

STATE OF WASHINGTON  
**DEPARTMENT OF ECOLOGY**  
**REPORT OF EXAMINATION**  
 TO APPROPRIATE PUBLIC WATERS OF THE STATE OF WASHINGTON

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

PRIORITY DATE January 3, 1995	APPLICATION NUMBER G2-29174	PERMIT NUMBER	CERTIFICATE NUMBER
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NAME City of Ridgefield, Washington			
ADDRESS (STREET) 230 Pioneer Avenue	(CITY) Ridgefield	(STATE) WA	(ZIP CODE) 98642

**PUBLIC WATERS TO BE APPROPRIATED**

SOURCE Well		
TRIBUTARY OF (IF SURFACE WATERS)		
MAXIMUM CUBIC FEET PER SECOND	MAXIMUM GALLONS PER MINUTE 400	MAXIMUM ACRE FEET PER YEAR 483
QUANTITY, TYPE OF USE, PERIOD OF USE Municipal, Continuous		

**LOCATION OF DIVERSION/WITHDRAWAL**

APPROXIMATE LOCATION OF DIVERSION—WITHDRAWAL					
LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION) NW¼ of the SE¼	SECTION 21	TOWNSHIP N. 04	RANGE, (E. OR W.) W.M. 01	W.R.I.A. 27	COUNTY Clark

**RECORDED PLATTED PROPERTY**

LOT	BLOCK	OF (GIVE NAME OF PLAT OR ADDITION)
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**LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED**

Area served by the City of Ridgefield Water System. Place of use is the water urban service area determined by Clark County Water Utility Council.

**DESCRIPTION OF PROPOSED WORKS**

The existing well, referred to as the Junction Well, is currently not in use because of high levels of iron and manganese. This well will be redeveloped and will provide treatment for iron and manganese. The well be equipped with a 400-gallon per minute (gpm) pump and will supply the Junction Reservoir, an existing 100,000 gallon above ground storage tank. The Junction Booster Station consists of three 1,000 gpm end suction centrifugal pumps and one 10 gpm vertical multi-stage pump. The Junction Booster Station provides water to the water system High Zone from the Junction Reservoir.

**DEVELOPMENT SCHEDULE**

BEGIN PROJECT BY THIS DATE: Begun	COMPLETE PROJECT BY THIS DATE: January 1, 2015	WATER PUT TO FULL USE BY THIS DATE: January 1, 2020
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**REPORT**

**BACKGROUND**

**Description and Purpose of the Project**

The subject application was submitted to Ecology by the City of Ridgefield and assigned a priority date of January 3, 1995. The application is for appropriation of groundwater to provide additional supply to the Ridgefield Water System, a Class A system (Washington State Department of Health [DOH] identification number 72400V). The most recent water system plan was prepared in 2005 by Gray & Osborne, Inc.

**Legal Requirements for Application Processing**

Chapters 90.03 and 90.44 RCW authorize the appropriation of public water for beneficial use and describe the process for obtaining water rights. Laws governing the water right permitting process are contained in RCW 90.03.250 through 90.03.340 and RCW 90.44.060.

The following legal requirements must be met prior to processing a water right application:

- **Public Notice**—Public notice of the application was published in The Reflector on February 14 and February 21, 1996. There were no protests received during the statutory 30-day protest period.
- **State Environmental Policy Act (SEPA)**—The subject water right application is categorically exempt under SEPA WAC 197-11-305 and WAC 197-11-800(4) because the instantaneous quantity is less than the 2,250 gallons per minute threshold.

