of perforations in. by in.

perforations from ft. to ft.

perforations from ft. to ft.

perforations from ft. to ft.

SCREENS:

Well screen installed? ☐ Yes ☑ No

Manufacturer's Name

Type Model No.

Diam. Slot Size Set from ft. to ft.

Diam. Slot Size Set from ft. to ft.

(8) WELL TESTS:

Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☑ No If yes, by whom?

Yield: gal./min. with ft. drawdown after hrs.

Air test 20 gal./min. with drill stem at 35 ft. 1 hrs.

Bailer test gal./min. with ft. drawdown after hrs.

Artesian flow g.p.m.

Temperature of water 55 Depth artesian flow encountered ft.

(9) CONSTRUCTION:

Special standards: Yes ☐ No ☑

Well seal—Material used Cement

Well sealed from land surface to 20 ft.

Diameter of well bore to bottom of seal 10 in.

Diameter of well bore below seal 6 in.

Amount of sealing material 8 sacks ☑ pounds ☐

How was cement grout placed? Pumped

Was pump installed? No Type HP Depth ft.

Was a drive shoe used? ☑ Yes ☐ No Plugs Size: location ft.

Did any strata contain unusable water? ☐ Yes ☑ No

Type of Water? depth of strata

Method of sealing strata off

Was well gravel packed? ☐ Yes ☑ No Size of gravel:

Gravel placed from ft. to ft.

(10) LOCATION OF WELL by legal description:

County Columbia NW ¼ of Section 7 of

Township (Township is North or South) Range 1W (Range is East or West) WM.

Tax Lot Lot Block Subdivision

MAILING ADDRESS OF WELL (or nearest address) Same as #1

(11) WATER LEVEL of COMPLETED WELL:

Depth at which water was first found 40 ft.

Static level 12 ft. below land surface. Date 7-15-85

Artesian pressure lbs. per square inch. Date

(12) WELL LOG:

Diameter of well below casing 6

Depth drilled 50 ft. Depth of completed well 50 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Brn soil	0	2	
Brn clay-boulders	8	12	
Brn clay	12	28	
Brn clay Gravel	22	35	
Gravel - sand	35	50	12

Date work started 7-15-85 completed 7-15-85

Date well drilling machine moved off of well 7-15 1985

(unbonded) Water Well Constructor Certification (if applicable):

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.

[Signed] Date , 19

(bonded) Water Well Constructor Certification:

Bond 32740 (number) Issued by: Dreamts Corp (Surety Company Name)

On behalf of Joseph Trussell (type or print name of Water Well Constructor)

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

(Signed) Joseph Trussell (Water Well Constructor)

(Dated) 7-15-85

NOTICE TO WATER WELL CONSTRUCTOR

The original and first copy of this report are to be filed with the

WATER RESOURCES DEPARTMENT, SALEM, OREGON 97310 within 30 days from the date of well completion.

SP*46866-690

The original and first copy of this report are to be filed with the

WATER RESOURCES DEPARTMENT.
SALEM, OREGON 97310
within 30 days from the date of well completion.

WATER WELL REPORT

STATE OF OREGON

(Please type or print)

(Do not write above this line)

State Well No. 3N/1W-31

State Permit No. #10 4th township

(1) OWNER:

Name Tony Irving

Address Route 3, Box 258 X B
Scappoose, Oregon 97056

(2) TYPE OF WORK (check):

New Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐

If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

Rotary ☒ Driven ☐
( ) ☐ Jetted ☐
D[illed] ☐ Bored ☐

(4) PROPOSED USE (check):

Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(5) CASING INSTALLED:

Threaded ☐ Welded ☒

6" Diam. from plus 1 ft. to 117½ ft. Gage .250

____" Diam. from ____ ft. to ____ ft. Gage ____

____" Diam. from ____ ft. to ____ ft. Gage ____

(6) PERFORATIONS:

Perforated? ☐ 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.

(7) SCREENS:

Well screen installed? ☐ Yes ☒ No

Manufacturer's Name ____

Type ____ Model No. ____

Diam. ____ Slot size ____ Set from ____ ft. to ____ ft.

Diam. ____ Slot size ____ Set from ____ ft. to ____ ft.

(8) WELL TESTS:

Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☒ No If yes, by whom?

Yield: 100 gal./min. with 97' drawdown after 1 hrs.

" 50 " 48' " "

" " " "

Bailer test ____ gal./min. with ____ ft. drawdown after ____ hrs.

Artesian flow ____ g.p.m.

Temperature of water ____ Depth artesian flow encountered ____ ft.

(9) CONSTRUCTION:

Well seal—Material used Cement grout & 5% gel

Well sealed from land surface to 20' ft.

Diameter of well bore to bottom of seal 10 in.

Diameter of well bore below seal 6 in.

Number of sacks of cement used in well seal 6 sacks

How was cement grout placed? Tremmed into dry annular bore - 20' to land surface

Is a drive shoe used? ☒ Yes ☐ No Plugs ____ Size: location ____ ft.

Did any strata contain unusable water? ☐ Yes ☒ No

Type of water? ____ depth of strata ____

Method of sealing strata off ____

Was well gravel packed? ☐ Yes ☒ No Size of gravel: ____

Gravel placed from ____ ft. to ____ ft.

(10) LOCATION OF WELL:

County Columbia Driller's well number ____

¼ ¼ Section 31 T. 3 N R. 1 W. W.M.

Bearing and distance from section or subdivision corner ____

(11) WATER LEVEL: Completed well.

Depth at which water was first found 25' ft.

Static level 3 ft. below land surface. Date 6/4/80

Artesian pressure ____ lbs. per square inch. Date ____

(12) WELL LOG:

Diameter of well below casing 6"

Depth drilled 120 ft. Depth of completed well 118 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Brown silty clay w/sand layers	0	15	
Gray silty sandy clays	15	23	
Coarse gravels w/cemented layers	23	29	w/b
Brown sandy clays w/gravel layers	29	53	
Coarse gravels w/brown sand and cemented layers	53	86	w/b
Brown sand w/coarse gravels	86	97	w/b
Coarse gravels w/muddy gravel layers	97	112	w/b
Coarse gravels w/little sand-(brown)	112	120	w/b
			100 gpm

RECEIVED
JUN 11 1980
WATER RESOURCES DEPT
SALEM, OREGON

Work started 6/2/80 19 Completed 6/4/80 19

Date well drilling machine moved off of well 6/4/80 19

Drilling Machine Operator's Certification:

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.

[Signed] ____ (Drilling Machine Operator) Date 6/9/80, 19

Drilling Machine Operator's License No. 523

Water Well Contractor's Certification:

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

Name A. M. JANNSEN WELL DRILLING CO., INC. (Person, firm or corporation) (Type or print)

Address 21075 SW Tualatin Valley Hwy. Aloha, Oreg

[Signed] ____ (Water Well Contractor)

Contractor's License No. 79 Date 6/9/80, 19

NOTICE TO WATER WELL CONTRACTOR
The original and first copy of this report are to be filed with the
WATER RESOURCES DEPARTMENT,
SALEM, OREGON 97310
within 30 days from the date of well completion.

WATER WELL REPORT
STATE OF OREGON
(Please type or print)
(Do not write above this line)

RECEIVED
JUN 11 1980
WATER RESOURCES DEPT
SALEM, OREGON

State Well No. 3N/1W-31
State Permit No.
10-4N-township

(1) OWNER:
Name Tony Irving
Address Route 3, Box 258 B
Scappoose, Oregon 97056

(2) TYPE OF WORK (check):
New Well ☐ Deepening ☐ Reconditioning ☐ Abandon ☒
If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:
Rotary ☒ Driven ☐
( ) ☐ Jetted ☐
D__ ☐ Bored ☐

(4) PROPOSED USE (check):
Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(5) CASING INSTALLED:
- and removed
Threaded ☐ Welded ☒
6 " Diam. from 0 ft. to 50 ft. Gage .250
" Diam. from ft. to ft. Gage
" Diam. from ft. to ft. Gage

(6) PERFORATIONS:
Perforated? ☐ 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.

(7) SCREENS:
Well screen installed? ☐ Yes ☐ No
Manufacturer's Name
Type Model No.
Diam. Slot size Set from ft. to ft.
Diam. Slot size Set from ft. to ft.

(8) WELL TESTS:
Drawdown is amount water level is lowered below static level
Was a pump test made? ☐ Yes ☐ No If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
" " " "
" " " "
Bailer test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m.
Temperature of water Depth artesian flow encountered ft.

(9) CONSTRUCTION: - SEE SECTION 12
Well seal—Material used
Well sealed from land surface to ft.
Diameter of well bore to bottom of seal in.
Diameter of well bore below seal in.
Number of sacks of cement used in well seal sacks
How was cement grout placed?
Was a drive shoe used? ☐ Yes ☐ No Plugs Size: location ft.
Did any strata contain unusable water? ☐ Yes ☐ No
Type of water? depth of strata
Method of sealing strata off
Was well gravel packed? ☐ Yes ☐ No Size of gravel:
Gravel placed from ft. to ft.

