

State of Idaho
Department of Water Resources

Permit to Appropriate Water

NO. 51-13106

Priority: September 27, 2013

Maximum Diversion Rate: 4.00 CFS

This is to certify, that HALF MOON LLC
911 E WINDING CREEK DR STE 150
EAGLE ID 83616

has applied for a permit to appropriate water from:

Source: GROUND WATER

and a permit is APPROVED for development of water as follows:

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>RATE OF DIVERSION</u>
IRRIGATION	03/15 to 11/15	4.00 CFS

LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER	SW1/4SE1/4	Sec. 24,	Twp 06S,	Rge 11E, B.M.	ELMORE County
GROUND WATER	NE1/4NW1/4	Sec. 25,	Twp 06S,	Rge 11E, B.M.	ELMORE County

PLACE OF USE: IRRIGATION

Twp	Rge	Sec	NE				NW				SW				SE				Totals					
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE						
06S	11E	24									21.0					40.0				12.0	17.0	40.0	40.0	170.0
06S	11E	25	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0														320.0

Total Acres: 490

CONDITIONS OF APPROVAL

1. Proof of application of water to beneficial use shall be submitted on or before **November 01, 2020**.
2. Subject to all prior water rights.
3. Project construction shall commence within one year from the date of permit issuance and shall proceed diligently to completion unless it can be shown to the satisfaction of the Director of the Department of Water Resources that delays were due to circumstances over which the permit holder had no control.
4. This right is limited to the irrigation of 200 acres within the authorized place of use in a single irrigation season.
5. This right when combined with all other rights shall provide no more than 0.02 cfs per acre nor more than 4.0 afa per acre at the field headgate for irrigation of the place of use.
6. After specific notification by the Department, the right holder shall install a suitable measuring device or shall enter into an agreement with the Department to use power records to determine the amount of water diverted and shall annually report the information to the Department.
7. Diversion and use of water with a temperature greater than 85 degrees Fahrenheit is not authorized under this right.
8. Right holder shall comply with the drilling permit requirements of Section 42-235, Idaho Code and applicable Well Construction Rules of the Department.

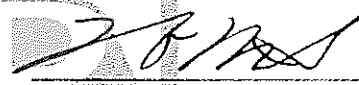
State of Idaho
Department of Water Resources

Permit to Appropriate Water

NO. 51-13106

9. Prior to submitting the proof of beneficial use statement under this right, the right holder shall conduct a minimum 24-hour pumping and recovery test of at least one of the points of diversion authorized under this right to estimate well capacity, short-term aquifer capacity, and aquifer transmissivity. The right holder shall submit a report from a qualified professional engineer, hydrologist, or hydrogeologist summarizing the hydrogeologic data collected and aquifer properties estimated.
10. This right is for the use of trust water, and it is subject to review 5 years after its initial approval (date of permit approval) to re-evaluate the availability of trust water for the authorized use and to re-evaluate the public interest criteria for reallocating trust water.
11. When the minimum stream flow water rights in the Snake River at Murphy Gage are not being satisfied, the right holder shall cease diverting water for the consumptive uses authorized by this right.
12. The Director retains jurisdiction to require the right holder to provide purchased or leased natural flow or stored water to offset depletion of Lower Snake River flows if needed for salmon migration purposes. The amount of water required to be released into the Snake River or a tributary, if needed for this purpose, will be determined by the Director based upon the reduction in flow caused by the use of water pursuant to this permit.

This permit is issued pursuant to the provisions of Section 42-204, Idaho Code. Witness the signature of the Director, affixed at Boise, this 20th day of October, 2015.

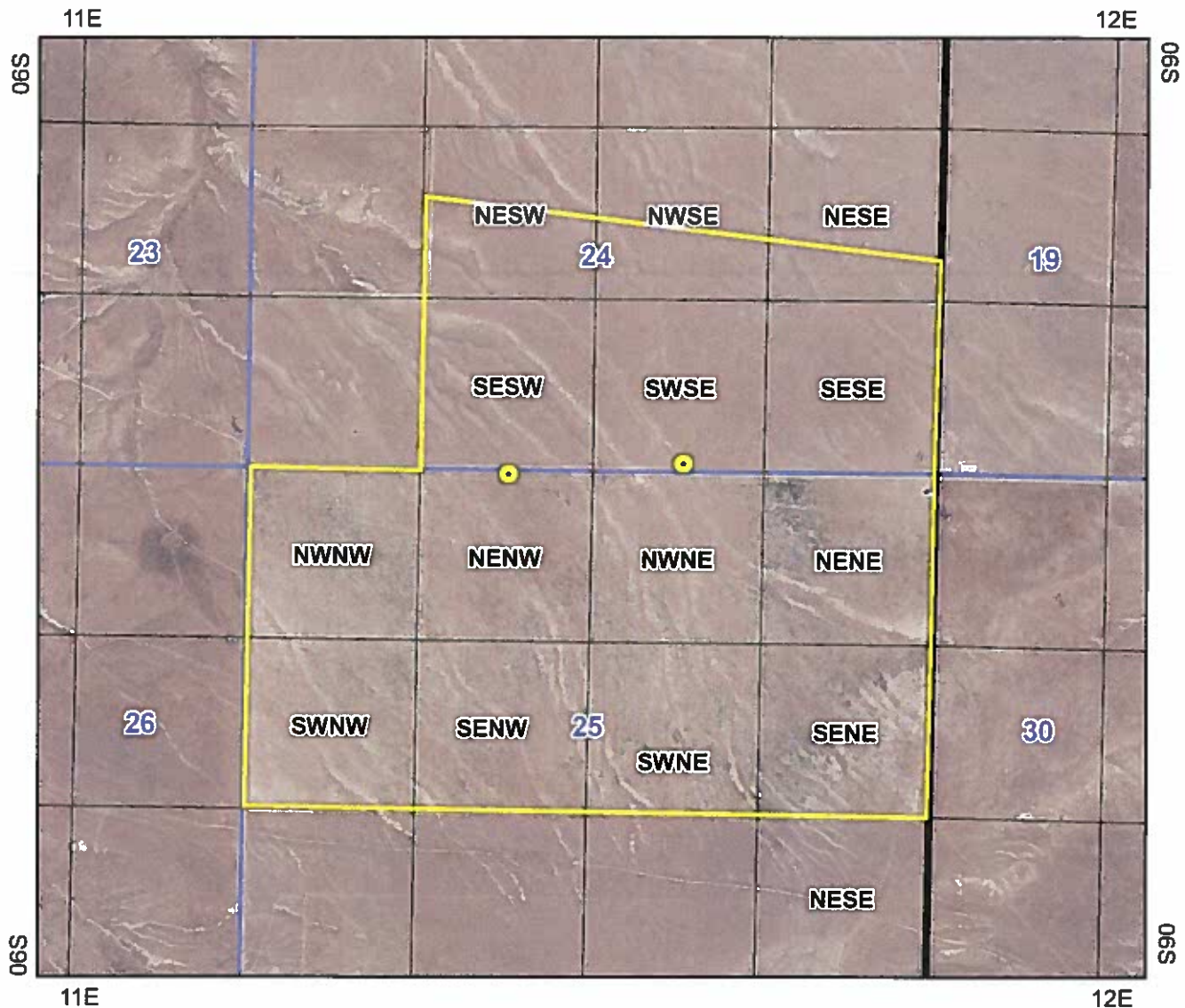


for GARY SPACKMAN, Director

State of Idaho
Department of Water Resources

Attachment to Permit to Appropriate Water

51-13106

This map depicts the IRRIGATION place of use boundary for this water right at the time of this approval and is attached to the approval document solely for illustrative purposes.



- Point of Diversion
- Place Of Use Boundary
- Townships
- PLS Sections
- Quarter Quarters

0 0.15 0.3 0.6 Miles





State of Idaho

DEPARTMENT OF WATER RESOURCES

Western Region, 2735 Airport Way • Boise, Idaho 83705-5082

Phone: (208) 334-2190 • Fax: (208) 334-2348 • Web Site: www.idwr.idaho.gov

C. L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Director

October 21, 2015

HALF MOON LLC
911 E WINDING CREEK DR STE 150
EAGLE ID 83616

RE: Permit No.51-13106

Permit Approval Notice

Dear Permit Holder:

The Department of Water Resources has issued the enclosed permit authorizing you to establish a new water right. Please be sure to thoroughly review the conditions of approval and remarks listed on your permit.

The permit is a PRELIMINARY ORDER issued by the Department pursuant to Section 67-5243, Idaho Code. It can and will become a final order without further action by the Department unless a party petitions for reconsideration or files an exception and/or brief within fourteen (14) days of the service date as described in the enclosed information sheet.

As a permit owner you must commence the excavation or construction of the diverting works within one year of the date the permit was issued, and you must proceed diligently until the project is completed. The date shown under condition no. 1 is the date when the project must be completed.

The Department will send you a 'Proof Due Notice' approximately 60 days prior to the above referenced date requesting you to file either a Proof of Beneficial Use form or a Request for Extension of Time form.

The right to drill a well is not a part of this permit to appropriate water. Beginning in July of 1987, a statute was enacted which requires a drilling permit for new well construction and deepening of existing wells. If the well(s) proposed for use under this water right permit were drilled or deepened after July 1, 1987, a separate drilling permit must be obtained from this Department. Please contact the Ground Water Protection Section located here at this office or our regional office nearest you.

Also, please note that water right owners are required to report any change of water right ownership and/or mailing address to the Department within 120 days of the change. Failure to report these changes could result in a \$100 late filing fee. Contact any office of the Department or visit the Department's homepage on the Internet to obtain the proper forms and instructions.

If you have any questions, please contact me at (208)334-2190.

Sincerely,

 Rachel Neely Fox

Nick Miller
Western Region Manager

Enclosure(s)

cc: SPF WATER ENGINEERING LLC

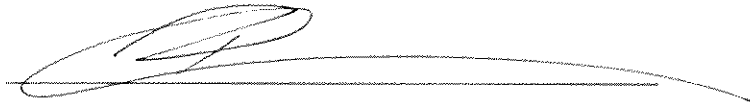
CERTIFICATE OF SERVICE

I hereby certify that on October 21, 2015 I mailed a true and correct copy, postage prepaid, of the foregoing PRELIMINARY ORDER(Approved Permit) to the person(s) listed below:

RE: WATER RIGHT NO. 51-13106

**HALF MOON LLC
911 E WINDING CREEK DR STE 150
EAGLE ID 83616**

**SPF WATER ENGINEERING LLC
C/O LORI GRAVES
300 E MALLARD DR STE 350
BOISE ID 83706**

A handwritten signature in black ink, appearing to read 'Rachel Neely', is written over a horizontal line.

**Rachel Neely
Administrative Assistant**

EXPLANATORY INFORMATION TO ACCOMPANY A PRELIMINARY ORDER

(To be used in connection with actions when a hearing was **not** held)

(Required by Rule of Procedure 730.02)

The accompanying order or approved document is a "Preliminary Order" issued by the department pursuant to section 67-5243, Idaho Code. **It can and will become a final order without further action of the Department of Water Resources ("department") unless a party petitions for reconsideration, files an exception and brief, or requests a hearing as further described below:**

PETITION FOR RECONSIDERATION

Any party may file a petition for reconsideration of a preliminary order with the department within fourteen (14) days of the service date of this order. **Note: the petition must be received by the department within this fourteen (14) day period.** The department will act on a petition for reconsideration within twenty-one (21) days of its receipt, or the petition will be considered denied by operation of law. See Section 67-5243(3) Idaho Code.

EXCEPTIONS AND BRIEFS

Within fourteen (14) days after: (a) the service date of a preliminary order, (b) the service date of a denial of a petition for reconsideration from this preliminary order, or (c) the failure within twenty-one (21) days to grant or deny a petition for reconsideration from this preliminary order, any party may in writing support or take exceptions to any part of a preliminary order and may file briefs in support of the party's position on any issue in the proceeding with the Director. Otherwise, this preliminary order will become a final order of the agency.

