STATE OF WASHINGTON
**DEPARTMENT OF ECOLOGY**
***REPORT OF EXAMINATION***
***Change of:* point of withdrawal and place of use**
***WRTS File*** # CG2-GWC1851

| PRIORITY DATE | CLAIM NO. | PERMIT NO. | CERTIFICATE NO. |
|---|---|---|---|
| October 13, 1953 | | | GWC 1851 |

| NAME | | |
|---|---|---|
| Washington State University | | |
| ADDRESS/STREET | CITY/STATE | ZIP CODE |
| 14204 NE Salmon Creek Avenue | Vancouver, WA | 98686-9600 |

## PUBLIC WATERS TO BE APPROPRIATED

SOURCE
wells

TRIBUTARY OF (IF SURFACE WATERS)

| MAXIMUM CUBIC FEET PER SECOND (cfs) | MAXIMUM GALLONS PER MINUTE (gpm) | MAXIMUM ACRE FEET PER YEAR (ac-ft/yr) |
|---|---|---|
| | 90 | 28 |

QUANTITY, TYPE OF USE, PERIOD OF USE
Irrigation
March 1 through October 31, each year

## LOCATION OF DIVERSION/WITHDRAWAL

APPROXIMATE LOCATION OF DIVERSION--WITHDRAWAL

| LOCATED WITHIN (SMALLEST LEGAL SUBDIVISION) | SECTION | TOWNSHIP | RANGE | WRIA | COUNTY |
|---|---|---|---|---|---|
| Field Well in NE ¼, SW ¼" and Future "Well B" in the portion of NW ¼, SW ¼ and SW ¼, NW ¼ that lies within current WSU campus | 24 | 3 N. | 1 E.W.M. | 28 | Clark |

| PARCEL NUMBER | LATITUDE | LONGITUDE | DATUM |
|---|---|---|---|
| 011-185948000 | | | |
| Field Well | 45.7280° N | -122.6321° W | NAD 83 |
| "Well B" | unknown | unknown | |

## RECORDED PLATTED PROPERTY

| LOT | BLOCK | OF (GIVE NAME OF PLAT OR ADDITION) |
|---|---|---|
| | | |

## LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED
**[Attachment 1 shows location of the authorized place of use and point(s) of diversion or withdrawal]**

WSUV campus area that has or will require irrigation as shown on Attachment 1.

## DESCRIPTION OF PROPOSED WORKS

Pump house, water lines, and irrigation system designed to allow WSU to track the portion of water use by groundwater, to ensure that the annual and instantaneous quantities associated with this water right are not exceeded.

## DEVELOPMENT SCHEDULE

| BEGIN PROJECT BY THIS | COMPLETE PROJECT BY THIS | WATER PUT TO FULL USE BY |
|---|---|---|
| July 1, 2009 | July 1, 2019 | July 1, 2019 |

## PROVISIONS

ABILITY TO LIMIT GROUNDWATER PRODUCTION TO CONSTARAINTS OF THIS WATER RIGHT
WSU will construct and maintain its irrigation system in a manner that allows them to track the portion of irrigation water use by groundwater, to ensure that the annual and instantaneous quantities associated with this water right are not exceeded.

LIMITATION ON FUTURE POTENTIAL WELL B
If "Well B" is drilled within the portion of the SW ¼ of the NW ¼ or the NW ¼ of the SW ¼ of Section 24, Township 3 North, Range 1 East., W.M. that lies within the current WSU campus, once the well is drilled WSU has one year to inform Ecology where the well is located (latitude and longitude) and how deep the well is. This information will be noted in the water right file and the Field Well and the new "Well B" limited to that location alone will become attributes of the water right.

PROPER DECOMMISSIONING OF ALL WELLS NO LONGER IN USE
WSU will properly decommission all wells no longer in use in accordance with Chapter 173-160-381 WAC. Such actions will reduce the potential for groundwater contamination and are consistent with WSU's Fifteen Year Water Resource Plan.

RELINQUISHMENT OF NO LONGER VALID WATER CLAIMS AND CERTIFICATES ASSOCIATED WITH THE WSU VANCOUVER CAMPUS
Other than Water Right Certificate 1851 and Water Right Certificate 2696 WSU shall voluntarily relinquish all other water claims and certificates associated with the WSU Vancouver campus.

WELL HEAD PROTECTION
In accordance with WAC 173-160, wells shall not be located within certain minimum distances of potential sources of contamination. These minimum distances shall comply with local health regulations, as appropriate. In general, wells shall be located at least 100 feet from sources of contamination. Wells shall not be located within 1,000 feet of the boundary of a solid waste landfill.

WELL CONSTRUCTION STANDARD
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. Specifically, any remaining un-used wells associated with Certificate Nos. 1851 and 2686 shall be properly decommissioned as specified in Chapter 173-160-381 WAC.

WELL TAG
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.

ACCESS PORT
Installation and maintenance of an access port as described in WAC 173-160- 291(3) is required.

METER INSTALLATION
An approved measuring device shall be installed and maintained for each of the sources authorized by this water right in accordance with the rule "Requirements for Measuring and Reporting Water Use", WAC 173-173. http://www.ecy.wa.gov/programs/wr/measuring/measuringhome.html

RECORD WEEKLY, REPORT ANNUAL TOTALS
Water use data shall be recorded weekly. The maximum rate of diversion/withdrawal and the annual total volume shall be submitted to the Department of Ecology by January 31st of each calendar year.