(10) LOCATION OF WELL:
County Columbia Driller's well number
¼ ¼ Section 31 T. 3 N R. 1 W. W.M.
Bearing and distance from section or subdivision corner

(11) WATER LEVEL: Completed well.
Depth at which water was first found ft.
Static level ft. below land surface. Date
Artesian pressure lbs. per square inch. Date

(12) WELL LOG:
Diameter of well below casing 0
Depth drilled 50 ft. Depth of completed well 0 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Previously drilled	0	63	
Coarse sand w/brown sand and cemented layers	68	86	
Brown sand w/coarse gravels	86	97	
Coarse gravels w/muddy gravel layers	97	110	
ABANDONMENT DUE TO BROKEN CASING ON PRIOR WELL DRILLING - break at 55' and possible breaks at 80' & 90'			
Casing removed from 55 to 0'			
Cement grout (4 sacks tremmed through casing at 55' - below 55' caved closed		55	
Bentonite slurry	25	55	
Cement grout (15 sacks tremmed in place	0	25	

Work started 5/29/80 19 Completed 6/4/80 19
Date well drilling machine moved off of well 6/2/80 19

Drilling Machine Operator's Certification:
This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.
[Signed] (Drilling Machine Operator) Date 6/9/80 19
Drilling Machine Operator's License No. 523

Water Well Contractor's Certification:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Name A. M. JANNSEN WELL DRILLING CO., INC. (Person, firm or corporation) (Type or print)
Address 21075 SW Tualatin Valley Hwy., Aloha, Or.
[Signed] (Water Well Contractor)
Contractor's License No. 79 Date 6/9/80 19

WATER WELL REPORT
STATE OF OREGON

RECEIVED
JAN 2 1981
WATER RESOURCES DEPT
SALEM, OREGON

COLU 124

State Well No. 4N/1W-31

State Permit No.

(1) OWNER:
Name Cascade Aggregates, Inc.
Address P. O. Box 1225
City Scappoose, Oregon 97056 State

(2) TYPE OF WORK (check):
New Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐
If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:
Rotary Air ☒ Driven ☐
Rotary Mud ☐ Dug ☐
Cable ☐ Bored ☐

(4) PROPOSED USE (check):
Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐
Thermal: Withdrawal ☐ Reinjection ☐

(5) CASING INSTALLED: Steel ☒ Threaded ☐ Plastic ☐ Welded ☒
6 " Diam. from plus 1 ft. to 33 ft. Gauge .250
" Diam. from ft. to ft. Gauge

LINER INSTALLED:
" Diam. from ft. to ft. Gauge

(6) PERFORATIONS: Perforated? ☐ 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.

(7) SCREENS: Well screen installed? ☐ Yes ☒ No
Manufacturer's Name
Type Model No.
Diam. Slot Size Set from ft. to ft.
Diam. Slot Size Set from ft. to ft.

(8) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? ☐ Yes ☒ No If yes, by whom?
Yield Airlift 24 gal./min. with 8 ft. drawdown after 1 hrs.
" " " " " "
Air test gal./min. with drill stem at ft. hrs.
" test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m.
Temperature of water Depth artesian flow encountered ft.

(9) CONSTRUCTION: Special standards: Yes ☐ No ☒
Well seal—Material used Cement
Well sealed from land surface to 20 ft.
Diameter of well bore to bottom of seal 10 in.
Diameter of well bore below seal 6 in.
Number of sacks of cement used in well seal 11 sacks
How was cement grout placed? Tremmed from 20 ft. to surface
Was pump installed? no Type HP Depth ft.
Is a drive shoe used? ☒ Yes ☐ No Plugs Size: location ft.
Did any strata contain unusable water? ☐ Yes ☒ No
Type of Water? depth of strata
Method of sealing strata off
Was well gravel packed? ☐ Yes ☒ No Size of gravel:
Gravel placed from ft. to ft.

(10) LOCATION OF WELL:
County Columbia Driller's well number
¼ ¼ Section 31 T. 4 N R. 1 W. W.M.
Tax Lot # Lot Blk Subdivision
Address at well location:

(11) WATER LEVEL: Completed well.
Depth at which water was first found 21 ft.
Static level 17 ft. below land surface. Date 12/24/80
Artesian pressure lbs. per square inch. Date

(12) WELL LOG: Diameter of well below casing 0
Depth drilled 35 ft. Depth of completed well 33 ft.
Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Medium gravels w/fine brown sand	0	6	
Medium gravels w/fine gray sand	6	14	
Medium gravels w/large boulders	14	29	
Medium gravels w/brown clays	29	31	
Coarse gravels w/fine gray sand	31	35	

Work started 12/22/80 19 Completed 12/24/80 19
Date well drilling machine moved off of well 12/24/80 19

Drilling Machine Operator's Certification:
This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.
[Signed] Robert V Bigsby (Drilling Machine Operator) Date 12/29, 19 80.
Drilling Machine Operator's License No. 1471

Water Well Contractor's Certification:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Name A. H. JANNSEN WELL DRILLING CO. INC. (Person, firm or corporation) (Type or print)
Address 21075 SW Tualatin Valley Hwy. Aloha, Or.
[Signed] (Water Well Contractor)
Contractor's License No. 79 Date 12/29/80, 19

NOTICE TO WATER WELL CONTRACTOR
The original and first copy of this report

WATER RESOURCES DEPARTMENT,
SALEM, OREGON 97310

SP*12658-690

WATER WELL REPORT
STATE OF OREGON

RECEIVED
NOV 8 1982
WATER RESOURCES DEPT.
SALEM, OREGON

State Well No. 4N/1W-31

State Permit No.

(1) OWNER:
Name Allan Wendlandt
Address Rt 3 Box 267
City Scappoose State ORE

(2) TYPE OF WORK (check):
New Well ☑ Deepening ☐ Reconditioning ☐ Abandon ☐
If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:
Rotary Air ☑ Driven ☐
Rotary Mud ☐ Dug ☐
Cable ☐ Bored ☐

(4) PROPOSED USE (check):
Domestic ☑ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐
Thermal: Withdrawal ☐ Reinjection ☐

(5) CASING INSTALLED: Steel ☑ Threaded ☐ Plastic ☐ Welded ☑
6" Diam. from +2 ft. to 53 ft. Gauge .250
" Diam. from ft. to ft. Gauge

LINER INSTALLED:
" Diam. from ft. to ft. Gauge

(6) PERFORATIONS: Perforated? ☐ 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: Well screen installed? ☐ Yes ☒ No
Manufacturer's Name
Type Model No.
Diam. Slot Size Set from ft. to ft.
Diam. Slot Size Set from ft. to ft.

(8) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? ☐ Yes ☒ No If yes, by whom?
gal./min. with ft. drawdown after hrs.
"
Air test 50 gal./min. with drill stem at 45 ft. 1 hrs.
Bailer test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m.
Temperature of water Depth artesian flow encountered ft.

(9) CONSTRUCTION: Special standards: Yes ☐ No ☑
Well seal—Material used Cement + 5% Bentonite
Well sealed from land surface to 18 ft.
Diameter of well bore to bottom of seal 10 in.
Diameter of well bore below seal 6 in.
Number of sacks of cement used in well seal 7 sacks
How was cement grout placed? pumped
Was pump installed? Type HP Depth ft.
Was a drive shoe used? ☒ Yes ☐ No Plugs Size: location ft.
Did any strata contain unusable water? ☐ Yes ☒ No
Type of Water? depth of strata
Method of sealing strata off
Was well gravel packed? ☐ Yes ☒ No Size of gravel:
Gravel placed from ft. to ft.

(10) LOCATION OF WELL:
County Columbia Driller's well number
¼ ¼ Section 31 T. 4N R. 1W W.M.
Tax Lot 040-001700 Blk Subdivision
Address at well location: Same as #1

(11) WATER LEVEL: Completed well.
Depth at which water was first found 36 ft.
Static level 35 ft. below land surface. Date 10-26
Artesian pressure lbs. per square inch. Date

(12) WELL LOG: Diameter of well below casing 6
Depth drilled 53 ft. Depth of completed well 53 ft.
Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Brown Sand, Gravel + Boulders	0	53	

Work started 10-25 1982 Completed 10-26 1982
Date well drilling machine moved off of well 10-26 1982

Drilling Machine Operator's Certification:
This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.
[Signed] Don Feaken (Drilling Machine Operator) Date 10-27 1982
Drilling Machine Operator's License No.

