DEPARTMENT OF ECOLOGY
State of Washington

State of Washington
REPORT OF EXAMINATION
FOR WATER RIGHT APPLICATION

PRIORITY DATE	WATER RIGHT NUMBER
2/12/2011	G1-28682

MAILING ADDRESS	SITE ADDRESS (IF DIFFERENT)
PEACH MOUNTAIN ORGANICS 1560 RICHLAND ROAD SPRING VALLEY OH 45370	1971 ROCHE HARBOR RD FRIDAY HARBOR WA 98250

Quantity Authorized for Withdrawal

WITHDRAWAL RATE	UNITS	ANNUAL QUANTITY (AF/YR)
15	GPM	12.14*

Purpose

PURPOSE	WITHDRAWAL RATE			ANNUAL QUANTITY (AF/YR)		PERIOD OF USE (mm/dd)
	ADDITIVE	NON-ADDITIVE	UNITS	ADDITIVE	NON-ADDITIVE	
IRRIGATION	15		GPM	12.14*		04/15 - 10/31

IRRIGATED ACRES		PUBLIC WATER SYSTEM INFORMATION	
ADDITIVE	NON-ADDITIVE	WATER SYSTEM ID	CONNECTIONS
10	0	N/A	N/A

* S1-28683 is associated with G1-28682. G1-28682 is the primary water right and has a sufficient Q_a to irrigate 10 acres. S1-28683 has a non-additive Q_a and an additive Q_i. The water rights should be evaluated together.

Source Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
SAN JUAN	GROUNDWATER	N/A	2-SAN JUAN

SOURCE	PARCEL	WELL TAG	TOWNSHIP	RANGE	SECTION	QQ Q	LATITUDE	LONGITUDE
WELL	350343001000	ABC-426	35N	03W	03	SW SE	N 48.5541	123.0462 W

Datum: NAD83/WGS84

Place of Use (See Map in Attachment 1)

PARCELS (NOT LISTED FOR SERVICE AREAS)

350343001000

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE

That portion of the North Half of the Southwest Quarter of the Southeast Quarter of Section 3, Township 35 North, Range 3 West, W.M., described as follows:

Beginning at the Northeast corner of said subdivision, thence South 00°2'27" West 661.51 feet to the Southeast corner of said subdivision, thence North 89°43'14" West 791.61 feet, thence North

04°35'57" East 532.35 feet, thence South 89°36'50" West 31.00 feet, thence North 00°50'16" East 130.89 feet, thence South 89°43'59" East 778.48 feet to the point of beginning;

Situated within San Juan County, Washington.

ALSO KNOWN As Lot 2 of the Lyn Dan Short Plat, San Juan County Auditor's File Number 20051107008, in Volume 7 of Short Plats, Pages 69 and 69A.

Proposed Works

A single well, 220 feet deep with a 6-inch casing and a 1.5 HP pump, providing water to a drip irrigation (3 acres) system and an overhead sprinkler (7 acres) irrigation system.

Development Schedule

BEGIN PROJECT	COMPLETE PROJECT	PUT WATER TO FULL USE
January 1, 2016	December 31, 2020	December 31, 2028

Measurement of Water Use

How often must water use be measured?	Monthly
How often must water use data be reported to Ecology?	Annually (Jan 31)
What volume should be reported?	Total Annual Volume
What rate should be reported?	Annual Peak Rate of Withdrawal (gpm)

Provisions

Measurements, Monitoring, Metering and Reporting

An approved measuring device shall be installed and maintained for each of the sources identified by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", WAC 173-173, which describes the requirements for data accuracy, device installation and operation, and information reporting. It also allows a water user to petition the Department of Ecology for modifications to some of the requirements.

Recorded water use data shall be submitted via the Internet. To set up an Internet reporting account, contact the Northwest Regional Office. If you do not have Internet access, you can still submit hard copies by contacting the Northwest Regional Office for forms to submit your water use data.

Proof of Appropriation

The water right holder shall file the notice of Proof of Appropriation of water (under which the certificate of water right is issued) when the permanent distribution system has been constructed and the quantity of water required by the project has been put to full beneficial use. The certificate will reflect the extent of the project perfected within the limitations of the permit. Elements of a proof inspection may include, as appropriate, the source(s), system instantaneous capacity, beneficial use(s), annual quantity, place of use, and satisfaction of provisions.

Schedule and Inspections

Department of Ecology personnel, upon presentation of proper credentials, shall have access at reasonable times, to the project location, and to inspect at reasonable times, records of water use, wells, diversions, measuring devices and associated distribution systems for compliance with water law.

Water Use Efficiency
The water right holder is required to maintain efficient water delivery systems and use of up-to-date water conservation practices consistent with RCW 90.03.005.

Wells, Well Logs and Well Construction Standards
All wells constructed in the state shall meet the construction requirements of WAC 173-160 titled "Minimum Standards for the Construction and Maintenance of Wells" and RCW 18.104 titled "Water Well Construction". Any well which is unusable, abandoned, or whose use has been permanently discontinued, or which is in such disrepair that its continued use is impractical or is an environmental, safety or public health hazard shall be decommissioned.