REQUEST FOR HEARING

Unless a right to a hearing before the Department or the Water Resource Board is otherwise provided by statute, any person aggrieved by any final decision, determination, order or action of the Director of the Department and who has not previously been afforded an opportunity for a hearing on the matter may request a hearing pursuant to section 42-1701A(3), Idaho Code. A written petition contesting the action of the Director and requesting a hearing shall be filed within fifteen (15) days after receipt of the denial or conditional approval.

ORAL ARGUMENT

If the Director grants a petition to review the preliminary order, the Director shall allow all parties an opportunity to file briefs in support of or taking exceptions to the preliminary order and may schedule oral argument in the matter before issuing a final order. If oral arguments are to be heard, the Director will within a reasonable time period notify each party of the place, date and hour for the argument of the case. Unless the Director orders otherwise, all oral arguments will be heard in Boise, Idaho.

CERTIFICATE OF SERVICE

All exceptions, briefs, requests for oral argument and any other matters filed with the Director in connection with the preliminary order shall be served on all other parties to the proceedings in accordance with IDAPA Rules 37.01.01302 and 37.01.01303 (Rules of Procedure 302 and 303).

FINAL ORDER

The Director will issue a final order within fifty-six (56) days of receipt of the written briefs, oral argument or response to briefs, whichever is later, unless waived by the parties or for good cause shown. The Director may remand the matter for further evidentiary hearings if further factual development of the record is necessary before issuing a final order. The department will serve a copy of the final order on all parties of record.

Section 67-5246(5), Idaho Code, provides as follows:

Unless a different date is stated in a final order, the order is effective fourteen (14) days after its service date if a party has not filed a petition for reconsideration. If a party has filed a petition for reconsideration with the agency head, the final order becomes effective when:

- (a) The petition for reconsideration is disposed of; or
- (b) The petition is deemed denied because the agency head did not dispose of the petition within twenty-one (21) days.

APPEAL OF FINAL ORDER TO DISTRICT COURT

Pursuant to sections 67-5270 and 67-5272, Idaho Code, if this preliminary order becomes final, any party aggrieved by the final order or orders previously issued in this case may appeal the final order and all previously issued orders in this case to district court by filing a petition in the district court of the county in which:

- i. A hearing was held,
- ii. The final agency action was taken,
- iii. The party seeking review of the order resides, or
- iv. The real property or personal property that was the subject of the agency action is located.

The appeal must be filed within twenty-eight (28) days of this preliminary order becoming final. See section 67-5273, Idaho Code. The filing of an appeal to district court does not itself stay the effectiveness or enforcement of the order under appeal.

MEMORANDUM

TO: Right 51-13106 File

FROM: Angela Grimm

DATE: August 7, 2015

RE: IDAPA 37.03.08.040.05d Sufficiency of Water Supply Information

SPF Water Engineering, LLC filed permit application 51-13106 on behalf of Half Moon, LLC for 4.0 cfs to irrigate 200 acres within the Trust Water Area. Consequently, the Department requested additional information to address IDAPA 37.03.08.040.05 (Rule 40). The applicant provided sufficient information to address all aspects of Rule 40 except sufficiency of water supply. Despite requesting the applicant construct a well and conduct a large scale pump test, the Department decided the limited information provided regarding sufficiency of supply is adequate to issue an approval in this case based on the following rational:

- The applicant proposes diversion of ground water in an area with limited development (limited existing aquifer data).
- There a few water users in this area, thus the potential for injury is lesser.
- In an attempt to address the sufficiency issue, the applicant conducted a small scale pump test (0.03 cfs) from an existing stockwater well that provided some degree of information.
- The use proposed is irrigation, thus if not fully developed only the applicant is likely to be injured. As opposed to a municipal, domestic or commercial use where other individuals may grow to rely upon the source or assume it's available upon purchasing land/lots, etc.
- The applicant submitted correspondence acknowledging they are assuming all the risk with project development should the water supply be insufficient for full permit development.
- The applicant (via consultant) indicated they would conduct a minimum 24-hour pumping/recovery test to estimate aquifer/well properties upon permit approval.
- Permit conditions will require such a test be conducted and the applicant to submit a report from a qualified professional engineer, hydrologist, or hydrogeologist summarizing the hydrogeologic data collected and aquifer properties estimated prior to filing proof of beneficial use.

Grimm, Angie

From: jim [jim@mongosgrill.com]
Sent: Wednesday, June 17, 2015 3:47 PM
To: Grimm, Angie; 'Christian Petrich'
Subject: FW: Half Moon Ranch

Please disregard the 50 cfs in the previous email.

The application is for 4.0 cfs and is permit number 51-13106 by Half Moon LLC.

Owners are willing to accept any and all risks associated with drilling and using the well.

Thank you,

- Jim Chambers

From: jim [mailto:jim@mongosgrill.com]
Sent: Wednesday, June 17, 2015 3:44 PM
To: 'Angie.Grimm@idwr.idaho.gov'; 'Christian Petrich'
Subject: Half Moon Ranch

Hello Angie,

This email is to confirm on behalf of Half Moon LLC dba Half Moon Ranch that the owners are willing to take any and all risks associated with drilling a new irrigation well on the property they have requested the 50 cfs well permit.

You should be receiving a letter very soon from Christian Petrich in response to your recent letter/update.

Thank you,

- Jim Chambers
- Controller Half Moon Ranch

Grimm, Angie

From: Christian Petrich [CPetrich@spfwater.com]
Sent: Thursday, June 18, 2015 4:47 PM
To: Grimm, Angie
Cc: Jim Chambers (royalfork@qwestoffice.net); Lori Graves
Subject: Application for Permit 51-13106 (Half Moon, LLC)
Attachments: SPF response to 6-5-2015 IDWR ltr re 51-13106.pdf

Angie,

Please find attached a response to your letter of June 5, 2015 in regard to SPF's Half Moon, LLC Stockwater Well pumping tests. A paper copy will go into tomorrow's mail. In advance, thank you for your consideration of this response – we look forward to IDWR's approval of this application.

Regards,
Christian

Christian R. Petrich, Ph.D., P.E., P.G.
Principal Engineer/Hydrologist
SPF Water Engineering, LLC
300 E Mallard Drive, Suite 350 | Boise, ID 83706
Tel: 208.383.4140
Fax: 208.383.4156
Cell: 208.869.4569

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June 16, 2015

Ms. Angela Grimm, P.G.
Water Rights Supervisor
Idaho Department of Water Resources
Western Region
2735 Airport Way
Boise, Idaho 83705-5082

Subject: Application for Permit 51-13106 (Half Moon, LLC)

Dear Ms. Grimm,

Thank you for your letter of June 5, 2015 regarding SPF's Half Moon LLC Stockwater Well pumping test results.¹ We agree that the pumping test results do not provide insight for the entire aquifer interval targeted under this application. However, there is evidence to suggest that the requested rate and volume *may* be available, and that the applicant recognizes the risk associated with attempting to develop the supply following permit approval.

By way of review, Application for Permit 51-13106 requested the diversion of 4.0 cfs for the irrigation of 200 acres within a 490-acre permissible place of use in Sections 24 and 25 of Township 6S, Range 11E. The anticipated well depth ranges from 500 to 1,200 feet below ground surface. Geology in the vicinity of the proposed place of use consists of Tertiary- and Quaternary-aged sediments, including fine-grained Idaho Group lacustrine sediments, underlain by Pliocene-or Miocene-age basalts (Bond and Wood, 1978; Lewis et al., 2012).

IDWR² requested that a test well capable of producing approximately 2 cfs be constructed and a pumping test performed in this well *prior* to approving a permit. The Applicant was willing to take on the risk of constructing a well extending to a depth between 500 and 1,200 feet once a permit was approved, but not prior to permit approval. The Applicant therefore proposed a pumping test using an existing 6-inch diameter stockwater well completed at a depth of 515 to 630 feet below ground surface (which is within the requested 500- to 1,200-foot target interval). IDWR approved the proposed pumping test noting that the test was "not likely to yield information as relevant as the pump test [originally] requested, [but that] IDWR

¹ Memo from Erik Boe to Angie Grimm, dated April 30, 2015.

² Letter from John Westra to Christian Petrich, dated June 4, 2014.

believes the pump test proposed will likely provide some information to allow for evaluation of Rule 40 and 45 criteria."³

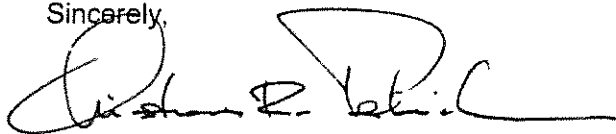
As anticipated, the well test pump capacity was constrained by depth to water and well diameter; pumping rates in the well test were insufficient to fully stress the 515- to 630-foot zone. Nonetheless, results from the stockwater well test (e.g., approximately 0.14-foot drawdown at a pumping rate of 13 gpm over 24 hours) indicate that the 515- to 630-foot aquifer zone, which is within the 500- to 1,200-foot target zone under Application 51-13106, is quite productive and capable of substantially greater flow rates than those achieved in the test.

Despite not having fully tested the entire 500- to 1,200-foot interval targeted under Application 51-13106, we respectfully request approval of this application. As noted in my letter⁴ of July 24, 2014, "the applicant understands the inherent risk associated with developing a water supply in an area with a few wells. The applicant recognizes (per 6/17/2015 email from Jim Chambers to you) that permit licensing will reflect the actual amount of water put to beneficial use, even if this is less than the initially-permitted amount."

The stockwater well pumping test demonstrated the presence of an aquifer zone with substantial transmissivity between 500 and 630 feet below ground surface. Ultimately, the best way to determine long-term sustainable water supply in this area is through exploratory drilling and extended pumping and irrigation. The applicant would be pleased to make available to IDWR results from the exploratory drilling and testing following well construction.

In advance, thank you again for your consideration of this application – we look forward to IDWR's approval. Please feel free to call if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Christian R. Petrich". The signature is fluid and cursive, with a large, stylized initial "C" and "P".

Christian R. Petrich, Ph.D., P.E., P.G.
Principal Engineer/Hydrologist

cc: Jim Chambers, Half Moon LLC

³ Letter from John Westra to Christian Petrich, dated September 9, 2014.

⁴ Letter from Christian Petrich to John Westra, dated July 24, 2014.

References

- Bond, J.G., Wood, C.H., 1978. Geologic map of Idaho. Idaho Department of Lands, Bureau of Mines and Geology, 1:500,000 scale.
- Lewis, R.S., link, P.K., Stanford, L.R., Long, S.P., 2012. Geologic Map of Idaho. Idaho Geologic Survey, scale: 1:750,000.



State of Idaho

DEPARTMENT OF WATER RESOURCES

Western Region • 2735 Airport Way • Boise, Idaho 83705-5082

Phone: (208) 334-2190 • Fax: (208) 334-2348 • Website: www.idwr.idaho.gov

C.L. "BUTCH" OTTER

Governor

June 5, 2015

GARY SPACKMAN

Director

HALF MOON LLC
C/O ATTN CHRISTIAN PETRICH
SPF WATER ENGINEERING
300 E MALLARD DR SUITE 350
BOISE ID 83706

Re: Application for Permit 51-13106 – Half Moon, LLC – Response to “Half Moon LLC Stockwater Well Pump Test Results...” Report Submittal

Dear Christian:

The Idaho Department of Water Resources (Department) received the above referenced report submitted via email April 30, 2015. The stockwater well pump test conducted by SPF Water Engineering LLC (SPF) on behalf of the applicant was in response to a request from the Department for additional information regarding sufficiency of water supply for the diversion of 4.0 cfs for irrigation of 200 acres proposed in application for permit no. 51-13106. While the report included water level and other ground water data from the pumping test, no specific conclusions were drawn regarding the sufficiency of the aquifer to provide an adequate quantity of water for the 4.0 cfs proposal.