Water Well Contractor's Certification:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Name TURNER DRILLING CO (Person, firm or corporation) (Type or print)
Address Rt 1 Box 522 Portland 97231
[Signed] Don Feaken (Water Well Contractor)
Contractor's License No. Date 10-27, 1982

NOTICE TO WATER WELL CONTRACTOR
The original and first copy of this report are to be filed with the WATER RESOURCES DEPARTMENT, SALEM, OREGON 97310 within 30 days from the date of well completion.

SP-12658-690

STATE OF OREGON

WATER WELL REPORT

(as required by ORS 537.765)

RECEIVED

MAY 2 1985

WATER RESOURCES DEPT
SALEM, OREGON

TYPE or PRINT IN INK

4N/1W-31

(for official use only)

(1) OWNER:

Name Harold J Goodrich

Address 54453 Freeman Rd

City Scappoose State Ore

(2) TYPE OF WORK (check):

New Well ☑ Deepening ☐ Reconditioning ☐ Abandon ☐

If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

Rotary Air ☑ Driven ☐

Rotary Mud ☐ Dug ☐

Cable ☐ Bored ☐

(4) PROPOSED USE (check):

Domestic ☐ Industrial ☑ Municipal ☐

Irrigation ☐ Thermal: Withdrawal ☐ Reinjection ☐

Other: Piezometric ☐ Grounding ☐ Test ☐

(5) CASING INSTALLED:

Steel ☑ Threaded ☐ Plastic ☐ Welded ☑

6 " Diam. from +1 ft. to 60 ft. Gauge .250

" Diam. from ft. to ft. Gauge

LINER INSTALLED:

Steel ☐ Threaded ☐ Plastic ☐ Welded ☐

" Diam. from ft. to ft. Gauge

(6) PERFORATIONS:

Perforated? ☐ Yes ☑ No

Size of perforations in. by in.

perforations from ft. to ft.

perforations from ft. to ft.

perforations from ft. to ft.

SCREENS:

Well screen installed? ☐ Yes ☑ No

Manufacturer's Name

Type Model No.

Diam. Slot Size Set from ft. to ft.

Diam. Slot Size Set from ft. to ft.

(8) WELL TESTS:

Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☑ No If yes, by whom?

Yield: gal./min. with ft. drawdown after hrs.

Air test 20 gal./min. with drill stem at 45 ft. 1 hrs.

Bailer test gal./min. with ft. drawdown after hrs.

Artesian flow g.p.m.

Temperature of water Depth artesian flow encountered ft.

(9) CONSTRUCTION:

Special standards: Yes ☐ No ☑

Well seal—Material used Cement + 5% Bentonite

Well sealed from land surface to 18 ft.

Diameter of well bore to bottom of seal 10 in.

Diameter of well bore below seal 6 in.

Amount of sealing material 14 sacks ☑ pounds ☐

How was cement grout placed? pumped

Was pump installed? Type HP Depth ft.

Was a drive shoe used? ☑ Yes ☐ No Plugs Size: location ft.

Did any strata contain unusable water? ☐ Yes ☑ No

Type of Water? depth of strata

Method of sealing strata off

Was well gravel packed? ☐ Yes ☑ No Size of gravel:

Gravel placed from ft. to ft.

(10) LOCATION OF WELL by legal description:

County Columbia ¼ ¼ of Section 31 of

Township 4N (Township is North or South) Range 1W (Range is East or West) WM.

Tax Lot Lot Block Subdivision

MAILING ADDRESS OF WELL (or nearest address) Same as #1

(11) WATER LEVEL of COMPLETED WELL:

Depth at which water was first found 46 ft.

Static level 40 ft. below land surface. Date 5-20

Artesian pressure lbs. per square inch. Date

(12) WELL LOG:

Diameter of well below casing 6

Depth drilled 60 ft. Depth of completed well 60 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Brn Sandy Silt + Boulders	0	19	
Blue/Grey Sand + Boulders	19	60	

Date work started 5-18 /completed 5-20

Date well drilling machine moved off of well 5-20 19 85

(unbonded) Water Well Constructor Certification (if applicable):

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.

[Signed] Date , 19

(bonded) Water Well Constructor Certification:

Bond 140898 (number) Issued by: Ore Auto Ins Co (Surety Company Name)

On behalf of Don Feakin (type or print name of Water Well Constructor)

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

(Signed) Don Feakin (Water Well Constructor)

(Dated) 5-28-85

NOTICE TO WATER WELL CONSTRUCTOR

The original and first copy of this report are to be filed with the

WATER RESOURCES DEPARTMENT,
SALEM, OREGON 97310
within 30 days from the date of well completion

SP*46866-690

STATE OF OREGON

WATER WELL REPORT

(as required by ORS 537.765)

Cold 485

APR - 6 1992

WATER RESOURCES DEPT. SALEM, OREGON

5N/2W/1Dc

(START CARD) # 33845

(1) OWNER:

Well Number:

Name Ray Goodnight

Address 53333 West Lane Road

City Scappoose State OR Zip 97056

(2) TYPE OF WORK:

☒ New Well ☐ Deepen ☐ Recondition ☐ Abandon

(3) DRILL METHOD

☒ Rotary Air ☐ Rotary Mud ☐ Cable

☐ Other

(4) PROPOSED USE:

☒ Domestic ☐ Community ☐ Industrial ☐ Irrigation

☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION:

Special Construction approval Yes ☐ No ☑ Depth of Completed Well 103 ft.

Explosives used Yes ☐ No ☑ Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Amount sacks or pounds
10	0	18	Bentonite	0	18	11
6	18	103				

How was seal placed: Method ☐ A ☐ B ☐ C ☐ D ☐ E

☑ Other pour

Backfill placed from ft. to ft. Material

Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	6	+1	102	250	☑	☐	☑	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s) 102

(7) PERFORATIONS/SCREENS:

☐ Perforations Method

☐ Screens Type Material

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
						☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump ☐ Bailer ☑ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
20		90	1 hr.

Temperature of water 53 Depth Artesian Flow Found

Was a water analysis done? ☐ Yes By whom

Did any strata contain water not suitable for intended use? ☐ Too little

☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other

Depth of strata:

(9) LOCATION OF WELL by legal description:

County Columbia Latitude Longitude

Township 3N N or S. Range 2W E or W. WM.

Section 01 NE ¼ SE ¼

Tax Lot 01200 Lot Block Subdivision

Street Address of Well (or nearest address) same

(10) STATIC WATER LEVEL:

54 ft. below land surface. Date 3-25-92

Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:

Depth at which water was first found 68

From	To	Estimated Flow Rate	SWL
68	103	20	54

(12) WELL LOG:

Ground elevation

Material	From	To	SWL
Silty Sand & Cobbles	0	51	
BRN clay	51	53	
Blue clay	53	60	
BRN clay & Gravel	60	68	
Blue Sand & Gravel	68	103	54

Date started 3-25-92 Completed 3-25-92

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, abandonment of this well is in compliance with Oregon well construct standards. Materials used and information reported above are true to my b knowledge and belief.

WWC Number

Signed Date

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonm work performed on this well during the construction dates reported above. work performed during this time is in compliance with Oregon construction standards. This report is true to the best of my knowledge belief.

WWC Number 71

Signed Dan Feakin Date 3-25-92

STATE OF OREGON

WATER WELL REPORT

(as required by ORS 537.765)

(COLL 382)

3N/2W/1dd

(START CARD) # 30190

(1) OWNER:

Well Number:

Name Robert & Thomas

Address 53756 McKay DR

City Scappoose State OR Zip 97056

(2) TYPE OF WORK:

☑ New Well ☐ Deepen ☐ Recondition ☐ Abandon

(3) DRILL METHOD

☑ Rotary Air ☐ Rotary Mud ☐ Cable

☐ Other

(4) PROPOSED USE:

☑ Domestic ☐ Community ☐ Industrial ☐ Irrigation

☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION:

Special Construction approval Yes ☐ No ☑ Depth of Completed Well 80 ft.

Explosives used Yes ☐ No ☑ Type Amount

HOLE Diameter	From	To	SEAL Material	From	To	Amount sacks or pounds
10	0	18	Cement	0	18	12 bags
6	18	80				

How was seal placed: Method ☐ A ☐ B ☑ C ☐ D ☐ E

☐ Other

Backfill placed from ft. to ft. Material

Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	6"	0	80	250	☑	☐	☑	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s) 80

(7) PERFORATIONS/SCREENS:

☐ Perforations Method

☐ Screens Type Material

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
						☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump ☐ Bailer ☑ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Drill stem at	Time
15 gpm		75	1 hr.

Temperature of water 52° Depth Artesian Flow Found

Was a water analysis done? ☐ Yes By whom

Did any strata contain water not suitable for intended use? ☐ Too little

☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☐ Other

Depth of strata:

(9) LOCATION OF WELL by legal description:

County Col Latitude Longitude

Township T3N N or S. Range 2W E or W. WM.