WATER MEASURING DATA REPORTING- GROUND WATER
The following information shall be included with each submittal of water use data:

a. owner,
b. contact name (if different from owner),
c. mailing address,
d. daytime phone number,
e. WRIA,
f. period of use,
g. Permit/Certificate/Claim No.,
h. source name,
i. annual quantity used including units,

j. maximum rate of withdrawal including units,
k. monthly meter readings including units
l. well tag number

In the future, the Department of Ecology may require additional parameters to be reported or more frequent reporting. The Department of Ecology prefers web based data entry, but does accept hard copies. The Department of Ecology will provide forms and electronic data entry information. http://www.ecy.wa.gov/pubs/ecy070170.pdf

AUTHORITY TO ACCESS PROJECT
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.

PROJECT COMPLETION – On changes to certificates
The water right holder shall file the notice of project completion 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 superseding certificate will reflect the extent of beneficial use within the limitations of the change authorization. Elements of the project completion inspection may include, as appropriate, the source(s), system instantaneous capacity, beneficial use(s), annual quantity, place of use, and compliance with provisions.

## FINDINGS OF FACT AND ORDER

Upon reviewing the investigator's report, I find all facts, relevant and material to the subject application, have been thoroughly investigated. Furthermore, I find the change of water right as recommended will not be detrimental to existing rights.

Therefore, I ORDER approval of the recommended change of the point of withdrawal and place of use under Change Application No. GWC1851, subject to existing rights and the provisions listed above.

You have the right to appeal this Order to the Pollution Control Hearings Board. Pursuant to chapter 43.21B RCW, your appeal must be filed with the Pollution Control Hearings Board, and served on the Department of Ecology, within thirty (30) days of the date of your receipt of this document. To appeal this action or decision, your notice of appeal must contain a copy of the Ecology order, action or decision you are appealing.

Mail your appeal to:
Pollution Control Hearings Board
PO Box 40903
Olympia, Washington 98504-0903

OR

Deliver your appeal to:
Pollution Control Hearings Board
4224 – 6th Ave SE Rowe Six, Bldg 2
Lacey, Washington 98503

AND MAIL TO BOTH ADDRESSES BELOW

Mail your appeal to:
Department of Ecology
Appeals Coordinator
PO Box 47608
Olympia, Washington 98504-7608

AND

Mail your appeal to:
Thomas Loranger
Department of Ecology
Street Address or P.O. Box
City, WA ZIP

Signed at Olympia, Washington, this 4th day of December 2009.

Thomas Loranger

Thomas Loranger, Section Manager
Water Resources Program
Southwest Region Office

## BACKGROUND

### Description and Purpose of Proposed Change

In 1991, Washington State University (WSU) purchased 348.5 acres of property in Clark County for the WSU Vancouver campus site. Water Right Certificates (WRC) 1851A and WRC 2686A are both appurtenant to the property and WSU filed applications to change the points of withdrawal (POWs) and places of use (POUs) associated with these rights. The priority date for these change applications is October 11, 2004.

The original applications indicated a desire to change the points of withdrawal to two new wells to be located within Section 24, T. 3 N., R. 1 E., W.M. However, when WSU drilled Well A in 2006 that well yielded less water than expected. Subsequently, WSU's plans changed several times. Based on recent discussions/negotiations WSU now seeks a change to WRC 2686A to allow a withdrawal from Well A alone, and a change to WRC 1851A to allow withdrawals from the Field Well and a yet-to-be drilled "Well B". The applications also request a change in the place of use for the water. Specifically WSU would like flexibility to use the water to irrigate anywhere within a designated 164-acre portion of the western half of Section 24, T. 3 N., R. 1 E., W.M., although the actual irrigated area would be much less.

The existing campus irrigation system uses three points of connection to the Clark Public Utility (CPU) water system. The new well water supply piping would connect to this existing irrigation system. The source feeding the irrigation system would be preferentially well water, with the CPU water available at all times as backup. Pressure regulating valves would be located at each point of connection. This arrangement would prevent CPU water from flowing into the wells, and well water from flowing towards the CPU system.

The attributes of both requested changes are indicated in Table 1 below.

Table 1. Attributes of requested changes.

| | Water Right Certificate 1851 | | Water Right Certificate 2686 | |
|---|---|---|---|---|
| **Attributes** | *Existing* | *Proposed* | *Existing* | *Proposed* |
| **Name** | Darling R J | WA State University | Darling R J | WA State University |
| **Priority Date/Date of Application for Change** | 13-Oct-53 | 11-Oct-04 | 31-Jan-56 | 11-Oct-04 |
| **Instantaneous Quantity** | 120 gpm | 120 gpm | 170 gpm | 170 gpm |
| **Annual Quantity** | 60 acre-feet per year | 60 acre-feet per year | 90 acre-feet per year | 90 acre-feet per year |
| **Source** | Field Well | Field Well and/or future "Well B" | 1956 Darling well | WSU Well A |
| **Point of Diversion or Withdrawal** | NE/SW, T03N/R01E-24 | T03N/R01E-24 | NW/SE, T03N/R01E-24 | NE/NW, T03N/R01E-24 |
| **Purpose of Use** | DS IR | IR | DS IR | IR |
| **Period of Use** | year round | irrigation season | year round | irrigation season |
| **Place of Use** | 30 acres in S1/2, Sec. 24, T.3N./R.1E., (predominantly NW of Salmon Creek) | 164 acres in W1/2, Sec. 24, T.3N./R.1E. (west of BPA power line corridor) | 45 acres in Sec. 24, T.3N./R.1E., (predominantly NW of Salmon Creek) | 164 acres in W1/2, Sec. 24, T.3N./R.1E. (west of BPA power line corridor) |

***This Report of Examination pertains to Application for Change to WRC 1851.***

### Legal Requirements for Proposed Change

The following requirements must be met prior to authorizing the proposed change in POW and POU.

- **Public Notice**
  Public notice of the proposed change was published in The Columbian, a daily newspaper in southwest Washington, on November 11 & 18, 2004. The advertised new point of withdrawal was to be located within Section 24, T. 3 N., R. 1 E., W.M. No protests were received.

