STATE OF OREGON

COUNTY OF WASCO

PERMIT TO CONSTRUCT A RESERVOIR AND STORE THE PUBLIC WATERS

THIS PERMIT IS HEREBY ISSUED TO

CITY OF THE DALLES
6780 RESERVOIR ROAD (541) 298-1242
THE DALLES, OREGON 97058

The specific limits and conditions of the use are listed below.

APPLICATION FILE NUMBER: R-84049

SOURCE OF WATER: SOUTH FORK MILL CREEK WITH ANY DEFICIENCY IN THE AVAILABLE WATER SUPPLY FROM SOUTH FORK MILL CREEK TO BE MADE UP BY DIVERSION FROM DOG RIVER APPROPRIATED UNDER CERTIFICATE 14954.

STORAGE FACILITY: ENLARGEMENT OF CROW CREEK RESERVOIR

PURPOSE OR USE OF THE STORED WATER: MUNICIPAL USE.

MAXIMUM VOLUME: 2100 ACRE-FEET PER YEAR

WATER MAY BE APPROPRIATED FROM THE SOUTH FORK MILL CREEK FOR STORAGE: JANUARY 1 THROUGH APRIL 14 AND OCTOBER 1 THROUGH OCTOBER 31

DATE OF PRIORITY: JANUARY 21, 1999

The area submerged by the reservoir, when full, will be 60.0 acres and the maximum depth of water will be 115 feet. The maximum height of the dam shall not exceed 140 feet.

DAM LOCATION: SE ¼ SW ¼, Section 17, and NE ¼ NW ¼ Section 20, T1S, R11E, W.M.

DOG RIVER POINT OF DIVERSION LOCATION: NW ¼ SW ¼, Section 11, T2S, R10E, W.M.; 1800 FEET NORTH & 890 FEET EAST FROM SW CORNER SECTION 11

THE AREA TO BE SUBMERGED BY THE RESERVOIR IS LOCATED AS FOLLOWS:

SW ¼ SW ¼
SE ¼ SW ¼
SECTION 17

NE ¼ NW ¼

NW ¼ NW ¼
SW ¼ NW ¼
SE ¼ NW ¼
NE ¼ SW ¼
SECTION 20
TOWNSHIP 1 SOUTH, RANGE 11 EAST, W.M.

Measurement, recording and reporting conditions:

A. Before water use may begin under this permit, the permittee shall install a meter or other suitable measuring device approved by the Director. The permittee shall maintain the meter or measuring device in good working order, shall keep a complete record of the amount of water used each month and shall submit a report which includes the recorded water use measurements to the Department annually or more frequently as may be required by the Director. Further, the Director may require the permittee to report general water use information, including the place and nature of use of water under the permit.

B. The permittee shall allow the watermaster access to the meter or measuring device; provided however, where the meter or measuring device is located within a private structure, the watermaster shall request access upon reasonable notice.

Prior to beginning construction under this permit the applicant shall obtain written approval from Wasco County indicating the proposed use complies with county land-use planning, and shall submit a copy of the approval to the Department's water right file.

Within 1 year of NEPA approval, the permittee shall submit a Water Management and Conservation Plan consistent with OAR Chapter 690, Division 86. The Director may approve an extension of this timeline to complete the required Water Management and Conservation Plan.

The dam shall be constructed, operated, and maintained according to plans and specifications approved and on file with the Water Resources Department (WRD). Construction shall not begin prior to the Department's approval of plans and specifications for the reservoir.

Construction shall not begin until plans and specifications prepared by an Oregon licensed professional engineer have been reviewed and approved in writing by WRD Dam Safety.

The outlet gate shall be cycled at least once each year and shall be

fully operational at all times.

Routine maintenance of the dam, its spillway and all appurtenant structures shall be performed as necessary to remove trees, brush and debris, and to repair slumps, areas of erosion, or defective equipment.

The embankment dam, the resultant reservoir, and the emergency spillway, shall be constructed and maintained according to the approved plans and specifications on file with the Oregon Water Resources Dam Safety program. Any significant change in the approved design prior to or during construction shall be documented by the project engineer in a letter to Dam Safety. All construction shall be performed under the supervision of a registered professional engineer licensed in Oregon.

No new fill shall be placed until preparation of the foundation materials have been completed and examined in its entirety by the engineer of record, or by the Water Resources Dam Safety Engineer, or both.

No water shall be stored until the Water Resources Department receives written certification from the engineer of record that construction has been completed in accordance with the approved plans and specification. If construction deviates from the approved design a set reproducible asbuilt drawings, including a revised reservoir capacity graph/table, must accompany the engineer's written certification of completion.

The completed structure shall not be enlarged, modified, altered or otherwise changed without the prior written approval of the Director of the Water Resources Department or the Director's authorized representative. Except for routine repair and maintenance, plans and specifications prepared by an Oregon licensed engineer are required for any significant modification, alteration, or rehabilitation of the dam, spillway or appurtenant structures.