All wells shall be tagged with a Department of Ecology unique well identification number. If you have an existing well and it does not have a tag, please contact the well-drilling coordinator at the regional Department of Ecology office issuing this decision. This tag shall remain attached to the well. If you are required to submit water measuring reports, reference this tag number. Installation and maintenance of an access port as described in WAC 173-160- 291(3) is required.

Findings of Facts
Upon reviewing the investigator's report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I concur with the investigator that water is available from the source in question; that there will be no impairment of existing rights; that the purpose of use is beneficial; and that there will be no detriment to the public interest.

Therefore, I ORDER approval of Application No. G1-28682, subject to existing rights and the provisions specified above.

Your Right To Appeal

You have a right to appeal this Order to the Pollution Control Hearings Board (PCHB) within 30 days of the date of receipt of this Order. The appeal process is governed by Chapter 43.21B RCW and Chapter 371-08 WAC. "Date of receipt" is defined in RCW 43.21B.001(2).

To appeal you must do the following within 30 days of the date of receipt of the Order:

- File your appeal and a copy of this Order with the PCHB (see addresses below). Filing means actual receipt by the PCHB during regular business hours.
- Serve a copy of your appeal and this Order on Ecology in paper form - by mail or in person. (See addresses below.) E-mail is not accepted.

You must also comply with other applicable requirements in Chapter 43.21B RCW and Chapter 371-08 WAC.

Street Addresses	Mailing Addresses
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608
Pollution Control Hearings Board 1111 Israel RD SW Ste 301 Tumwater, WA 98501	**Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

Signed at Bellevue, Washington, this 2 day of July 2014.

Jerry Liszak, Acting Section Manager

For additional information visit the Environmental Hearings Office Website: http://www.eho.wa.gov. To find laws and agency rules visit the Washington State Legislature Website: http://www1.leg.wa.gov/CodeReviser.

INVESTIGATOR'S REPORT
Application for Water Right – Peach Mountain Organics
Water Right Control Number G1-28682
Ria Berns, Department of Ecology

BACKGROUND

This report serves as the written findings of fact concerning Water Right Application Number G1-28682.

Peach Mountain Organics applied for a water right to appropriate groundwater on February 12, 2011. This application was submitted along with complementary surface water application S1-28683. Peach Mountain Organics plans to conjunctively use groundwater and surface water to irrigate 10 acres of mixed crops during the irrigation season (April 15 – October 31). The well is located in the SW¼ SE¼ of Section 3, Township 35 North, Range 3 West. This report describes the proposed project, discusses the hydrogeology of the area, investigates potential impairments, and evaluates water availability issues raised by the project.

Table 1. Summary of Requested Water Right

Applicant Name:	Peach Mountain Organics
Date of Application:	2/12/2011
Place of Use	See Attachment 1

County	Waterbody	Tributary To	WRIA
San Juan	Groundwater	N/A	2-San Juan

Purpose	Rate	Unit	Ac-ft/yr	Begin Season	End Season
Irrigation	15	GPM	12.14	04/15	10/31

Source Name	Parcel	Well Tag	Township	Range	Section	QQ Q	Latitude	Longitude
Well	350343001000	ABC-426	35N	03W	03	SW SE	N 48.5541	123.0462 W

Datum: NAD83/WGS84

GPM = Gallons per Minute; Ac-ft/yr = Acre-feet per year; QQ Q = Quarter-quarter of a section; WRIA = Water Resource Inventory Area

Legal Requirements for Approval of Appropriation of Water

Public Notice

RCW 90.03.280 requires that notice of a water right application be published once a week, for two consecutive weeks, in a newspaper of general circulation in the county or counties where the water is to be stored, diverted and used. Notice of this application was published in the *Journal of the San Juan Islands* on June 8, 2011 and June 15, 2011.

Consultation with the Department of Fish and Wildlife

The Department must give notice to the Washington Department of Fish and Wildlife (WDFW) of applications to divert, withdraw or store water. On April 29, 2014, Ecology provided notice to WDFW's Mr. Stephen Boessow. On May 5, 2014, WDFW submitted the following comment: "Based on impacts to fish and/or wildlife and the habitat they rely on, and pursuant to Chapter 77.57.020 RCW, [WDFW] does not oppose the issuance of this application. Beaverton Valley Creek and its tributaries are not known to be inhabited by fish."

State Environmental Policy Act (SEPA)
Groundwater withdrawals are subject to a SEPA threshold determination (i.e., an evaluation of whether there are likely to be significant adverse environmental impacts) if the water right application proposes withdrawals greater than 2,250 gpm. Because this application does not meet this condition and because the application is not part of a larger project that would trigger SEPA, the application is considered to be categorically exempt from SEPA and a threshold determination is not required.

INVESTIGATION

The following investigation is based on a May 21, 2013 site visit to Peach Mountain Organics with Water Resource Program hydrogeologist, John Rose. During the site visit, we met San Juan Conservation District employee Bruce Gregory, who prepared the farm plan for Peach Mountain Organics and showed us the proposed points of diversion (see S1-28683) and withdrawal and discussed the proposed farm plan. The investigation also draws on (1) follow-up conversations with Peach Mountain Organics co-owner Doug Seibert, (2) water rights office research, (3) hydrogeological analysis of the site, and (4) materials listed in the References section.