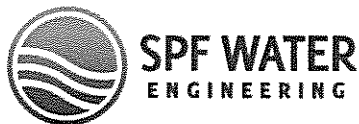
Information regarding the sufficiency of water supply was initially requested by the Department January 2, 2014. Your initial response, per SPF memo *RE: Application for Permit 51-13106 (Half Moon, LLC)* received via email May 7, 2014, concluded “Local well and aquifer capacity is uncertain because of the few available data in this area.” In response to this report, the Department requested an aquifer test be conducted to better estimate aquifer parameters to address the sufficiency of supply and other information requirements. You conducted the above referenced test in response to that request. The Department does not believe adequate information was provided to complete an evaluation of whether the water supply is sufficient or insufficient for the proposed use in terms of the evaluation criteria set forth in IDAPA 37.03.08.045.01.b. Therefore, the Department requests you provide additional information and/or analysis of existing information to conclude the supply is sufficient for the proposed diversion. If you are unable to reach such a conclusion or supply this information, please provide justification as to why it is unnecessary to conclude the supply is sufficient in evaluation of this application (i.e. the applicant is willing to bare the risk a sufficient supply does not exist for the proposed permit thus development of the proposed permit may not be possible).

I appreciate your efforts to supply information for this application to date. Please let me know if you have any questions regarding this particular request. Please submit the requested information within the next (30) days. The application will be voided without a timely written reply. Refunds are not issued for voided applications. Thank you for your attention to these matters.

Sincerely,

Angela M. Grimm, P.G.
Water Rights Supervisor

Cc. Half Moon, LLC



RECEIVED

JUN 22 2015

WATER RESOURCES
WESTERN REGION

June 16, 2015

Ms. Angela Grimm, P.G.
Water Rights Supervisor
Idaho Department of Water Resources
Western Region
2735 Airport Way
Boise, Idaho 83705-5082

Subject: Application for Permit 51-13106 (Half Moon, LLC)

Dear Ms. Grimm,

Thank you for your letter of June 5, 2015 regarding SPF's Half Moon LLC Stockwater Well pumping test results.¹ We agree that the pumping test results do not provide insight for the entire aquifer interval targeted under this application. However, there is evidence to suggest that the requested rate and volume *may* be available, and that the applicant recognizes the risk associated with attempting to develop the supply following permit approval.

By way of review, Application for Permit 51-13106 requested the diversion of 4.0 cfs for the irrigation of 200 acres within a 490-acre permissible place of use in Sections 24 and 25 of Township 6S, Range 11E. The anticipated well depth ranges from 500 to 1,200 feet below ground surface. Geology in the vicinity of the proposed place of use consists of Tertiary- and Quaternary-aged sediments, including fine-grained Idaho Group lacustrine sediments, underlain by Pliocene-or Miocene-age basalts (Bond and Wood, 1978; Lewis et al., 2012).

IDWR² requested that a test well capable of producing approximately 2 cfs be constructed and a pumping test performed in this well *prior* to approving a permit. The Applicant was willing to take on the risk of constructing a well extending to a depth between 500 and 1,200 feet once a permit was approved, but not prior to permit approval. The Applicant therefore proposed a pumping test using an existing 6-inch diameter stockwater well completed at a depth of 515 to 630 feet below ground surface (which is within the requested 500- to 1,200-foot target interval). IDWR approved the proposed pumping test noting that the test was "not likely to yield information as relevant as the pump test [originally] requested, [but that] IDWR

¹ Memo from Erik Boe to Angie Grimm, dated April 30, 2015.

² Letter from John Westra to Christian Petrich, dated June 4, 2014.

believes the pump test proposed will likely provide some information to allow for evaluation of Rule 40 and 45 criteria."³

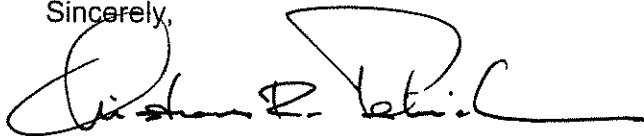
As anticipated, the well test pump capacity was constrained by depth to water and well diameter; pumping rates in the well test were insufficient to fully stress the 515- to 630-foot zone. Nonetheless, results from the stockwater well test (e.g., approximately 0.14-foot drawdown at a pumping rate of 13 gpm over 24 hours) indicate that the 515- to 630-foot aquifer zone, which is within the 500- to 1,200-foot target zone under Application 51-13106, is quite productive and capable of substantially greater flow rates than those achieved in the test.

Despite not having fully tested the entire 500- to 1,200-foot interval targeted under Application 51-13106, we respectfully request approval of this application. As noted in my letter⁴ of July 24, 2014, "the applicant understands the inherent risk associated with developing a water supply in an area with a few wells. The applicant recognizes (per 6/17/2015 email from Jim Chambers to you) that permit licensing will reflect the actual amount of water put to beneficial use, even if this is less than the initially-permitted amount."

The stockwater well pumping test demonstrated the presence of an aquifer zone with substantial transmissivity between 500 and 630 feet below ground surface. Ultimately, the best way to determine long-term sustainable water supply in this area is through exploratory drilling and extended pumping and irrigation. The applicant would be pleased to make available to IDWR results from the exploratory drilling and testing following well construction.

In advance, thank you again for your consideration of this application – we look forward to IDWR's approval. Please feel free to call if you have any questions.

Sincerely,



Christian R. Petrich, Ph.D., P.E., P.G.
Principal Engineer/Hydrologist

cc: Jim Chambers, Half Moon LLC

³ Letter from John Westra to Christian Petrich, dated September 9, 2014.

⁴ Letter from Christian Petrich to John Westra, dated July 24, 2014.

References

- Bond, J.G., Wood, C.H., 1978. Geologic map of Idaho. Idaho Department of Lands, Bureau of Mines and Geology, 1:500,000 scale.
- Lewis, R.S., Link, P.K., Stanford, L.R., Long, S.P., 2012. Geologic Map of Idaho. Idaho Geologic Survey, scale: 1:750,000.

Grimm, Angie

From: Christian Petrich [CPetrich@spfwater.com]
Sent: Thursday, April 30, 2015 12:52 PM
To: Grimm, Angie
Cc: Jim Chambers (royalfork@qwestoffice.net); Erik Boe
Subject: Pumping test in support of Application for Permit 51-13106
Attachments: Stock Well Pump Test_Memo_April 2015_Final.pdf

Angie,

The attached memorandum from Erik Boe summarizes results of a pumping test conducted in support of Application for Permit 51-13106 (submitted under the name of Half Moon LLC). Please call if you have any questions.

Regards,
Christian

Christian R. Petrich, Ph.D., P.E., P.G.
Principal Engineer/Hydrologist
SPF Water Engineering, LLC
300 E Mallard Drive, Suite 350 | Boise, ID 83706
Tel: 208.383.4140
Fax: 208.383.4156
Cell: 208.869.4569

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MEMORANDUM

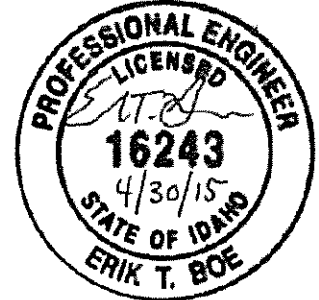
DATE: April 30, 2015

TO: Angie Grimm
Idaho Department of Water Resources, Western Region
2735 Airport Way
Boise, Idaho 83705-5082

FROM: Erik Boe, P.E.

CC: Christian Petrich, Ph.D., P.E., P.G, SPF.
Jim Chambers, Half Moon LLC

RE: Half Moon LLC Stockwater Well Pump Test Results; Application for Permit No. 51-13106



This memorandum summarizes results of a pumping test conducted in support of Application for Permit No. 51-13106 (submitted by Half Moon LLC). Plans for the test were approved by IDWR (see letter from John Westra dated September 9, 2015 in Attachment A). The purpose of the stockwater well pump test was to provide estimates of transmissivity for the 515-630 aquifer zone, specific capacity, and post water level recovery.

A. Stockwater Well Description

The stock well (Well Tag No. 0057962, listed under the name Juan Gutierrez) is located in the SWSWSW of Section 19, T6N, R12E and less than ½ mile east of the proposed points of diversion under Application 51-13106. A map illustrating the stockwater well's location relative to the proposed Permissible Place of Use (PPU) and surrounding areas is presented as Figure 1. The stockwater well was drilled to a depth of 631 feet, has nominal 6-inch diameter casing installed to 405 feet, and is open from 405 to 631 feet as described in the drillers' report (Attachment B). The well was previously equipped with a 2.5-hp pump at a depth of approximately 550 feet.

B. Aquifer Description

Geology in the vicinity of the stockwater well consists of Tertiary- and Quaternary-aged sediments, including fine-grained (e.g., clay) Idaho Group lacustrine (lake-deposited) sediments, underlain by Pliocene- or Miocene-age basalts (Bond and Wood, 1978; Lewis et al., 2012).

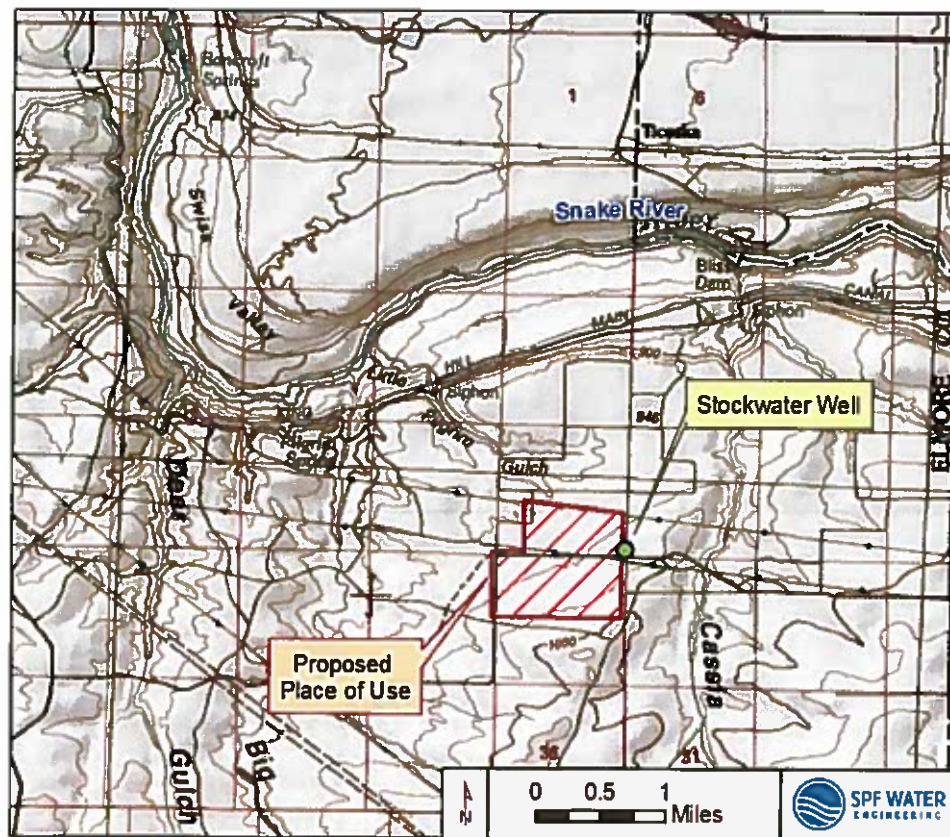


Figure 1. Location of stockwater well relative to PPU

A search of the IDWR online well-construction database revealed 19 wells in the general vicinity of the proposed place of use (defined in this case to be within 5 miles of the proposed place of use and south of the Snake River). However, two of these wells appear to have incorrect location information. Locations of the remaining 17 wells are shown in Figure 2. The wells ranged in depth from 180 to 1,060 feet below ground surface. Static water levels ranged from 60 to 624 feet below ground surface.

Information describing lithology associated with the 515-630 foot aquifer zone is limited. The well drillers' report (Attachment B) notes a "medium" formation between 515 and 607 feet, and a "very soft" formation between 607 and 631 feet. Following issuance of a permit, the applicant will construct a production well with a target depth between 600 and 1,200 feet. Construction of this production well will provide additional lithologic information.