STANDARD CONDITIONS

Use under this permit is limited to the reservoir area. This permit does not provide for the appropriation of water for maintaining the water level or maintaining a suitable fresh water condition.

The storage of water allowed herein is subject to the installation and maintenance of a fully functional conduit/gate assembly having a minimum diameter of 8 inches.

Failure to comply with any of the provisions of this permit may result in action including, but not limited to, restrictions on the use, civil

penalties, or cancellation of the permit.

This permit is for the beneficial use of water without waste. The water user is advised that new regulations may require the use of best practical technologies or conservation practices to achieve this end.

By law, the land use associated with this water use must be in compliance with statewide land-use goals and any local acknowledged land-use plan.

The use of water allowed herein may be made only at time when sufficient water is available to satisfy all prior rights, including prior rights for maintaining instream flows.

The Director finds that the proposed use(s) of water described by this permit, as conditioned, will not impair or be detrimental to the public interest.

The reservoir shall be filled and complete application of the stored water to the use shall be made on or before November 20 , 2011. Within one year after complete application of water to the proposed use, the permittee shall submit a claim of beneficial use, which includes a map and report prepared by a Certified Water Rights Examiner (CWRE).

Issued November 20 , 2001

Douglas C. Grafe for
Paul R. Cleary, Director
Water Resources Department

BEFORE THE WATER RESOURCES DEPARTMENT
OF THE STATE OF OREGON

In the Matter of Aquifer Storage and Recovery (ASR) Limited License Application #025, Wasco County	))	FINAL ORDER APPROVING ASR TESTING

AUTHORITY

Oregon Revised Statute (ORS) 537.534 and Oregon Administrative Rule (OAR) 690-350-0020 establish the process by which an application for ASR testing under an ASR limited license may be submitted and approved. OAR 690-350-0010 describes general provisions for ASR under Oregon law.

BACKGROUND

On April 9, 2018, the Department received application for ASR Limited License #025 from the City of The Dalles. The Department determined the application was incomplete on May 24, 2018. The application was resubmitted on June 7, 2018 and determined complete on June 13, 2018.

FINDINGS OF FACT

1. On April 9, 2018, the City of The Dalles submitted an application for ASR Limited License #025. After re-submission, the Department determined it was complete on June 13, 2018.
2. The Department provided public notice of the application in the Department's weekly public notice on June 19, 2018. A 30-day comment period followed.
3. The Department received timely comments from Waterwatch. The comments suggested the ASR limited license be conditioned to address concerns related to the City using water appropriated under its water rights to the Dog River as the source water for the proposed ASR project, water quality standards and a lack of groundwater information.
4. The Department reviewed the City's proposed source water rights, and found that the City of The Dalles holds Certificates 14954, 5691, 60410. These water rights authorize year-round municipal use of up to the entire specified rates and volumes, and ASR is a beneficial use inherent to those rights.
5. The Department sought comments and recommendations from the Oregon Department of Environmental Quality (DEQ) and the Oregon Health Authority's Drinking Water Services (OHA) related to water quality standards. Comments were received from DEQ and OHA supporting the issuance of ASR LL #025, and the license is conditioned accordingly.
6. The Department reviewed the groundwater information included with the application and found it met the application requirements as described in 690-350-0020(3).
7. The Department reviewed the ASR application and testing plan. The authorization of ASR LL #025 is conditioned accordingly.

APPEAL RIGHTS

This is an order in other than a contested case. This order is subject to judicial review under ORS 183.484. Any petition for judicial review must be filed within the 60-day time period specified by ORS 183.484(2). Pursuant to ORS 536.075 and OAR 137-004-0080, you may petition for judicial review or petition the Director for reconsideration of this order. A petition for reconsideration may be granted or denied by the Director, and if no action is taken within 60 days following the date the petition was filed, the petition shall be deemed denied.

8. The Department evaluated the application and comments and determined:
    a. The proposed ASR testing will not impair or be detrimental to the public interest;
    b. The proposed ASR testing will produce information that will adequately describe the water quality and quantity response in the aquifer and at nearby wells and springs due to ASR activities; and
    c. The proposed testing will not expand the use under an existing water right.
9. The Department evaluated the application and comments and determined that the proposed use is consistent with ORS 537.534 and OAR 690-350-0020.

CONCLUSIONS OF LAW

The request to issue ASR Limited License #025 for five years is consistent with the requirements of ORS 537.534 and OAR 690-350-0020.

ORDER

Now, THEREFORE, it is ORDERED, ASR Limited License #025 shall be valid through the fifth anniversary of issuance, pursuant to ORS 537.534 and OAR 690-350-0020(5).

Except as modified by other provisions of this license, the licensee is authorized to pursue the project schedule, monitoring, and other features noted in the accepted ASR testing plan. The plan may be modified and approved pursuant to condition (3)(A). The project schedule in the ASR testing plan may be reasonably adjusted by the licensee to reflect the license issuance date or other delays. Features of the testing plan are provided in the application documents entitled:

GSI Water Solutions, Inc. (April 4, 2018). City of The Dalles Aquifer Storage and Recovery Limited License Application and Pilot Test Work Plan.