- **State Environmental Policy Act (SEPA)**
  A water right application is subject to a SEPA threshold determination (i.e., an evaluation whether there likely will be significant adverse environmental impacts) if any one of the following conditions are met.

  - It is a surface water right application for more than 1 cubic feet per second, unless that project is for agricultural irrigation, in which case the threshold is increased to 50 cubic feet per second, so long as that irrigation project will not receive public subsidies;
  - It is a groundwater right application for more than 2,250 gallons per minute;
  - It is an application that, in combination with other water right applications for the same project, collectively exceed the amounts above;
  - It is a part of a larger proposal that is subject to SEPA for other reasons (e.g., the need to obtain other permits that are not exempt from SEPA);

- It is part of a series of exempt actions that, together, trigger the need to do a threshold determination, as defined under WAC 197-11-305.

Because this application does not meet any of these conditions, it is categorically exempt from SEPA and a threshold determination is not required.

**Water Resources Statutes and Case Law**
RCW 90.03.380(1) states a water right that has been put to beneficial use may be changed. The point of diversion, place of use, and purpose of use may be changed if it would not result in harm or injury to other water rights.

RCW 90.14.140(2)(c) states that a water right not used for more than 5 years is not relinquished if it is claimed for a determined future development to take place within 15 years of the last beneficial use of water under the water right. In addition, a series of court cases provide additional guidance in assessing such a plan. In order to be valid, a determined future development plan must satisfy a series of tests as established in *R.D. Merrill Company v. Pollution Control Hearings Board ; City of Union Gap and Ahtanum Ridge Business Park LLC v. Washington State Department of Ecology;* and *Protect Our Water v. Islanders for Responsible Water Management (Intervenors),State of Washington, Department of Ecology, and King County Water District No. 19:*

The requirements for a valid determined future development plan are as follows:

- The project must be sufficiently complex as to require more than 5 years to complete;
- The plan must be determined and fixed within five years of the last beneficial use of the water;
- The plan must remain fixed, and;
- Affirmative steps must be taken to implement the plan within 15 years.

RCW 90.44.100(2) requires that any well or wells added to a ground water permit must tap the same body of public ground water as the original well on the permit.

RCW 90.44.100 states that a ground water permit holder may construct wells or other means of withdrawal at a new location. The new well(s) may substitute or add to those at the original location.

RCW 90.44.100(1) states that a ground water permit can be amended to replace or add wells.

Tentative Determination/Extent and Validity
Ecology cannot adjudicate a claim to a water right; only the superior courts have this authority. However, the Washington Supreme Court has held that Ecology, when processing a water right change application, must make a tentative determination of extent and validity of the claim or right. This is necessary to establish whether the claim or right is eligible for change. *R.D. Merrill v. PCHB* and *Okanogan Wilderness League v. Town of Twisp.*

**INVESTIGATION**
Information contained in this Report of Examination was derived from the following and other sources:

1) Washington State Department of Ecology (Ecology) records: Ground Water Certificates CG2-GWC1851 and CG2-GWC2686.

2) Fifteen Year Water Resource Plan – Washington State University at Vancouver Branch Campus, Clark County, Washington. By Parametrix, May 1997.

3) Various technical memoranda by Parametrix described below.

4) U.S. Geological Survey technical references including:

   - Swanson, R.D., et. al., 1993. A Description of the Hydrogeologic Units in the Portland Basin, Oregon and Washington, USGS Water-Resources Investigation Report 90-4196, 56 pp.

   - McFarland, W.D., and Morgan, D.S., 1996. Description of the Ground-Water Flow System in the Portland Basin, Oregon and Washington, USGS Water Supply Paper 2470-A, 58 pp.

5) Groundwater Solutions, Inc., November 1, 2006. Tech memorandum regarding new irrigation well, prepared for Washington State University Vancouver campus.

6) Letter and information package regarding water use sent to Ecology by Tom McDonald (an attorney hired by WSU), dated November 11, 2008

7) Declaration of Lynn Valenter, Vice Chancellor for Finance and Operations at the Vancouver campus dated October 14, 2008.

8) Declaration of Michael J. Watters dated October 19, 2008

9) An analysis of electrical records from Clark County Public Utilities for a designated electrical connection to the 1956 Darling well.

10) A letter and attachments regarding WSU's future determined development plan, sent to Ecology by Tom McDonald, dated January 27, 2009.

11) A memo from Rick Malin dated May 5, 2009, indicating conditions of the 1956 Darling well and the Field well during Parmetrix site visits in the early 1990s.

On May 22, 2007 I met with Dan Bodell (WSU Project Manager), Joe Steinbrenner (WSU Construction Engineer), and Rick Malin (Parametrix, WSU's consultant) to discuss the project and visit the site. On December 11, 2008 Jeff Marti and I met with Dan Bodell and Tom McDonald to discuss new information regarding the history of water use at the site and the date when WSU had a future determined development plan.

**Place of Use**
The WSU applications request changes in the places of use associated with WRC 1851 and WRC 2686. The old authorizations include 30 acres under WRC 1851 and 45 acres under WRC 2686 - both within Section 24, T. 3 N., R. 1 E., W.M. The November 14, 2008 letter from Tom McDonald indicates WSU would now like flexibility to irrigate anywhere within a 164-acre portion of the western half of Section 24, T. 3 N., R. 1 E., W.M., although the actual irrigated area would be much less. The proposed place of use is limited to an area west of the BPA power line corridor, and is indicated on Attachment 1. Although the old places of use associated with WRC 1851 and WRC 2686 are somewhat different than those currently requested, all these areas are found within Section 24, T. 3 N., R. 1 E., W.M. Furthermore, the collective water rights exercised by the Darling dairy during its operation did include the area now requested as a place of use. As such, it is reasonable to conclude that the places of use associated with WRC 1851 and WRC 2686 can now be changed to the place of use requested by WSU.