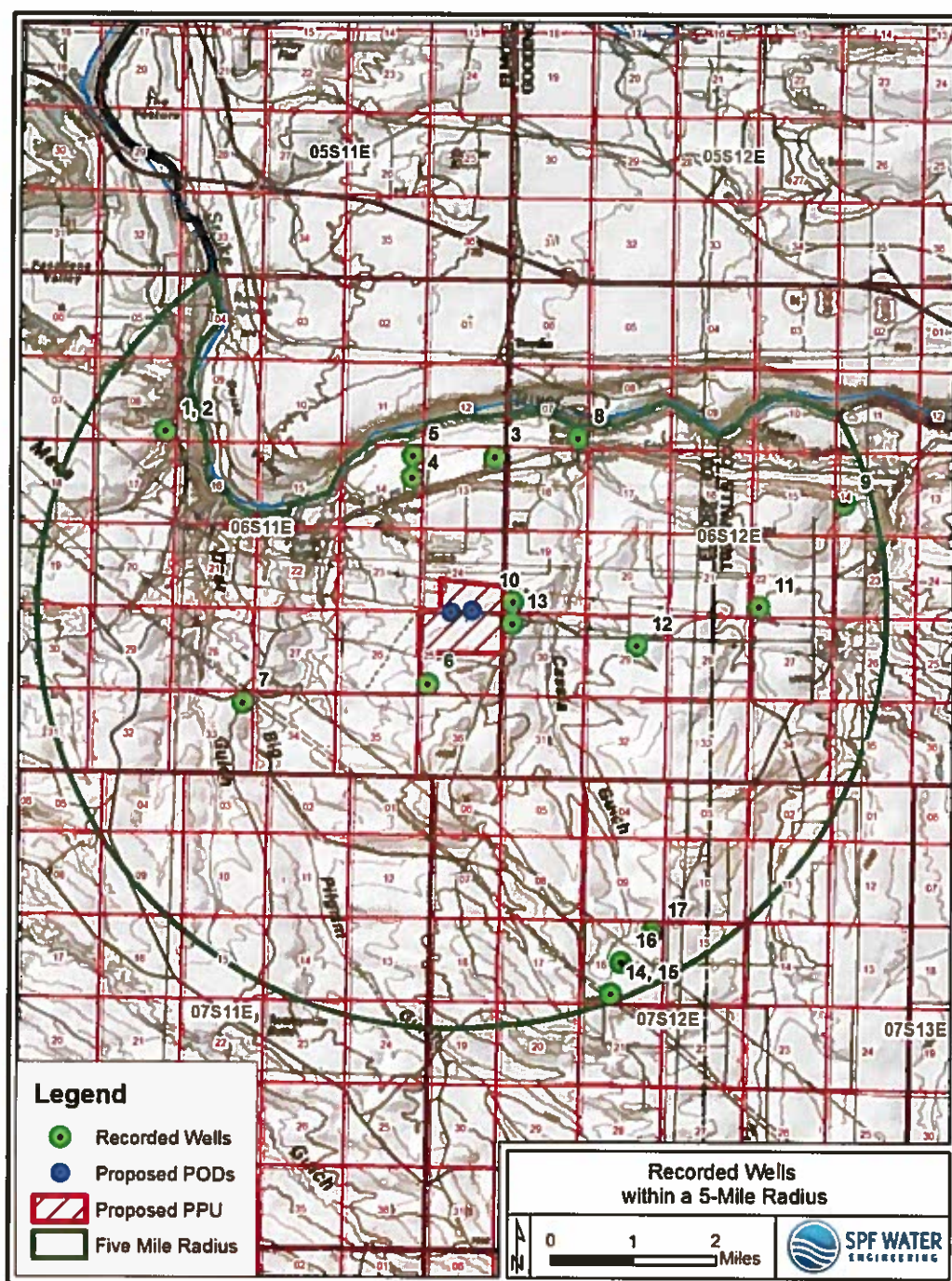


Figure 2. Recorded wells in the vicinity of the proposed place of use.

C. Aquifer Test Procedure

The aquifer test was conducted by pumping the existing stockwater well at a rate of 13 gpm for 24 hours. Due a lower than expected static water level of 539.65 feet below ground level (BGL), discharge rates using the pre-selected 5-hp submersible pump were just below the anticipated 15 to 25 gpm range described in the approved aquifer test proposal (Attachment B). (The nominal 6-inch diameter casing effectively limited the size of pump that could be installed in this well). Pumping began on April 1, 2015 and ceased on April 2, 2015.

The groundwater levels before, during, and after the pumping test were monitored in the stockwater well. Monitoring began approximately 2 hours prior to the start of pumping, and was continued for 1 hour following cessation of pumping. Water level observations were collected using an electric-line sounder and recording pressure transducers. A non-vented Solinst Levellogger Edge was placed to a depth of approximately 604 feet below ground level. To correct the transducer data for fluctuations in atmospheric pressure, a Solinst Barologger Edge was installed next to the sounding tube in the well casing. Manual measurements were made with the electric-line well sounder to both calibrate and provide confirmation of transducer measurements.

An installed 5-hp submersible pump, set to a depth of 609 feet, was used for test pumping. Flow rate was measured using a 5-gallon bucket and stop watch. Flow rate was controlled using a ball-valve installed on the discharge head. Attachment C provides photographs of the pumping test set-up, discharge, sounding tube, along with photographs of the general area at North, East, South, and West aspects. Water was discharged onto a plywood barrier and subsequently onto bare native soil. Due to the terrain, slope, and dry conditions, no significant ponding occurred. Infiltration of discharge water was thought to be minimal because of the 540-foot depth to water and the 85-foot aggregate thickness of tan and blue clay beginning at a depth of 12 feet below ground surface.

Standard water quality parameters were measured periodically in discharge water collected in a 5-gallon bucket; water quality parameters included the following: pH (S.U.), water temperature (°C), electrical conductivity (µS/cm), and specific conductance (µS/cm @ 25°C). An EcoSense Model PH100 meter was used for pH measurements. Temperature, electrical conductivity (EC), and specific conductance (SC) were measured with a YSI Model EC300 meter. Calibrations for pH, EC, and SC were completed on the morning of each field day. The pH and SC readings are temperature-compensated.

D. Test Results

No significant drawdown occurred in the pumping well during the test. The maximum drawdown attained during the 24 hour pump test was 0.14 feet. Upon cessation of pumping, the water level recovered to pre-pumping static conditions within 8 minutes.

Data for the stockwater well are plotted on an arithmetic time scale in Figure 3. Drawdown data are plotted on a semi-logarithmic time scale in Figure 4. Residual drawdown data that describe aquifer recovery are plotted on a semi-logarithmic time scale in Figure 5.

All manual observations of water level, pH, water temperature (at point of discharge), electrical conductivity, and specific conductance are presented in Table 1.

Pressure transducer data (Excel format) and corresponding calculations and corrections are available upon request.

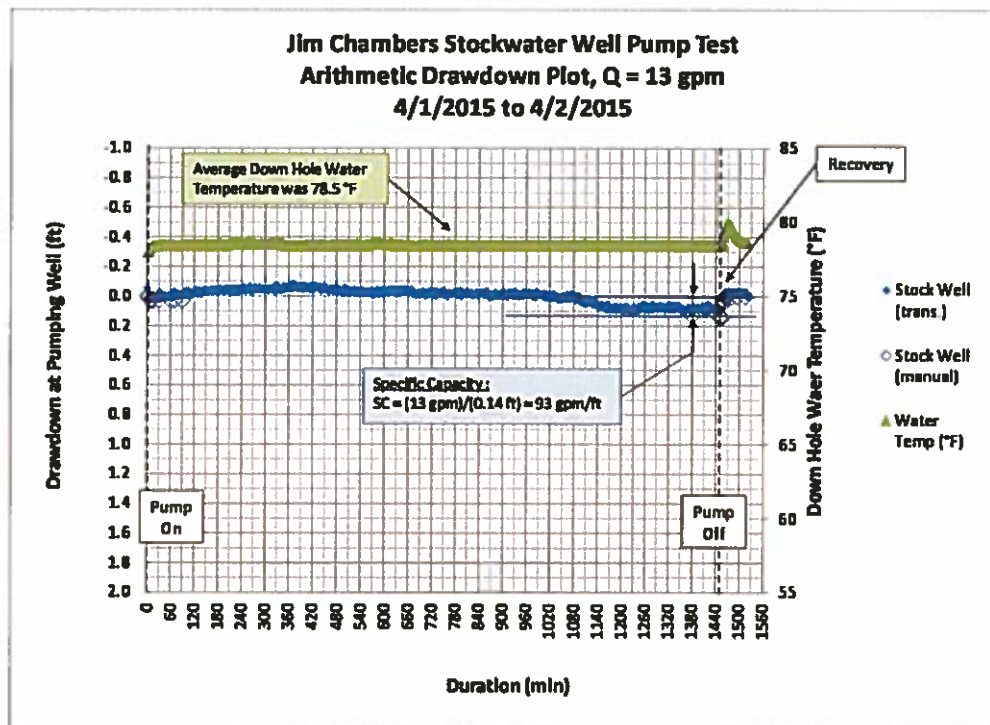


Figure 3. Arithmetic drawdown plot of stockwater well pump test data.

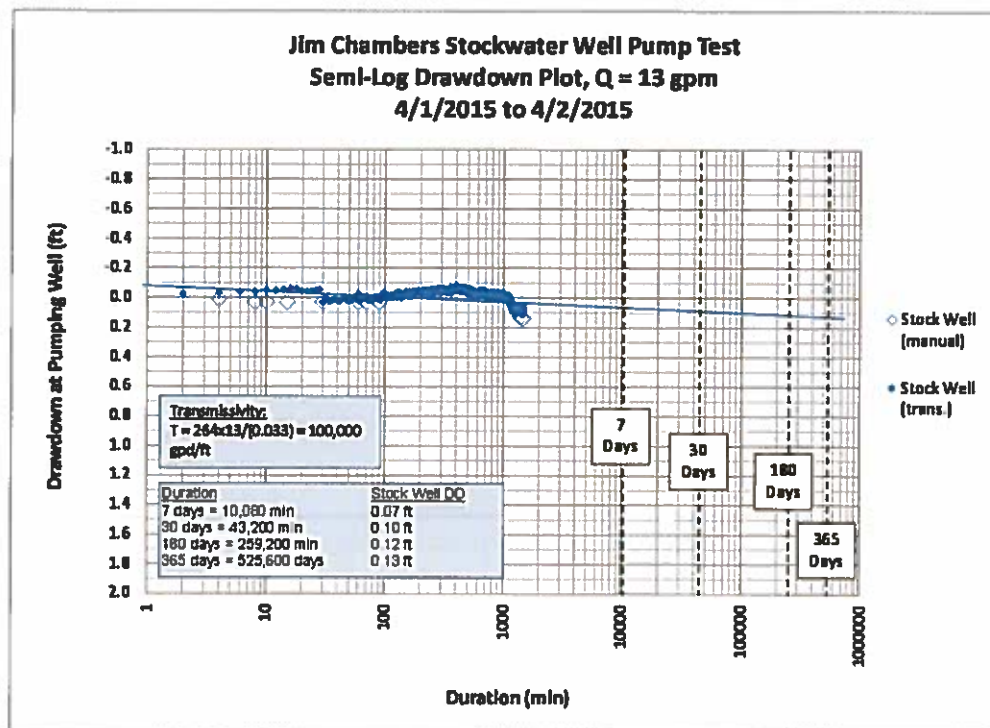


Figure 4. Semi-log drawdown plot of stockwater well pump test data

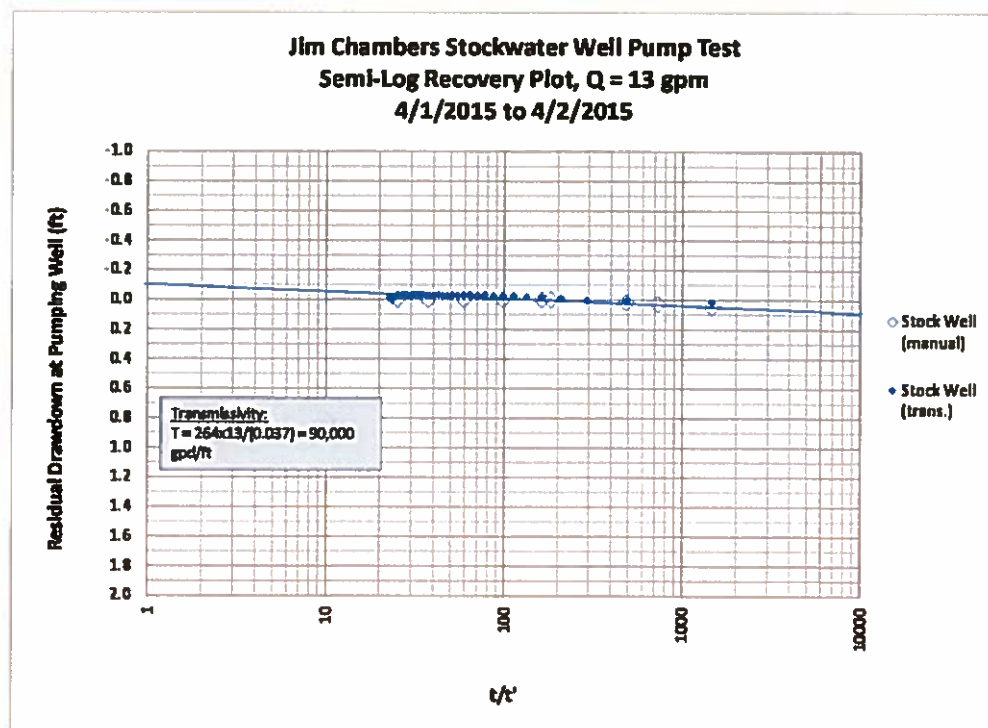


Figure 5. Semi-log residual drawdown (recovery) plot of stockwater well pump test data