GSI Water Solutions, Inc. (June 7, 2018). Response to Completeness Review of ASR LL #025 Application: City of The Dalles.

ASR testing must provide data and analysis that address the following:

- The appropriate target storage volume
- Loss of stored ASR water and natural water by virtue of ASR activities
- Water quality changes due to ASR activities
- Well construction sufficiency for ASR purposes
- Water level response in the ASR wells, aquifer, springs and nearby wells
- Accounting of ASR inputs, withdrawals, and storage
- Water quality testing needs
- Well hydraulics at the ASR wells

The licensee may divert up to 16.7 cubic feet per second (cfs) from the Dog River, a tributary of Hood River; South Fork Mill Creek, a tributary of Mill Creek; and Crow Creek Reservoir, a tributary of Crow Creek under the following water rights. The diversion rate shall not exceed the total diversion rate authorized for each source.

Source/ Certificate	Point of Diversion
Dog River/ 14954	1,800 FEET NORTH, 890 FEET EAST FROM THE SW CORNER OF SECTION 11, T2S/R10E
South Fork Mill Creek/ 5691	1,270 FEET NORTH AND 960 FEET WEST FROM SE CORNER OF SECTION 28, T1N/R12E
Crow Creek Reservoir/ 60410	452 FEET SOUTH AND 366 FEET WEST FROM N ¼ CORNER OF SECTION 20, T1S/R11E

The licensee may store up to 1,200 million gallons in a basalt aquifer. With the approval of individual ASR well testing plans, up to four wells may be authorized. The maximum injection rate is 1,875 gallons per minute (gpm) per well. The maximum recovery rate is 2,500 gpm per well at the same four wells. The maximum storage duration is five years under this license.

Four ASR wells may be authorized at four of the following seven proposed locations:

Well Name	Well Log ID	Well Location
ASR 1	(not yet drilled)	293 FEET NORTH, 1,676 FEET EAST FROM SW CORNER OF SECTION 4, T1N/R13E
Site 2	(not yet drilled)	75 FEET SOUTH, 1,900 FEET EAST FROM NW CORNER OF SECTION 9, T1N/R13E
Site 3	(not yet drilled)	775 FEET SOUTH, 1,050 FEET WEST FROM NE CORNER OF SECTION 9, T1N/R13E
Site 4	(not yet drilled)	1,000 FEET SOUTH, 2,050 FEET WEST FROM NE CORNER OF SECTION 4, T1N/R13E
Site 5	(not yet drilled)	1,030 FEET NORTH, 1,150 FEET EAST FROM SW CORNER OF SECTION 33, T2N/R13E
Site 6	(not yet drilled)	2,880 FEET NORTH, 2,730 FEET WEST FROM SE CORNER OF SECTION 33, T2N/R13E
Site 7	(not yet drilled)	940 FEET NORTH, 1,150 FEET WEST FROM SE CORNER OF SECTION 4, T1N/R13E

The ASR testing project shall be operated according to the following conditions, pursuant to OAR 690-350-0020(5). Failure to comply with any of the provisions of this license may result in action including, but not limited to, revocation of the license.

1) **Notice Prior to Injection and Recovery.** The licensee shall give notice, in writing, to the watermaster not less than 15 days in advance of either initiating any injection under the license or recovering stored water. The injection notice shall include the license number, the location of the injection source water diversion, the quantity of water to be diverted from that source, the time of injection, and the place of injection. The recovery notice shall include the license number, the location of the recovery well(s), the time of recovery, and the quantity of water to be recovered.

2) **Record of Use.** The licensee shall maintain a record of injection and recovery, including the total number of hours and times of injection and recovery and the total metered quantity injected and recovered. The record of use may be reviewed by Department staff upon request.

3) **Modification/Revocation**. The Department shall notify the licensee in writing and allow the licensee to respond when considering the following actions:
(A) The Director may modify the ASR license for any of the following reasons:

(i) to reflect changes in Oregon Health Authority Drinking Water Services (OHA) and Oregon Department of Environmental Quality (DEQ) water quality or treatment standards;

(ii) to address needed technological changes as requested by DEQ or OHA to minimize constituents regulated under OAR 333-61-030 (ORS 448.131 and 448.273) or OAR 340-40 (ORS 468B.165);

(iii) to address a written request from the applicant for minor adjustments to the authorization in the license.

(B) The Director may revoke, suspend or modify the ASR license for any of the following reasons:

(i) to prevent or mitigate injury to other water rights, instream water rights, minimum perennial streamflows or aquifer water quality;

(ii) to address any other unintended, injurious effects of the ASR activity; or

(iii) failure to maintain compliance with all conditions of this license.

(C) The Department may offer an additional public comment opportunity consistent with the notice and comment provisions of OAR 690-350-020 prior to modifying the license.

4) **Priority/Protection**. This license does not receive a priority date and is not protected under ORS 540.045. The diversion of water for this ASR testing retains the priority date and protection of the source water rights.