San Juan Island Geology and Hydrogeology

Geological Overview of the San Juan Islands
Bounded by the Strait of Juan de Fuca to the south, Rosario Strait to the east, Haro Strait to the west, and Boundary Pass to the north, the San Juan Islands archipelago has a complex geologic history. Radiometric dating indicates that the San Juan Islands were accreted to North America sometime prior to the Late Jurassic Period. However, the Late Cretaceous period most dramatically shaped the Islands' bedrock geology. A major suture, known as the Haro Thrust zone, formed during the late Cretaceous Period and joined the Wrangellia terrane of Vancouver Island and the San Juan-Cascade nappes (Brandon, 1989). The San Juan Islands consist of a thick sequence of Late Cretaceous thrust faults, referred to as the San Juan thrust system, containing a diverse group of rocks (terranes) ranging from early Paleozoic to middle Cretaceous in age. A terrane is a fault-bounded package of rocks with a distinctive stratigraphy, structure and geologic history. Formed in compressed tectonic zones (e.g., subduction zones), a nappe is a large sheet of rock with a horizontal or sub-horizontal axial plane that has moved due to faulting or folding.

Wrangellia is a large allochthonous terrane that underlies most of Vancouver Island and parts of Alaska. On Vancouver Island it is characterized as a coherent Paleozoic-to-Lower Jurassic stratigraphic sequence that is dominantly volcanic. The thrust system straddles the southeastern edge of the Wrangellia terrane of Vancouver Island. The San Juan-Cascade nappes are northwest-trending belts that are bounded by the Skagit metamorphic core. In the San Juan Islands, five terranes (Haro, Turtleback, Deadman Bay, Garrison, and Decatur) were thrust and stacked upon each other and on top of the Wrangellia Terrane. The San Juan-Cascade nappes are thought to represent an old accretionary system formed by the successive arrival of these far-traveled terranes (Brandon, 1989).

The bedrock geology of the San Juan Islands has been greatly modified by the three major glacial advances, including the Double Bluff Glaciation (earliest), Possession Glaciation, and Fraser Glaciation (latest) (Russell et al, 1975). However, erosion beneath the glaciers was likely guided by the topography formed by the fracture and fault zones already in existence. It is probable that a fault of considerable magnitude occupies each of the major San Juan channels.

San Juan Island Hydrogeology

San Juan Island is the second largest of the San Juan Islands and has an aerial extent of about 55 square miles. About 40 percent of San Juan Island is overlain by Quaternary glacial deposits, but only as thin, discontinuous sheets, with thicknesses generally less than 30 feet. The glacial deposits, where saturated, generally yield large quantities of water to wells, but the bedrock is nonporous, and water occurs primarily in joints and fractures (Russell et al, 1975).

The underlying geology in the vicinity of the Peach Mountain Organics well is part of the Late Jurassic Constitution Formation (referred to as KJmm and Jc), which includes ophiolitic plutonic rocks, mid-oceanic-ridge basalt, ribbon chert, and arc-derived mudstone-sandstone (Brown et al, 2007). The Constitution Formation is the predominant geologic formation on San Juan Island. Overlaying the constitution formation at the Peach Mountain Organics site are two glacial formations, the Pleistocene Era Qgd and $Qgdm_{es}$ formations (DNR, Washington Interactive Geologic Map). The Qgd is undifferentiated glacial drift from the Fraser glaciation. The $Qgdm_{es}$ formation underlies the Qgd and consists of glaciomarine drift from the Everson Glaciomarine Drift (Dragovich et al, 2002).

The mean annual precipitation for Peach Mountain Organics is 30-32 inches/year. Average annual recharge to the ground water system for this area ranges from 4 to 7 inches (Orr, 2002).

Proposed Use and Basis of Water Demand

Peach Mountain Organics plans to irrigate a 10-acre organic farm on San Juan Island. In addition, Peach Mountain Organics plans to continue to use the existing well to serve the domestic water needs for one house.

Farm Plan and Crop Irrigation Requirements

Peach Mountain Organics proposes to irrigate 10 acres of mixed commercial crops. Based on initial design, Peach Mountain plans to plant and irrigate:

- ½ acre of fruit orchard;
- 2½ acres of vegetable row crops grown in hoop houses and outside; and
- ~7 acres of grain/feedstock.

Peach Mountain Organics plans to regularly rotate crops, so water duties will vary seasonally. The farm has not settled on an exact crop rotation or ratio; Thus, Ecology will conservatively estimate water duty to allow Peach Mountain Organics the flexibility to grow into their farm plan.

The Department of Ecology uses the Washington Irrigation Guide (WIG) to determine crop water duties when the actual volume of water applied per acre is not known, or to assess whether actual use is reasonable for a given crop (see Table 2). Application efficiency (EA) values are from *GUID-1210, Determining Irrigation Efficiency and Consumptive Use.* Assumptions made for the consumptive irrigation requirement (CIR) of each crop are discussed below.

