WR File NR CG1-*04475C
WR Doc ID: 5442116

DEPARTMENT OF ECOLOGY
State of Washington

State of Washington
REPORT OF EXAMINATION
FOR WATER RIGHT CHANGE

Change Place of Use X | **Add Irrigated Acres** X | **Add or Change Point of Diversion/Withdrawal** X

PRIORITY DATE	WATER RIGHT NUMBER
November 21, 1956	3630-A

MAILING ADDRESS	SITE ADDRESS (IF DIFFERENT)
MJD Farms, LLC Mr. Mike Douma 8300 N. Enterprise Road Custer, WA 98240 360-410-2048	1679 Loomis Trail Road Custer, WA 98240

Total Quantity Authorized for Withdrawal or Diversion

WITHDRAWAL OR DIVERSION RATE	UNITS	ANNUAL QUANTITY (AF/YR)
150	GPM	60

Purpose

	WITHDRAWAL OR DIVERSION RATE			ANNUAL QUANTITY (AF/YR)		
PURPOSE	ADDITIVE	NON-ADDITIVE	UNITS	ADDITIVE	NON-ADDITIVE	PERIOD OF USE (mm/dd)
Irrigation	150	0	GPM	60	0	4/15 – 10/1

IRRIGATED ACRES		PUBLIC WATER SYSTEM INFORMATION	
ADDITIVE	NON-ADDITIVE	WATER SYSTEM ID	CONNECTIONS
402*	NA	NA	NA

* Combined total of 402 acres authorized under GWC 3630-A, GWC 5433-A, G1-022169CL, G1-022170CL, G1-022172CL, and G1-022173CL

Source Location

COUNTY	WATERBODY	TRIBUTARY TO	WATER RESOURCE INVENTORY AREA
Whatcom	Groundwater	NA	01 - Nooksack

SOURCE FACILITY/DEVICE	PARCEL	WELL TAG	TWN	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
IW-1	400216071150	BHE783	40N	02E	16	SW SW	48.95219	-122.57053
IW-2	400221337280	BHE785	40N	02E	21	SW NE	48.94407	-122.56285
IW-3	400221337280	BHE786	40N	02E	21	SW NE	48.94433	-122.56241

IW-4	400221337280	AAX420	40N	02E	21	SW NE	48.94302	-122.56295
IW-5	400221235138	BHE788	40N	02E	21	SE NW	48.94459	-122.56375
IW-7	400220472461	BHN672	40N	02E	20	NE NE	48.94811	-122.57685
IW-8	400220472461	BHN674	40N	02E	20	NE NE	48.94955	-122.57669
IW-9	400221100424	BHN670	40N	02E	21	NW NW	48.94986	-122.57235
IW-10	400221100424	BHN669	40N	02E	21	NW NW	48.94987	-122.57212
IW-11	400221337280	BHN664	40N	02E	21	SW SE	48.93752	-122.55785
HW-1	400221234404	BHN675	40N	02E	21	NE NW	48.94643	-122.56519

Datum: NAD83/WGS84

Place of Use (See Attached Map)

PARCELS

400216071150, 400216090010, 400217523069, 400217490067, 400220472461, 400221100424, 400221077285, 400221234404, 400221235138, and 400221337280

LEGAL DESCRIPTION OF AUTHORIZED PLACE OF USE

NW ¼ SW ¼ and East 30 acres of the SW ¼ SW ¼, Section 16, Township 40 North, Range 2 East W.M.
East 20 acres of the SE ¼ SE ¼, Section 17, Township 40 North, Range 2 East W.M.
NE ¼ NE ¼, Section 20, Township 40 North, Range 2 East W.M.
NW ¼, Section 21, Township 40 North, Range 2 East W.M.
W ½ E ½, Section 21, Township 40 North, Range 2 East W.M.
E ½ E ½ SW ¼, Section 21, Township 40 North, Range 2 East W.M. EXCEPT the portion defined as follows – Beginning at the southeast corner of the southwest quarter, thence west along south line of southwest quarter 190 feet thence north at right angle 30 feet to the northerly right-of-way margin of Birch Bay Lynden Road, which is the point of beginning. Thence, continue north, perpendicular to said south line 270 feet, thence west parallel to said south line of southwest quarter165 feet thence south perpendicular to said south line 270 feet, thence east parallel to said south line of southwest quarter 165 feet to the true point of beginning.
All less roads

Proposed Works

One infiltration trench (HW-1) and ten wells (IW-1, IW-2, IW-3, IW-4, IW-5, IW-7, IW-8, IW-9, IW-10, and IW-11). The irrigation system consists of 6-inch PVC mainlines that extend across the entire place of use with 4-inch risers. Riser spacing is approximately 250 feet. One lined pond is currently used for storage of water that is later used for irrigation. Pumps include 5 hp submersibles installed in the wells, a diesel powered pump used at the infiltration trench, and a 150 hp tractor PTO (power take-off) pump that can be used to withdraw water from any of the wells.

Development Schedule

BEGIN PROJECT	COMPLETE PROJECT	PUT WATER TO FULL USE
Started	December 31, 2014	December 31, 2019

Additional Actions and Due Dates

ACTION	DATE DUE
Water Meter Installation and Metering Plan	April 1, 2014

Due to the number of sources and use of a tractor PTO pump, a particular method for metering will not be prescribed. However, the water right holder must put forth and implement a plan for how all water used for irrigation under this water right will be metered and accounted for, consistent with the intent of WAC 173-173.

Measurement of Water Use

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

Provisions

New or Replacement Wells

RCW 90.44.100 allows for the drilling of new or replacement wells within the original advertised location for the point of withdrawal of the water right without requiring a water right change application. Because MJD Farms, LLC does not own all of the property included within the original advertised area, any new or replacement wells must be constructed within the area currently owned by MJD Farms, LLC as listed below:

- SW ¼ SW ¼, Section 16, Township 40 North, Range 2 East, W.M.
- NW ¼ NW ¼, Section 20, Township 40 North, Range 2 East, W.M.
- NW ¼ NW ¼, Section 21, Township 40 North, Range 2 East, W.M.
- W ½ NE ¼, Section 21, Township 40 North, Range 2 East, W.M.
- W ½ SE ¼, Section 21, Township 40 North, Range 2 East, W.M.
- E ½ NW ¼, Section 21, Township 40 North, Range 2 East, W.M.
- E ½ E ½ SW ¼, Section 21, Township 40 North, Range 2 East, W.M.