5) **Compliance with Other Laws**. The injection of acceptable water into the aquifer as well as its storage and recovery under this license shall comply with all applicable local, state or federal laws. This shall include, but not be limited to, compliance with the Oregon Department of Environmental Quality's Underground Injection Control registration program as authorized under the Safe Drinking Water Act (40 CFR 144.26). Also, all pilot test discharges to waterways must be covered by a DEQ National Pollution Discharge Elimination System (NPDES) permit.

6) **Detailed Testing Plans**. The licensee shall submit a detailed testing plan for each injection well as the project develops. The plan shall include, but is not limited to, water quality and water level monitoring activities, precise well locations and well construction information. The plan shall be sealed and signed by a professional(s) registered or allowed, under Oregon law, to practice geology. The licensee shall obtain the Department's approval of a detailed plan before injection testing at any well may begin. The Department may approve, condition or reject a plan. After the first ASR well is installed and testing occurs, the Department will evaluate the water level data's adequacy to describe the project's impact to the aquifer. If the Department determines the monitoring network is insufficient at that time, identification or installation of a dedicated observation well of similar depth and construction to the ASR well(s) will be required before approval of further testing.

7) **Well Construction**. Injection and recovery wells shall be open to a single aquifer in the Columbia River Basalt Group and shall meet applicable well construction standards (e.g., OAR 690-200 and

OAR 690-210). Following well drilling to total depth, the wells shall be thoroughly developed to remove cuttings and drilling fluids. The licensee or their agent shall consult with a Department Hydrogeologist and the Department's Well Construction and Compliance Section before well completion to obtain approval of the proposed final casing and seal depth. The wells shall be designed to limit the irretrievable loss of injected water to unsaturated zones.

8) **Cuttings.** During drilling of new project wells, the licensee shall collect cuttings at a minimum of 10 foot intervals and at major formation changes. The licensee shall provide a split of the cuttings to the Department.

9) **Well Tag Condition for Licensee Wells.** Prior to testing, the licensee shall ensure that their wells have been assigned a Department Well Identification Number (Well ID Number). A tag showing the Well ID Number shall be permanently attached to the well. If a well does not have a Well ID Number, the licensee shall apply for one from the Department and attach it to the well.

10) **Water Quality Conditions and Limits.**
(A) The licensee shall minimize, to the extent technically feasible, practical and cost-effective, the concentration of constituents in the injection source water that are not naturally present in the aquifer;

(B) Except as otherwise provided in (C) of this condition, if the injection source water contains constituents regulated under OAR 333-61-030 (ORS 448.131 and 448.273) or OAR 340-40 (ORS 468B.165) that are detected at greater than 50 percent of the established levels (MCLs or MMLs in the cited rules), the licensee shall employ technically feasible, practical and cost-effective methods to minimize concentrations of such constituents in the injection source water;

(C) Constituents that have a secondary contaminant level or constituents that are associated with disinfection of the injection source water may be injected into the aquifer according to the standards established under OAR 333-61-030 (ORS 448.131 and 448.273);

(D) The Department may, based upon valid scientific data, further limit certain constituents in the injection source water if the Department finds that those constituents will interfere with or pose a threat to the maintenance of the water resources of the state for present or future beneficial uses; and

(E) If during the course of ASR testing, a constituent regulated under OAR 333-61-030 (ORS 448.131 and 448.273) or OAR 340-40 (ORS 468B.165) is detected above the 50 percent level prescribed in condition (11)(B), the licensee shall immediately stop injection activities upon receipt of lab data and notify the Department within five days. Injection may recommence after constituent levels return to acceptable levels pursuant to (B) or (C) of this condition.

11) **Water Quality Monitoring.** The licensee shall sample and analyze injection, receiving and recovered water as described in the currently approved testing plan.

12) **Water Level Monitoring.**
(A) The licensee shall monitor water levels in wells in the manner described in the currently approved testing plan.

(C) Transducer data shall be verified with quarterly manual measurements if an e-tape can be lowered past obstructions to the water level. In the event a pump is pulled, or in the case of a newly drilled project well, the well shall be equipped with an unobstructed, dedicated measuring tube pursuant to Figure 200-5 in OAR 690-200.

13) **Recovery.** The amount of stored water available for recovery is based on the following factors:
(A) Available stored water is determined on a well-by-well basis.

(B) The licensee may recover up to 100 percent of water injected during Cycle 1 for the purpose of geochemical analysis.

(C) After Cycle 1, the following two-step accounting method applies to each annual cycle:

(i.) The licensee may recover up to 95 percent of the quantity injected during the same water year.

(ii.) At the end of each water year, 95 percent of the storage account balance is carried over to the next year. The storage account balance consists of the sum of water not recovered within the water year and water carried over from previous testing cycles.