## **INVESTIGATION**

This investigation included, but was not limited to, research or review of:

- Records of water rights and well logs in the vicinity
- Topographic and local area maps
- Evarts, R.C., 2004a, *Geologic Map of the Ridgefield Quadrangle, Clark and Cowlitz Counties, Washington*: U.S. Geological Survey Scientific Investigations Map 2844, scale 1:24,000
- Evarts, R.C., 2004b, *Geologic Map of the Saint Helens Quadrangle, Columbia County, Oregon and Clark and Cowlitz Counties, Washington*: U.S. Geological Survey Scientific Investigations Map 2834, scale 1:24,000
- Golder Associates, Inc., 2007, *Estimates of Streamflow Reduction in Gee Creek from Operating the Junction Well*: Technical Memorandum submitted to Washington State Department of Ecology, February 15, 2007
- Golder Associates, Inc., 2008, *Junction Well Hydrogeologic Analysis*: Prepared for Gray & Osborne, February 5, 2008
- Gray & Osborne, Inc., 2005, *City of Ridgefield Water System Plan Update*, October 2005
- Gray & Osborn, Inc., 2008, *Junction Well Impact Analysis and Mitigation Plan*: Memorandum to Washington State Department of Ecology, May 7, 2008.
- Howard, K.A., 2002, *Geologic map of the Battle Ground 7.5-minute quadrangle, Clark County, Washington*: U.S. Geological Survey Miscellaneous Field Studies Map MF-2395, scale 1:24,000, with 18-p. pamphlet
- Mundorff, M.J., 1964, *Geology and ground-water conditions of Clark County, Washington, with a description of a major alluvial aquifer along the Columbia River*: U.S. Geological Survey Water-Supply Paper 1600, 268 p., with geologic map at scale 1:48,000
- Pacific Groundwater Group (PGG), 2003, *Groundwater/Surface-Water Relationships East Fork Lewis River Watershed*: Technical Memorandum 10 (Task 8a), WRIA 27/28 Watershed Plan, prepared for Lower Columbia Fish Recovery Board, December 2003
- Swanson, R.D., McFarland, W.D., Gonthier, J.B., and others, 1993, *A description of hydrogeologic units in the Portland basin, Oregon and Washington*: U.S. Geological Survey Water-Resources Investigations Report 90-4196

## **Geographic Setting**

The City of Ridgefield is located in southwestern Washington approximately two miles east of the Columbia River and 25 miles north of Portland, Oregon. Rolling hills and ravines surround the City. Lake River borders Ridgefield to the west and the existing city limits extend past I-5 to the east. Gee Creek is the primary surface water body through the City's service area. Elevations range from a maximum of approximately 300 feet above mean sea level (msl) on the east side of I-5 to a minimum of 0 feet msl at Lake River.

The Junction Well is located approximately two miles east of the city of Ridgefield business district along SR-501. The well lies at an elevation of approximately 285 ft MSL within the East Fork Lewis River Subbasin of WRIA 27 and within the surface water drainage basin of Allen Creek. The well is located on land owned by the Port of Ridgefield and leased to the City of Ridgefield.

## **Purpose of Use**

Groundwater is requested for municipal supply used continuously year round. Bringing the Junction Well on line will help meet Ridgefield's projected water demand over the next 20 years. In 2003, the City of Ridgefield supplied water to serve 1,022 equivalent residential units (ERUs) based on an annual average consumption of 232 gallons per day (gpd) per ERU. By 2010, demand is projected to be 3,637 ERUs and by 2024 demand is projected to be 11,161 ERUs.

## **Hydrogeology**

The regional geologic and hydrogeologic framework for Clark County was first developed by Mundorff (1964); additional regional hydrogeologic investigation and interpretation was performed by Swanson and others (1993). Detailed geologic mapping of the west-central portion of Clark County, including the Ridgefield, Saint Helens, and Battle Ground quadrangles, has been done by Everts (2004a, 2004b) and Howard (2002). Hydrostratigraphic cross sections of west-central Clark County were developed by Pacific Groundwater Group and presented in PGG (2003). Golder Associates (2007, 2008) developed detailed hydrostratigraphic cross sections and potentiometric surface maps of the Ridgefield area, focusing on the Junction Well vicinity, in support of the present application.