Peach Mountain Organics plans to irrigate a half acre of mixed fruit trees. Because Peach Mountain does not know which trees will be planted, the CIR for apple trees with groundcover is used. Apples have a similar water duty to other fruit and nut trees that are commonly grown on San Juan Island and thus, their water duty is used as a proxy to calculate CIR. For the 2.5 acres of rotating vegetable crops, the CIR for carrots is used. Carrots are a medium-to-high water duty crop and thus, will provide Peach Mountain some flexibility when planting both more and less water intensive vegetable crops. Lastly, the farm plans

to irrigate seven acres of grain/feedstock. Water duty for the 1992 WIG for pasture/turf is used to calculate the CIR, which is a high water duty crop compared to other feedstock crops that Peach Mountain may rotate through.

Precipitation data from the Olga, Washington weather station on Orcas Island was used for the CIR calculations. Annual precipitation data from this station aligns closely with the observed precipitation data at the Peach Mountain Organics site (USGS, 2002).

Table 2. Calculation of Total Irrigation Requirements for Peach Mountain Organics

Crop and System Type	*Total Irrigation Requirement (TIR)* *(CIR ÷ Ea)*
Crop : Apples w/Cover **System:** Microirrigation: Trickle/Drip **Area:** .5 acres **CIR:** 1.37 ac-ft/ac **Ea**: 88%	1.37 ac-ft/ac ÷ 88% = 1.56 ac-ft/ac
Crop : Mixed Vegetable Row Crops **System:** Microirrigation: Trickle/Drip **Area:** 2.5 acres **CIR:** 0.6 ac-ft/ac **Ea:** 88%	0.6 ac-ft/ac ÷ 88% = 0.68 ac-ft/ac
Crop : Mixed Pasture Crops **System:** Sprinkler: Solid-Set – Overtree **Area:** 7 acres **CIR:** 0.94 ac-ft/ac **Ea:** 70%	0.94 ac-ft/ac ÷ 70% = 1.38 ac-ft/ac
Total Irrigation Requirement All Acres	$TIR * No. of\ Crop\ Acres$ $(1.56 * .5) + (0.68 * 2.5) + (1.38 * 7) = \mathbf{12.14}\ \boldsymbol{ac - ft/yr}$

Abbreviation Key: Ea – the ratio of the average depth of water infiltrated and stored in the root zone to the average depth of water applied, expressed as a percentage; TIR – water supplied by irrigation to satisfy evapotranspiration, miscellaneous water requirements, and irrigation efficiency; CIR – water supplied by irrigation to satisfy evapotranspiration that is not provided by water stored in the soil and precipitation.

Irrigation System Design

The existing well (well ID tag ABC-426) was drilled in January 1994. Since this time, the well has served the domestic needs for one house on the property as well as some stockwatering purposes, all within the allowable limits set forth in the groundwater permit exemption (RCW 90.44.050). The well is 220 feet deep and the static water level was measured at 18 feet below the well casing when the well was initially drilled. The well log indicates that an airtest was completed on the day the well was drilled, which yielded 30+ gpm. The pump was running during the site visit and the well had no access port, so I was unable to take a static water level measurement. In October 2013, I returned to the site and conducted a series of bucket tests on the well using a spicket several feet away. After allowing the water to run continuously for approximately 10 minutes, I took three bucket test measurements which yielded an instantaneous pumping rate of approximately 28 gpm with no perceivable reduction in Q_i. The bucket and air tests were both conducted during the wet season (mid-October and January, respectively), and produced similar instantaneous quantities.

The irrigation system is still in the design state. However, Doug Seibert, co-owner of Peach Mountain Organics, has indicated that the farm will use conservation practices and irrigate using drip irrigation for

3 (and possibly more) acres of vegetable and fruit crops. The remaining 7 acres of feedstock crops will be irrigated with overhead sprinklers. The pump will have a 1.5 HP engine. At this point, the make and model of the pump is unknown as are the diameters of the irrigation lines.

Other Rights Appurtenant to the Place of Use

The Department of Ecology has record of 14 water rights or water right claims within a half mile radius of the Peach Mountain Organics proposed points of withdrawal and diversion (See Table 3 and Attachment 2). Of the water rights considered for the impairment analysis, 4 are state-issued water right certificates (3 for groundwater, 1 for reservoir storage), 1 is a new application for groundwater, and 9 are claims (5 short- and 4 long-form claims).

A water right claim is a *claim* to a water right for a beneficial use which predates the state water code (1917 for surface water and 1945 for groundwater) and is not authorized by a state-issued permit or certificate. Water right claims can only be confirmed through adjudication by the Washington State Superior Court. The Department of Ecology cannot verify a claim's validity. Many of the below-listed claims represent uses allowable under the groundwater permit exemption (RCW 90.44.050).