(D) Any water withdrawn from an ASR well identified in this license shall first be debited against the quantity available in the aquifer by virtue of ASR storage. When the ASR storage is depleted at an ASR well, any water withdrawn from an ASR well shall be considered a draft of natural groundwater, thereby requiring separate or additional authorization. At no time does this license authorize withdrawal of more water than was credited by injection.

(D) The availability of stored water is a running account that is subject to determination at any time.

14) **Use of Recovered Water.** The licensee shall use recovered water for the purposes described in the appropriate source water authorization.

15) **Annual Reporting.**
(A) Except as otherwise noted, the licensee shall provide the Department a written report of the results of ASR testing for the previous water year by February 15th. The first report shall be due in 2020 and include results from water years 2018 (if any) and 2019. Annual reports shall be sealed and signed by a professional(s) registered or allowed, under Oregon law, to practice geology. The report shall:
- Include the data collected during the water year
- Analyze those data to show the ASR project impacts on the aquifer
- Evaluate loss of stored ASR water and natural water by virtue of ASR activities
- Indicate the testing and development progress made under the terms of the license
- Account for the injection of stored water, withdrawals of stored and natural water, and the storage account balance at the ASR well(s)

(B) The licensee shall provide the following to the Department:
(i) Submission of any and all hydrogeologic data collected and reports developed for the project, including, but not limited to, cuttings analysis, video logs, geophysical logs, aquifer tests, and step tests.

(ii) Submission of digital water level data for all ASR wells and any other wells measured in conjunction with the project (in a Department specified format), including annual report data.

(iii) Submission of annual reports with locations and elevations for all project wells (actual locations of built wells and proposed locations for proposed wells) and locations and elevations for all non-project wells that have been used for collecting water levels or other data pertinent to the project (in a Department specified format).

(iv) Notification in the annual report of any changes in well construction.

(v) Associating all project well data with the Department Well Identification Number (Well ID Number), the Department Well Log ID, if available, and the project Well Name.

16) **Protection for Existing Users**. In the event of conflicts with existing appropriators, the licensee shall conduct all testing to mitigate the injurious effects. In addition, the licensee shall cooperate with the efforts of the Department to protect existing water rights and the water quality of existing users that rely upon the receiving aquifer and the injection source water.

17) **Other Measures**. The licensee shall take additional measures, as appropriate, to address ASR-related issues such as landslide activation, seepage, streamflow increases, interference with nearby wells, aquifer storage limitations, and water quality protection. Further, the licensee shall notify the Department upon resolution of such issues. The licensee shall resolve these issues prior to submittal of an ASR permit application.

18) **Access.** The licensee shall allow reasonable access to ASR facilities to the watermaster and other state officials with an oversight role in this ASR project.

19) **Carryover Storage.** At the end of testing under this license, the licensee shall provide an accounting to the Department of the residual stored water based on the methods of determination given in this license. The Department shall consider this residual for carryover to a permanent ASR permit based on information which discloses the aquifer's ability to retain stored water.

20) **License Renewal.** The license may be renewed if the licensee demonstrates to the Director's satisfaction that further testing is necessary and that the licensee complied with the terms and conditions of the license.

Dated at Salem, Oregon on October 15th, 2018.

Dwight French
Water Rights Services Division Administrator
for Thomas M. Byler, Director
Water Resources Department

This order was produced by Jen Woody. If you have questions about the Department or any of its programs please contact our Customer Service Group at 503-986-0801. Address all other correspondence to: Groundwater Section, Oregon Water Resources Department, 725 Summer St NE, Suite A, Salem OR 97301-1266, Fax: 503-986-0902.

STATE OF OREGON

CERTIFICATE OF WATER RIGHT

THIS CERTIFICATE ISSUED TO

Oregon Water Resources Department
158 12th Street NE
Salem, Oregon 97310

The specific limits for the use are listed below along with conditions of use.

Source: Dog River Tributary to East Fork Hood River

County: Hood River

Purpose: Providing required stream flow for migration, spawning, egg incubation, fry emergence, and juvenile rearing for Coho Salmon, Summer Steelhead, Winter Steelhead, Rainbow Trout, Cutthroat Trout.

To be maintained in:

DOG RIVER FROM RIVER MILE 5.9 (NWSW, SECTION 11, TOWNSHIP 2S, RANGE 10E WM); TO THE MOUTH AT RIVER MILE 0.0 (NESE, SECTION 20, TOWNSHIP 1S, RANGE 10E WM)

The right is established under Oregon Revised Statutes 537.341.

The date of priority is December 6, 1991.

The following conditions apply to the use of water under this certificate:

1. The right is limited to not more than the amounts, in cubic feet per second, during the time periods listed below:

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
12.0	12.0	12.0	20.0	20.0	20.0	12.0	7.01	6.05	7.79	14.7	12.0

2. The water right holder shall measure and report the in-stream flow along the reach of the stream or river described in the certificate as may be required by the standards for in-stream water right reporting of the Water Resources Commission.

3. For purposes of water distribution, this instream right shall not have priority over human or livestock consumption.

4. The instream flow allocated pursuant to this water right is not in addition to other instream flows created by a prior water right or designated minimum perennial stream flow.