Ridgefield lies in the northern part of the Portland Basin, a northwest-southeast trending topographic and structural basin approximately 40 miles long and 20 miles wide. The basin is flanked by Eocene through Miocene volcanic and sedimentary bedrock. The deepest parts of the basin, near Vancouver, are filled by up to 1,800 ft of late Miocene and younger unconsolidated sediments primarily carried in from the east by the Columbia River.

The unconsolidated basin-fill sediments consist of layers of coarse-grained sand, gravel, and cobble deposits and layers of fine-grained silt and clay deposits. The coarse-grained deposits form the principal aquifers and the fine grained deposits act as aquitards or confining units which separate the aquifers from one another. Groundwater in the shallow, unconfined aquifers is typically recharged via infiltration of precipitation and discharges to smaller surface-water tributaries such as Gee Creek. Groundwater in the deeper, confined systems is recharged via downward leakage from overlying aquifers and typically discharges to the Columbia River or larger tributaries such as the East Fork Lewis River.

Understanding of the hydrogeology of the Portland Basin has been evolving over the past 40 years and terminology and stratigraphic relationships are sometimes inconsistent between workers. For the purposes of this report, the stratigraphic framework of the most recent site-specific study (Golder Associates 2007, 2008) is presented. Based on this work, the Ridgefield area is underlain, from the surface downward, by the following hydrostratigraphic units:

- *Pleistocene Alluvial Deposits* - Undifferentiated sediments associated with flood deposits of the Columbia River. Well logs indicate that the Pleistocene deposits are predominantly unconsolidated with thicknesses that generally range between 50 and 200 feet in the surrounding area, and are composed of sediments ranging from boulders to clay. At the Junction Well, the Pleistocene Alluvial Deposits are approximately 50 feet thick.
- *Upper Troutdale Aquifer* - This aquifer is approximately 100 feet thick at the Junction Well and is largely composed of sand and gravel. Zones of silt and clay and partially-cemented coarse sands and gravels noted in local well logs limit the transmissivity of this unit. The aquifer supplies many of the local domestic wells in the area, and typically has well yields less than 100 gpm.
- *Upper Confining Unit* - Composed of low-permeability sediments of silt and clay, this unit typically underlies the Upper Troutdale Aquifer. However, based on the available well logs, the Upper Confining Unit appears to be discontinuous or absent in the vicinity of the Junction Well.
- *Lower Troutdale Aquifer* - Composed predominately of sand with interlayers of medium sand and silt, and is approximately 50 feet thick at the Junction Well. The Lower Troutdale Aquifer is typically confined and overlain by the Upper Confining Unit; however, with the apparent absence of the Upper Confining Unit in the vicinity of the Junction Well, the Lower Troutdale Aquifer is directly overlain by the Upper Troutdale Aquifer.
- *Lower Confining Unit* - Composed predominantly of clay with some sand and gravel. In the vicinity of the Junction Well, this confining unit is approximately 50 to 70 feet thick. Well logs southeast and southwest of the Junction Well indicate that the Lower Confining Unit is relatively uniform in thickness and is present over a broad area including in the vicinity of Gee Creek and the Junction Well.
- *Sand and Gravel Aquifer (SGA)* - This unit is confined and is approximately 160 feet thick at the Junction Well. The top contact of the SGA is found at a depth of 300 feet below ground surface (bgs), or approximate elevation -67 feet msl. It is primarily composed of sand, sandy gravel, and silt. This unit also contains some cemented sand and gravel layers, and silt and clay interbeds. The SGA exists over a broad area of the Portland Basin. Relatively few wells tap the SGA and groundwater development within the SGA is primarily by public water-supply systems.
- *Pliocene and Miocene Undifferentiated Sediments* - Fine-grained sedimentary deposits primarily composed of fine- to medium-grained sand, silt and clay with small lenses of sand.
- *Miocene Basalt Bedrock* - Bedrock underlying the sedimentary deposits in this area is composed of basalt of the Columbia River Basalt Group.