New or replacement wells may not be located within 500-feet of IW-6 (a source of domestic water supply), as long as it continues to be the point of withdrawal under G1-022171CL, which is located in the SE ¼ SE ¼ SW ¼, Section 21, Township 40 North, Range 2 East W.M.

Wells, Well Logs and Well Construction Standards

All wells constructed in the state must 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 must be decommissioned.

All wells must 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 must remain attached to the well. If you are required to submit water measuring reports, all such reports shall reference this tag number.

Measurements, Monitoring, Metering and Reporting
Due to the number of sources and use of a tractor PTO pump, a particular method for metering will not be prescribed. However, the water right holder must put forth and implement a plan for how all water used for irrigation, under this water right, will be metered and accounted for consistent with the intent of WAC 173-173. The water right holder shall submit this plan to Ecology no later than April 1, 2014, for review and approval.

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

Easement and Right-of-Way
The water source and/or water transmission facilities are not wholly located upon land owned by the applicant. Issuance of a water right change authorization by this department does not convey a right of access to, or other right to use, land which the applicant does not legally possess. Obtaining such a right is a private matter between the applicant and the owner of that land.

Proof of Appropriation
The water right holder must file the notice of Proof of Appropriation of water (under which the superseding 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 change authorization. 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, will 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.

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. CG1-*04475C subject to existing rights and the provisions specified above, with the exception of the request to add IW-6 as an additional point of withdrawal, which has been denied.

Your Right To Appeal

You have a right to appeal this Order to the Pollution Control Hearing 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.

Address and Location Information	
Street Addresses	**Mailing Addresses**
Department of Ecology Attn: Appeals Processing Desk 300 Desmond Drive SE Lacey, WA 98503 **Pollution Control Hearings Board** 111 Israel RD SW STE 301 Tumwater, WA 98501	**Department of Ecology** Attn: Appeals Processing Desk PO Box 47608 Olympia, WA 98504-7608 **Pollution Control Hearings Board** PO Box 40903 Olympia, WA 98504-0903

Signed at Bellevue, Washington, this 17 day of April 2013.

Jacqueline Klug, Section Manager
Water Resources Program -- Department of Ecology, Northwest Regional Office

INVESTIGATOR'S REPORT

BACKGROUND

On November 21, 1956, the Department of Conservation and Development (predecessor to the Department of Ecology) received a ground water application (4475) from Howard Remington to appropriate 150 gallons per minute (gpm) for irrigation in Section 16, Township 40 North, Range 2 East, W.M., during the irrigation season.

On March 6, 1957, the Department of Conservation and Development issued a report of examination recommending approval of a water right for 150 gpm and 138.64 acre-feet per year from a well located in the W ½ SW ¼, Section 16, Township 40 North, Range 2 East, W.M. for irrigation of 69.32 acres during the irrigation season.

On May 24, 1957, the Department of Conservation and Development issued Howard Remington Ground Water Permit 4263. Permit 4263 authorized 150 gpm and 138.64 acre-feet per year for irrigation of 69.32 acres.

Howard Remington signed a proof of appropriation form on March 4, 1960, attesting to the perfection of the instantaneous quantity of 150 gpm for irrigation of 30 acres. No space is provided to indicate how much water had been perfected on an annual basis.

On June 10, 1960, the Department of Ecology issued ground water certificate 3630-A to Howard Remington. The certificate authorized 150 gpm and 60 acre-feet per year for irrigation of 30 acres.

On September, 21, 2012, the Department of Ecology received a change application from Mike Douma/MJD Farms, LLC to add additional points of withdrawal, change the place of use, and irrigate additional acres under GWC 3630-A. The attributes of the requested change are shown in Table 1 below.

Table 1: Attributes of the Existing Water Right and Proposed Change

Attributes	Existing	Proposed
Name	Howard Remington	Mike Douma/MJD Farms, LLC
Priority Date/ Change Application Date	November 21, 1956	September 21, 2012
Instantaneous Quantity	150 gallons per minute (gpm)	150 gpm
Annual Quantity	60 acre-feet per year (afy)	60 afy

Purpose of Use	Irrigation	Irrigation
Irrigated Acres	30	402 (Total of water rights GWC 3630-A, GWC 5433-A, G1-022169CL, G1-022170CL, G1-022172CL, and G1-022173CL)
Period of Use	Irrigation Season	Irrigation Season
Place of Use	E ¾ of SW ¼ SW ¼, Section 16, Township 40 North, Range 2 East W.M.	Parcel Nos. 400216071150, 400216090010, 400217523069, 400217490067, 400220472461, 400221100424, 400221077285, 400221234404, 400221235138, and 400221337280 NW ¼ SW ¼ and East 30 acres of the SW ¼ SW ¼, Section 16, Township 40 North, Range 2 East W.M. East 20 acres of the SE ¼ SE ¼, Section 17, Township 40 North, Range 2 East W.M. NE ¼ NE ¼, Section 20, Township 40 North, Range 2 East W.M. NW ¼, Section 21, Township 40 North, Range 2 East W.M. W ½ E ½, Section 21, Township 40 North, Range 2 East W.M. E ½ E ½ SW ¼, Section 21, Township 40 North, Range 2 East W.M. EXCEPT the portion defined as follows – Beginning at the southeast corner of the southwest quarter, thence west along south line of southwest quarter 190 feet thence north at right angle 30 feet to the northerly right-of-way margin of Birch Bay Lynden Road, which is the point of beginning. Thence, continue north, perpendicular to said south line 270 feet, thence west parallel to said south line of southwest quarter165 feet thence south perpendicular to said south line 270 feet, thence east parallel to said south line of southwest quarter 165 feet to the true point of beginning. All less roads
Point of Withdrawal	Well IW-1 W ½ SW ¼, Section 16, Township 40 North, Range 2 East, W.M.	All in T 40 N, R 2E, Whatcom County IW-1 SW ¼ SW ¼ S16, Parcel #400216071150, Well Tag BHE783 IW-2,SW ¼ NE ¼,S21, Parcel # 4002213337280, Well Tag BHE785 IW-3 SW ¼ NE ¼, S21, Parcel # 400221337280, Well tag BHE786 IW-4, SW ¼ NE ¼, S21,Parcel # 400221337280, Well Tag AAX420 IW-5, SE ¼ NW ¼, S21, Parcel # 400212234404, Well Tag BHE788 IW-6 SE ¼ SW ¼, S21, Parcel # 400221235138, Well