Section 1 SE ¼ SE ¼

Tax Lot Lot Block Subdivision

Street Address of Well (or nearest address) 53756 McKay DR Scappoose OR

(10) STATIC WATER LEVEL:

18 FT ft. below land surface. Date 10 May

Artesian pressure lb. per square inch. Date

(11) WATER BEARING ZONES:

Depth at which water was first found 10 FT

From	To	Estimated Flow Rate	SWL
75	80	15 gpm	18

(12) WELL LOG:

Ground elevation

Material	From	To	SWL
Top Soil	0	3	
Sand & Gravel	3	80	18

RECEIVED

JUN 11 1991

WATER RESOURCES DEPT.
SALEM, OREGON

Date started 9 May Completed 20 May

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration abandonment of this well is in compliance with Oregon well construct standards. Materials used and information reported above are true to my knowledge and belief.

WWC Number

Signed Date

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonm work performed on this well during the construction dates reported above work performed during this time is in compliance with Oregon construction standards. This report is true to the best of my knowledge belief.

WWC Number

Signed Date 6-10-91

STATE OF OREGON

WATER WELL REPORT

(as required by ORS 537.765)

RECEIVED
MAY 22 1984
WATER RESOURCES DEPT
SALEM, OREGON

3N/2W-1

PLEASE TYPE or PRINT ~~EITHER~~ (for official use only)

(1) OWNER:

Name Tom Smith

Address 53277 West Lane Rd

City Scappoose State ORE

(2) TYPE OF WORK (check):

New Well ☑ Deepening ☐ Reconditioning ☐ Abandon ☐

If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

Rotary Air ☑ Driven ☐
Rotary Mud ☐ Dug ☐
Cable ☐ Bored ☐

(4) PROPOSED USE (check):

Domestic ☑ Industrial ☐ Municipal ☐
Irrigation ☐ Thermal: Withdrawal ☐ Reinjection ☐
Other: Piezometric ☐ Grounding ☐ Test ☐

(5) CASING INSTALLED:

Steel ☑ Plastic ☐
Threaded ☐ Welded ☑

6 " Diam. from +1 ft. to 125 ft. Gauge .250

" Diam. from ft. to ft. Gauge

LINER INSTALLED:

Steel ☐ Plastic ☐
Threaded ☐ Welded ☐

" Diam. from ft. to ft. Gauge

(6) PERFORATIONS:

Perforated? ☐ Yes ☒ No

Size of perforations in. by in.

perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

(7) SCREENS:

Well screen installed? ☐ Yes ☒ No

Manufacturer's Name

Type Model No.

Diam. Slot Size Set from ft. to ft.

Diam. Slot Size Set from ft. to ft.

(8) WELL TESTS:

Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☒ No If yes, by whom?

gal./min. with ft. drawdown after hrs.

Air test 20 gal./min. with drill stem at 105 ft. 1 hrs.

Bailer test gal./min. with ft. drawdown after hrs.

Artesian flow g.p.m.

Temperature of water Depth artesian flow encountered ft.

(9) CONSTRUCTION:

Special standards: Yes ☐ No ☑

Well seal—Material used Cement + 5% Bentonite

Well sealed from land surface to 18 ft.

Diameter of well bore to bottom of seal 10 in.

Diameter of well bore below seal 6 in.

Amount of sealing material 6 sacks ☒ pounds ☐

How was cement grout placed? pumped

Was pump installed? Type HP Depth ft.

Was a drive shoe used? ☒ Yes ☐ No Plugs Size: location ft.

Did any strata contain unusable water? ☐ Yes ☒ No

Type of Water? depth of strata

Method of sealing strata off

Was well gravel packed? ☐ Yes ☒ No Size of gravel:

Gravel placed from ft. to ft.

(10) LOCATION OF WELL by legal description:

County Columbia ¼ ¼ of Section 1 of

Township 3N (Township is North or South) Range 2W (Range is East or West) WM.

Tax Lot Lot Block Subdivision

MAILING ADDRESS OF WELL (or nearest address) Same as #1

(11) WATER LEVEL of COMPLETED WELL:

Depth at which water was first found 37 ft.

Static level 65 ft. below land surface. Date 4-26-84

Artesian pressure lbs. per square inch. Date

(12) WELL LOG:

Diameter of well below casing 6

Depth drilled 125 ft. Depth of completed well 125 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Brn Silt + Boulders	0	12	
Brn Silt + Gravel	12	34	
Brn Clay	34	36	
Brn Sand + Gravel	36	61	
Brn Clay	61	64	
Blue/Black Sand + Gravel	64	103	
Blue Clay	103	106	
Blue/Black Sand + Gravel	106	125	

Date work started 4-25-84 completed 4-26-84

Date well drilling machine moved off of well 4-26 1984

(unbonded) Water Well Constructor Certification (if applicable):

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.

[Signed] Don Frahi Date 5-21, 1984

(bonded) Water Well Constructor Certification:

Bond 140898 (number) Issued by: ORE Auto Ins Co (Surety Company Name)

On behalf of DON FRAKIN (type or print name of Water Well Constructor)

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

(Signed) Don Frahi (Water Well Constructor)

(Dated) 5-21-84

NOTICE TO WATER WELL CONSTRUCTOR

The original and first copy of this report

WATER RESOURCES DEPARTMENT,
SALEM, OREGON 97310
within 30 days from the date of well completion.

SP*46866-690

STATE OF OREGON

WATER WELL REPORT

(as required by ORS 537.765)

RECEIVED JUN 19 1986 WATER RESOURCES DEPT SALEM, OREGON

RECEIVED JUL 22 1986 WATER RESOURCES DEPT SALEM, OREGON

3N/2W-1b

(1) OWNER: Owner's Well Number

me Warren WicKum

Address 53833 Columbia River Hwy

City Scappoose State OR Zip 97056

(2) TYPE OF WORK:

☒ New Well ☐ Deepen ☐ Recondition ☐ Abandon

(3) DRILL METHOD:

☒ Rotary Air ☐ Rotary Mud ☐ Cable ☐ Other

(4) PROPOSED USE:

☒ Domestic ☐ Community ☐ Industrial ☐ Irrigation

☐ Thermal ☐ Injection ☐ Other

(5) BORE HOLE CONSTRUCTION:

Depth of Completed Well 65 ft.

Special Standards date of approval

HOLE Diameter	From	To	SEAL Material	From	To	Amount sacks or pounds
10	0	18	Cement Grout	0	18	8 SKS

How was seal placed? Method ☐ A ☐ B ☒ C ☐ D ☐ E

☐ Other

Backfill placed from ft. to ft. Material

Gravel placed from ft. to ft. Size of gravel

(6) CASING/LINER:

	Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing:	6	+3	65	250	☑	☐	☑	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
Liner:					☐	☐	☐	☐
					☐	☐	☐	☐

Final location of shoe(s) 65'

(7) PERFORATIONS/SCREENS:

☐ Perforations Method none

☐ Screens Type Material

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
						☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐
						☐	☐

(8) WELL TESTS: Minimum testing time is 1 hour

☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min	Pumping level	Drill stem at	Time
20		35	½ hr
20		35	1 hr

Temperature of water Depth Artesian Flow Found

Was a water analysis done? ☐ Yes By whom

Did any strata contain water not suitable for intended use? ☑ Too little

☐ Salty ☐ Muddy ☐ Odor ☐ Colored ☑ Other Sand

Depth of strata: 4-14'

(9) LOCATION OF WELL by legal description:

County Columbia Latitude ° ' Longitude ° '

Township 3N N or S. Range 2W E or W. WM.

Section 1 NW ¼ ¼

Tax Lot Lot Block Subdivision

Street Address of Well (or nearest address) Same

(10) STATIC WATER LEVEL:

29 ft. below land surface. Date 6-4-86

Artesian pressure lb. per square inch. Date

(11) WELL LOG: Ground elevation

Material	From	To	WB?	SWL
Soil	0	2		
Brn Clay	2	4		
Blue Clay	4	8		
Blue Sand	8	14		
Brn Sand + Gravel w/Layers of Brn Clay	14	65		

Date started 6-3-86 Completed 6-4-86

(unbonded) Water Well Constructor Certification:

I constructed this well in compliance with Oregon well construction standards. Materials used and information reported above are true to my best knowledge and belief.

Signed Date

(bonded) Water Well Constructor Certification:

I accept responsibility for construction of this well and its compliance with all Oregon water well standards. This report is true to the best of my knowledge and belief.

Signed Don Fealen Date 6-16-86

Company Turner Drilling Co. Job No.

The original and first copy of this report are to be filed with the STATE ENGINEER, SALEM, OREGON 97310 within 30 days from the date of well completion.