Geologic mapping by Evarts (2004a), shows the SGA to have been incised by streams in the lower reaches of the study area near base-level elevations that discharge to the tidally influenced areas of the lower portions of the East Fork Lewis River, Lewis River, and Lake River systems. The SGA is mapped intermittently along some portions of the East Fork Lewis River floodplain, the lower reaches of Allen Canyon Creek upstream of Mud Lake, the lower reaches of McCormick Creek upstream of its confluence with the East Fork Lewis River, and along slopes east of Lancaster Lake near the Lake River system.

The Junction Well taps the Sand and Gravel Aquifer. The driller's log for this well indicates that it penetrates clays of the Pleistocene Alluvial Deposits to a depth of between 45 and 62 feet bgs, sands and gravels of the Upper Troutdale Aquifer to 171 feet bgs, sands of the Lower Troutdale Aquifer to between 225 and 230 feet bgs, clays of the Lower Confining Unit to a depth of between 285 and 300 feet bgs, and sands with some gravel of the SGA to 458 feet bgs. The well is gravel packed from 306 to 458 feet bgs and screened from approximately 326 to 342 feet bgs and from 438 to 443 feet bgs.

### **Pumping Test**

A 72-hour, constant-rate pumping test was performed at the Junction Well beginning on November 5, 2007. This test was performed by Golder Associates, Inc. (2008) in order to characterize hydraulic properties of the SGA and assess the extent of hydraulic effects of the proposed pumping of the Junction Well. A test pump was installed in the Junction Well and a monitoring network was established. The monitoring network consisted of three observation wells and three surface water gauging sites. One observation well was completed below the Lower Confining Unit in the SGA (Ellertson Well) and two were completed above the Lower Confining Unit. One of these, the Fandell Well, was completed in the Lower Troutdale Aquifer and one was completed in the Pleistocene Alluvial Deposits (WSDOT H-1-04). Stream gauging sites were established at Gee Creek, McCormick Creek, and Allen Canyon Creek. Streams near the Junction Well are located above the Lower Confining Unit and are either perched within the Pleistocene Alluvial deposits or are incised into the Upper Troutdale Aquifer.

The well was pumped at an average rate of 419 gpm for 72 hours. No hydraulic response to pumping the Junction Well was observed in the Fandell or WSDOT H-1-04 observation wells, or the surface water gauging stations. Hydraulic response to pumping at the Junction Well was observed only in the Ellertson Well, which is located approximately 0.5 miles east of the Junction Well. A total of 1.0 ft of drawdown was observed at the Ellertson Well. Approximately half of the observed drawdown likely resulted from interference caused by nearby Clark Public Utilities (CPU) production wells. Results of the test indicate that the SGA is a confined and highly transmissive aquifer system. Table 1 summarizes the pumping test results.

**Table 1. Summary of Junction Well Pumping Test**

<b>Name</b>	<b>Distance from Junction Well (feet)</b>	<b>Hydrologic Unit</b>	<b>Observed Effect from Pumping of Junction Well<sup>(a)</sup></b>
Junction Well	0	SGA	30 feet drawdown in well casing, including well losses. (Estimated 10-15 feet drawdown in adjacent aquifer)
Ellertson Well	2,713	SGA	~0.5 foot drawdown. (Total of 1 foot drawdown observed; approximately half of this attributed to interference from Clark Public Utilities wells)
WSDOT H-1-04	1,462	Pleistocene Alluvial Deposits	No effect observed
Fandell Well	2,744	Lower Troutdale Aquifer	No effect observed
Gee Creek at S 45 <sup>th</sup> St.	6,473	Surface Water	No effect observed
Allen Canyon Creek at NW 289 <sup>th</sup> St.	6,516	Surface Water	No effect observed
McCormick Creek at NW 11 <sup>th</sup> St.	10,805	Surface Water	No effect observed