5. The flows are to be measured at the lower end of the stream reach to protect necessary flows throughout the reach.

Witness the signature of the Water Resources Director affixed this 6 day of August, 1999.

Douglas Grafe for
Water Resources Director

Recorded in State Record of Water Right Certificate 76267.

Oregon Water Resources Department
Hydrographics Data Results

Main Help
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DOG R NR PARKDALE, OR

Station ID	14113400 (More) (Map)	OWRD Basin	HOOD
Hydrologic Unit	17070105	T-R-S-QQ	2.00S-10.00E-11
Latitude	45° 24' 27.428" *	Longitude	-121° 31' 8.287" *

Missing Values Tolerated: 0

Download type: Formatted Text Download Report

Monthly Streamflow

Requested Period of Record 10/01/1960 - 10/31/1971

Mean, Minimum and Maximum Flows in Cubic Feet per Second, Sums in Cubic Feet per Second-Days

Year	Month	# Values	Mean	Minimum	Maximum	Sum	Std Dev
1960	10	31	2.19	2.00	2.80	67.800	0.24
1960	11	30	3.86	1.60	18.0	115.900	3.12
1960	12	31	3.12	2.20	5.20	96.600	0.68
1961	1	31	6.23	3.00	8.80	193.100	1.57
1961	2	28	16.5	8.80	26.0	461.800	4.69
1961	3	31	10.9	9.60	14.0	337.200	1.32
1961	4	30	10.6	10.0	13.0	319.000	0.81
1961	5	31	15.8	12.0	20.0	490.000	2.84
1961	6	30	19.3	14.0	22.0	579.000	2.35
1961	7	31	8.75	5.40	14.0	271.300	2.53
1961	8	31	4.39	3.60	5.40	136.200	0.47
1961	9	30	3.00	2.60	4.80	90.100	0.50
1961	10	31	2.67	2.10	5.40	82.900	0.56
1961	11	30	4.96	1.80	26.0	148.900	4.90
1961	12	31	2.90	1.40	6.00	89.800	1.06
1962	1	31	2.08	1.10	3.60	64.500	0.73
1962	2	28	4.36	2.20	6.00	122.000	1.12
1962	3	31	3.87	2.70	5.80	120.000	0.75
1962	4	30	10.1	3.00	16.0	304.000	4.29

1962	5	31	14.8	13.0	17.0	458.000	1.15
1962	6	30	17.3	15.0	20.0	519.000	1.44
1962	7	31	11.0	6.50	16.0	340.200	2.80
1962	8	31	5.24	4.00	6.50	162.400	0.77
1962	9	30	3.61	2.70	4.40	108.400	0.55
1962	10	31	3.57	2.70	6.10	110.600	0.91
1962	11	30	5.57	2.70	26.0	167.000	4.70
1962	12	31	9.38	7.60	14.0	290.800	1.70
1963	1	31	5.34	3.50	8.00	165.600	1.29
1963	2	28	12.9	8.00	25.0	361.000	4.03
1963	3	31	7.01	5.80	8.40	217.200	0.79
1963	4	30	6.48	5.70	8.40	194.400	0.66
1963	5	31	11.3	6.10	16.0	351.800	3.38
1963	6	30	8.98	6.10	13.0	269.400	1.81
1963	7	31	4.85	4.00	6.10	150.300	0.91
1963	8	31	3.34	3.00	4.00	103.500	0.28
1963	9	30	2.65	2.40	4.00	79.600	0.34
1963	10	31	2.32	2.10	3.70	71.800	0.29
1963	11	30	3.11	2.40	6.90	93.400	1.04
1963	12	31	2.80	2.40	4.90	86.800	0.54
1964	1	31	4.32	2.60	9.20	133.900	1.42
1964	2	29	3.75	3.10	4.60	108.800	0.48
1964	3	31	2.68	2.40	3.10	83.100	0.23
1964	4	30	2.96	2.20	4.30	88.700	0.64
1964	5	31	8.61	4.30	16.0	267.000	3.66
1964	6	30	17.4	12.0	23.0	523.000	2.78
1964	7	31	8.96	6.20	12.0	277.600	1.73
1964	8	31	4.59	3.70	6.20	142.400	0.69
1964	9	30	2.90	2.40	3.70	87.100	0.42
1964	10	31	2.46	2.30	2.70	76.300	0.11
1964	11	30	3.81	2.10	18.0	114.300	3.32
1964	12	31	13.6	2.00	47.0	421.800	13.4
1965	1	31	11.9	9.50	17.0	367.400	2.22