RECEIVED
SEP 25 1970
STATE ENGINEER
SALEM OREGON

WATER WELL REPORT
STATE OF OREGON
(Please type or print)
(Do not write above this line)

State Well No. 3N/1W-6

State Permit No. _____

(1) OWNER:
Name Don Curtis
Address 2123 NW 30 ave Portland Ore

(2) TYPE OF WORK (check):
New Well [X] Deepening [ ] Reconditioning [ ] Abandon [ ]
If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:
Rotary [ ] Driven [ ]
Cable [X] Jetted [ ]
Dug [ ] Bored [ ]

(4) PROPOSED USE (check):
Domestic [X] Industrial [ ] Municipal [ ]
Irrigation [ ] Test Well [ ] Other [ ]

CASING INSTALLED: Threaded [ ] Welded [X]
6" Diam. from 0 ft. to 61 ft. Gage 17#
_____" Diam. from _____ ft. to _____ ft. Gage _____
_____" Diam. from _____ ft. to _____ ft. Gage _____

PERFORATIONS: Perforated? [ ] Yes [X] 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.

(7) SCREENS: Well screen installed? [ ] Yes [X] No
Manufacturer's Name
Type Model No.
Diam. Slot size Set from ft. to ft.
Diam. Slot size Set from ft. to ft.

(8) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? [ ] Yes [X] No If yes, by whom?
Yield: gal./min. with ft. drawdown after hrs.
Bailer test 30 gal./min. with 8 ft. drawdown after 1 hrs.
Artesian flow g.p.m.
Temperature of water Depth artesian flow encountered ft.

(9) CONSTRUCTION:
Well seal—Material used Bentonite
Well sealed from land surface to 18 ft.
Diameter of well bore to bottom of seal 5 7/8 10 in.
Diameter of well bore below seal 6 7/8 in.
Number of sacks of cement used in well seal 90# sacks
Number of sacks of bentonite used in well seal sacks
Brand name of bentonite Wall Gel
Number of pounds of bentonite per 100 gallons of water Appro. 4.5 Gal Per 100# lbs./100 gals.
Was a drive shoe used? [X] Yes [ ] No Plugs Size: location ft.
Did any strata contain unusable water? [ ] Yes [X] No
Type of water? depth of strata
Method of sealing strata off
Was well gravel packed? [ ] Yes [X] No Size of gravel:
Gravel placed from ft. to ft.

(10) LOCATION OF WELL:
County Col Driller's well number 132
¼ ¼ Section 6 T. 3N R. 1W W.M.
Bearing and distance from section or subdivision corner

(11) WATER LEVEL: Completed well.
Depth at which water was first found 49 ft.
Static level 41 ft. below land surface. Date 9-14-7
Artesian pressure lbs. per square inch. Date

(12) WELL LOG: Diameter of well below casing
Depth drilled 61 ft. Depth of completed well 61 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Lt. Br. Soil + Large Gravel	0	3	
" " Clay + " "	3	21	
med + Fine Gravel & Course Sand	21	48	
Lt. Br Clay med + fine Gravel & Course Sand	48	61	41

Work started 9-4-70 19 Completed 9-14-70
Date well drilling machine moved off of well 9-17-70 19

Drilling Machine Operator's Certification:
This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.
[Signed] Svend a. Hald Date 9-21, 19 7
(Drilling Machine Operator)
Drilling Machine Operator's License No. 144

Water Well Contractor's Certification:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Name SVEND A. HALD
(Person, firm or corporation) (Type or print)
Address Box 1267 St. Helens Ore
[Signed] Svend a. Hald
(Water Well Contractor)
Contractor's License No. 261 Date 9-21-70 19

(USE ADDITIONAL SHEETS IF NECESSARY)

are to be filed with the
WATER RESOURCES DEPARTMENT.
SALEM, OREGON 97310
within 30 days from the date
of well completion.

STATE OF OREGON

(Please type or print)

(Do not write above this line)

State Well No. _____

State Permit No. _____

(1) OWNER:

City of Scapoose

Address

Scapoose, Oregon 97056

(2) TYPE OF WORK (check):

New Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐

If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:

Rotary ☒ Driven ☐
Cable ☐ Jetted ☐
Dug ☐ Bored ☐

(4) PROPOSED USE (check):

Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(5) CASING INSTALLED:

Threaded ☐ Welded ☒

12" Diam. from 0 ft. to 186 ft. Gage .375
10" Diam. from 185 ft. to 1869 ft. Gage .250
_____ Diam. from _____ ft. to _____ ft. Gage _____

(6) PERFORATIONS:

Perforated? ☐ 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.

(7) SCREENS:

Well screen installed? ☒ Yes ☐ No

Manufacturer's Name Johnson Co.

Stainless Steel Model No. _____

Diam. 12 tel Slot size 50 Set from 186'9 ft. to 206'9" ft.
Diam. 12 Slot size 60 Set from 206'9 ft. to 216'9 ft.

12	80	216'9	226'9

(8) WELL TESTS:

Drawdown is amount water level is lowered below static level

Was a pump test made? ☒ Yes ☐ No If yes, by whom? Driller

Yield: 500 gal./min. with 72 ft. drawdown after 48 hrs.

" " " "

" " " "

Bailer test gal./min. with ft. drawdown after hrs.

Artesian flow g.p.m.

Temperature of water Depth artesian flow encountered _____ ft.

(9) CONSTRUCTION:

Well seal—Material used cement

Well sealed from land surface to 45 ft.

Diameter of well bore to bottom of seal 16 in.

Diameter of well bore below seal 12 in.

Number of sacks of cement used in well seal 36 sacks

How was cement grout placed? pressure pumped

Was a drive shoe used? ☒ Yes ☐ No Plugs _____ Size: location _____ ft.

Did any strata contain unusable water? ☐ Yes ☒ No

Type of water? depth of strata

Method of sealing strata off

Was well gravel packed? ☐ Yes ☒ No Size of gravel: _____

Gravel placed from _____ ft. to _____ ft.

(10) LOCATION OF WELL:

County Columbia Driller's well number D-159-78

¼ ¼ Section 13 T. 3N R. 2W W.M.

Bearing and distance from section or subdivision corner

Dutch Cannyon Rd. #2

(11) WATER LEVEL: Completed well.

Depth at which water was first found _____ ft.

Static level 61 ft. below land surface Date 10-78

Artesian pressure 228 lbs. per square inch Date _____

RECEIVED NOV 1978 WATER RESOURCES DEPT. SALEM, ORE.

(12) WELL LOG:

Diameter of well below casing _____

Depth drilled 228 ft. Depth of completed well 227 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Top soil	0	3	
Clay Brwn. sandy	3	11	
Clay brwn.	11	22	
Clay Br. w/gravel	22	60	
Gravel & Sand cemented	60	123	
Sand w/ trace gravel	123	158	
Graevl med. sand fine water	158	180	
gravel w/med. sand water	180	227	
Clay Blue	227	228	
screen was placed			
w/ Fig K packer			

Work started Sept. 7 19 78 Completed Oct. 10 19 78

Date well drilling machine moved off of well 9/25/ 19 78

Drilling Machine Operator's Certification:

This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.

[Signed] _____ (Drilling Machine Operator) Date 11/2, 1978

Drilling Machine Operator's License No. 888

Water Well Contractor's Certification:

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

Name S & M Drilling & Supply Inc. (Person, firm or corporation) (Type or print)

Address 399 se Walnut St. Canby, Oregon 9701

[Signed] _____ (Water Well Contractor)

Contractor's License No. 497 Date 11/2, 1978

(USE ADDITIONAL SHEETS IF NECESSARY)

WATER WELL REPORT
STATE OF OREGON
(Please type or print)

(Do not write above this line)

...this report ...in the ...ES DEPARTMENT, ...OREGON 97310 ...days from the date ...of well completion.

State Well No. ______

State Permit No. ______

(1) OWNER:
Name Albert Haulick
Address Rt 1 Boxx 395H
Scappoose, Oregon 97056

(2) TYPE OF WORK (check):
New Well ☒ Deepening ☐ Reconditioning ☐ Abandon ☐
If abandonment, describe material and procedure in Item 12.

(3) TYPE OF WELL:
Rotary ☒ Driven ☐
Cable ☐ Jetted ☐
Dug ☐ Bored ☐

(4) PROPOSED USE (check):
Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☒ Other ☐

(5) CASING INSTALLED: Threaded ☐ Welded ☒
____" Diam. from ____ ft. to ____ ft. Gage ____
6" Diam. from 0 ft. to 340 ft. Gage .250
____" Diam. from ____ ft. to ____ ft. Gage ____

(6) PERFORATIONS: Perforated? ☒ Yes ☐ No.
Type of perforator used Mills Knife
Size of perforations 1/4 in. by 2 in.
110 perforations from 157 ft. to 172 ft.
138 perforations from 195 ft. to 210 ft.
____ perforations from ____ ft. to ____ ft.

(7) SCREENS: Well screen installed? ☐ Yes ☒ No
Manufacturer's Name ______
Type ______ Model No. ______
Diam. ____ Slot size ____ Set from ____ ft. to ____ ft.
Diam. ____ Slot size ____ Set from ____ ft. to ____ ft.