(a) Junction well pumped for 72 hours at average rate of 419 gpm

Estimates of transmissivity using both pumping and recovery data analyzed with Theis and/or Cooper-Jacob methods, as appropriate, ranged from 101,000 gallons per day per foot (gpd/ft) to 119,000 gpd/ft (geometric mean of 110,000 gpd/ft) for the Junction Well and from 118,000 to 170,000 gpd/ft (geometric mean of 133,000 gpd/ft) for the Ellertson Well. Storativity was estimated to be 0.0004. These estimates are consistent with those obtained from pumping tests conducted on CPU wells that tap the SGA located approximately 6,000 feet east and northeast of the Junction Well.

### **Streamflow Depletion Modeling**

In support of the present application, Golder Associates, Inc. (2008) evaluated the potential effects of pumping the Junction Well on flow in nearby streams. This evaluation involved application of the IGARF1 v4 streamflow depletion model. This model estimates the impacts of groundwater withdrawals on streamflow using one of several analytical solutions. For this application, the Hunt (1999) solution was used; this solution is applicable to streams that partially penetrate an unconfined aquifer. Inputs to the model include aquifer characteristics (transmissivity and storativity), streambed hydraulic conductivity, pumping rate and duration, and distance to the stream. For this study, the value for aquifer transmissivity, 100,000 gpd/ft, was based on results of Junction Well pumping test, a range of storativity values of 0.05 to 0.2, was based on literature values for unconfined aquifers, streambed hydraulic conductivity, 2.7 feet per day (ft/day), was based on grain-size analysis of streambed sediments, and pumping rate and duration, 400 gpm for 215 days, represents a seasonal high-demand period when streamflows would likely be at their lowest.

Four streams were evaluated: Gee Creek, a tributary to the Columbia River, Allen Canyon Creek, a tributary to the Lewis River (mainstem), and two tributaries to East Fork Lewis River, McCormick Creek and an unnamed tributary located about 3 miles east of the Junction Well.

The distance to each of the streams was taken to be the distance from the Junction Well to the downstream point on the stream where the SGA first crops out (based on geological mapping by Evarts [2004]) and the SGA potentiometric surface intersects the land surface. These points represent the closest points to the Junction Well where the SGA is not separated from surface water by a confining unit and where discharge from the SGA could reasonably be expected to contribute to baseflow. Except for Gee Creek, these points occur in the tidally-influenced lower reaches of the streams near base-level elevation. Gee Creek is perched within the Pleistocene Alluvial deposits over much of its length. In its lower reaches it incises into the Upper Troutdale Aquifer, but and does not appear to ever incise down into the SGA. Because of this, the distance to Gee Creek was measured to the point where the potentiometric surface intersects the land surface.

Model runs using a range of values for aquifer storativity and streambed hydraulic conductivity were conducted. Maximum stream depletion estimates ranged from 0.03 cubic feet per second (cfs) for the nearest stream (an unnamed tributary of East Fork Lewis River) to 0.01 cfs for the farthest stream (Gee Creek). Minimum estimates for all streams were 0.0002 cfs or less. The predicted depletion estimates are considered conservative and likely over-estimate actual impacts because the IGARF v4 analytical solutions do not account for inputs to the hydrogeologic system such as precipitation and regional aquifer recharge.

### **Senior Water Rights in the Vicinity of the Junction Well**

#### *Groundwater rights*

Ecology's Water Right Tracking System (WRTS) database was queried to identify senior groundwater rights in the vicinity of the Junction Well. Cross referencing these records with Ecology's Well Log Database and the well inventory presented in Golder (2008) indicates that the nearest senior certificated groundwater rights associated with wells tapping the SGA are G2-28630 and G2-28956. These are located about 1 mile northeast and 1.4 miles east of the Junction Well, respectively and are for deep production wells owned by CPU. The characteristics of the CPU water rights are summarized in Table 2. Other certificated water rights associated with SGA wells are G2-27103CWRIS, G2-27104CWRIS, and G2-27105CWRIS; these rights are for City of Ridgefield production wells which are located about 0.9 miles west of the Junction Well. In addition, there are 151 records of groundwater claims within about 1.5 miles of the Junction Well. Since these claims represent groundwater use that began before 1945, and because the development of the deep SGA has mostly occurred in the last 20 years or so, it is likely that few, if any, of these claims are for withdrawals from the SGA.