**Water Rights Appurtenant to the Place of Use**
Appendix B in the WRP describes findings by Parametrix regarding their investigation of water rights associated with the WSU campus. Parametrix determined that 14 water rights or claims were appurtenant. This included six water right certificates and eight claims. Two of the certificates were filed by other than Roy Darling, the former owner of the WSU property. These include WRC 3808, listed under the name W. H. Dawson, and WRC 1760, listed under the name E. K. Brown. Table 1 in the WRP indicates Roy Darling purchased the Dawson and Brown properties. As such, these two water rights are also included in Table 2 below.

Parametrix indicates that in most instances water rights and claims were filed duplicatively for the same sources. Apparently this was the case for Water Right Claims 119948 and 119949, which pertain to WRC 1760 and WRC 3808, respectively. All relevant claims were filed under the name of the Salmon Creek Land Company, which was an entity created by Roy Darling. Parametrix concluded that all four surface water certificates are invalid due failure to exercise these during their last five years. The same would appear to be true for all claims, with the exception of 132484 and 132486, which pertain to the two subject water right certificates.

Table 2. Water right certificates and claims appurtenant to the WSU campus property.

| | Water Right Certificates | | | | | | Salmon Creek Land Company Claims | |
|---|---|---|---|---|---|---|---|---|
| **Sources** | **Cert. No.** | **Priority Date** | **Owner** | **Qi** | **Qa** | **Irrigated Acres** | **Claim No.** | **Claimed Priority Date** |
| Groundwater | | | | | | | | |
| Field Well | 1851 | 1953 | R J Darling | 120 gpm | 60 afy | 30 | 132484 | 1953 |
| 1956 Darling well | 2686 | 1956 | R J Darling | 170 gpm | 90 afy | 45 | 132486 | 1956 |
| 1954 Darling well | | | Salmon Creek Land Company | | | | 99241 | 1954 |
| Well | | | Salmon Creek Land Company | | | | 136818 | 1950 |
| Well | | | Salmon Creek Land Company | | | | 136819 | 1938 |
| | | | | | | | | |
| Surface Water | | | | | | | | |
| Mill Creek | 1760 | 1940 | R J Darling (originally E K Brown) | 0.1 cfs | | 10 | 119948 | 1916 |
| Mill Creek | 3808 | 1950 | R J Darling | 0.1 cfs | | 20 | 119949 | 1946 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | (originally E K Brown) | | | | | |
| Unnamed spring | S2-23004C | 1974 | Salmon Creek Land Company | 0.03 cfs | 4 afy | 2 | | |
| | | | | | | | | |
| Surface and Ground Water | | | | | | | | |
| artesian well & unnamed spring | 1141 | 1938 | R J Darling | 0.0023 cfs | | 1 | 132483 | 1938 |

Parametrix indicates that a total of four wells likely were drilled on the lower terrace to provide water for the dairy, although water was primarily supplied only from the Field Well and the 1956 Darling well.

The first dairy well drilled on the present WSU site was the 1952 Darling well. Apparently the water production of this well was not sufficient and/or the bore hole collapsed. Consequently, a 14-inch diameter well was drilled prior to 1956 approximately 20 feet to the northwest. Eventually a third well, referred to as the Field Well, was drilled southwest of the pump house sometime after 1952 and prior to 1956. The Field Well is eight-inches in diameter, but a driller's log has not been located. Parametrix suggests this well is about 82 feet deep and apparently has a well screen. The Field Well had a turbine pump installed when WSU purchased the property. Based on this history, Parametrix indicates the Field Well is associated with WRC 1851.

The lower terrace irrigation well was drilled in 1956, apparently in association with WRC 2686. The 1956 Darling well was drilled further east and closer to Salmon Creek compared to the previous three wells. This 12-inch diameter well was drilled to a depth of 90 feet. Flowing artesian conditions were encountered in this well and a steel casing extends to a depth of 58 feet.

**WSU Fifteen Year Water Resource Plan (WRP)**
Typically water rights not put to use for a continuous 5-year period are relinquished to the State. However, RCW 90.14.140 describes "Sufficient cause" for nonuse that can exempt water rights from this relinquishment requirement. 90.14.140 states that,

> (2) Notwithstanding any other provisions of RCW 90.14.130 through 90.14.180, there shall be no relinquishment of any water right... (c) If such right is claimed for a determined future development to take place either within fifteen years of July 1, 1967, or the most recent beneficial use of the water right, whichever date is later;

Legal guidance on how a future determined development plan may lead to exemption from relinquishment was provided by the Washington State Supreme Court in their 1999 R.D. Merrill Co. v. Pollution Bd. decision. In that decision the Court held that the non-use of a water right is not excused under the future development unless the development is conclusively or authoritatively fixed (i.e., there is a firm and definite plan) before the expiration of a five-year period of nonuse specified by RCW 90.14.160 for relinquishment of the right. Investigation into whether development is feasible, alone, does not constitute a fixed definitive plan. The decision indicates that for purposes of "a determined future development" the development need not be completed within the 15-year period, however, some affirmative steps toward realization of the fixed development plans must occur within the 15-year period for the statutory exception to apply.