Table 3. Record of Water Rights within a Half Mile Radius from the Points of Withdrawal and Diversion

Control Number	*Name on Document*	*Document Type*	*Priority Year*	*Purpose*	Q_i *(gpm)*	Q_a *(ac-ft/yr)*
G1-019783CL	Harold W. Livesley	Claim L		DG		
G1-064523CL	Mildred J. Ervin	Claim L		DG		
G1-064524CL	Mildred J. Ervin	Claim L		DG		
G1-079617CL	Edward R. King	Claim S		DG		
G1-079618CL	Harold W. Livesley	Claim S		DG, ST		
S1-080097CL	Al Sundstrom	Claim S		DG, ST		
G1-089364CL	Lorena L Buchanan	Claim S		IR, ST		
G1-093667CL	Thomas C Wilmer	Claim L		DG, IR		
G1-140006CL	John W King	Claim S		DS, ST		
G1-23330CWRIS	Roger Sandwith	Cert	1979	DS, ST	10	.6
G1-23453GWRIS	Richard Wright	Cert	1979	DS, IR, ST	5	2.1
G1-23509CWRIS	John W King	Cert	1979	DM	10	13
R1-23959CWRIS	Al Sundstrom	Cert	1981	RE, ST, WL		85
G1-28602	Taylor Reality	New App	2009	DM	52	23

Abbreviation Key: Q_i – instantaneous quantity, Q_a – annual quantity, gpm – gallons per minute, Claim L – long form claim, Claim S – short form claim, Cert – Certificate, New App – New application, DS – domestic single, DG – Domestic General, DM – Domestic multiple, IR – Irrigation, RE – recreation and beautification, ST – stockwater, WL – wildlife propagation.

In addition to the above-listed water right claims, there are approximately 30 water wells located within a half mile radius of the Peach Mountain Organics points of withdrawal and diversion. This information was obtained using the Department of Ecology's well log database. Many of these wells overlap with the above-listed water right claims.

FINDINGS

Under Washington State law, the following four criteria must be met for an application to be approved:

- There must be no impairment of existing rights
- Water must be available
- The water use must be beneficial
- The water use must not be detrimental to the public interest

Impairment Considerations

Impairment is an adverse impact on the physical availability of water for a beneficial use that is entitled to protection. A water right application may not be approved if it would:

- Interrupt or interfere with the availability of water to an adequately constructed groundwater withdrawal facility of an existing right. An adequately constructed groundwater withdrawal facility is one that (a) is constructed in compliance with well construction requirements and (b) fully penetrates the saturated zone of an aquifer or withdraws water from a reasonable and feasible pumping lift.
- Interrupt or interfere with the availability of water at the authorized point of diversion of a surface water right. A surface water right conditioned with instream flows may be impaired if a proposed use or change would cause the flow of the stream to fall to or below the instream flow more frequently or for a longer duration than was previously the case.
- Interrupt or interfere with the flow of water allocated by rule, water rights, or court decree to instream flows.
- Degrade the water quality of the source to the point that the water is unsuitable for beneficial use by existing users (e.g., via sea water intrusion).

Peach Mountain Organics has operated its well for the purposes of single domestic use and stockwatering for over 20 years. At one point during the past three years, the main water line running from the well to the house erupted and leaked water continuously for a period of several months, unbeknownst to both the tenant and homeowner. Several months of continuously high electrical bills alerted the homeowner to the water system problem; yet, during this period, no reduction in water supply was observed. Moreover, neither the Department of Ecology nor the homeowner received impairment complaints by senior water right holders. Water right application G1-28602 is senior to Peach Mountain Organics; however the proposed wells are upgradient and over a half mile from the Peach Mountain Organics well location. Thus, I find that no senior water right holders will be impaired by this proposed withdrawal.

The well was drilled in 1994 and was constructed to code.

Potential for Seawater Intrusion

Seawater intrusion is the movement of seawater into fresh water due to natural processes or human activities. In order for seawater intrusion to occur, an aquifer must be in hydraulic connection with seawater and the hydraulic head of the fresh ground water must be reduced relative to that of the seawater. On an island, if a well withdraws water at a rate that sufficiently lowers the water table and disturbs the fresh-sea water balance, seawater will rise as a cone and move toward the well (Dion and Sumioka, 1978).

Chloride concentrations are often used as an indicator for salt water intrusion. However, Peach Mountain Organics has never measured for chlorides. Thus, a proxy must be used. The relationship based on the density difference between seawater and freshwater can be used to estimate the depth to seawater beneath the freshwater lens based on the thickness of the freshwater zone above sea level. This relationship is known as the Ghyben-Herzberg relation: $z = \frac{\rho_f}{(\rho_s - \rho_f)} h \text{ or } z = 40h$. I.e., for every foot of freshwater above sea level (h) there is 40 feet of freshwater below sea level (z). This equation allows the use of aquifer water level elevations to predict if an aquifer has sufficient pressure to prevent

seawater intrusion (Kelly, 2005). If the aquifer elevation is significantly high relative to sea level, it will maintain adequate freshwater pressure to prevent seawater from entering the aquifer.