**Table 2. Senior Groundwater Rights in the Vicinity of the Junction Well**

File #	Owner	Priority Date	Purpose	Qi (gpm)	Qa (acre-feet/year)	TRS
G2-28630	Clark Public Utilities	8/13/1986	Domestic, multiple	500	403	04N01E22
G2-28956	Clark Public Utilities	8/13/1986	Municipal	700	565	04N01E22

There are 229 well logs in Ecology’s Well Log Database within about 1.5 miles of the Junction well. Examination of the well logs indicates that most of these wells tap shallow aquifers above the Lower Confining Unit. The nearest well tapping the SGA appears to be the Ellertson Well (the owner shown on the well log is N. Fiorito Co. Inc.); this well is located about 0.5 miles east-northeast of the Junction Well.

*Surface water closures*

Under Ecology’s proposed rule, WAC 173-527, the East Fork Lewis River subbasin (in which the Junction Well is located) would be closed to new withdrawals of groundwater that would affect certain closed streams in order to maintain instream flows, except under certain conditions listed in WAC 173-527-080. Instream flows established under WAC 173-527 constitute water rights whose priority date is the effective date of the regulation. Streams in the subbasin that would be closed to further appropriation, as listed in WAC 173-527-070, are the East Fork Lewis River east of I-5, including tributaries, and the entire Gee Creek drainage system. Affected streams in the vicinity of the Junction Well are Gee Creek, McCormick Creek, and an unnamed tributary to East Fork Lewis River located about 2 miles east of the well.

**Mitigation**

The City of Ridgefield has proposed several measures to mitigate any potential impacts to surface water resources from development of the Junction Well. These include both water and non-water measures. The City’s proposed mitigation plan is documented in a May 7, 2008 memorandum from Mike Johnson of Gray & Osborne, Inc. (the City’s engineering firm) to Phil Crane of Ecology.

*Water-for-water measures*

In order to benefit surface water and to help maintain instream flows, the City proposes to shift groundwater withdrawals within the city limits away from the shallow aquifer system, which provides flow to nearby streams, and toward the SGA, which supplies limited, if any, flow to these streams. This will be accomplished by requiring new developments to connect to the City water system (which is supplied from the SGA) and to take existing wells (most of which are shallow-aquifer wells) out of service.

The City anticipates that 12 shallow-aquifer wells will be decommissioned in the near future from development projects currently in progress. Assuming that these wells are pumped at the permit-exempt limit of 5,000 gallons per day, potentially up to 42 gpm (0.1 cfs) of additional water will be available to the upper aquifer/surface water system once they are taken offline. (Under this program, 11 existing shallow wells have been decommissioned within the last 10 years.)

The City proposes to continue this program of requiring existing wells to be decommissioned as properties connect to the City of Ridgefield water system.

*Non-water measures*

The City also proposes the following non-water mitigation measures aimed at improving water quality and stream habitat in Gee Creek:

- Maintaining the City’s existing program of controlling and eradicating Japanese Knotweed, an aggressive invasive species, from the banks along Gee Creek.
- Maintaining membership and participation in the Gee Creek Enhancement Committee, the Gee Creek Watershed Restoration Project (associated with the Washington State University Clark County Extension Program) to coordinate and execute various stream clean-up and restoration projects within the city limits and beyond.
- Providing \$10,000 towards the following programs:
  - The evaluation of specific reaches of Gee Creek and the development of detailed habitat restoration plans for these reaches. This work would be done by the Gee Creek Watershed Restoration Project or other qualified groups or professionals.
  - The planting of native trees along the banks of Gee Creek in Abrams Park and other City owned open spaces to increase shade and improve water temperatures in the creek.
- Continuing to remove Japanese Knotweed and Himalayan Blackberries along the banks of Gee Creek through Abrams Park and other City owned open spaces.