		Tag BHE789 IW-7 NE ¼ NE ¼, S20, Parcel # 400220472461, Well Tag BHN672 IW-8 NE ¼ NE ¼, S20, Parcel # 400220472461, Well Tag BHN674 IW-9 NW ¼ NW ¼, S21, Parcel # 400221100424, Well Tag BHN670 IW-10 NW ¼, NW ¼, S21, Parcel 3 400221100424, Well Tag BHN669 IW-11, SW ¼ SE ¼ S21, Parcel # 400221337280, Well Tag BHN664 Infiltration Trench, HW-1, NE ¼ NW ¼, S21, Parcel # 400221234404, Well Tag BHN675

Legal Requirements for Proposed Change
The following is a list of requirements that must be met prior to authorizing the proposed change in place of use, point of withdrawal, and purpose of use.

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 Bellingham Herald* commencing with the issue of October 26, 2012, and ending with the issue of November 2, 2012.

The Lummi Indian Business Council submitted a protest to this change application.

State Environmental Policy Act (SEPA)
This water right application is categorically exempt from the requirements of SEPA under WAC 197-11-800(4).

Water Resources Statutes and Case Law

RCW 90.44.100 allows Ecology to amend a ground water right to (1) allow the user to construct a replacement or additional well at a new location outside of the location of the original well, or to (2) change the manner or place of use of the water, if:

(a) The additional or replacement well taps the same body of public ground water as the original well. RCW 90.44.100(2)(a),
(b) Where a replacement well is approved, the user must discontinue use of the original well and properly decommission the original well. RCW 90.44.100(2)(b),
(c) Where an additional well is constructed, the user may continue to use the original well, but the combined total withdrawal from all wells shall not enlarge the right conveyed by the original permit or certificate. RCW 90.44.100(2)(c),
(d) Other existing rights shall not be impaired. RCW 90.44.100(2)(d).

When changing or adding points of withdrawal to groundwater rights (RCW 90.44.100) the wells must draw from the *same body of public groundwater*. Indicators that wells tap the *same body of public*

groundwater include:

(a) Hydraulic connectivity.
(b) Common recharge (catchment) area.
(c) Common flow regime.
(d) Geologic materials that allow for storage and flow, with recognizable boundaries or effective barriers to flow.

The Washington State Supreme Court held that Ecology must make a tentative determination of the extent and validity of the right to be changed (R.D. Merrill v. PCHB and Okanogan Wilderness League v. Town of Twisp). See Extent and Validity section of this report, below.

RCW 90.03.380(1) states that the acreage irrigated under a water right may be enlarged if the annual consumptive quantity is not increased. The annual consumptive quantity means the estimated or actual annual amount of water diverted pursuant to the water right, reduced by the estimated annual amount of return flows, averaged over the two years of greatest use within the most recent five-year period of continuous beneficial use of the water right.

Cost Reimbursement Processing

This application is being processed under a Cost Reimbursement Agreement between the applicant and the Department of Ecology. The applicant selected RH2 Engineering, Inc. to process their applications on Ecology's behalf. These change applications are being processed without requiring processing of previously filed water right change applications, as allowed under RCW 90.03.265, since the transfers will not diminish the water available to earlier pending applicants for changes or transfers from the same source of supply.

INVESTIGATION

Site Visit

On January 30, 2013, Jim Bucknell and Andrew Dunn from RH2 Engineering met with Mike and Jeb Douma (MJD Farms, LLC) and their consultant Charles Lindsay (Associated Earth Sciences). The site visit consisted of an office meeting to discuss the details of water use under the water rights and a tour of the farm and water-related facilities.

We discussed the infrastructure associated with the irrigation and domestic/stockwater delivery systems. Also discussed was the general operation and how water was used for the various dairy purposes.

During the farm tour we viewed irrigation equipment that was in storage, but was indicated by Mike Douma to be used on the property. These included a traveling Big Gun (with 1-inch nozzle) wheeled sprinkler with hose reel, a diesel powered pump that is used to withdraw water from the infiltration trench, and a PTO pump that can be used with a tractor to withdraw water from any of the wells if needed.

Since the site visit occurred in the winter, no crops were actively growing. However, fields either contained pasture grass, or they contained the remnants of corn stalks that had been harvested for

silage in the previous irrigation season. Raspberry canes had been recently planted and some were cut back on the south end of Parcel 400221337280. The plantings were new, as confirmed from Mike Douma, and no berry trellises or drip lines had yet been installed.

We field confirmed most of the well locations based on the map provided with the application and aerial photos. Depth to static water level and approximate casing stickup were measured in Wells IW-1, IW-2, IW-4, IW-5, IW-7, IW-8, IW-10, and IW-11. At one well the protective well caps could not be manually removed and no measurement could be taken (Well IW-9). One well was pumping and no static water level measurement could be taken (Well IW-3). Distance between risers was paced off and was approximately 255 feet.

Charles Lindsay had previously placed Ecology Unique Well ID tags on all of the wells and submitted paperwork to Ecology to assist with identification and numbering of wells. Some of the well tags have popped off and were not able to be located (Wells IW-1 and IW-7). We also field confirmed the existence and location of the infiltration trench HW-1.

Well IW-6 was not visited since it is used for domestic supply of a neighboring property that is not owned by MJD Farms, even though the well is located on MJD Farms' property.