Table 1. Manual observations for Stockwater Well Pump Test

Date Time	t (min)	t' (min)	t/t'	Stock Well DTW (ft, BMP)	Stock Well DTW (ft, BGL)	Stock Well DD (ft)	Flow Rate (gpm)	Notes
4/1/2015 10:30				541.85	539.65	0.00	0	SWL; MP = 2.2 ft AGL
4/1/2015 12:30	0			541.85	539.65	0.00	0	SWL; MP = 2.2 ft AGL; measured WL then turned pump on, throttled back slightly.
4/1/2015 12:34	4			541.86	539.66	0.01	13	5gal/23.05sec
4/1/2015 12:38	8			541.88	539.68	0.03	13	
4/1/2015 12:40	10			541.88	539.68	0.03	13	
4/1/2015 12:45	15			541.88	539.68	0.03	13	
4/1/2015 13:00	30			541.88	539.68	0.03	13	
4/1/2015 13:30	60			541.88	539.68	0.03	13	pH = 7.95 T = 26.2°C = 79.2 °F EC = 900 µm/cm SC = 896 µm/cm @ 25°C
4/1/2015 13:40	70			541.88	539.68	0.03	13	pH = 8.03 T = 26.3°C = 79.3 °F EC = 920 µm/cm SC = 901 µm/cm @ 25°C
4/1/2015 14:00	90			541.88	539.68	0.03	13	
4/2/2015 11:30	1380			541.98	539.78	0.13	13	
4/2/2015 12:40	1450			541.99	539.79	0.14	13	pH = 8.10 T = 26.1°C = 79.0 °F EC = 923 µS/cm SC = 903µS/cm @ 25°C
4/2/2015 12:45	1455	0		541.99	539.79	0.14	13	Measured WL then turned pump off, begin recovery
4/2/2015 12:46	1456	1	1456.00	541.90	539.70	0.05	0	
4/2/2015 12:47	1457	2	728.50	541.88	539.68	0.03	0	
4/2/2015 12:48	1458	3	486.00	541.87	539.67	0.02	0	
4/2/2015 12:53	1463	8	182.87	541.85	539.65	0.00	0	
4/2/2015 12:54	1464	9	162.67	541.85	539.65	0.00	0	
4/2/2015 13:00	1470	15	98.00	541.85	539.65	0.00	0	
4/2/2015 13:10	1480	25	59.20	541.85	539.65	0.00	0	
4/2/2015 13:25	1495	40	37.37	541.85	539.65	0.00	0	
4/2/2015 13:45	1515	60	25.25	541.85	539.65	0.00	0	End of recovery
Notes: Casing DIA: 6-inch Measurement Point (MP): 2.2 feet above ground level (AGL) Pump: 5 hp submersible, set at 609 feet below ground level (BGL) Flow rate measured with 5 gallon bucket and stop watch								

E. Discussion of Test Results

As shown in Figure 3, the stockwater well experienced a nominal maximum drawdown of 0.14 feet while pumping at 13 gpm. The calculated specific capacity is approximately 93 gpm/ft. However, this value is somewhat uncertain because of the small amount of drawdown during the test.

The slope of the semi-logarithmic drawdown plot (Figure 4) suggests a transmissivity of approximately 100,000 gpd/ft. This transmissivity estimate is relatively consistent with the transmissivity estimated from the semi-logarithmic recovery plot (Figure 5), which was 90,000 gpd/ft. Again, these values are somewhat uncertain because of the small drawdown.

Discharge water was turbid at the beginning of the pump test, but cleared up relatively quickly and did not have any odor. Measured pH, water temperature, EC, and SC were relatively consistent throughout the duration of the pumping test (Table 1). Average pH, water temperature, EC, and SC measurements were 8.03 (S.U.), 79.2 (°F), 920 (µS/cm), and 900 (µS/cm @ 25°C) respectively.

Average downhole water temperature measured with the water level transducer was 78.5 °F during the pump test.. Note that the spike in downhole water temperature during recovery is likely a result of the pump motor releasing heat energy.

In summary, the pumping rate from the 515-630 foot aquifer zone was constrained by both the 6-inch casing and single phase power supply. The resulting 13 gpm flow rate did not stress the aquifer enough to provide reliable estimates of specific capacity or aquifer transmissivity. However, it is clear that the 515-630 foot aquifer zone is capable of substantially greater flow rates than those achieved in this test.

F. Attachments

- Attachment A:** Approval Letter from IDWR dated September 9, 2014
- Attachment B:** Letter proposing alternate/preliminary pumping test to IDWR from SPF dated July 24, 2014; including Well Drillers' Report
- Attachment C:** Site photographs

G. References

- Bond, J.G., Wood, C.H., 1978. Geologic map of Idaho. Idaho Department of Lands, Bureau of Mines and Geology, 1:500,000 scale.
- Lewis, R.S., Link, P.K., Stanford, L.R., Long, S.P., 2012. Geologic Map of Idaho. Idaho Geologic Survey, scale: 1:750,000.

Attachment A:

Approval Letter from IDWR dated September 9, 2014



State of Idaho

DEPARTMENT OF WATER RESOURCES

Western Region • 2735 Airport Way • Boise, Idaho 83705-5082

Phone: (208) 334-2190 • Fax: (208) 334-2348 • Website: www.idwr.idaho.gov

C.L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Director

September 9, 2014

HALF MOON LLC
C/O CHRISTIAN R PETRICH PE
SPF WATER ENGINEERING
300 E MALLARD DR SUITE 350
BOISE ID 83706

Re: Application for Permit No. 51-13106: Response to Aquifer Pump Test Proposal

Dear Christian:

On July 24, 2014, the Idaho Department of Water Resources (IDWR) received your pump test proposal in response to IDWR's request. A pump test has been requested to allow further evaluation of the proposed appropriation in reference to IDAPA 37.03.08. Rule 40 and Rule 45 (Rule 40 and 45) criteria. On August 7, 2014, IDWR staff met with the Jim Chambers, Christian Petrich, and Chris Bromley representing the applicant to discuss the pump test request, pump test proposal, and other aspects of the application processing.

Based on the meeting and subsequent communications, it is IDWR's understanding the applicant is not willing to perform a pump test of the scale proposed in IDWR's June 4, 2014 letter (~ 2 cfs in test well). As an alternative, you propose installing a 5 hp pump in an existing well to be pumped at 15 to 25 gpm (~ 3% of test rate requested and ~1% of total rate proposed for appropriation) for a minimum of 24 hours.

While not likely to yield information as relevant as the pump test requested, IDWR believes the pump test proposed will likely provide some information to allow for evaluation of Rule 40 and 45 criteria. As authorized under I.C. § 42-1805 "Additional duties of the Director," the **aquifer pump test is approved**. Currently, IDWR has no basis to move forward with evaluation of the application until additional information to address Rule 40 and 45 is submitted. Further evaluation of the application will commence once the additional information is received with any possible approval likely being proportionate to the extent of the information received.

Should you have questions or concerns please contact me at 208-334-2190.

Sincerely,

John Westra
Western Regional Manager

P.S. Although Chris Bromley has not submitted a Notice of Appearance in this matter, a copy of this letter is being sent to him as a courtesy given his presence at our 8/7/14 meeting on this matter.

Cc: Jim Chambers - Half Moon, LLC & Chris Bromley - McHugh Bromley PLLC

Attachment B:

Letter proposing alternate/preliminary pumping test to
IDWR from SPF dated July 24, 2014; including Well
Drillers' Report



July 24, 2014

John Westra, Manager
Idaho Department of Water Resources – Western Region
2735 Airport Way
Boise, Idaho 83705-5082

Via email and surface mail

Subject: Application for Permit 51-13106

Dear John,

The purpose of this letter is to respond to your June 4, 2014 request for the drilling, construction, and testing of a test well prior to issuing a permit for Application 51-13106. Specifically, your letter requested construction of a well capable of producing approximately 2 cfs (900 gpm) to provide estimates of aquifer properties in the area.

The applicant (Half Moon LLC) wishes to propose an alternate plan for testing, exploration, and development. First, the applicant proposes conducting a pumping test in an existing well prior to permit issuance. Second, following permit issuance, the applicant will (1) construct and test at least one production well and (2) monitor and report discharge rates, discharge volumes, and groundwater levels during and after irrigation withdrawals. Monitoring groundwater-level responses to seasonal irrigation withdrawals is the best way to evaluate sustainable water supply in this area.

An initial pumping test is proposed for a stockwater well located less than ½ mile east of the proposed points of diversion under Application 51-13106 (Well Tag No. 0057962, listed under the name of Juan Gutierrez, located in the SWSWSW of Section 19, T6N R12E).¹ The stockwater well was drilled to a depth of 631 feet, has casing installed to 405 feet, and is open from 405 to 631 feet.² The well is currently equipped with a 2.5-hp pump at a depth of approximately 550 feet. The pump installer (Darren Bybee) believes that the well will accommodate a 5-hp pump at a depth of approximately 600 feet.

Thus, the applicant proposes installing a 5-hp pump in the stockwater well at a depth of approximately 600 feet, installing a minimum 1.25-inch diameter PVC pipe to the pump

¹ This well is indicated as Well 10 in Figure 3 of my memorandum to Ms. Angela Grimm of February 4, 2014, and is provided again as an attachment to this letter.

² See attached drillers' report.

column to serve as a dedicated sounding tube, installing a pressure transducer/data logger in the sounding tube, and conducting a minimum 24-hour pumping test in this well. Groundwater levels will be measured, recorded, and analyzed during and following the pumping test. The anticipated discharge rate will be substantially less than 900 gpm (between approximately 15 and 25 gpm) because the well was not constructed for higher production rates. Nonetheless, the well test can be used to estimate transmissivity for the 515-630 aquifer zone, specific capacity, and more importantly, post-test water-level recovery. Furthermore, the applicant will monitor and record water temperature during the aquifer test. SPF will prepare and submit a brief technical memorandum summarizing the results of this test.