Table 4. Peach Mountain Organics Well Seawater Intrusion Potential Measured by the Ghyben-Herzberg Relation

Seawater Intrusion Parameters	*Ghyben-Herzberg Relation Variables & Calculations*
Static Water Level	$18\ feet$ (water well report)
Drilled Well Depth	$220\ feet$ (water well report)
Surface Elevation of Well	$129\ feet\ above\ mean\ sea\ level$ (Taken from LiDAR, 2009 Puget Sound LiDAR Consortium; LiDAR Accuracy RMSE is 0.136 feet)
Well Distance to Shoreline	$4,234\ feet$ (ArcGIS measurement)
Well Depth Below Sea Level	$91\ feet\ below\ mean\ sea\ level$ $(129 - 220 = 91\ feet)$
Ghyben-Herzberg Relation Calculation	$5,801.5\ feet\ of\ freshwater\ (freshwater\ thickness)$ $40 * (129 - 18) = 4,440\ feet\ below\ sea\ level$ $Total\ freshwater\ zone: 4,440 + 111 = 4,551\ feet$

The zone of freshwater, as measured by the Ghyben-Herzberg relation, is 4,551 feet thick (see Table 4). Furthermore, the well is located 4,234 feet from the shoreline. This suggests a low potential for seawater intrusion. Thus, I find that the proposed withdrawal will not degrade the aquifer.

Water Availability

For water to be available for appropriation, it must be both physically and legally available.

Physical Availability

For water to be physically available for appropriation there must be ground or surface water present in quantities and quality and on a sufficiently frequent basis to provide a reasonably reliable source for the requested beneficial use or uses. In addition, the following factors are considered:

- Volume of water represented by senior water rights, including federal or tribal reserved rights or claims;
- Water right claims registered under Chapter 90.14 RCW;
- Ground water uses established in accordance with Chapter 90.44 RCW, including those that are exempt from the requirement to obtain a permit;
- Potential riparian water rights, including non-diversionary stock water; and
- Lack of data indicating water usage can also be a consideration in determining water availability, if the department cannot ascertain the extent to which existing rights are consistently utilized and cannot affirmatively find that water is available for further appropriation.

A one hour airtest conducted by the well driller demonstrated an instantaneous rate of 30 gpm. This rate is corroborated by the three bucket tests I conducted, which consistently demonstrated a Q_i of 28 gpm. Moreover, the fact that the water main ruptured for a period of several months and did not noticeably reduce water supply suggests that the well has a significant capacity for continuous pumping. The well is located in a lowland area, down-gradient from nearby wells. During the site visit, the ground was saturated and runoff collected near the well site.

The annual quantity (Q_a) was calculated using the WIG, as discussed above. The calculated 12.14 ac-ft/yr is a reasonable conservative estimate which will allow Peach Mountain Organics some flexibility to grow into their farm plan.

Together, direct and anecdotal evidence supports the physical availability of the requested 15 gpm from this well. The WIG supports the calculated annual quantity of 12.14 ac-ft/yr.

Legal Availability

To determine whether water is legally available for appropriation, the following factors are considered:

- Regional water management plans – which may specifically close certain water bodies to further appropriation.
- Existing rights – which may already appropriate physically available water.
- Fisheries and other instream uses (e.g., recreation and navigation). Instream needs, including instream and base flows set by regulation. Water is not available for out of stream uses where further reducing the flow level of surface water would be detrimental to existing fishery resources.
- The Department may deny an application for a new appropriation in a drainage where adjudicated rights exceed the average low flow supply, even if the prior rights are not presently being exercised. Water would not become available for appropriation until existing rights are relinquished for non-use by state proceedings.

There are no regulatory closures or restrictions affecting water availability on San Juan Island and WDFW does not oppose or have concerns with the proposed project. Therefore, I find water is legally available for appropriation.

Beneficial Use

Irrigation is considered a beneficial use under RCW 90.54.020(1).

Public Interest Considerations

No protests were filed against this application and no potential for detriment to the public interest was identified during the investigation of this application.

Conclusions

In accordance with chapter RCW 90.03, I conclude that there is water available from the source in question, the purpose of use is beneficial, there will be no impairment of existing rights, and there will be no detriment to the public interest.

RECOMMENDATIONS

Based on the above investigation and conclusions, I recommend that this request for a water right be approved in the amounts and within the limitations listed below and subject to the provisions listed above.

Purpose of Use and Authorized Quantities

The amount of water recommended is a maximum limit and the water user may only use that amount of water within the specified limit that is reasonable and beneficial:

- 15 gpm
- 12.14 ac-ft/yr
- Irrigation (April 15 – October 31)

Point of Withdrawal
SW¼, SE¼, Section 3, Township 35 North, Range 3 West, W.M.

Place of Use
That portion of the North Half of the Southwest Quarter of the Southeast Quarter of Section 3, Township 35 North, Range 3 West, W.M., described as follows:

Beginning at the Northeast corner of said subdivision, thence South 00°2'27" West 661.51 feet to the Southeast corner of said subdivision, thence North 89°43'14" West 791.61 feet, thence North 04°35'57" East 532.35 feet, thence South 89°36'50" West 31.00 feet, thence North 00°50'16" East 130.89 feet, thence South 89°43'59" East 778.48 feet to the point of beginning;

Situated within San Juan County, Washington.