Field conditions were very wet and the water table was near ground surface over much of the farm. The tributary to Dakota Creek that passes just south of the infiltration trench was full and flowing to the southwest as the weather had been very wet leading up to the site visit. There was no surface water inflow contribution to the infiltration trench.

Extent and Validity

Well IW-1 is assumed to be the same well identified as the original point of withdrawal since the location is similar to the mapped location contained in the water right file and the construction matches that described on the well log.

Mike Douma indicated that IW-1 is connected to their farm-wide irrigation mainline system.

Since the farm has an integrated irrigation system, it is possible that water used within the place of use originated from another well on the farm, or that water pumped from the point of withdrawal was used elsewhere on the farm (*de-facto* change). Ecology Water Resources Program Policy 1120 – "Water Resources Program Policy for Conducting Tentative Determinations of Water Rights" states the following related to *de-facto* changes:

> When evaluating unauthorized changes to water rights, the department generally considers beneficial use to be the measure of the right, even if some attributes of the right may not be consistent with the current authorization.

Affidavits

Affidavits relating to knowledge of farming and irrigation practices on GWC 3630-A were provided by Herman G. Douma signed October 17, 2012, Mike Douma signed October 18, 2012, and Gordon A. James signed October 17, 2012. AESI (2012) provided a map to the individuals who prepared affidavits

showing the place of use of the water rights in question to improve the quality of the information provided in the affidavits. Unfortunately, the place of use for this water right as shown on that map was incorrect since the place of use had been reduced when the certificate was issued. The place of use shown on the map included all of Parcel No. 400216071150 (NW ¼ SW ¼ and E ¾ SW ¼, Section 16, Township 40 North, Range 2 East W.M.), which is 68.64 acres in size and includes 65 irrigable acres, as opposed to the place of use identified on the certificate (E ¾ SW ¼, Section 16, Township 40 North, Range 2 East W.M.), which is just the southern 30 acres of the parcel that was shown. In the affidavits, a number of the individuals indicate that all but 5 acres of the place of use was irrigated until the last 5 acres was cleared in the late 1960s and the entire place of use was irrigated. The intended interpretation of this language is that 60 acres were irrigated on Parcel No. 40216071150 until the late 1960s, when the full 65 acres was irrigated. The 5 acres that was cleared and irrigated in the late 1960s falls outside of the place of use identified on the certificate. Each affidavit is unique and is described separately below:

Herman G. Douma – Attested that he is familiar with the farming and dairy operations located on the properties appurtenant to the current MJD Farms water rights since the late 1950s. He personally knew Howard Remington and Clyde Greene. Mr. Douma recalls that Mr. Remington farmed and irrigated most of the place of use under GWC 3630-A except 5 acres of woodlands that were later cleared in the late 1960s. Mr. Douma recalls that Mr. Greene also farmed and irrigated the majority of the place of use under GWC 5433-A since the early 1960s.

Mike Douma – Attested that he is familiar with the farming and dairy operations located on the properties appurtenant to the current MJD Farms water rights since the early 1990s. He indicates that the farming, irrigation, and general water use practices associated with the water rights as described by AESI (2012) is correct.

Gordon James – He lives across Enterprise Road from the MJD Farms property. Mr. James attested that he is familiar with the farming and dairy operations located on the properties appurtenant to the current MJD Farms water rights since the late 1950s. He personally knew Howard Remington and Clyde Greene. Mr. James recalls that Mr. Remington farmed and irrigated most of the place of use under GWC 3630-A except 5 acres of woodlands that were later cleared in the late 1960s. Mr. James recalls that Mr. Greene also farmed and irrigated the majority of the place of use under GWC 5433-A since the early 1960s.

Instantaneous Rate

AESI (2012) indicates that the well is currently equipped with a 5 hp submersible pump capable of pumping a maximum of 120 gpm, which is less than the water right instantaneous limit. However, AESI (2012) also indicated that MJD Farms periodically pumps from the well using their John Deere 150 hp tractor with a Rudolf Bauer SM 1000 PTO pump. According to the pump manufacturer, the PTO pump has a capacity of 176 to 1,300 gpm, confirming that it is capable of pumping at rates greater than 150 gpm authorized under the water right.

Annual Volume

Aerial photos of the MJD Farms, LLC property were provided with the application packet. These aerial photos were labeled with the following dates: 1951, 1961, 5/4/1962, 4/29/1989, 7/15/1998, 6/20/2004, 7/15/2004, 7/31/2005, 3/31/2006, 6/23/2006, 8/6/2006, 9/6/2006, 6/25/2009, and 8/25/2011. The

aerial photos from 1998 to present were viewed using Google Earth™. In viewing similar aerial photos through Google Earth™, irrigation from a big gun sprinkler is visible on 6/21/2004 and 8/1/2005 on the field in the south eastern portion of the proposed place of use on Parcel No. 400221337280. From aerial photos, the crops that have been grown historically on the property are corn, pasture/grass, and raspberries.

Landsat imagery was spot-checked for the following dates: 8/1/1986, 8/4/1987, 8/12/1990, 7/27/1996, 8/2/1998, 8/21/2005, 7/10/2010, and 7/5/2011. The different colors of red through the irrigation season suggest that multiple crop types are grown on the farm. This is consistent with the observed aerial photos and discussion with Mike Douma. Vigorous plant growth shows as bright red when viewed in color infrared (band 4-3-2).

Considering the irrigation infrastructure and equipment observed during the site visit, the affidavits provided by those familiar with the farm, and analysis of aerial photos and Landsat imagery, there is no reason to doubt that at least 70 acres of the farm was irrigated at least every 5 years, which is the combined total acres authorized under both GWC 3630-A and GWC 5433-A.

There are currently no water meters installed on the points of withdrawal. Therefore, we relied on the Washington Irrigation Guide (WAIG) and Water Resources Guidance GUID-1210 to estimate the highest annual volume of water pumped under this water right.