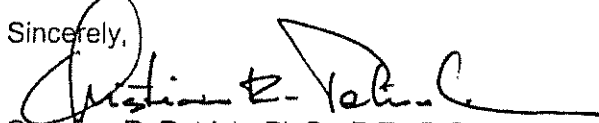
Following issuance of a permit, the applicant will construct a production well with a target depth between 600 and 1,200 feet. Construction of this well will provide additional lithologic information for the area. During drilling, the applicant will log water temperature information every 100 feet of well depth below the water table. Following drilling and construction, the applicant will conduct a minimum-24-hour pumping/recovery test to estimate well capacity, short-term aquifer capacity, and aquifer transmissivity. SPF will prepare and submit a brief technical memorandum describing the testing and summarizing test results.

Ultimately, the best way to determine long-term sustainable water supply in this area is through extended pumping/irrigation. Withdrawals for irrigation, with groundwater-level measurements prior to, immediately following, and several months after the irrigation season, will allow a much better assessment of long-term pumping withdrawals than a short-term aquifer test. To that end, the applicant anticipates monitoring and reporting (on an annual basis) discharge rates, groundwater levels prior to and immediately following the irrigation season, and post-irrigation season groundwater-level recovery. Such monitoring and annual reporting would continue at least during the permit development period.

Finally, the applicant understands the inherent risk associated with developing a water supply in an area with few wells. The applicant recognizes that licensing of the permit will reflect the actual amount of water put to beneficial use, even if this is less than the initially-permitted amount.

In advance, thank you for your consideration of this alternate testing, development, and monitoring proposal. Please call me if you have any questions.

Sincerely,



Christian R. Petrich, Ph.D., P.E., P.G.
Principal Engineer/Hydrologist

cc: Jim Chambers, Half Moon LLC

Attachments: Figure 3 from memorandum to Ms. Angela Grimm dated February 4, 2014.
Driller's report for Half Moon stockwater well.

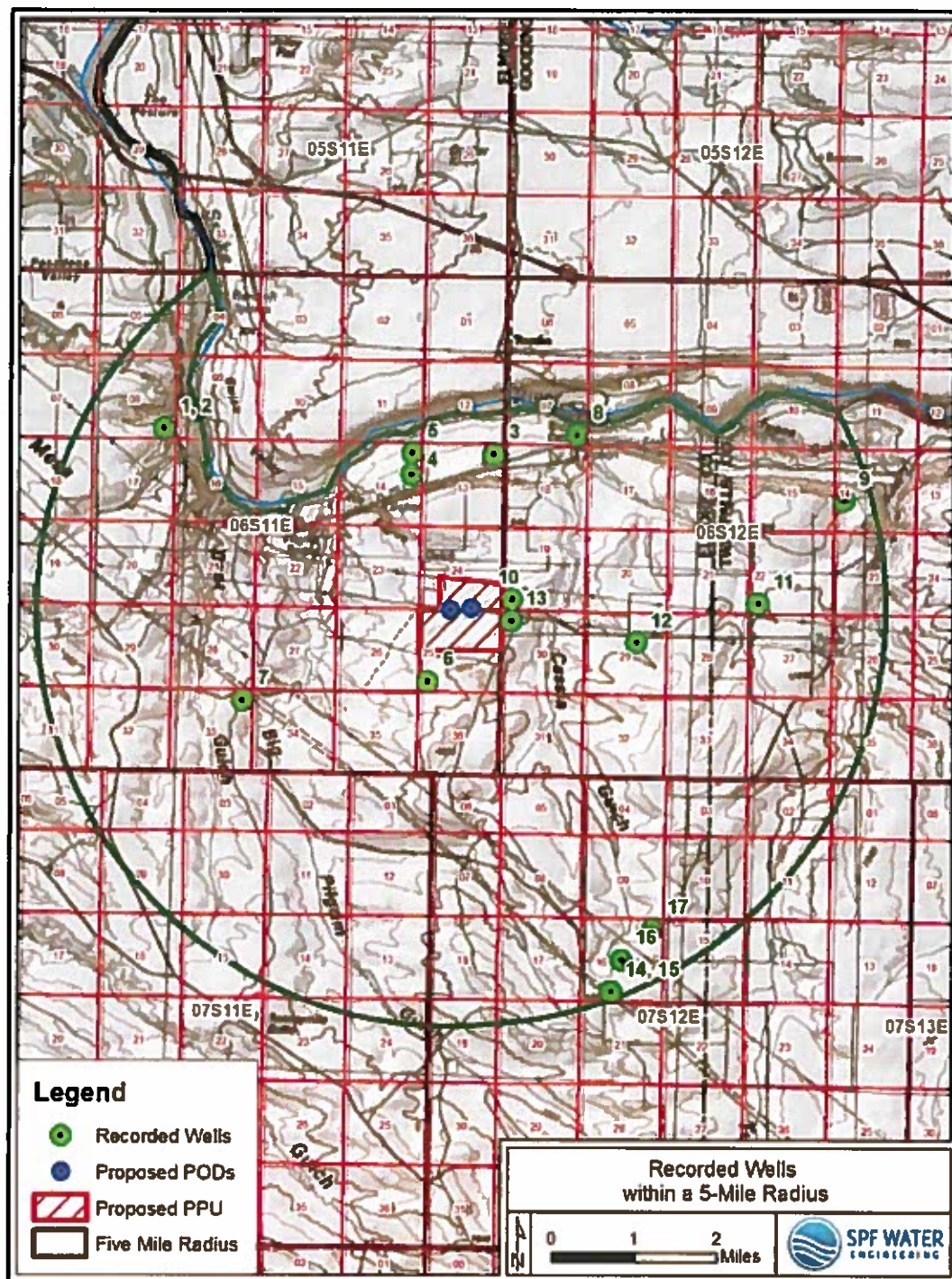


Figure 3. Recorded wells in the vicinity of the proposed place of use.

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Form 238-7
6/07IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Well 10

860759

1. WELL TAG NO. D 0057962

Drilling Permit No. _____
Water right or injection well # _____

2. OWNER:

Name Juan Gutierrez
Address P.O. Box 154
City Glenns Ferry State ID. Zip 83623

3. WELL LOCATION:

Twp. 6 North ☐ or South ☒ Rge. 12 East ☒ or West ☐
Sec. 30 19 SW 1/4 NW SW 1/4Gov't Lot _____ County Elmore
Lat. 42 ° 52.7833 (Deg and Decimal minutes)Long. -115 ° 55.1667 N side of (Deg and Decimal minutes)Address of Well Site P.O. Box 154, North Bell Rapids Road,
56m NE of Old Oregon Trail Hwy City Glenns Ferry

Lot _____ Blk. _____ Sub. Name _____

4. USE:

☒ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation ☐ Thermal ☐ Injection
☐ Other _____

5. TYPE OF WORK:

☐ New well ☒ Replacement well ☐ Modify existing well
☐ Abandonment ☐ Other _____

6. DRILL METHOD:

☒ Air Rotary ☐ Mud Rotary ☐ Cable ☐ Other _____

7. SEALING PROCEDURES:

Seal material	From (ft)	To (ft)	Quantity (lbs or ft)	Placement method/procedure
Bentonite #5	0	405'	5900 lbs	Overbore Pour

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/schedule	Material	Casing Liner	Threaded	Yielded
6 5/8"	+2'	405'	.250	Steel	☒	☐	☒

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 405 feet

9. PERFORATIONS/SCREENS:

Perforations ☐ Y ☒ N Method _____Manufactured screen ☐ Y ☒ N Type _____

Method of installation _____

From (ft)	To (ft)	Slot size	Number(s)	Diameter (nominal)	Material	Gauge or Schedule

Length of Headpipe _____ Length of Tailpipe _____

Packer ☐ Y ☒ N Type _____

10. FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft)	Placement method

11. FLOWING ARTESIAN:

Flowing Artesian? ☐ Y ☒ N Artesian Pressure (PSIG) _____

Describe control device _____

12. STATIC WATER LEVEL and WELL TESTS:

Depth first water encountered (ft) 540' Static water level (ft) 536'Water temp. (°F) NA Bottom hole temp. (°F) _____Describe access port Through top of well seal

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)	Pump	Water	As	Flowing
<u>na</u>	<u>na</u>	<u>90</u>	☐	☐	☒	☐
<u>LOST CIRCULATION</u>			☐	☐	☐	☐

Water quality test or comments: _____

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in)	From (ft)	To (ft)	Remarks, lithology or description of repairs or abandonment, water temp.	Water
10"	0	6'	Topsoil	X
10"	6'	12'	Silty sand	X
10"	12'	26'	Tan clay	X
10"	26'	30'	Gravel	X
10"	30'	91'	Tan clay	X
10"	91'	94'	Blue clay	X
8"	94'	101'	Blue clay	X
8"	101'	127'	Gray lava	X
8"	127'	138'	Gray and brown lava	X
8"	138'	139'	Void	X
8"	139'	153'	Gray and brown lava soft broken up with water	X
8"	153'	156'	Lost circulation	X
8"	156'	207'	Medium broken up	X
8"	207'	254'	Hard broken up	X
8"	254'	265'	Soft	X
8"	265'	276'	Medium	X
8"	276'	402'	Medium soft	X
8"	402'	403'	Hard	X
6"	403'	420'	Gray lava	X
6"	420'	437'	Brown lava	X
6"	437'	442'	Broken up lost circulation	X
6"	442'	509'	Soft	X
6"	509'	515'	Broken up soft	X
6"	515'	607'	Medium	X
6"	607'	631'	Very soft	X

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APR 04 2011

WATER RESOURCES

WESTERN REGION

Completed Depth (Measurable) 615 feetDate Started: Mar 7, 2011Date Completed: Mar 21, 2011

14. DRILLER'S CERTIFICATION:

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name Hiddleston Drilling, Co. No. 35Principal Driller [Signature] Date 3/31/2011

Driller _____ Date _____

Operator [Signature] Date 4-1-11

Operator I _____ Date _____

* Signature of Principal Driller and rig operator are required.