WSU formally documented its intent to use groundwater in its "Fifteen Year Water Resource Plan" (WRP) in May of 1997 (Parametrix, 1997), "to serve as objective evidence of WSUV's commitment to invest in the development and to demonstrate that full volumetric use of the right would be made before the end of the 15 year period." However, based on the evidence presented WSU intended to use groundwater as a source for irrigation even as they bought the property in 1991. That evidence includes closing documents associated with the purchase that included easements on the water rights. Additionally, almost immediately following purchase of the property WSU hired Parametrix to confirm the validity of the water rights and to evaluate the potential well site. As indicated in Mr. McDonald's January 27, 2009 letter,

> These efforts were not the defining elements establishing the development plan. Instead the development plan was already established, and the engineers were simply asked by WSU to conduct due diligence to develop the water rights for that plan..."

In addition, support for the argument that groundwater use was sought by WSU is available from David Smith, the Director of Capital Planning and Development and the Campus Architect. Mr. Smith was involved in development of the campus in 1991. According to Mr. McDonald's January 27, 2009 letter Mr. Smith is willing to attest to the fact that WSU "did indeed want to use whatever water rights were available."

As for the plan specifics, the WRP states the short-term plan entailed using the 1956 Darling well and the Field well for existing campus landscape irrigation. The plan noted that construction of a conveyance system was required to connect the wells to the existing landscape irrigation system. The plan also noted at that time that Clark

County Public Utility District was supplying water for campus start-up landscape and that due to budget constraints, implementation of the short-term usage plan might be delayed until the year 2000 or later.

Based on all of the above, I conclude WSU did have a "determined future development" plan in place with respect to WRC 1851 and WRC 2686 by the date of WSU's purchase of the property in 1991. Counting backwards 5 years from WSU's purchase indicates that the highest period of 12-month use regarding WSU's water right covers the years 1986 through 1991.

**Tentative Determination of Darling Dairy Farm Water Use at the Time of WSU's Purchase**
In order to provide information on history of water use at the farm Tom McDonald, WSU's attorney, located and met with Michael Watters, the individual that operated or helped operate the farm from 1972 to 1993. Based upon Mr. Watters' declaration, farm irrigation using groundwater stopped around 1987 or 1988. Furthermore about 180 to 200 heifers apparently remained on the farm into 1992 and these were watered using the 1956 Darling well.

The groundwater production associated with WRC 1851 that occurred five years prior to WSU's purchase involved use of the Field well. In his declaration Mr. Watters recalled irrigating the west field using the Field well, and a map accompanying his declaration indicates the west field was 15 acres. According to the USDA, NRCS Washington State Irrigation Guide (WIG), pasture/turf in the Vancouver area requires about 18.85 inches per year of water per acre (figure from December 17, 1992 update). Assuming an 85% efficiency factor, that would increase this number to about 22.2 inches per year per acre. Based on this and an assumed 15 acre field, the annual water use would have been about 28 acre-feet per year. Regarding the instantaneous withdrawal rate, Mr. Watters indicated that the irrigation system incorporated 15 sprinklers at 6 gpm each, which suggests a 90 gpm instantaneous rate. The May 5, 2009 memo from Rick Malin of Parametrix substantiates that amount.

**Based on the above I conclude the eligible quantities associated with WRC 1851 are 28 acre-feet per year and 90 gpm.**

**Status of the Surface Water Rights Associated with the WSU Property**
Based on Mr. Watters' declaration some surface water irrigation was occurring when WSU purchased the property in 1991. Specifically Mr. Watters indicates that he relied on a diversion from Mill Creek to irrigate 20 to 22 acres east of Mill Creek ("Mill Creek field") up until 1988, and a diversion from Mill Creek to irrigate 60 acres on the field west of 50th avenue up until 1990. This irrigation likely was authorized under the surface water rights and claims associated with the property. However, regarding surface water use page iv of the WRP states:

> Recommendations for the disposition of existing surface water rights are presented. As the campus irrigation system groundwater resources are developed, the University will pursue a relinquishment strategy for the surface water certificates. This will involve a voluntary relinquishment at such time as requested by the Department of Ecology.

Therefore, development of surface water claims/rights was never part of WSU's plan. Since greater than 15 years of non-use have passed since WSU's purchase and there has been lack of due diligence toward developing these, all surface water right and claims associated with the property are now invalid.

**Types of Use**
WRC 1851 authorizes the withdrawal of water for domestic and irrigation use, and therefore irrigation use is authorized.

**Hydrologic/Hydrogeologic Evaluation**
The applicant has requested authorization to pump the Field Well and a yet-to-be drilled "Well B" in conjunction with WRC 1851, and Well A in conjunction with WRC 2686.

The 1956 Darling Well
A September 9, 1993 Parametrix memo contains information regarding the 1956 Darling Well. The well was drilled about 90 feet below ground surface (bgs) and cased to a depth of 58 feet bgs. Flowing artesian conditions were encountered at the time of drilling, although the depth to water was 9.63 feet below the top of casing when Parametrix visited the site. The existing pump was removed by Parametrix in 1993 and a temporary pump was used to produce up to 160 gpm for 95 minutes. The report indicates that a 120 gpm rate would be more efficient.

The Field Well
No driller's log is available for the Field Well, although a May 10, 1996 Parametrix memo indicates the well was sounded to a depth of 82.5 feet bgs. Parametrix indicated that when they visited the well the depth to water was 34.22 feet from the top of a temporarily installed PVC sounding tube. With a temporary 5 HP pump, the Field Well produced 60 gpm for four hours in 1995. Based on the test data Parmetrix recommends a long-term rate of 50 gpm. That said, Parametrix also reports the well had sloughed to the point of the original pump being within 2 feet above of the bottom of a well and thus that for historical water-use purposes a 90 gpm rate is reasonable.