Irrigation Method: Sprinkler: Moving Big Gun
WAIG Station: Blaine
Crop: Pasture/Turf (1992 WAIG version)
Crop Irrigation Requirement = 14.69 inches
Irrigation Efficiency = 55% to 75% range, 65% average
Total Irrigation Requirement = 14.69 inches / 65% = 22.6 inches (range from 26.7 to 19.6 inches)
Acres Irrigated under GWC 3630-A = 30 acres
Annual Volume = 30 acres * 22.6 inches / 12 inches per foot = 56.5 afy (range 66.8 to 49 afy)

Since the Washington Irrigation Guide calculates the water needed in an average year, an irrigator will actually need additional water in order to meet the total irrigation requirement during dryer than normal years. Station Circular 512 (Irrigation Water Requirements Estimates for Washington, November 1969) show that for Bellingham (closest location to site) the crop irrigation requirement increased by approximately 20 percent going from the 2-year (14 inches) to the 5-year (17 inches) return interval and 26 percent going from the 2-year to the 20-year return interval (19 inches). If the crop irrigation requirement provided in the 1992 WAIG is increased by 26 percent, it is 18.51 inches. Assuming an average irrigation efficiency of 65%, one can calculate a total irrigation requirement of 28.5 inches and an annual use of 71.3 afy. Since the water right is limited to a total irrigation requirement of 24 inches (60 afy), it is reasonable to conclude that the annual volume of 60 afy granted with the original water right has been fully used and not lost to non-use without sufficient cause.

Proposed Use
The proposed use of water after the change will remain irrigation, however the water right holder is requesting to change the allowed number of irrigated acres to a total of 402 for the six water rights

identified in Table 2 that are concurrently going through the water right change process. Therefore, the annual consumptive quantity calculation is required.

Annual Consumptive Quantity
RCW 90.03.380 states:

> *A change in the place of use, point of diversion, and/or purpose of use of a water right to enable irrigation of additional acreage or the addition of new uses may be permitted if such change results in no increase in the annual consumptive quantity of water used under the water right. For purposes of this section, "annual consumptive quantity" means the estimated or actual annual amount of water diverted pursuant to the water right, reduced by the estimated annual amount of return flows, averaged over the two years of greatest use within the most recent five-year period of continuous beneficial use of the water right.*
>
> *If the water right has not been used during the previous five years but the nonuse of which qualifies for one or more of the statutory good causes or exceptions to relinquishment in RCW 90.14.140 and 90.44.520, the period of nonuse is not included in the most recent five-year period of continuous beneficial use for purposes of determining the annual consumptive quantity of water under this section.*

Varying weather conditions and crop rotation are sufficient causes for non-use under RWC 90.14.140(1)(g) and (k), respectively. These sufficient causes for non-use allow the annual consumptive quantity calculation to shift to those years when higher use crops were grown and weather conditions necessitated additional irrigation.

AESI (2012) calculated the total consumptive use (assuming 75% total use consumed) based on the Blaney-Criddle Method as being greater than 60 afy under this water right for the years of 2007 and 2008. As established in the Extent and Validity section above, the highest annual volume withdrawn under this water right, for which the water right holder can get credit, was estimated to be 60 afy during the 2007 and 2008 irrigation seasons when pasture/turf was grown (AESI, 2012). Irrigation from 2007 is allowed to be used in the calculation because of crop rotation practiced on the farm.

If the crop irrigation requirement is estimated to be 18.51 inches for pasture/turf and the water right holder used 60 afy to irrigate 30 acres, the total amount of water applied over the 30 acres is equal to 24 inches. According to Ecology Water Resources Guidance 1210, the irrigation efficiency can be calculated by dividing the crop irrigation requirement by the total water use. In this case the crop irrigation requirement is 18.51 inches and the total water use is 24 inches. Using those values in the calculation produces an irrigation efficiency of 77 percent, which is greater than the average irrigation efficiency and higher than the typical range.

Policy 1210 states the following:

> *If the estimated or calculated efficiency is greater than the average Ea, the consumptive and return flow portions of the Ea must also be calculated using the*

% Evap term. Typically, systems that are more efficient than the average will first reduce return flow and then reduce consumptive use of the crop (e.g. deficit irrigation).

We agree with the policy, in this particular situation, that all efficiency savings will first be realized through reduction of return flow prior to any reduction in consumptive use by the crop. Using this logic, the consumptive use percentage is equal to 75%. When the crop irrigation requirement (18.51 inches) is divided by the consumptive use percentage (0.75), the result is the consumptive use of the crop and irrigation method, which in this case is 24.68 inches. However, the water right limit is only equal to 24 inches, so in the driest years the crop has received less water than it could have utilized (deficit irrigation).

Since the annual consumptive quantity calculated has been equal to (cannot exceed) the water right limit, the full water right limit is available for transfer to irrigate additional acres.

Other Water Rights Appurtenant to the Proposed Place of Use

There are a total of 9 water right documents (2 certificates, 5 long form claims, 1 short form claim, and 1 water right application) associated with the proposed place of use (Table 2). Change applications have been submitted by MJD Farms on six of these water rights and all are being processed concurrently. There are also two permit exempt wells serving two homes within the proposed place of use. These homes are located on parcel 400221077285 at 8300 N. Enterprise Road and parcel 400216090010 at 1634 Loomis Trail Road.

Short Form Claim G1-136939CL (Leo C. Nielsen) identifies the place of use as parcel 400217490067 and is assumed to represent the source of water for the home on that parcel, located at 1736 Loomis Trail Road. No change application has been filed for this water right claim.

The water right application was submitted by Herm Douma "MJD Ranch" on August 1, 1994, was assigned water right number G1-27515, and is still pending. Water right claim G1-022171CL is not being changed since it is used for domestic supply of a parcel not part of MJD Farms LLC.