ALSO KNOWN As Lot 2 of the Lyn Dan Short Plat, San Juan County Auditor's File Number 20051107008, in Volume 7 of Short Plats, Pages 69 and 69A.

Ria Berns, Report Writer — *July 1, 2014*
Date

Reviewed by Jerry Lizsak, L.Hg — 7/2/2014
Date

If you need this publication in an alternate format, please call Water Resources Program at (360) 407-6600. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.

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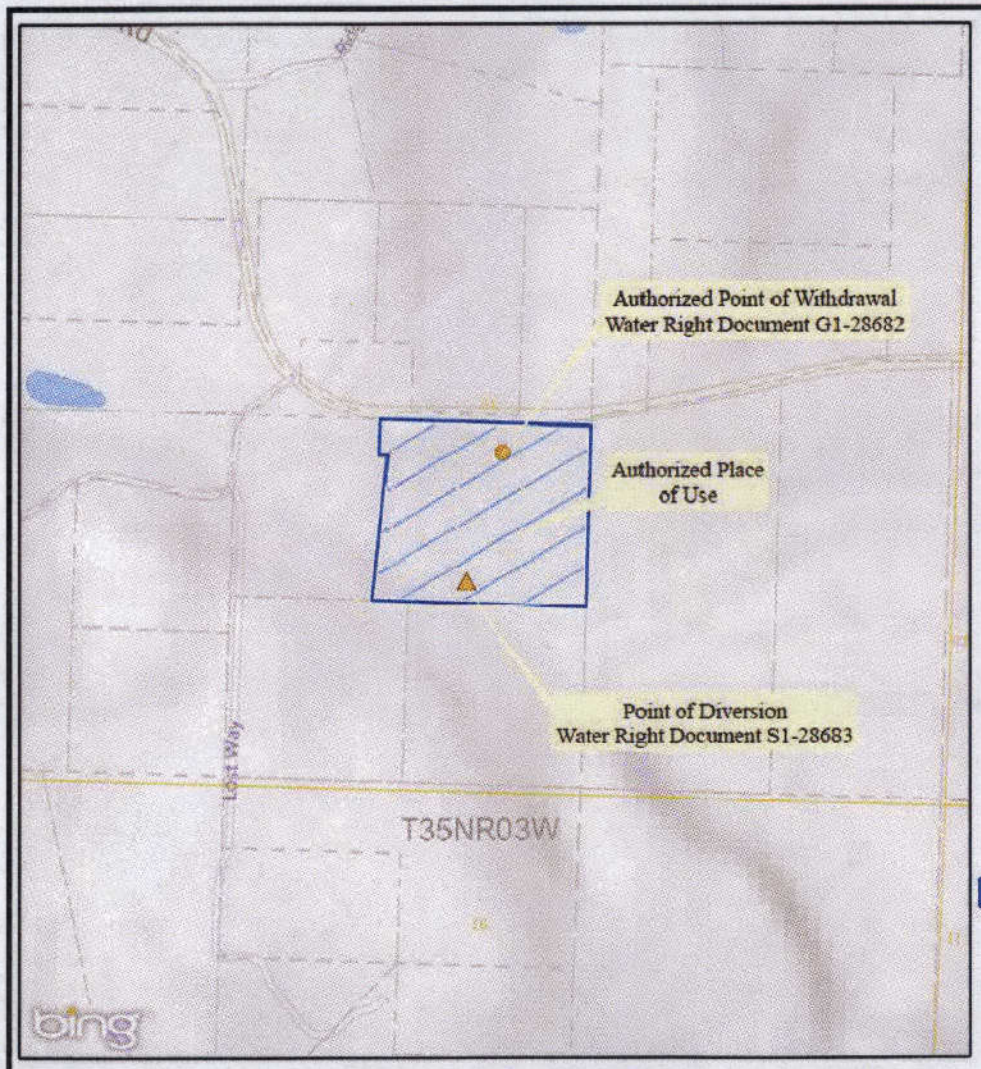
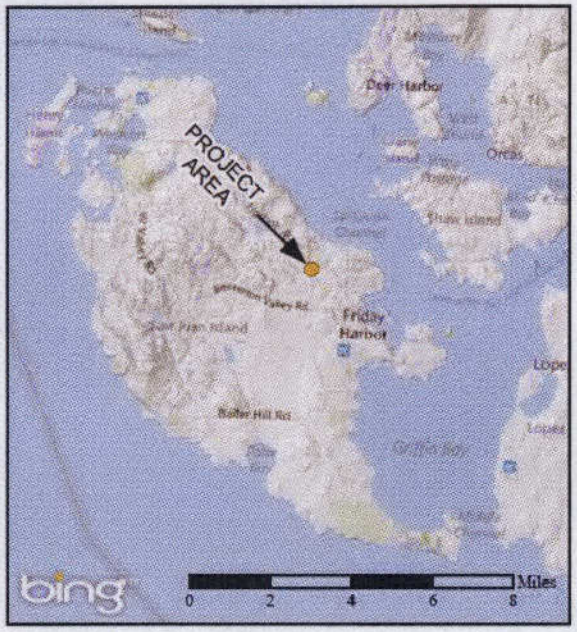
Peach Mountain Organics
Water Right G1-28682
Section 3 T 35N R 03W W.M.
WRIA 2 - San Juan Island - San Juan County