Well A

Ecology issued a preliminary permit on March 2, 2005 granting permission to drill and test wells. A November 1, 2006 technical memorandum by Groundwater Solutions, Inc. (GSI) summarizes the results of the 2006 drilling and testing of WSU Well A (unique well ID number ALK126). Well A was drilled 262 feet bgs, and screens were installed 142 to 160 feet bgs. The material between ground surface and a depth of 49 feet consisted of unconsolidated silt and very fine sand. Groundwater was first encountered 75 feet bgs within unconsolidated sand and gravel found 69 to 87 feet bgs. The primary water-bearing zone encountered consists of cemented sand, and sand and gravel 146 to 162 feet bgs.

Well A was pumped at 45.9 gpm on September 25-26, 2006. During that test water levels were measured in Well A, the 1956 Darling well (to the south, radius = ~2,850 feet), the 1954 Darling well (due east, radius = ~2,700 feet), and the Field Well (to the south, radius = 3,000 feet). Well A experienced 43.23 feet of drawdown at the end of 24 hours of pumping. The well recovered to within 0.74 feet of pre-test conditions within approximately 20 hours of the end of pumping. Data indicate significant wellbore storage effects during about the first 30 minutes of pumping. Transmissivity (T) values calculated by GSI from the pumping well data range from 4,800 gallons per day per foot (gpd/ft) to 6,100 gpd/ft. GSI's estimate of T using an empirical relationship related to specific capacity was 2,200 gpd/ft. GSI concluded the lower T value based on the empirical relationship suggests a specific capacity lower than expected and that the well is relatively inefficient.

GSI indicates that the 1956 Darling well experienced approximately 0.2 feet of drawdown and the other two wells experienced approximately 0.1 feet of drawdown during the 24-hour Well A test. Based on the 1956 Darling well data, GSI estimated a T of 16,700 gpd /ft and a specific capacity of $4.5 \times 10^{-4}$. However, GSI cautioned there is high potential uncertainty associated with these values, as the aquifer near the 1956 Darling well is considerably more productive than at Well A. GSI noted that Well A's specific capacity is consistent with a confined alluvial aquifer and is similar to other values calculated for the lower Troutdale Formation elsewhere in Clark County. Based on the estimated aquifer storativity, the location of the static water level relative to the screened interval, and the nature of geologic materials penetrated by the wells, the subject aquifer is confined. Assuming that a submersible pump is placed above the well screen, GSI recommended a maximum sustained pumping rate (24-hours/day, 60 days) of 50 gpm for Well A.

Two water samples were obtained from Well A during the 24-hour pumping test - one after about 8 hours of pumping and a second just prior to shut-down. The iron and manganese concentrations detected in both samples exceed the secondary maximum contaminant levels (SMCL) established for drinking water by EPA. The SMCL for iron is 0.3 mg/L and for manganese is 0.05 mg/L. SMCLs are established based on aesthetic considerations. Because Well A will be used for irrigation, the SMCls are not applicable and likely are not of concern.

The locations of the three existing subject wells are indicated in Figure 1 below. Location data collected by GSI Water Solutions using a standard handheld GPS unit are as follows:

| | |
|---|---|
| New Well A: | 45.7362 N, -122.6334 W, NAD '83, Elevation: 234 feet |
| 1956 Darling Well: | 45.7290 N, -122.6294 W, NAD '83, Elevation: 129 feet |
| Field Well: | 45.7280 N, -122.6321 W, NAD '83, Elevation: 162 feet |

Potential Effects of Well Pumping

The 1956 Darling well is located directly adjacent to Salmon Creek and was drilled 90 feet bgs. The flowing artesian conditions encountered confirm that the tapped aquifer is confined. Parametrix suggests the Field Well may be 82 feet deep. Cross Section A-A' in USGS WRIR 90-4196 indicates that Salmon Creek and Mill Creek are incised into the Troutdale Gravel Aquifer, and that this unit is underlain by undifferentiated deposits to a depth of approximately 200 feet. It would appear that both the 1956 Darling well and the Field Well are completed within a confined portion of the Troutdale Gravel Aquifer. The proximity of both wells to Salmon Creek and their relatively shallow depths indicate that pumping these wells would decrease creek flows.

WSU has requested authorization to pump the Field well and Well B" to be located somewhere within the portion of the SW ¼ of the NW ¼ or the NW ¼ of the SW ¼ of Section 24 that lies within the current WSU campus. The yet-to-be drilled well potentially might be located a bit upgradient of the Field well, but also significantly further from the creek. Therefore adding this new well as an authorized POW should not pose a problem.

**Impairment Considerations**

No impairment problems have been noted in association with historic pumping of the Field Well, thus it is unlikely that future pumping of this well would lead to any problems. There is limited basis upon which to evaluate how "Well B" might affect other wells adjacent to the WSU site. Ecology's data bases indicate only one groundwater right or claim (a certificated irrigation right) located in the west half of Section 24, T. 3 N., R. 1 E., W.M.. In addition there are 9 groundwater right certificates and 34 groundwater claims indicated for Section 23. Of these 9 rights, all are located in the western half of the section and thus at least one half mile from the two quarter quarters where a new well may be drilled. There is very limited information on the 34 claims. A check of Ecology's well log data base (well locations only accurate to the quarter, quarter) indicates about 17 water wells not belonging to WSU are located within ½ mile of the two quarter quarters where "Well B" may be drilled. The logs indicate these wells range in depth from 90 to 748 feet bgs, and that all but three are between 90 and 205 feet deep.

Any "Well B" that is drilled will be subject to existing rights and Ecology could deny use of that well as an approved new point of withdrawal if it is determined that well interference is a problem.

Some area wells are relatively shallow and may not fully penetrate the subject aquifer. WAC 173-150-060 specifies that the impairment test be applied to "qualifying withdrawal facilities". Qualifying groundwater facilities are defined as those wells that are adequately constructed. An adequately constructed well is one that fully penetrates the saturated thickness of an aquifer and can accommodate reasonable variation in seasonal pumping water levels (WAC 173-150). As such, in this instance if any neighboring wells are significantly affected, legal impairment would not likely occur.