**FINDINGS**

In accordance with state law, the following considerations must be met before a permit can be issued:

- Water must be available
- There must be no impairment of existing rights
- The water use must be beneficial

- The water use must not be detrimental to the public interest

### **Water Availability**

The Junction Well was tested at over 400 gpm (the requested Qi) for 72 hours with only modest drawdown. Based on this, the highly transmissive nature of the SGA (in which the well is screened), and the successful development of other high-capacity wells in the SGA, we conclude that water is available for appropriation in the requested quantity.

### **Impairment to Existing Water Rights**

Existing groundwater rights, including permit-exempt rights, are associated with wells tapping both the shallow aquifer system (the Pleistocene Alluvial Deposits and the Upper Troutdale Aquifer) and the deep system (the SGA). Water rights are also associated with instream flows established for streams in the East Fork Lewis River subbasin.

#### *Shallow-aquifer system*

The upward propagation of effects from pumping the SGA are limited by the overlying Lower Confining Unit and no interference to wells in aquifers above this unit (the Pleistocene Alluvial Deposits and the Upper Troutdale Aquifer) are expected. This conclusion is supported by the absence of hydraulic response of upper aquifer observation wells to pumping of the Junction Well.

#### *Sand and Gravel Aquifer*

Because of the high transmissivity of the SGA and the distance of other SGA wells to the Junction well, interference to other SGA wells from pumping are expected to be observable but insignificant. This conclusion is supported by the limited hydraulic response of the Ellertson Well (~0.5 feet) during the pumping test. Even under long-term pumping of the Junction Well (one year continuously at 400 gpm), This analyses indicate that interference to existing wells between 0.5 and 1 mile of the Junction Well would be less than 3.5 feet. The nearest well that is in use is located approximately 0.9 miles to the west of the Junction Well.

#### *Instream flows*

As described above, several streams in the vicinity of the Junction Well, Gee Creek, McCormick Creek, and an unnamed tributary to East Fork Lewis River located about 2 miles east of the well, are proposed to be closed to further appropriation under Ecology's proposed rule, WAC 173-527, in order to protect instream flows. Groundwater withdrawals that would affect these closed streams would not be permitted except as provided in the proposed language in WAC 173-527-080. We conclude that that the provisions of proposed WAC 173-527-080 have been met for the subject application based on the following considerations.

WAC 173-527-080(3)(a) states that new appropriations can be approved if, "*The person or entity seeking to commence a proposed ground water use shows, through scientifically sound studies and technical analysis, that the ground water use would not affect any of the closed surface waters identified in WAC 173-527-070.*" We conclude that the City's hydrogeologic analysis summarized above (Golder Associates, Inc. 2008) meets this criterion by demonstrating that pumping of the Junction Well would not significantly affect shallow aquifers from which stream reaches in the vicinity of the Junction Well receive baseflow and that conservative analytical modeling indicates that any streamflow depletion would be extremely small and, based on the regional stratigraphy, would occur near the mouths of streams that discharge to tidally influenced reaches of the Columbia River or East Fork Lewis River.

Furthermore, WAC 173-527-080(4) states that new appropriations can be approved if, "*The person or entity seeking to commence the new appropriation submits a scientifically sound mitigation plan, and such plan is approved by ecology. A mitigation plan must offset water-for-water the impacts of a proposed withdrawal, and provide adequate assurances that the mitigation will in fact occur.*" We conclude that the City's mitigation plan, which is summarized above, meets this criterion by proposing to offset potential depletion of surface water from operation of the Junction Well with a reduction in withdrawals from the shallow-aquifer system (which feeds local streams). In addition, the City's mitigation plan contains non-water-for-water elements to improve habitat and water quality of Gee Creek. Implementation of the mitigation plan will be made a provision of the permit and demonstration that the mitigation plan has been implemented will be required before the water right is certificated.