1965	2	28	10.1	8.30	12.0	283.000	1.31
1965	3	31	7.02	5.60	8.30	217.500	0.87
1965	4	30	8.22	4.50	17.0	246.700	4.01
1965	5	31	15.4	13.0	20.0	478.000	1.98
1965	6	30	16.4	11.0	20.0	493.000	3.31
1965	7	31	7.99	4.90	11.0	247.700	1.66
1965	8	31	4.28	3.30	5.20	132.600	0.58
1965	9	30	2.82	2.50	3.30	84.500	0.27
1965	10	31	2.30	2.10	2.70	71.300	0.18
1965	11	30	2.48	2.10	3.90	74.300	0.46
1965	12	31	2.02	1.60	2.70	62.500	0.26
1966	1	31	2.10	1.80	4.20	65.000	0.47
1966	2	28	1.80	1.60	1.90	50.500	0.050
1966	3	31	1.98	1.60	3.00	61.300	0.29
1966	4	30	3.93	2.30	5.60	117.800	0.99
1966	5	31	13.3	6.00	18.0	412.700	2.89
1966	6	30	12.5	9.90	15.0	373.900	1.60
1966	7	31	6.76	4.70	9.50	209.400	1.48
1966	8	31	3.64	2.70	4.50	112.800	0.46
1966	9	30	2.41	2.20	2.70	72.200	0.14
1966	10	31	2.11	1.90	3.60	65.300	0.36
1966	11	30	2.65	1.90	6.10	79.600	0.91
1966	12	31	3.87	2.10	8.60	120.100	1.23
1967	1	31	4.23	3.00	11.0	131.100	2.12
1967	2	28	5.73	4.20	7.90	160.400	1.12
1967	3	31	3.61	3.20	4.20	111.800	0.29
1967	4	30	3.00	2.70	3.40	89.900	0.15
1967	5	31	10.3	2.70	22.0	317.800	7.20
1967	6	30	15.8	9.90	19.0	474.900	2.75
1967	7	31	6.20	4.20	9.60	192.100	1.60
1967	8	31	3.18	2.60	4.00	98.600	0.43
1967	9	30	2.30	2.00	2.60	68.900	0.21
1967	10	31	2.71	1.90	8.10	84.100	1.24

1967	11	30	2.44	2.00	4.00	73.200	0.49
1967	12	31	2.25	0.03	6.50	69.800	1.48
1968	1	31	3.81	2.50	6.90	118.200	1.18
1968	2	29	17.3	3.40	56.0	502.500	16.5
1968	3	31	12.9	7.50	24.0	400.400	5.11
1968	4	30	6.05	5.20	7.30	181.400	0.63
1968	5	31	8.40	5.70	13.0	260.500	2.40
1968	6	30	7.48	5.20	14.0	224.500	2.18
1968	7	31	3.84	3.00	5.00	119.000	0.58
1968	8	31	2.86	2.50	3.40	88.600	0.24
1968	9	30	2.20	1.90	2.50	66.000	0.17
1968	10	31	2.13	1.90	3.50	66.100	0.32
1968	11	30	3.96	1.90	9.20	118.900	1.91
1968	12	31	4.24	2.80	8.50	131.300	1.45
1969	1	31	6.36	3.50	9.30	197.000	1.15
1969	2	28	4.64	4.10	5.20	129.800	0.40
1969	3	31	4.49	4.00	6.60	139.300	0.76
1969	4	30	7.42	5.60	11.0	222.500	1.77
1969	5	31	39.5	9.90	72.0	1223.900	20.7
1969	6	30	36.2	13.0	70.0	1085.000	18.2
1969	7	31	8.26	5.40	13.0	256.000	2.16
1969	8	31	4.07	3.30	5.40	126.300	0.63
1969	9	30	2.93	2.60	3.20	88.000	0.17
1969	10	31	2.49	2.20	3.00	77.300	0.21
1969	11	30	2.09	1.90	2.70	62.700	0.18
1969	12	31	2.60	1.80	6.30	80.700	1.15
1970	1	31	7.78	0.22	24.0	241.080	6.45
1970	2	28	9.41	7.90	11.0	263.400	0.90
1970	3	31	6.94	6.10	8.30	215.100	0.43
1970	4	30	5.85	5.10	6.60	175.400	0.42
1970	5	31	13.3	5.20	25.0	413.000	7.07
1970	6	30	18.2	10.0	32.0	547.000	6.88
1970	7	31	6.42	4.50	9.70	199.000	1.50

1970	8	31	3.52	2.90	4.40	109.200	0.48
1970	9	30	2.63	2.30	3.10	78.800	0.23
1970	10	31	2.17	2.00	3.20	67.300	0.22
1970	11	30	3.43	1.50	13.0	103.000	2.46
1970	12	31	2.79	2.00	4.50	86.500	0.72
1971	1	31	6.15	1.00	13.0	190.600	3.91
1971	2	28	9.29	7.70	11.0	260.000	1.16
1971	3	31	6.13	5.20	7.90	190.100	0.80
1971	4	30	5.62	5.10	6.50	168.500	0.30
1971	5	31	20.5	6.90	38.0	634.500	8.31
1971	6	30	30.2	24.0	42.0	906.000	4.06
1971	7	31	18.4	12.0	24.0	571.000	3.48
1971	8	31	7.17	4.80	11.0	222.200	1.89
1971	9	30	4.55	3.80	8.60	136.600	1.02
1971	10	28					

SILICON FOREST

Google buys another 74 acres in The Dalles as data centers expand

Updated Mar 30, 2016;
Posted Mar 29, 2016

By **Mike Rogoway**, mrogoway@oregonian.com
The Oregonian/OregonLive

Google has acquired 74 acres in The Dalles, making room for the company to add considerably to its growing data-center campus along the Columbia River.