**Public Interest Considerations**
WAC 173-528, adopted in December 2008, closes Salmon Creek to future withdrawals except for a limited reserve set aside for community domestic purposes.

In this instance, WSU seeks changes to existing water rights. Pumping the Field well affected Salmon Creek historically, thus pumping that well would produce the same level of impact on the creek. Regarding the yet-to-be drilled "Well B", the location of this well will be further from Salmon Creek and thus it is expected to have no greater effect.

**Same Source of Water**
Ecology derives authority to transfer diversion and withdrawal points between surface and ground water bodies from RCW 90.03.380, 90.44.020-030, 90.44.100 and 90.54.020(9). In order to approve applications, all subject well(s) must tap that same source of water. Surface waters and/or groundwater in hydraulic connection are considered to use the same source when they meet the following conditions:

1. They share a common recharge area.
2. They are part of a common flow regime.
3. They are separable from other water sources by effective barriers to hydraulic flow.
4. They are part of an independent water body for the purpose of water right administration.

The1956 Darling well, the Field Well, Well A, and the yet-to-be drilled "Well B" all are or will be completed within the Troutdale Gravel Aquifer and all four of the above conditions apply or would apply.

**Water Demand and Proposed Use**
The November 14, 2008 letter from Mr. McDonald indicates WSU would like flexibility to use the water to irrigate anywhere within a 164-acre portion of the western half of Section 24, T. 3 N., R. 1 E., W.M. Figures prepared by Dan Bodell on December 22, 2008 estimate WSU's recent and projected irrigation water use as follows:

Table 4. WSU's recent and projected irrigation water use

| Fiscal Year | Cubic Feet | Acre-Feet |
|---|---|---|
| 2005 | 1092120 | 25.1 |
| 2006 | 1897690 | 43.6 |
| 2007 | 1953840 | 44.9 |
| 2008 | 1506294 | 34.6 |
| 2009* | 1833720 | 42.1 |

* FY 2009 estimated for March-June 2009 with FY 2006 quantities

Taking into account anticipated growth Mr. Bodell projects that about 68 acre-feet per year will be needed in order to meet irrigation requirements in the future.

Based my above analyses I conclude the eligible quantities associated with WRC 1851 are 28 acre-feet per year and 90 gpm, and those associated with WRC 2686 are 20 acre-feet per year and 50 gpm. This amounts to a total annual quantity of 48 acre-feet per year. According to the USDA, NRCS Washington State Irrigation Guide pasture/turf in the Vancouver area requires about 18.85 inches per year of irrigation water per acre (figure from December 17, 1992 update). Assuming this irrigation requirement, a supply of 48 acre-feet per year might irrigate about 31 acres of land.

As the total 48 acre-feet per year authorized quantity actually is insufficient to meet the project's 68 acre-feet per year requirement, the balance of the water will be supplied by the Clark Public Utility (CPU) water system. Therefore, as a condition of both these permits WSU should be required to construct and maintain its irrigation system in a manner that will allow them to track the portion of irrigation water use by groundwater, to ensure that the annual and instantaneous quantities associated with this water right are not exceeded.

**Consideration of Protests and Comments**
No protests or comments were received.

## CONCLUSIONS

In evaluating this change the following factors were conclusions were reached:

- Although the places of use associated with WRC 1851 and WRC 2686 are somewhat different than that currently requested by WSU, all the areas are found within Section 24, T. 3 N., R. 1 E., W.M and the collective water rights exercised by the Darling dairy included the area now requested. As such, the places of use associated with WRC 1851 and WRC 2686 can be changed to WSU's new requested place of use.

- Given the fact that water was still being used for agricultural purposes and in the same vicinity, there was a de facto change in the purpose of use associated with WRC 2686 from domestic and irrigation use to irrigation and stockwater use.

- WSU had a "determined future development" plan in place when they purchased the property in 1991. Therefore both WRC 1851 and WRC 2686 have remained eligible for water right change authorizations.

- Based on the available information the eligible quantities associated with WRC 1851 are 28 acre-feet per year and 90 gpm.

- The change will not impair any existing rights.

- The change will not be detrimental to the public interest.

- The water will be used for landscape irrigation on the WSU Vancouver campus, which is a beneficial use under Chapter 90.54.020 RCW.

- WSU should relinquish all water rights and claims identified in Table 2 above other than WRC 1851 and WRC 2686.

## RECOMMENDATIONS

Based on the above investigation and conclusions, I recommend that the request for change to WRC 1851 be approved in the amounts and within the limitations listed below and subject to the provisions beginning on Page 2, et seq.

WSU should relinquish all water rights and claims identified in Table 2 other than WRC 1851 and WRC 2686.

**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:

- 90 gpm
- 28 acre-feet per year
- for irrigation purposes

**Points of Withdrawal**
The Field Well located in the NE ¼, SW ¼, Section 24, Township 3 North, Range 1 East., W.M., and potentially "Well B" to be located within the portion of the SW ¼ of the NW ¼ or the NW ¼ of the SW ¼ of Section 24, Township 3 North, Range 1 East., W.M that lies within the current WSU campus.