Legend

- Authorized Place of Use
- Authorized Point of Withdrawal
- Surface Water Diversion Peach Mountain Organics
- Parcels
- Water Body
- Townships
- Sections

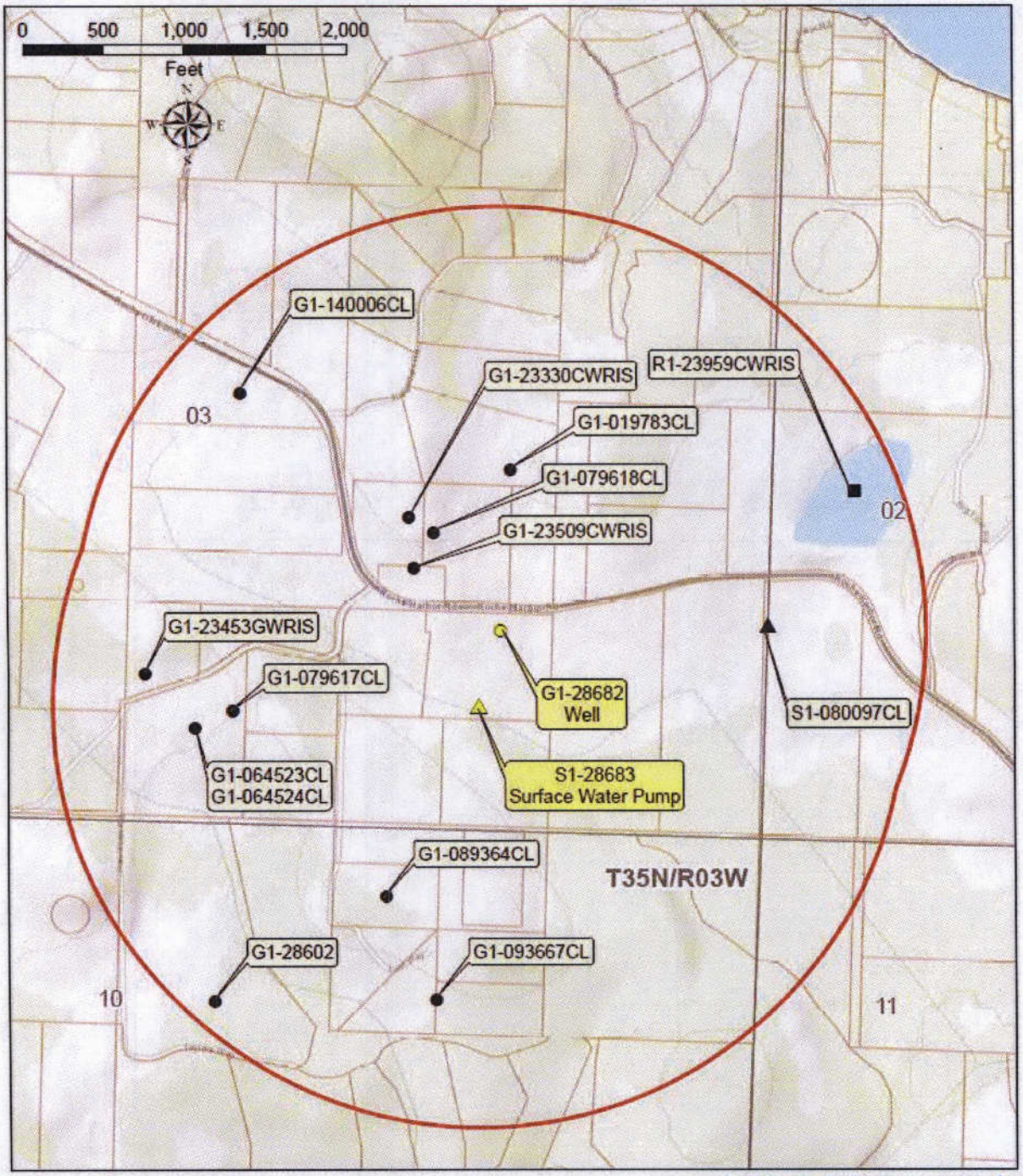
0 500 1000 1500 2000 2500 3000 Feet

DEPARTMENT OF ECOLOGY State of Washington

Map Date: 5/6/2014

Place of use and point(s) of withdrawal are as defined on the cover sheet under the headings,'LOCATION OF WITHDRAWAL' and 'LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED.'

Attachment 2: Impairment Map



- G1-28682
- S1-28683
- Half Mile Radius
- Ground Water Right Document
- Reservoir Water Right Document
- Surface Water Right Document

DEPARTMENT OF ECOLOGY State of Washington

Water Right Documents within
One-Half Mile of Water Right Documents
G1-28682 and S1-28683
Peach Mountain Organics
Sec 3, T 35N, R 3W, W.M.
WRIA 2, San Juan County, San Juan Island