(8) WELL TESTS: Drawdown is amount water level is lowered below static level
Was a pump test made? ☒ Yes ☐ No If yes, by whom? Aqua Pump
Yield: 200 gal./min. with 46.6 ft. drawdown after 48 hrs.
Bailer test ____ gal./min. with ____ ft. drawdown after ____ hrs.
Artesian flow ____ g.p.m.
Temperature of water ____ Depth artesian flow encountered ____ ft.

(9) CONSTRUCTION:
Well seal—Material used Cement
Well sealed from land surface to 46 ft.
Diameter of well bore to bottom of seal 10 in.
Diameter of well bore below seal 6 in.
Number of sacks of cement used in well seal 24 sacks
How was cement grout placed? pumped

Was drive shoe used? ☒ Yes ☐ No Plugs ____ Size: location ____ ft.
Did any strata contain unusable water? ☐ Yes ☒ No
Type of water? ____ depth of strata ____
Method of sealing strata off ____
Was well gravel packed? ☐ Yes ☒ No Size of gravel: ____
Gravel placed from ____ ft. to ____ ft.

(10) LOCATION OF WELL:
County Columbia Driller's well number D-87-78
¼ ¼ Section 13 T. 3N R. 2W W.M.
Bearing and distance from section or subdivision corner
Dutch Canyon Road # 1

(11) WATER LEVEL: Completed well.
Depth at which water was first found 52 ft.
Static level 56 ft. below land surface. Date 1/25/78
Artesian pressure ____ lbs. per square inch. Date ____

(12) WELL LOG: Diameter of well below casing 6
Depth drilled 350 ft. Depth of completed well 350 ft.

Formation: Describe color, texture, grain size and structure of materials; and show thickness and nature of each stratum and aquifer penetrated, with at least one entry for each change of formation. Report each change in position of Static Water Level and indicate principal water-bearing strata.

MATERIAL	From	To	SWL
Clay brwn	0	11	
Clay sandy w/grvl brn	11	40	
Clay sandy w/grvl gray	40	52	
Gravel/sand cemented	52	80	
Sand w/some gravel	80	135	
Sand w/trace gravel	135	155	
Gravel	155	175	56
Sand blck w/trace grvl	175	210	56
Clay blue	210	212	
Clay br, seam of sndstn	212	225	
Clay brn	225	316	
Sandstone Brn	316	350	

Keep pump @ 20' above bottom of well

Work started Jan 19 1978 Completed Jan 25 1978
Date well drilling machine moved off of well Jan 25 1978

Drilling Machine Operator's Certification:
This well was constructed under my direct supervision. Materials used and information reported above are true to my best knowledge and belief.
[Signed] [signature] (Drilling Machine Operator) Date 2/6 1978
Drilling Machine Operator's License No. 883

Water Well Contractor's Certification:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Name S & M Drilling & Supply, Inc (Person, firm or corporation) (Type or print)
Address 399 S.E.Walnut, Canby, Ore 97013
[Signed] [signature] (Water Well Contractor)
Contractor's License No. 497 Date 2/6 1978

Exhibit 4
Existing Water Rights

STATE OF OREGON

COUNTY OF COLUMBIA

CERTIFICATE OF WATER RIGHT

This Is to Certify, That CITY OF SCAPPOOSE of Scappoose, State of Oregon 97056, has made proof to the satisfaction of the STATE ENGINEER of Oregon, of a right to the use of the waters of Lazy Creek and South Fork Scappoose Creek, a tributary of Columbia River for the purpose of municipal

under Permit No. 25918 of the State Engineer, and that said right to the use of said waters has been perfected in accordance with the laws of Oregon; that the priority of the right hereby confirmed dates from November 24, 1958

that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed 4.0 cubic feet per second, being 1.5 c.f.s. from Lazy Creek and 2.5 c.f.s. from South Fork Scappoose Creek

or its equivalent in case of rotation, measured at the point of diversion from the stream.

The point of diversion is located in the S. Fk. Scappoose Cr.-NW¼ SE¼, Section 7, Lazy Cr.-SE¼ NW¼, Section 18, T. 3 N., R. 2 W., W. M., 1930 ft. North & 1970 ft. West, 1470 ft. South & 2680 ft. West, both from NE Corner, Section 18.

The amount of water used for irrigation, together with the amount secured under any other right existing for the same lands, shall be limited to ---------- of one cubic foot per second per acre,

and shall conform to such reasonable rotation system as may be ordered by the proper state officer.

A description of the place of use under the right hereby confirmed, and to which such right is appurtenant, is as follows:

NW¼ NW¼
Section 18
T. 3 N., R. 1 W., W. M.

S½ SW¼
NE¼ SE¼
S½ SE¼
Section 1

SE¼ SE¼
Section 2

E½ NE¼
N½ SE¼
SE¼ SE¼
Section 11
T. 3 N., R. 2 W., W. M.

All
Section 12

N½ NE¼
SW¼ NE¼
NW¼
N½ SW¼
SE¼ SW¼
W½ SE¼
Section 13

E½ NE¼
N½ SW¼
SE¼ SW¼
N½ SE¼
Section 14
T. 3 N., R. 2 W., W. M.

W½ NE¼
N½ NW¼
NE¼ SE¼
Section 15

W½ NW¼
Section 16

S½ NE¼
N½ NW¼
Section 17

NE¼ NE¼
Section 18

W½ NE¼
NE¼ NW¼
Section 24
T. 3 N., R. 2 W., W. M.

The right to the use of the water for the purposes aforesaid is restricted to the lands or place of use herein described.

WITNESS the signature of the State Engineer, affixed this date. December 5, 1975

James E. Sexson
Water Resources Director XXXXXXXXXXXX

Recorded in State Record of Water Right Certificates, Volume 34, page 42700

STATE OF OREGON

COUNTY OF COLUMBIA

CERTIFICATE OF WATER RIGHT

This is to Certify, *That.* City of Soappoose 97056

of Soappoose, *State of* Oregon, *has made proof to the satisfaction of the STATE ENGINEER of Oregon, of a right to the use of the waters of* Gourley Creek, a tributary of Soappoose Creek and *a tributary of* Columbia River *for the purpose of* Municipal *under Permit No.* 5813 *of the State Engineer, and that said right to the use of said waters has been perfected in accordance with the laws of Oregon; that the priority of the right hereby confirmed dates from* January 24, 1923;

that the amount of water to which such right is entitled and hereby confirmed, for the purposes aforesaid, is limited to an amount actually beneficially used for said purposes, and shall not exceed

10.0 cubic feet per second;

The use hereunder for irrigation shall conform to such reasonable rotation system as may be ordered by the proper state officer.

The amount of water used for irrigation, together with the amount secured under any other right existing for the same lands, shall be limited to one-eightieth of one cubic foot per second per acre, or its equivalent in case of rotation.

A description of the lands irrigated under the right hereby confirmed, and to which such right is appurtenant (or, if for other purposes, the place where the water is put to beneficial use), is as follows: Northeast Quarter of the Southeast Quarter ($NE\frac{1}{4}SE\frac{1}{4}$) of Section Twelve (12), Township Three North, Range Two West of the Willamette Meridian, in the City of Soappoose, Columbia County, Oregon.

The right to the use of the water for irrigation purposes is restricted to the lands or place of use herein described.

Rights to the use of water for power purposes are limited to a period of forty years from the date of priority of the right, as herein set forth, subject to a preference right of renewal under the laws existing at the date of the expiration of the right for power purposes, as hereby confirmed and limited.

WITNESS the signature of the State Engineer, affixed this 30th *day of* November, *192* 5.

Thos. Luper.
State Engineer.

Recorded in State Record of Water Right Certificates, Volume 6, *page* 5573.

Registration No.

Certificate No.

Registration Statement

OF CLAIMANT OF RIGHT TO APPROPRIATE GROUND WATER

TO THE STATE ENGINEER OF OREGON:

I, City of Scappoose

of Scappoose (Mailing address) County of Colum

State of Oregon, do hereby make application for a certificate of registra of a right to appropriate ground water.

1. Source from which water is withdrawn is Pump Well (Flowing well, pump well, infiltration trench,

2. Location is: in Scappoose (Approximate distance and direction from nearest city or town)

and is more particularly described as follows:

(a) South - 726.51 Feet & West 529.78 feet from East ¼ corner of S (Give distance and bearing to corner of section or other legal subdivision)

being within N.E. ¼ of S.E. ¼ (Smallest legal subdivision) of Sec. 12, Twp. 3N (N. or S.) R

or (b) within limits of recorded platted property, town or city: 20 Feet West of Ea end 20 feet South of Oak St. Not subdivided

in Lot ____, Block ____ of ____ (Name of plat or addition)

____ (If within city or town, give name) County of Columbia

3. Construction Work was begun on 1950 (Date); was completed on June

and the ground water claimed was first used for the purposes set out below on 1950 (Da

since which time the water has been used intermittantly (Continuously or intermittently)

from 1950 (Date) to date (Date)

4. Quantity of water claimed and used is 50 gallons per minute; ___ feet per year.

5. Purpose or Purposes for which water is used Municipal Supply

____ (Domestic, irrigation, municipal, manufacturing, industrial, etc.)

6. Description of Well: Depth 116 feet. Type ____ Drilled (Dug or drilled)

diameter 8 inches. Elevation of ground at well site 32 (As near as known) feet

Depth to water table 50 feet.