### **Beneficial Use**

The proposed use is considered to be beneficial under RCW 90.54.020(1).

### **Public Interest Considerations**

No detriment to the public interest was identified in evaluating this application.

## **RECOMMENDATIONS**

Based on the investigation and findings described above, it is recommend that the request for a groundwater permit be issued for a maximum instantaneous withdrawal rate (Qi) of 400 gpm and a maximum annual withdrawal (Qa) of 483 acre-feet/year. The permit shall be issued subject to the following provisions.

## **PROVISIONS**

**Well Construction:** All water wells constructed within the State shall meet the minimum standards for well construction and maintenance as provided under chapter 18.104 RCW. Washington Water Well Construction Act of 1971, and Chapter 173-160 WAC, Minimum Standards for Construction and Maintenance of Wells. Any additional wells drilled under this water right shall be constructed within the SGA aquifer system.

Installation and maintenance of an access port as described in WAC 173-160-291 is required on any additional wells drilled under this water right. An air-line and gauge may be installed in addition to the access port.

**Water Level Monitoring:** In order to protect the ground water resource, static water level in each production well shall be measured at a minimum semi-annually (March/April and September/October of each year). The water level data shall be maintained and made available to Ecology upon request.

**Water metering and Reporting:** An approved metering device shall be installed and maintained for each well used under this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use," Chapter 173-1 73 WAC.

Water use data shall be recorded weekly. The maximum rate of withdrawal and the annual total volume shall be submitted to the Department of Ecology by January 31st of each calendar year.

Reported water use data shall be submitted via the Internet or by using the enclosed forms. To set up an internet account, access <https://fortress.wa.gov/ecy/wrx/Meteringx/>. If you have questions or need additional forms, contact the Southwest Regional Office.

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the records of water use that are kept to meet the above conditions, and to inspect at reasonable times any measuring device used to meet the above conditions.

**Mitigation:** The mitigation plan described elsewhere in this document will be implemented and documented for review by Ecology. A record of all wells that have been decommissioned and abandoned under the City's policy, described above under water-for-water mitigation, including well log, purpose of use, whether the well was in use prior to being abandoned, and production records or estimates (if available), will be maintained for review by Ecology when conducting its final review for issuance of a water right certificate. This applies to all wells abandoned from the date of issuance of this permit onward. In addition, documentation that all non-water mitigation measures described above will be maintained for review by Ecology when conducting its final review for issuance of a water right certificate.

A water right certificate shall not be issued until a final investigation has been made.

### CONCLUSION

In accordance with chapters 90.03 and 90.44 RCW, I find that there is water available for this beneficial appropriation from the source in question and that the appropriation as authorized will not impair existing rights or be detrimental to the public interest. Therefore, a permit should be issued, subject to the above-indicated provisions.

REVIEWED BY \_\_\_\_\_  
Phil Crane

DATE \_\_\_\_\_

### FINDINGS OF FACT AND DECISION

Upon reviewing the above report, I find all facts, relevant and material to the subject application: have been thoroughly investigated. Furthermore, I find water is available for appropriation and the appropriation as recommended is a beneficial use and will not be detrimental to existing rights or the public welfare. Therefore, I ORDER a permit be issued under Ground Water Application Number G2-29174, subject to existing rights and indicated provisions, to allow appropriation of public ground water for the amount and uses specified in the foregoing report.

Signed at Olympia, Washington, this \_\_\_\_\_ day of \_\_\_\_\_, 2008.

Thomas Loranger  
Water Resources Section Manager  
Southwest Regional Office