The Dalles was home to Google's first corporate data center anywhere, opening back in 2006. The company steadily expanded on that original site and held a ceremonial groundbreaking Thursday on a new, $600 million facility near its original site. It will bring Google's total investment in The Dalles to $1.8 billion, consisting primarily of the expensive computers running the data centers.

Google bought the new acreage from Northwest Aluminum, which operated a smelter nearby until 2000. It paid $2.6 million for the property, according to Wasco County, purchasing the land under the name Moraine Industries.

Google's new property had been used by the Fort Dalles Rodeo Association since 1975, according to The Dalles Chronicle. The Chronicle reported the rodeo doesn't plan an event this summer but may continue to hold events on the site in future years while it looks for a new, long-term home.

The new, 10-million-cubic-foot data center now under construction is on 23 acres acquired last year from the Port of The Dalles. The port's industrial land is nearly exhausted, so buying Northwest Aluminum's land gives Google room to continue growing.

"We don't have plans to build on this piece of property in the immediate future, but we want to ensure that we have options to continue to invest in The Dalles in the future if our business demands it," Darcy Nothnagle, Google's Northwest head of external affairs, said in a written statement.

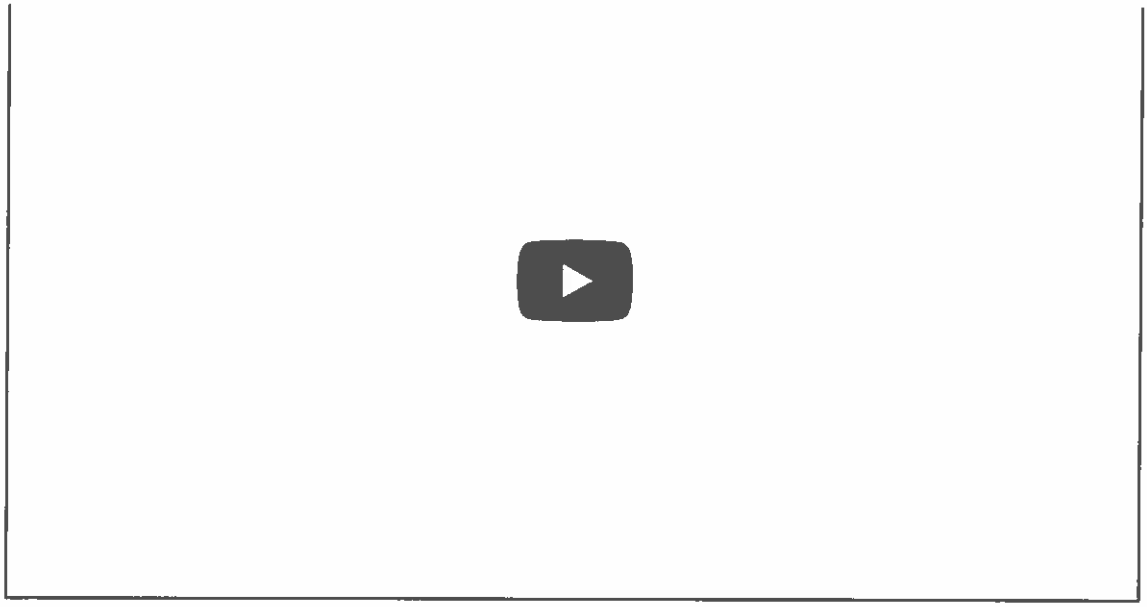
Oregon is among the most popular destinations in the country for large data centers, largely due to local tax breaks that exempt data centers' computers from local property taxes. Facebook, Apple and Amazon all have large facilities in eastern or central Oregon, and all are expanding those operations.

Last year, Wasco County valued Google's exemption just shy of $6.9 million. The company compensates the county with negotiated fees that partially offset the tax savings - those payments will total nearly $2.2 million annually with the new data center now going up.

Additionally, franchise fees generated by Google's electricity use currently account for about 6 percent of The Dalles' general fund. Google estimates that total will rise to 10 percent when the new data center opens.

Approximately 200 people work in Google's data center in The Dalles, about half of them contractors. The company says employment could eventually increase by about 50, ramping up after the new data center opens.

Google is typically very secretive about activities inside its data centers, but earlier this month it posted a video of its existing facilities in The Dalles. Check it out below (it works best with Google's virtual reality goggles).



Clarification: This article has been updated to clarify the number of people working at Google's existing site in The Dalles (it's about 200, not 175) and the timing of potential new employees.)

-- Mike Rogoway

mrogoway@oregonian.com
503-294-7699
@rogoway