**Place of Use**
As described on Page 1 of this Report of Examination.

Report by: Tom Culhane — 12/2/09

Tom Culhane
Water Resources Program

Date

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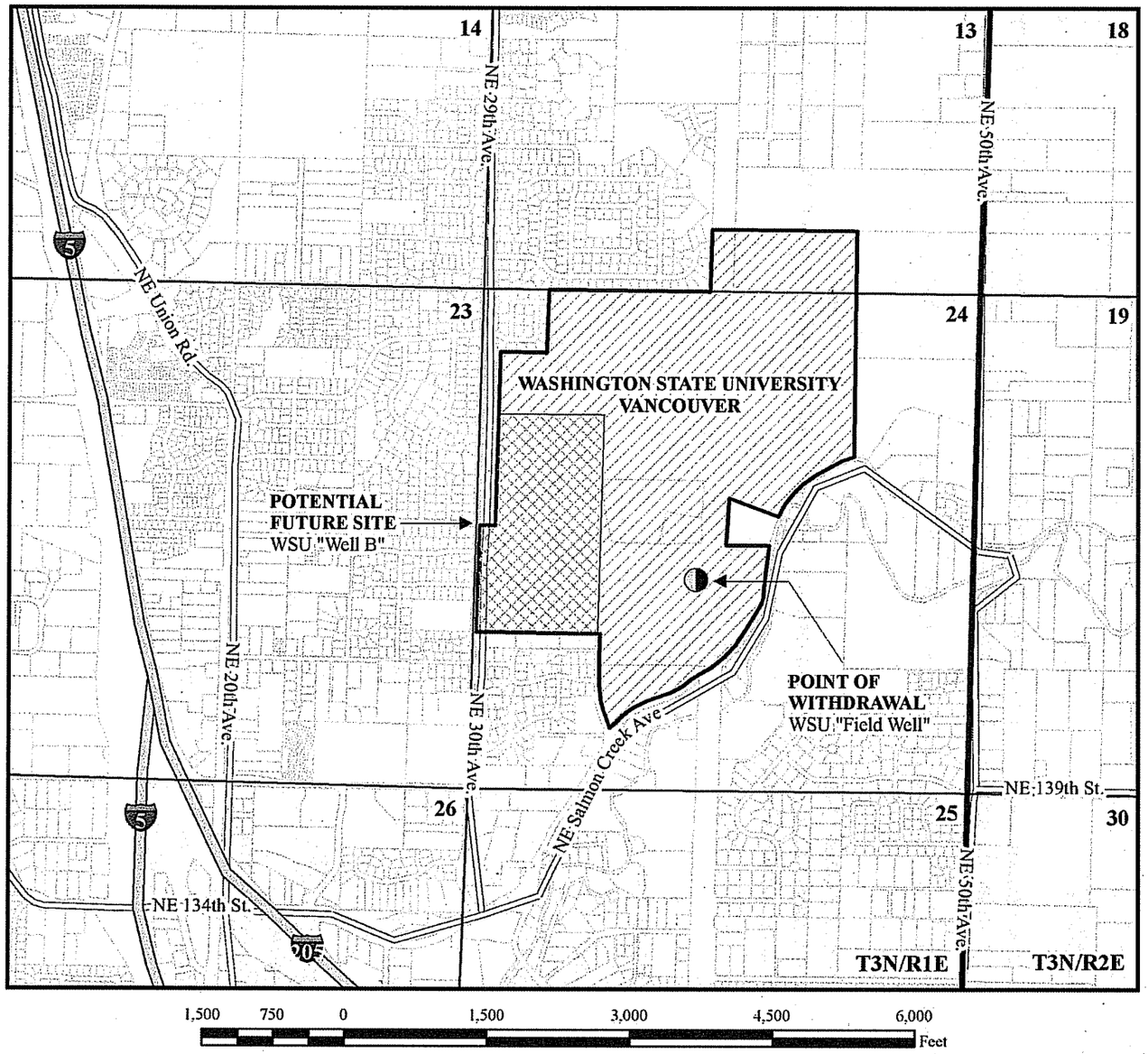
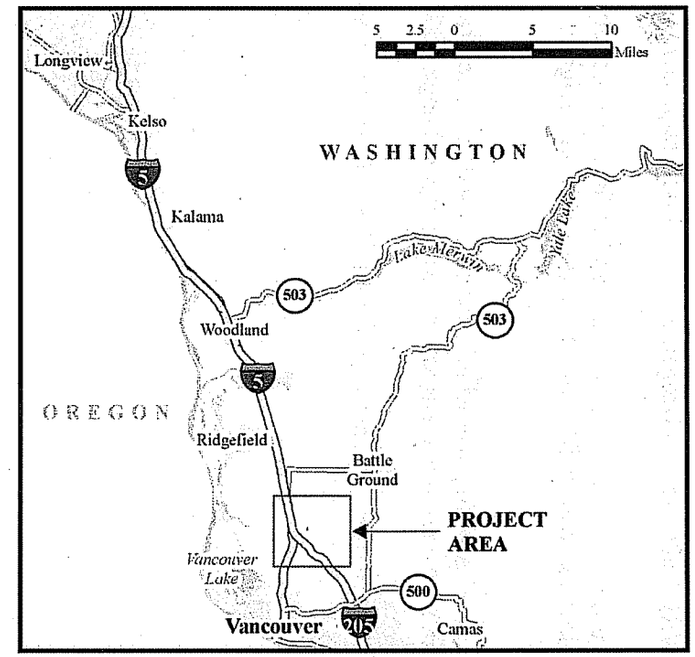



**Washington State University**
CG2-GWC1851
Sec. 24, T3N/R1E.W.M.
WRIA 28 - Clark County

DEPARTMENT OF ECOLOGY
State of Washington




**Legend**

- PLACE OF USE (POU)
- FUTURE "WELL B" SITE
- POINT OF WITHDRAWL (POW)
- SECTION LINES
- TOWNSHIP LINES
- CITIES
- HIGHWAYS

Comments:

Place of use, points of withdrawal/diversion are as defined on the cover sheet under the heading, 'LEGAL DESCRIPTION OF PROPERTY ON WHICH WATER IS TO BE USED.'

*Map Created 10/28/2009 aln*

**ATTACHMENT 1**