7. Capacity of Well: 200 g.p.m. with 25 feet drawdown.

300 g.p.m. with 35 feet drawdown.

Date of test June 1950

If Flowing Well: Measured discharge ____ g.p.m. on ____ (Date)

Shut-in pressure at ground surface ____ lbs. per sq. in. on ____

Water is controlled by ____ (Cap, valve, etc.)

426—4-51

Application No. G-9218 Permit No. G 8615

STATE OF OREGON WATER RESOURCES DEPARTMENT

Application for a Permit to Appropriate Ground Water

RECEIVED
APR 30 1979
WATER RESOURCES DEPT.
SALEM, OREGON

I, City of Scappoose (Name of Applicant)

of P.O. Drawer "B" (Mailing Address), Scappoose (City)

State of Oregon, 97056 (Zip Code) Phone No. 503-543-7146 do hereby make application for a permit to appropriate the following described ground waters of the State of Oregon:

1. The development will consist of One Well (Give number of wells, tile lines, infiltration galleries, etc.)

having a diameter of 12" and an estimated depth of 227 feet.

2. The well or other source is to be located 1563.91 ft. North (N. or S.) and 1935.80 ft. East (E. or W.)

from the S.W. corner of Sec. 13, TWP 3N, R2 WWM (Public Land Survey Corner)

(If there is more than one well, each must be described)

being within the N.E. ¼ of the S.W. ¼ of

Sec. 13 Tp. 3N R 2W, W. M., in the county of Columbia.

3. Location of area to be irrigated, or place of use if use other than irrigation.

Township	Range	Section	List ¼ ¼ of Section	List use and/or number of acres to be irrigated
City of	Scappoose	Water	System - see	Municipal
Attachment One		for Description of the		
Property	on which	water is	to be used.	

4. It is estimated that 227 feet of the well will require Steel (Kind) casing.

5. Depth to water table is estimated 61.0' (Feet) Well drilled by S. & M. Drilling & Supply, Inc. Canby, Oregon

Form 690-3-0-1-77

6. The amount of water which the applicant intends to apply to beneficial use is ..... cubic feet per second or 400 gallons per minute.

7. The use to which the water is to be applied is Municipal

8. If the flow to be utilized is artesian, the works to be used for the control and conservation of the supply when not in use must be described.

-

9. If the location of the well, or other development work is less than one-fourth mile from a natural stream channel, give the distance to the channel and the difference in elevation between the stream bed and the ground surface at the source of development.

-

10. DESCRIPTION OF WORKS

Include length and dimensions of supply ditch or pipeline, size and type of pump and motor, type of irrigation system to adequately describe the proposed distribution system.

Pump: Worthington Oil Lubricated-Lineshaft, Vertical Turbine, 10M41 Bowls, 11 stage, 185' in length, airline, gauge and flowmeter.

Motor: U.S. Motors 364T-21, Type RU, 60 HP, 1770 RPM.

Distribution Pipeline:

Well water discharges through pump into 100 LF of 8" Diameter Ductile Iron Pipe, through 3300 LF of 12" Diameter Ductile Iron Pipe, ties into existing 12" I.D. Steel supply line, and flows 5700 LF to Water Treatment Plant. From there water is distributed throughout existing Municipal Water System.

11. Construction work will begin on or before September 7, 1978

12. Construction work will be completed on or before June 30, 1979

13. The water will be completely applied to the proposed use on or before June 30, 1979

14. If the ground water supply is supplemental to an existing supply, identify the supply and existing water right. 1. Gourley Creek, Permit No. 5813.

2. Lazy Creek and South Fork Scappoose Creek, Permit No. 25918.

Application No. G-9218 Permit No. G 8615

Quarter/Quarter Description	Section	Township	Range
N.W. 1/4 of N.W. 1/4	13	3 N.	2 W.W.M.
N.E. 1/4 of N.W. 1/4	13	3 N.	2 W.W.M.
S.E. 1/4 of N.W. 1/4	13	3 N.	2 W.W.M.
S.W. 1/4 of N.W. 1/4	13	3 N.	2 W.W.M.
N.W. 1/4 of N.E. 1/4	13	3 N.	2 W.W.M.
N.E. 1/4 of N.E. 1/4	13	3 N.	2 W.W.M.
S.E. 1/4 of N.E. 1/4	13	3 N.	2 W.W.M.
S.W. 1/4 of N.E. 1/4	13	3 N.	2 W.W.M.
N.W. 1/4 of S.E. 1/4	13	3 N.	2 W.W.M.
S.W. 1/4 of S.E. 1/4	13	3 N.	2 W.W.M.
N.W. 1/4 of S.W. 1/4	13	3 N.	2 W.W.M.
N.E. 1/4 of S.W. 1/4	13	3 N.	2 W.W.M.
S.E. 1/4 of S.W. 1/4	13	3 N.	2 W.W.M.
S.W. 1/4 of S.W. 1/4	13	3 N.	2 W.W.M.
S.E. 1/4 of N.E. 1/4	14	3 N.	2 W.W.M.
N.W. 1/4 of S.E. 1/4	14	3 N.	2 W.W.M.
N.E. 1/4 of S.E. 1/4	14	3 N.	2 W.W.M.
N.W. 1/4 of S.W. 1/4	14	3 N.	2 W.W.M.
N.E. 1/4 of S.W. 1/4	14	3 N.	2 W.W.M.
N.W. 1/4 of N.E. 1/4	24	3 N.	2 W.W.M.

2,000 acres M/L

Application No. G-9218.
Permit No. G 8615

Remarks:.....

.....

.....

.....

.....

.....

.....

.....

.....

Virginia R. Sheldon Recorder-Treas.
Signature of Applicant
City of Scappoose

This is to certify that I have examined the foregoing application, together with the accompanying maps and data, and return the same for correction and completion

In order to retain its priority, this application must be returned to the Water Resources Director with corrections on or before August 13, 19 79

WITNESS my hand this 12th *day of* June, 1979

James E. Sexson *Water Resources Director*

By Robert G. Mucken
Robert G. Mucken

RECEIVED
AUG 3 - 1979
WATER RESOURCES DEPT
SALEM OREGON

This instrument was first received in the office of the Water Resources Director at Salem, Oregon, on the 30th *day of* April, 19 79, *at* 8:00 *o'clock* A *M.*

Application No. G-9218 *Permit No.* G 8615

Permit to Appropriate the Public Waters of the State of Oregon

This is to certify that I have examined the foregoing application and do hereby grant the same, SUBJECT TO EXISTING RIGHTS INCLUDING THE EXISTING MINIMUM FLOW POLICIES ESTABLISHED BY THE WATER POLICY REVIEW BOARD and the following limitations and conditions:

The right herein granted is limited to the amount of water which can be applied to beneficial use and shall not exceed 0.89 *cubic feet per second measured at the point of diversion from the well or source of appropriation, or its equivalent in case of rotation with other water users, from* a well.

The use to which this water is to be applied is municipal.

If for irrigation, this appropriation shall be limited to ..... of one cubic foot per second or its equivalent for each acre irrigated and shall be further limited to a diversion of not to exceed ..... acre feet per acre for each acre irrigated during the irrigation season of each year;

and shall be subject to such reasonable rotation system as may be ordered by the proper state officer.

The well shall be constructed in accordance with the General Standards for the Construction and Maintenance of Water Wells in Oregon.

The works constructed shall include an air line and pressure gauge or an access port for measuring line, adequate to determine water level elevation in the well at all times.

The permittee shall install and maintain a weir, meter, or other suitable measuring device, and shall keep a complete record of the amount of ground water withdrawn.

The priority date of this permit is April 30, 1979

Actual construction work shall begin on or before August 31, 1980 *and shall thereafter be prosecuted with reasonable diligence and be completed on or before October 1, 19*80

Extended to Oct. 1985

*Complete application of the water to the proposed use shall be made on or before October 1, 19*81

Extended to Oct. 1985

WITNESS my hand this 31st *day of* August, *19*79

James E. Sexton

Water Resources Director

RESUBMITTAL ATTACHMENT ONE

APPLICATION FOR PERMIT TO APPROPRIATE GROUND WATER
CITY OF SCAPPOOSE, OREGON
August 6, 1979

Permit No. G-9218 Item No. 3 "See Resubmittal Map"

Note: The quarter/quarter sections listed include any land either encroached upon by the City of Scappoose corporate city limit lines, and existing distribution lines or existing users of water derived from any existing lines owned and operated by the City of Scappoose, Oregon.