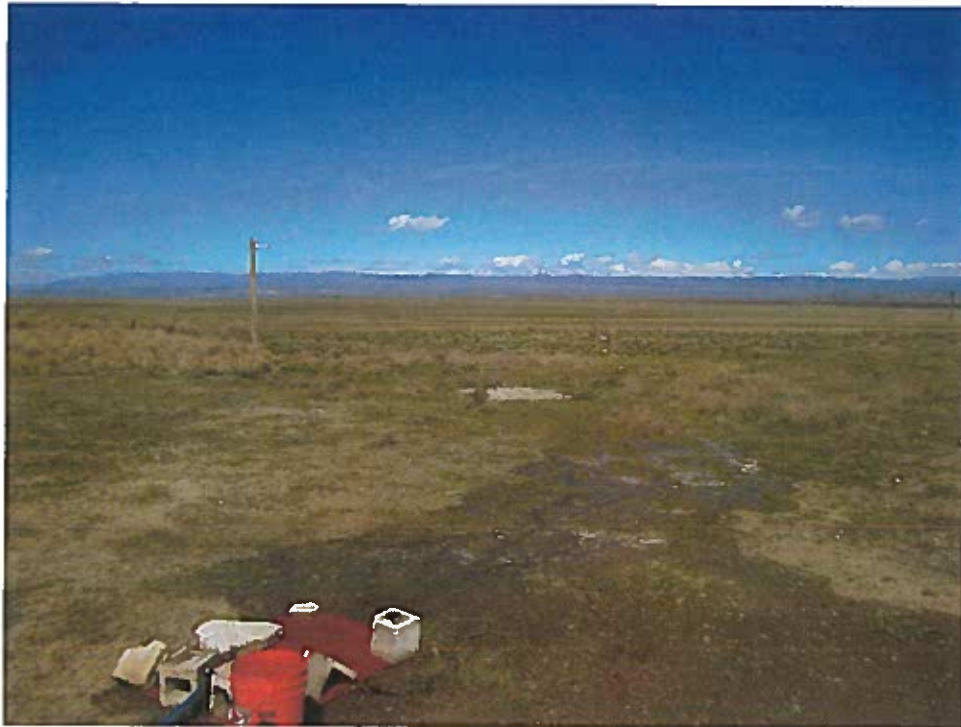
Attachment C:
Site Photographs



Test pumping set-up at stockwater well site



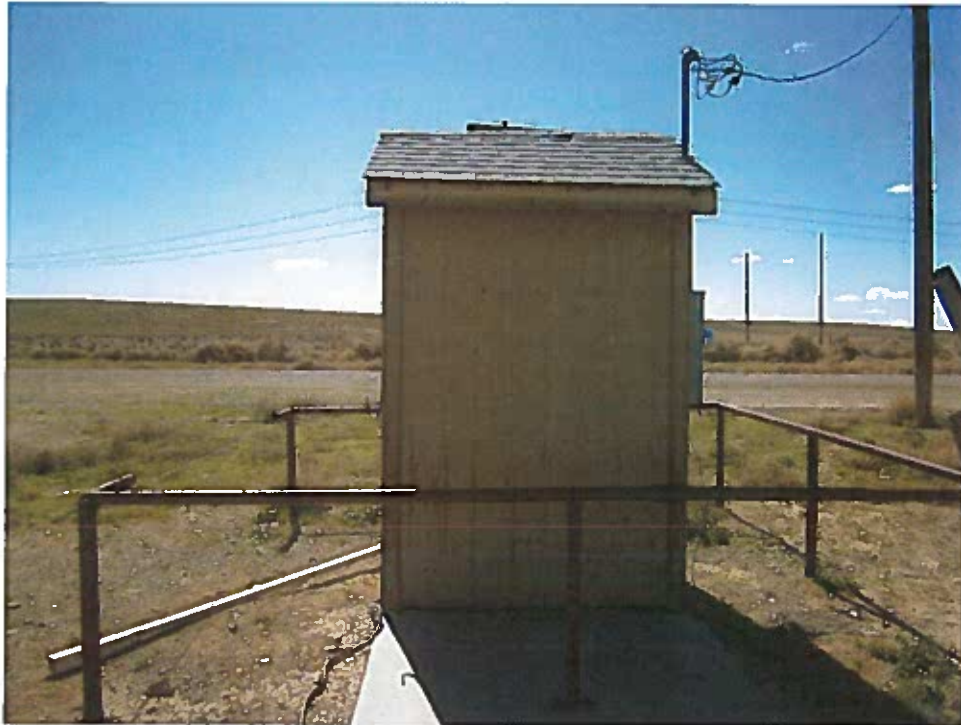
13 gpm discharge and top of 1.25-inch sounding tube with measurement point identified



Looking north from stockwater well site



Looking east from stockwater well site



Looking south from stockwater well site



Looking west from stockwater well site

Strange, Jennifer

To: Lester, Steve
Subject: RE: Half Moon pumping test

From: Lester, Steve
Sent: Monday, October 27, 2014 3:16 PM
To: 'Christian Petrich'
Subject: RE: Half Moon pumping test

Christian:

Your email correctly summarizes our conversation and the approved timing of the test. Please let me know if you need more information.

Thank you.

Steve Lester
Interim Western Region Manager
IDWR Western Region
2735 Airport WY
Boise, ID 83705
(208-334-2190)

From: Christian Petrich [<mailto:CPetrich@spfwater.com>]
Sent: Friday, October 24, 2014 5:36 PM
To: Lester, Steve
Cc: Jim Chambers (royalfork@qwestoffice.net)
Subject: Half Moon pumping test

Steve,

The purpose of this email is to confirm our conversation from earlier this week in which you agreed that an aquifer test in support of Application 51-13106, the plan for which was approved in your letter of September 9, 2014, can be done in February or March, 2015. We anticipate submitting a report summarizing results of this test in April, 2015. Thank you for your accommodation on this.

Regards,
Christian

Christian R. Petrich, Ph.D., P.E., P.G.
Principal Engineer/Hydrologist
SPF Water Engineering, LLC
300 E Mallard Drive, Suite 350 | Boise, ID 83706
Tel: 208.383.4140
Fax: 208.383.4156
Cell: 208.869.4569
web: www.spfwater.com



State of Idaho

DEPARTMENT OF WATER RESOURCES

Western Region • 2735 Airport Way • Boise, Idaho 83705-5082

Phone: (208) 334-2190 • Fax: (208) 334-2348 • Website: www.idwr.idaho.gov

C.L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Director

September 9, 2014

HALF MOON LLC
C/O CHRISTIAN R PETRICH PE
SPF WATER ENGINEERING
300 E MALLARD DR SUITE 350
BOISE ID 83706

Re: Application for Permit No. 51-13106: Response to Aquifer Pump Test Proposal

Dear Christian:

On July 24, 2014, the Idaho Department of Water Resources (IDWR) received your pump test proposal in response to IDWR's request. A pump test has been requested to allow further evaluation of the proposed appropriation in reference to IDAPA 37.03.08. Rule 40 and Rule 45 (Rule 40 and 45) criteria. On August 7, 2014, IDWR staff met with the Jim Chambers, Christian Petrich, and Chris Bromley representing the applicant to discuss the pump test request, pump test proposal, and other aspects of the application processing.

Based on the meeting and subsequent communications, it is IDWR's understanding the applicant is not willing to perform a pump test of the scale proposed in IDWR's June 4, 2014 letter (~ 2 cfs in test well). As an alternative, you propose installing a 5 hp pump in an existing well to be pumped at 15 to 25 gpm (~ 3% of test rate requested and ~1% of total rate proposed for appropriation) for a minimum of 24 hours.

While not likely to yield information as relevant as the pump test requested, IDWR believes the pump test proposed will likely provide some information to allow for evaluation of Rule 40 and 45 criteria. As authorized under I.C. § 42-1805 "*Additional duties of the Director*," the **aquifer pump test is approved**. Currently, IDWR has no basis to move forward with evaluation of the application until additional information to address Rule 40 and 45 is submitted. Further evaluation of the application will commence once the additional information is received with any possible approval likely being proportionate to the extent of the information received.

Should you have questions or concerns please contact me at 208-334-2190.

Sincerely,

John Westra
Western Regional Manager

P.S. Although Chris Bromley has not submitted a Notice of Appearance in this matter, a copy of this letter is being sent to him as a courtesy given his presence at our 8/7/14 meeting on this matter.

Cc: Jim Chambers - Half Moon, LLC & Chris Bromley - McHugh Bromley PLLC



RECEIVED

JUL 25 2014

WATER RESOURCES
WESTERN REGION

July 24, 2014

John Westra, Manager
Idaho Department of Water Resources – Western Region
2735 Airport Way
Boise, Idaho 83705-5082

Via email and surface mail

Subject: Application for Permit 51-13106

Dear John,

The purpose of this letter is to respond to your June 4, 2014 request for the drilling, construction, and testing of a test well prior to issuing a permit for Application 51-13106. Specifically, your letter requested construction of a well capable of producing approximately 2 cfs (900 gpm) to provide estimates of aquifer properties in the area.

The applicant (Half Moon LLC) wishes to propose an alternate plan for testing, exploration, and development. First, the applicant proposes conducting a pumping test in an existing well prior to permit issuance. Second, following permit issuance, the applicant will (1) construct and test at least one production well and (2) monitor and report discharge rates, discharge volumes, and groundwater levels during and after irrigation withdrawals. Monitoring groundwater-level responses to seasonal irrigation withdrawals is the best way to evaluate sustainable water supply in this area.

An initial pumping test is proposed for a stockwater well located less than ½ mile east of the proposed points of diversion under Application 51-13106 (Well Tag No. 0057962, listed under the name of Juan Gutierrez, located in the SWSWSW of Section 19, T6N R12E).¹ The stockwater well was drilled to a depth of 631 feet, has casing installed to 405 feet, and is open from 405 to 631 feet.² The well is currently equipped with a 2.5-hp pump at a depth of approximately 550 feet. The pump installer (Darren Bybee) believes that the well will accommodate a 5-hp pump at a depth of approximately 600 feet.

Thus, the applicant proposes installing a 5-hp pump in the stockwater well at a depth of approximately 600 feet, installing a minimum 1.25-inch diameter PVC pipe to the pump

¹ This well is indicated as Well 10 in Figure 3 of my memorandum to Ms. Angela Grimm of February 4, 2014, and is provided again as an attachment to this letter.

² See attached drillers' report.

column to serve as a dedicated sounding tube, installing a pressure transducer/data logger in the sounding tube, and conducting a minimum 24-hour pumping test in this well. Groundwater levels will be measured, recorded, and analyzed during and following the pumping test. The anticipated discharge rate will be substantially less than 900 gpm (between approximately 15 and 25 gpm) because the well was not constructed for higher production rates. Nonetheless, the well test can be used to estimate transmissivity for the 515-630 aquifer zone, specific capacity, and more importantly, post-test water-level recovery. Furthermore, the applicant will monitor and record water temperature during the aquifer test. SPF will prepare and submit a brief technical memorandum summarizing the results of this test.

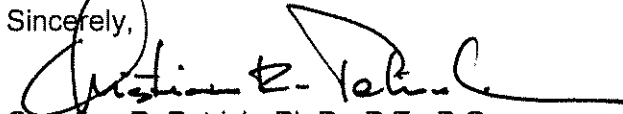
Following issuance of a permit, the applicant will construct a production well with a target depth between 600 and 1,200 feet. Construction of this well will provide additional lithologic information for the area. During drilling, the applicant will log water temperature information every 100 feet of well depth below the water table. Following drilling and construction, the applicant will conduct a minimum-24-hour pumping/recovery test to estimate well capacity, short-term aquifer capacity, and aquifer transmissivity. SPF will prepare and submit a brief technical memorandum describing the testing and summarizing test results.

Ultimately, the best way to determine long-term sustainable water supply in this area is through extended pumping/irrigation. Withdrawals for irrigation, with groundwater-level measurements prior to, immediately following, and several months after the irrigation season, will allow a much better assessment of long-term pumping withdrawals than a short-term aquifer test. To that end, the applicant anticipates monitoring and reporting (on an annual basis) discharge rates, groundwater levels prior to and immediately following the irrigation season, and post-irrigation season groundwater-level recovery. Such monitoring and annual reporting would continue at least during the permit development period.

Finally, the applicant understands the inherent risk associated with developing a water supply in an area with few wells. The applicant recognizes that licensing of the permit will reflect the actual amount of water put to beneficial use, even if this is less than the initially-permitted amount.

In advance, thank you for your consideration of this alternate testing, development, and monitoring proposal. Please call me if you have any questions.

Sincerely,



Christian R. Petrich, Ph.D., P.E., P.G.
Principal Engineer/Hydrologist

cc: Jim Chambers, Half Moon LLC

Attachments: Figure 3 from memorandum to Ms. Angela Grimm dated February 4, 2014.
Driller's report for Half Moon stockwater well.