Table 2. Summary of Water Right Documents Appurtenant to the Proposed Place of Use

Water Right Number	Name	Type	Qi (gpm)	Qa (afy)	Type of Use		Irrigation Acres		Part of Concurrent Change Requests
					Existing	Proposed	Existing	Proposed	
G1-*04475C	Remington	Certificate	150	60	Irrigation	Irrigation	30.0	402.0	Yes
G1-*07005C	Greene	Certificate	260	80	Irrigation	Irrigation	40.0		Yes
G1-022169CL	Greene	Claim [L]	10	2	Stock/Dom	Irrigation	0.0		Yes
G1-022170CL	Greene	Claim [L]	10	2	Stock/Dom	Irrigation	0.0		Yes
G1-022172CL	Greene	Claim [L]	10	2	Stock/Dom	Irrigation	0.0		Yes
G1-022173CL	Greene	Claim [L]	10	2	Stock/Dom	Irrigation	0.0		Yes
G1-022171CL	Greene	Claim [L]	10	2	Stock/Dom	NA	NA	NA	No
G1-136939CL	Nielsen	Claim [S]	NA	NA	Stock/Dom/Irr	NA	NA	NA	No
G1-27515	Douma	Application	80	75	NA	Stock		0.0	No
Qi – Instantaneous Rate in gallons per minute (gpm)									

Qa – Annual Volume in acre-feet per year (afy)
Claim [L] – Long Form Claim
Claim [S] – Short Form Claim
NA – Not applicable/available
Stock – Stockwatering
Dom – Domestic
Irr – Irrigation

Additional Consultations

On February 1, 2013, RH2 Engineering sent an e-mail to Mr. Steve Boessow of the Washington State Department of Fisheries and Wildlife (WDFW) to find out if WDFW has any concerns about the proposed change application. Additional requests for comments were sent via e-mail on February 15 and 22, 2013. No comments were received from Mr. Boessow as of March 8, 2013.

Hydrologic/Hydrogeologic Evaluation

A separate hydrogeologic memorandum was prepared by Andrew B. Dunn, LG, LHG, focusing on the same body of public groundwater test and impairment (RH2 Engineering, 2013). A summary of that memorandum is presented here and more detail can be obtained from the memorandum if desired.

The points of withdrawal and place of use involved in this water right change lie within the geographic feature commonly referred to as the Custer Trough. The Custer Trough is a low-lying region located south of the Boundary Upland and north of the Mountain View Upland. The Custer Trough contains Dakota Creek and California Creek, both of which flow to the northwest and discharge directly into the marine waters of Drayton Harbor near the City of Blaine. All of the existing and proposed points of withdrawal fall within the South Fork Dakota subbasin as defined by the WRIA 1 watershed planning group and are completed within the Sumas Outwash Aquifer, which is composed of fine to medium sand at this location. Recharge to the aquifer is almost exclusively through vertical infiltration of precipitation. Groundwater flow is to the south-southwest and the water table is less than 5 feet below ground surface in the winter and drops by approximately 3 feet in the summer and early fall due to seasonal changes in recharge and groundwater use (Figure 1).

There are a number of factors at play in the project area that prevent the pumping of a well to cause a neighboring well to go dry:

1. The aquifer is very thin and most wells fully penetrate the aquifer (typically a depth of less than 30 feet).
2. The hydraulic conductivity of the aquifer is only moderate (approximately 13,000 gpd/ft).
3. The aquifer is unconfined, which results in a higher storage coefficient (specific yield) than if the aquifer was confined (approximately 0.2).

Pumping a well completed at the base of a thin aquifer with a moderate hydraulic conductivity and high storage coefficient will tend to create a steep cone of depression around the well. This steep cone of depression often reduces the ability to pump these wells at a high rate for a long enough duration to impact neighboring wells.