Quarter/Quarter Description	Section	Township	Range
N.W. 1/4 of S.W. 1/4	7	3 N.	1 W.W.M.
N.E. 1/4 of S.W. 1/4	7	3 N.	1 W.W.M.
S.E. 1/4 of S.W. 1/4	7	3 N.	1 W.W.M.
S.E. 1/4 of S.W. 1/4	1	3 N.	2 W.W.M.
S.W. 1/4 of S.W. 1/4	1	3 N.	2 W.W.M.
S.E. 1/4 of S.E. 1/4	2	3 N.	2 W.W.M.
S.W. 1/4 of S.E. 1/4	2	3 N.	2 W.W.M.
N.E. 1/4 of N.W. 1/4	11	3 N.	2 W.W.M.
N.W. 1/4 of N.E. 1/4	11	3 N.	2 W.W.M.
N.E. 1/4 of N.E. 1/4	11	3 N.	2 W.W.M.
S.E. 1/4 of N.E. 1/4	11	3 N.	2 W.W.M.
N.W. 1/4 of S.E. 1/4	11	3 N.	2 W.W.M.
N.E. 1/4 of S.E. 1/4	11	3 N.	2 W.W.M.
S.E. 1/4 of S.E. 1/4	11	3 N.	2 W.W.M.
N.W. 1/4 of N.W. 1/4	12	3 N.	2 W.W.M.
N.E. 1/4 of N.W. 1/4	12	3 N.	2 W.W.M.
S.E. 1/4 of N.W. 1/4	12	3 N.	2 W.W.M.
S.W. 1/4 of N.W. 1/4	12	3 N.	2 W.W.M.
N.W. 1/4 of N.E. 1/4	12	3 N.	2 W.W.M.
N.E. 1/4 of N.E. 1/4	12	3 N.	2 W.W.M.
S.E. 1/4 of N.E. 1/4	12	3 N.	2 W.W.M.
S.W. 1/4 of N.E. 1/4	12	3 N.	2 W.W.M.
N.W. 1/4 of S.E. 1/4	12	3 N.	2 W.W.M.
N.E. 1/4 of S.E. 1/4	12	3 N.	2 W.W.M.
S.E. 1/4 of S.E. 1/4	12	3 N.	2 W.W.M.
S.W. 1/4 of S.E. 1/4	12	3 N.	2 W.W.M.
N.W. 1/4 of S.W. 1/4	12	3 N.	2 W.W.M.
N.E. 1/4 of S.W. 1/4	12	3 N.	2 W.W.M.
S.E. 1/4 of S.W. 1/4	12	3 N.	2 W.W.M.
S.W. 1/4 of S.W. 1/4	12	3 N.	2 W.W.M.

Application No. G-9218
Permit No. G 8615

Tables

TABLE 1: ACTUAL AND PROJECTED DEMANDS

	Actual		Projected(1)			
			@ 2%		@ 4%	
	1975(2)	1991(3)	2000	2010	2000	2010
RESIDENTIAL WATER DEMAND						
Number of Service Connections	725	1127	1347	1642	1604	2374
Annual Demand (mg)(4)	79.4	123.4	147.5	179.8	175.6	260.0
COMMERCIAL WATER DEMAND						
Number of Service Connections (6)	100	50	60	73	71	105
Annual Demand (mg)(5)	29.2	14.6	17.4	21.3	20.8	30.8
INDUSTRIAL WATER DEMAND						
Annual Demand (mg)	5.5	9	11	13.1	13	19.0
TOTAL WATER DEMANDS						
Annual Demand (mg)	125.5	161.7	193.3	235.6	230.2	340.7
Average Daily Demand (gpd)	343,825	443,033	529,466	645,416	630,575	933,404
Maximum Daily Demand (gpd)	860,000	835000	997,902	1,216,437	1,188,465	1,759,219
Maximum Daily Demand (gpm)	600	580	692.99	844.75	825.32	1221.68
STORAGE REQUIREMENTS (Table 2)						
Emergency Storage (gallons)	860,000	886,067	1,058,932	1,290,832	1,261,149	1,866,809
Equalization Storage (gallons)	172,000	167,000	199,580	243,287	237,693	351,844
Fire Reserve (gallons)	630,000	630,000	630,000	630,000	630,000	630,000
Storage Volume Required	1,662,000	1,683,067	1,888,512	2,164,119	2,056,158	2,741,063

Notes:

1. Straight line projections at annual rates indicated.
2. Values for 1975 taken from City of Scappoose Water System Master Plan.
3. Values for 1991 provided by City of Scappoose.
4. Residential unit demand estimated at 300 gallons per service per day.
5. Commercial unit demand estimated at 800 gallons per service per day.
6. The reduction in commercial services is attributed to accounting differences between 1975 and 1991.

W&H Pacific, Inc. 20-Dec-92

TABLE 2: RESERVOIR SIZING

Emergency Storage:

Take the higher value of elther the peak day demand or two times the average day demand. Quantities used are from actual 1991 data.

Peak Day	835,000		
Ave Day x 2	886,066	Use	886,066

Fire Flow:

Assume one 3 hour fire at 3500 gpm	630,000

Equalization Flow:

Use 20% of Peak Daily	167,000
Total	1,683,066

Table 3: Cost Estimates

SHORT TERM (0-3 YEARS)

Airpark	Quantity	Unit	Unit Cost	Cost
Phase 1 Distribution Improvements				
Water Main - 12" (1)	1500	lf	$40	$60,000
Engineering and Contingencies (2)	40	%	$24,000	$24,000
Estimated Project Cost				$84,000

City	Quantity	Unit	Unit Cost	Cost
Transmission Main Improvements				
Water Main - 16" (1)	4500	lf	$56	$252,000
Water Main - 12" (1)	2100	lf	$40	$84,000
Water Main - 6" (1)	800	lf	$35	$28,000
Engineering and Contingencies (2)	40	%	$145,600	$145,600
Estimated Project Cost				$509,600
New Well Source				
Well Drilling/Appurtenances (3)	1	ls	$250,000	$250,000
Engineering and Contingencies (2)	30	%	$75,000	$75,000
Estimated Project Cost				$325,000
Tank Restoration (0.3mg)				
Reservoir Liner (4)	1	ls	$50,000	$50,000
Engineering and Contingencies (2)	30	%	$15,000	$15,000
Estimated Project Cost				$65,000

NEAR TERM (2-5 YEARS)

Airpark	Quantity	Unit	Unit Cost	Cost
Phase 2 Distribution Improvements				
Water Main - 12" (1)	3300	lf	$40	$132,000
Pavement Repair	2000	lf	$7	$14,000
Engineering and Contingencies (2)	40	%	$58,400	$58,400
Estimated Project Cost				$204,400

City	Quantity	Unit	Unit Cost	Cost
Complete Transmission Main Improvements				
Water Main - 16" (1)	4300	lf	$56	$240,800
Pavement Repair	4300	lf	$7	$30,100
Engineering and Contingencies (2)	40	%	$108,360	$108,360
Estimated Project Cost				$379,260

Continued next page.

Table 3: Cost Estimates, Continued

LONG TERM (5-15 YEARS)

Airpark	Quantity	Unit	Unit Cost	Cost
Phase 3 Distribution Improvements				
Water Main - 12" (1)	3300	lf	$40	$132,000
Pavement Repair	2000	lf	$7	$14,000
Engineering and Contingencies (2)	40	%	$58,400	$58,400
Estimated Project Cost				$204,400

City	Quantity	Unit	Unit Cost	Cost
Distribution Improvements				
Water Main - 12" (1)	3000	lf	$40	$120,000
Pavement Repair	3000	lf	$7	$21,000
Engineering and Contingencies (2)	40	%	$56,400	$56,400
Estimated Project Cost				$197,400
Reservoir Improvements				
Storage Reservoir - 1mg (5)	1	ls	$500,000	$500,000
Engineering and Contingencies (2)	30	%	$150,000	$150,000
Estimated Project Cost				$650,000
Dutch Canyon Aqueduct				
Water Main - 12" (1)	29040	lf	$50	$1,452,000
Engineering and Contingencies (2)	40	%	$580,800	$580,800
Estimated Project Cost				$2,032,800

Notes:

1. Water main costs include an allowance for valves at 500' and fire hydrants at 300' spacings.
2. Engineering and Contingencies include allowances for engineering, surveying, construction contingencies and overhead.
3. Value currently budgeted by the City.
4. From a cost estimate by Adco International, Ltd. including an allowance for plumbing improvements.
5. Estimated at $0.41 per gallon plus an allowance for appurtenances.