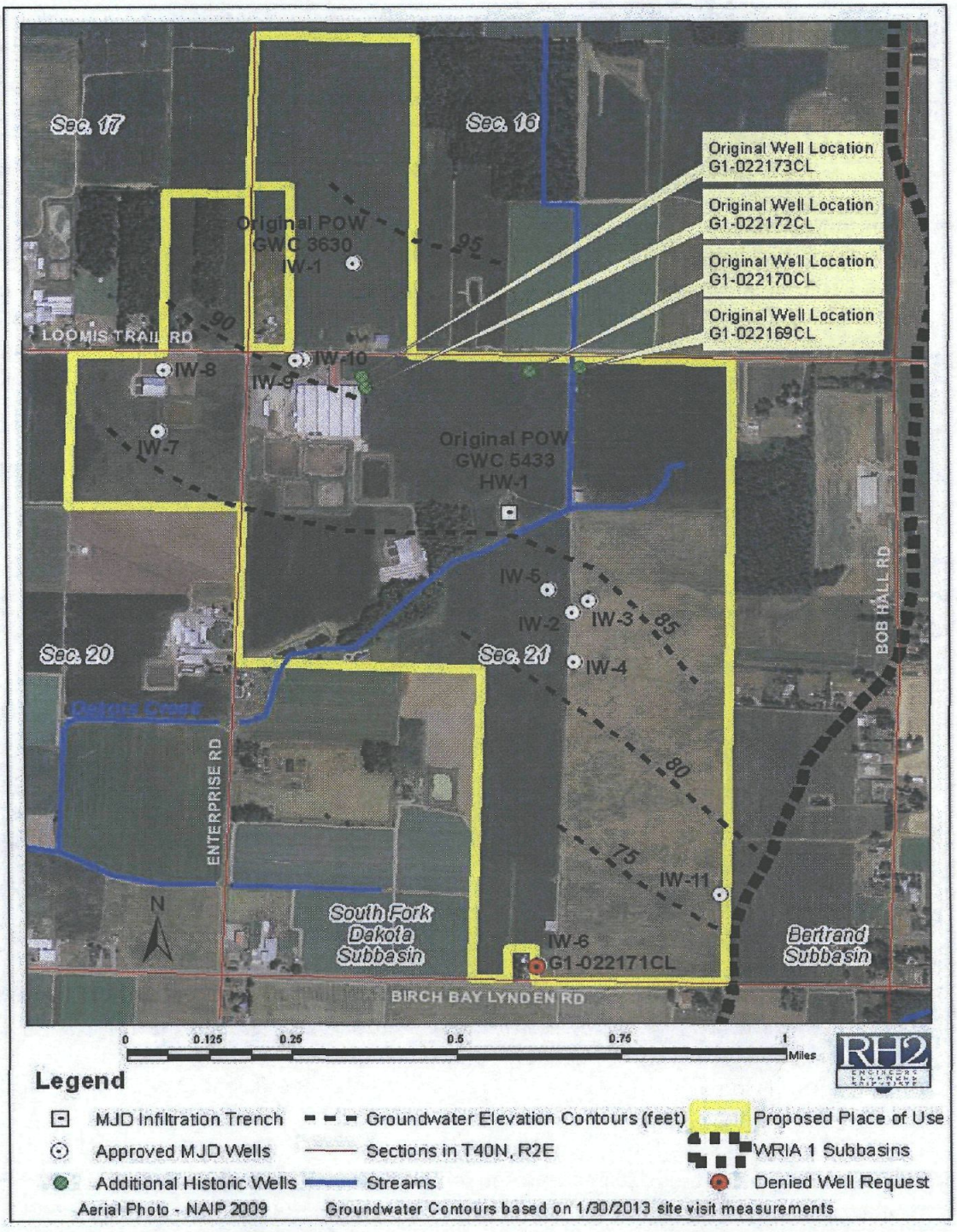


Figure 1. Original Points of Withdrawal, Recommended Approved Points of Withdrawal (Wells and Infiltration Trench), and Recommended Denied Point of Withdrawal. Groundwater elevations and flow directions based on January 30, 2013, water level measurements. WRIA 1 subbasin boundaries.

Same Body of Public Ground Water

In order for the requested additional points of withdrawal to be added to each ground water right, all points of withdrawal must tap the same body of public ground water. We conclude all wells located on the MJD Farms property tap the same body of public ground water based on the following facts:

1. All of the proposed points of withdrawal, including the infiltration trench, tap the Sumas Outwash aquifer.
2. All wells are located within the South Fork Dakota subbasin as defined by the WRIA 1 watershed planning group (2001).
3. No groundwater flow divides or flow boundaries exist between any of the proposed points of withdrawal.
4. While the maximum distance between any of the proposed wells is 1.2 miles, the similarity of the hydrogeologic setting of all of the wells is so similar that the distance is not significant.
5. While withdrawing water from the existing wells or the infiltration trench will ultimately decrease the amount of water flowing through the unconfined Sumas Outwash aquifer, the impacts of withdrawing water from any combination of these sources will have the same impacts as if all of the water had been withdrawn exclusively from the original points of withdrawal as identified on the water rights. Therefore, the changes being requested will result in no change to the impacts associated with these water withdrawals.

Impairment Considerations

The particular hydrogeologic characteristics of the Sumas outwash aquifer at the project location (shallow, thin, moderate transmissivity, and unconfined) provides a form of automatic-regulation of pumping rates and helps to protect neighboring well owners from well interference that could lead to impairment. Ecology has no record of any complaints of impairment from well owners near the MJD property, even though they have been using the proposed points of withdrawal without authorization for approximately 20 years. Allowing these water rights to be pumped from additional points of withdrawal spread across the MJD Farms property will not impair existing rights.

MJD Farms should be reminded that while RCW 90.44.100(3) allows for replacement and additional wells to be added to existing water right, these new wells cannot impair any water rights existing at the time the new well is drilled. So, any new wells constructed should be preferentially located away from neighboring wells.

IW-6 is currently associated with groundwater claim G1-0221771CL. In order to protect that existing water right, this specific well is <u>not</u> approved as an additional point of withdrawal under the MJD Farms water rights.

RCW 90.44.100 allows for the drilling of new or replacement wells within the original advertised location for the point of withdrawal of the water right without requiring a water right change application. Because MJD Farms, LLC does not own all of the property included within the original advertised area and to avoid impairment of neighboring water rights any new or replacement wells must be constructed within the area currently owned by MJD Farms, LLC as listed below:

SW ¼ SW ¼, Section 16, Township 40 North, Range 2 East, W.M.
NW ¼ NW ¼, Section 20, Township 40 North, Range 2 East, W.M.
NW ¼ NW ¼, Section 21, Township 40 North, Range 2 East, W.M.
W ½ NE ¼, Section 21, Township 40 North, Range 2 East, W.M.
W ½ SE ¼, Section 21, Township 40 North, Range 2 East, W.M.
E ½ NW ¼, Section 21, Township 40 North, Range 2 East, W.M.
E ½ E ½ SW ¼, Section 21, Township 40 North, Range 2 East, W.M.

Public Interest Considerations

No detriment to the public interest will occur as a result of adding points of withdrawal, adding additional irrigated acres, and changing the place of use of the subject water right.

Consideration of Protests and Comments

The October 18, 2012, protest letter from the Lummi Indian Business Council indicates that all of the change applications are for points of withdrawal located within the Nooksack/WRIA 1 watershed. Their protest is based on concerns over current and future potential impacts on instream flows. However, these are change applications and not applications for new (consumptive) water use. Because the quantities of water involved will remain unchanged and because each of the sources pumps from the same body of public water, no additional or new impacts are associated with the changes being proposed. The pumping of water from any of the subject wells will not change stream flows from current conditions.

Therefore, this protest does not justify denial of the change application.

CONCLUSIONS

This table is provided as a means of easily understanding how the six MJD Farms water rights relate following the change application process.

Water Right Number	Type	Qi (gpm)	Qa (afy)	Purpose of Use	Irrigated Acres	Points of Withdrawal
GWC 3630	Certificate	150	60	Irrigation	402	IW-1, IW-2, IW-3, IW-4, IW-5, IW-7, IW-8, IW-9, IW-10, IW-11, HW-1
GWC 5433	Certificate	260	80	Irrigation		
G1-022169CL	Claim [L]	10	0.92	Irrigation		
G1-022170CL	Claim [L]	10	0.92	Irrigation		
G1-022172CL	Claim [L]	10	0.92	Irrigation		
G1-022173CL	Claim [L]	10	0.92	Irrigation		
	Total	450	143.68		402	

RECOMMENDATIONS

Based on the above investigation and conclusions, the authors partially recommend the request for change to add new points of withdrawal, add additional irrigated acres, and change the place of use be approved in the amounts and within the limitations listed below and subject to the provisions beginning on page 3. The

proposed change related to IW-6 is denied in order to protect the existing domestic use of water from that well.

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:
150 gpm
60 afy
Irrigation of a combined total of 402 acres under GWC 3630-A, GWC 5433-A, G1-022169CL, G1-022170CL, G1-022172CL, and G1-022173CL from April 15 through October 1.

Points of Withdrawal

SOURCE FACILITY/DEVICE	PARCEL	WELL TAG	TWN	RNG	SEC	QQ Q	LATITUDE	LONGITUDE
IW-1	400216071150	BHE783	40N	02E	16	SW SW	48.95219	-122.57053
IW-2	400221337280	BHE785	40N	02E	21	SW NE	48.94407	-122.56285
IW-3	400221337280	BHE786	40N	02E	21	SW NE	48.94433	-122.56241
IW-4	400221337280	AAX420	40N	02E	21	SW NE	48.94302	-122.56295
IW-5	400221235138	BHE788	40N	02E	21	SE NW	48.94459	-122.56375
IW-7	400220472461	BHN672	40N	02E	20	NE NE	48.94811	-122.57685
IW-8	400220472461	BHN674	40N	02E	20	NE NE	48.94955	-122.57669
IW-9	400221100424	BHN670	40N	02E	21	NW NW	48.94986	-122.57235
IW-10	400221100424	BHN669	40N	02E	21	NW NW	48.94987	-122.57212
IW-11	400221337280	BHN664	40N	02E	21	SW SE	48.93752	-122.55785
HW-1	400221234404	BHN675	40N	02E	21	NE NW	48.94643	-122.56519

Place of Use

As shown on Attachment 1 and described in Legal Description of Authorized Place of Use on page 2 of this Report of Examination.

Report by: Jim Bucknell — Jim Bucknell – RH2 Engineering

4/17/2013 — Date

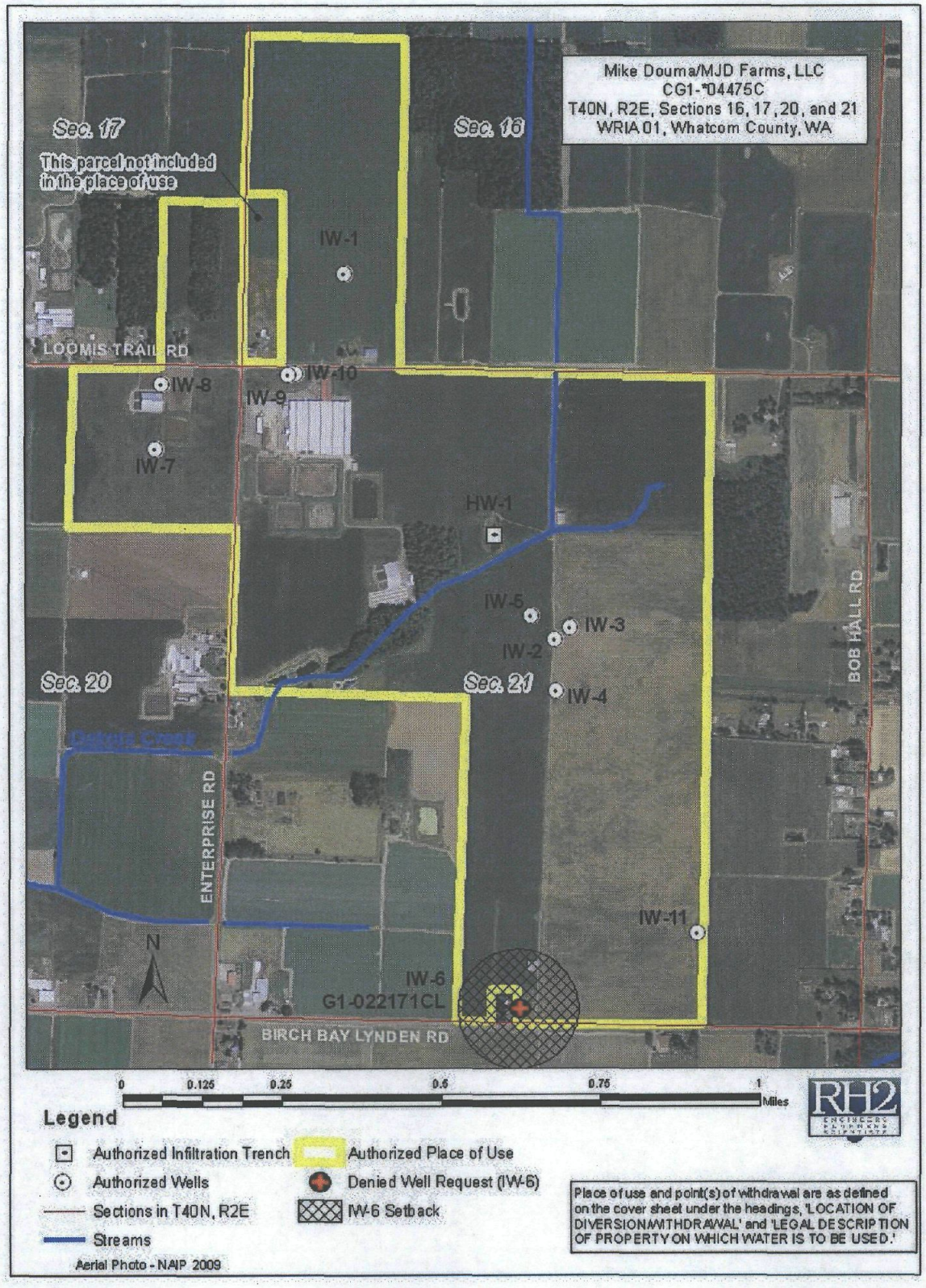
ANDREW B. DUNN

Report by: _____ 4/17/2013

Andrew B. Dunn – RH2 Engineering Date

J. R. "BUCK" SMITH

Reviewed by: _____ 4/17/13

Buck Smith – Dept. of Ecology Date

ATTACHMENT 1. Authorized Points of Withdrawal and Place of Use