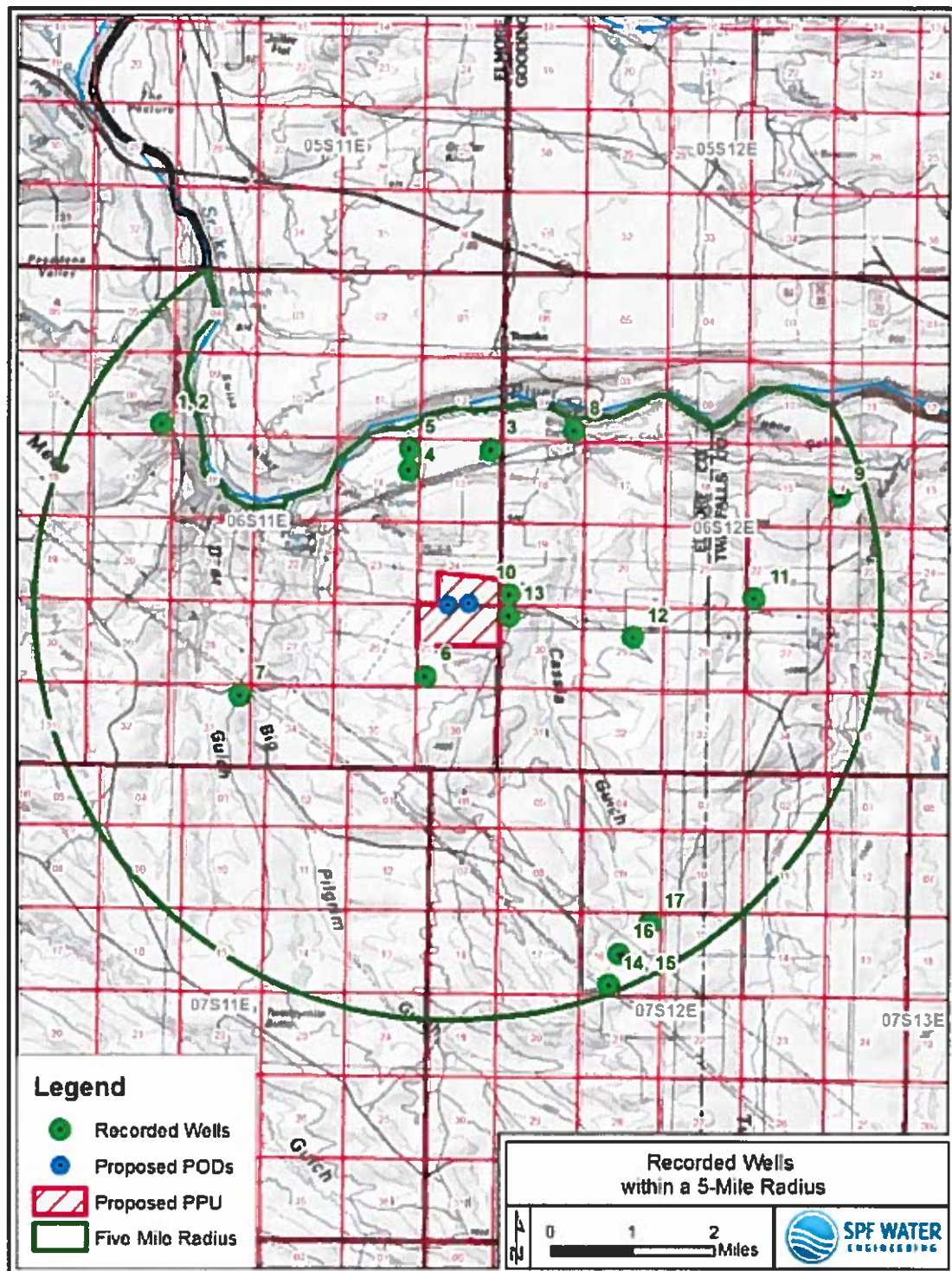


Figure 3. Recorded wells in the vicinity of the proposed place of use.

51

Form 238-7
6/07IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Well 10

860759

1. WELL TAG NO. D 0057962

Drilling Permit No. _____
Water right or injection well # _____

2. OWNER:

Name Juan Gutierrez
Address P.O. Box 154
City Glenns Ferry State ID. Zip 83623

3. WELL LOCATION:

Twp. 6 North ☐ or South ☒ Rge. 12 East ☒ or West ☐
Sec. 30 19 SW 1/4 NW 1/4 SW 1/4Gov't Lot _____ County ElmoreLat. 42 S 52.7833 (Deg. and Decimal minutes)Long. -115 5.1667 (Deg. and Decimal minutes)Address of Well Site P.O. Box 154, North Bell Rapids Road5.6m NE of Old Oregon Trail Hwy City Glenns Ferry

Lot _____ Blk. _____ Sub. Name _____

4. USE:

☒ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation ☐ Thermal ☐ Injection
☐ Other _____

5. TYPE OF WORK:

☐ New well ☒ Replacement well ☐ Modify existing well
☐ Abandonment ☐ Other _____

6. DRILL METHOD:

☒ Air Rotary ☐ Mud Rotary ☐ Cable ☐ Other _____

7. SEALING PROCEDURES:

Seal Material	From (ft)	To (ft)	Quantity (lbs or ft)	Placement Method/Procedure
Bentonite #5	0	405'	5900 lbs	Overbore Pour

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/Schedule	Material	Casing Liner	Threaded	Welded
6 5/8"	+2'	405'	.250	Steel	☒	☐	☒
					☐	☐	☐
					☐	☐	☐
					☐	☐	☐

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 405 feet

9. PERFORATIONS/SCREENS:

Perforations ☐ Y ☒ N Method _____Manufactured screen ☐ Y ☒ N Type _____

Method of installation _____

From (ft)	To (ft)	Screen size	Number	Diameter (nominal)	Material	Gauge or Schedule

Length of Headpipe _____ Length of Tailpipe _____

Packer ☐ Y ☒ N Type _____

10. FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft)	Placement Method

11. FLOWING ARTESIAN:

Flowing Artesian? ☐ Y ☒ N Artesian Pressure (PSIG) _____

Describe control device _____

12. STATIC WATER LEVEL and WELL TESTS:

Depth first water encountered (ft) 540' Static water level (ft) 536'Water temp. (°F) NA Bottom hole temp. (°F) _____Describe access point Through top of well seal

Well test:	Discharge or yield (gpm)	Test duration (minutes)	Test method:	Pump	Boiler	Air	Flowing Artesian
na	na	90		☐	☐	☒	☐
LOST CIRCULATION				☐	☐	☐	☐

Water quality test or comments: _____

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in)	From (ft)	To (ft)	Remarks, lithology or description of repairs or abandonment, water temp.	Water	
				Y	N
10"	0	8'	Topsoil		X
10"	8'	12'	Silty sand		X
10"	12'	26'	Tan clay		X
10"	26'	30'	Gravel		X
10"	30'	91'	Tan clay		X
10"	91'	94'	Blue clay		X
8"	94'	101'	Blue clay		X
8"	101'	127'	Gray lava		X
8"	127'	138'	Gray and brown lava		X
8"	138'	139'	Void		X
8"	139'	153'	Gray and brown lava soft broken up with water/a/c		X
8"	153'	156'	Lost circulation		X
8"	156'	207'	Medium broken up		X
8"	207'	254'	Hard broken up		X
8"	254'	265'	Soft		X
8"	265'	276'	Medium		X
8"	276'	402'	Medium soft		X
8"	402'	403'	Hard		X
6"	403'	420'	Gray lava		X
6"	420'	437'	Brown lava		X
6"	437'	442'	Broken up lost circulation		X
6"	442'	509'	Soft		X
6"	509'	515'	Broken up soft		X
6"	515'	607'	Medium	X	
6"	607'	631'	Very soft	X	

RECEIVED

APR 04 2011

WATER RESOURCES

WESTERN REGION

Completed Depth (Measurable) 615 feetDate Started Mar 7, 2011 Date Completed Mar 21, 2011

14. DRILLER'S CERTIFICATION:

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name Hiddleston Drilling, Co. No. 35Principal Driller [Signature] Date 3/31/2011Driller [Signature] Date _____Operator [Signature] Date 4-1-11Operator [Signature] Date _____

* Signature of Principal Driller and rig operator are required.



July 24, 2014

John Westra, Manager
Idaho Department of Water Resources – Western Region
2735 Airport Way
Boise, Idaho 83705-5082

Via email and surface mail

Subject: Application for Permit 51-13106

Dear John,

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Principal Engineer/Hydrologist

cc: Jim Chambers, Half Moon LLC

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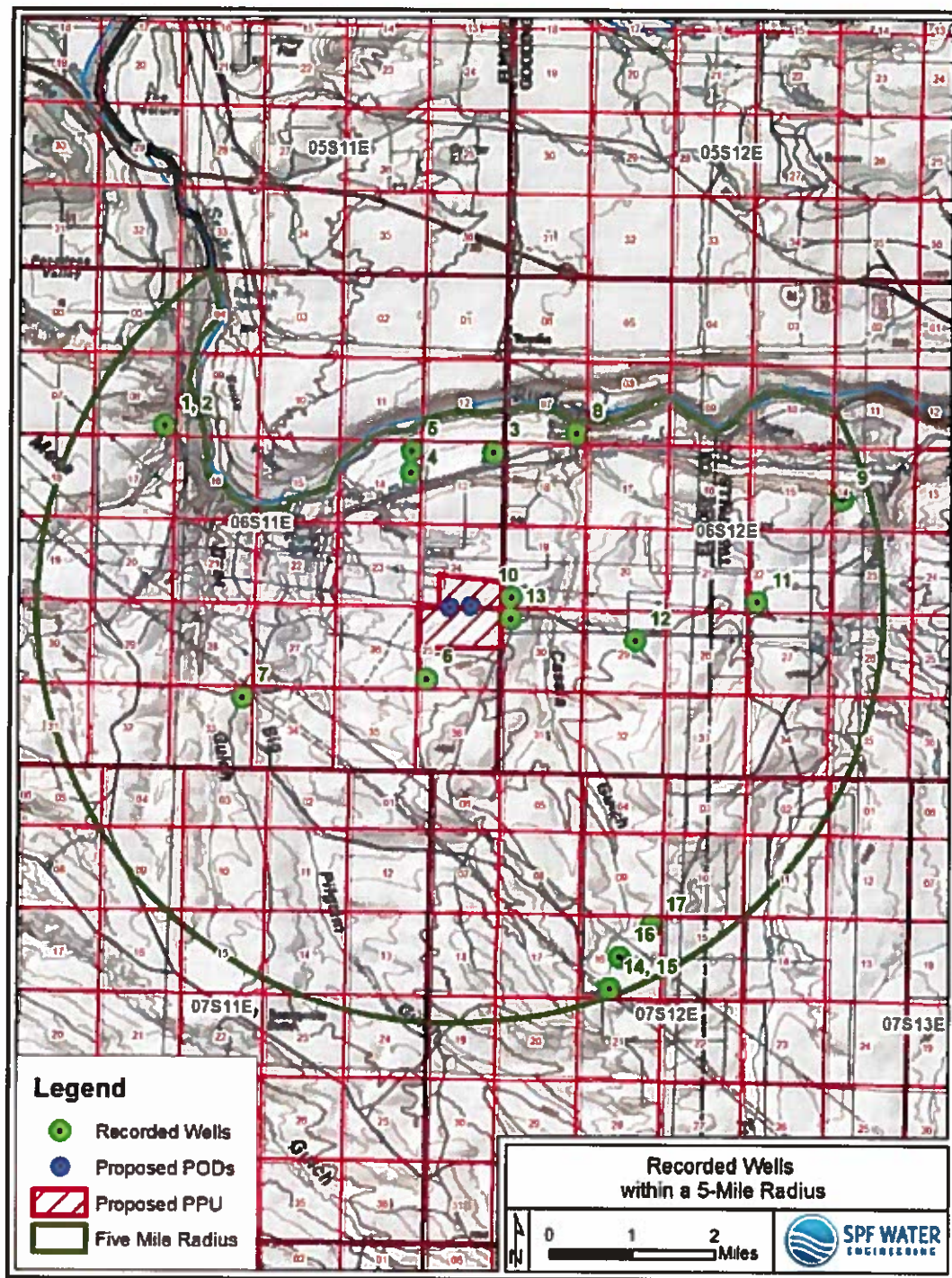


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Well 10

Page 4

MEMORANDUM

Type: In Office Conversation

Telephone

Meeting Notes

Follow-up

Log of Events

Other _____

To: File 51-13106

From: J. Westra, Western Reg. JFW

Date: 7/21/14.

RE: 6/4/14 Department Letter - Request for Pump test.

7/21/14. - Christian Petrich (383-4140) SPF Water Engineering

Discussed that construction of a test well would be costly and there would be risk if the permit was not approved. - Request a permit be approved with conditions. - I said the statutes require the Dept. evaluate certain criteria, one being water sufficiency. The project location is remote and there is no data on water availability or well records to review/evaluate. We need more information/data. This a large project in the "trust water" area. Although there were no protests, certain evaluation criteria must be met.

Suggest Mr. Petrich come back with a test plan for our consideration that maybe reasonable in cost. We just can not approve the permit without more information.

7/24/14 Christian Petrich - phone conference w/ Steve Lester + J. Westra

Discussed 7/24/14 Letter from SPF Engineering. Proposing using stock well to provide information requested. Stated our office would look at it - need to study and review. Pump test only covers aquifer to 630 ft. What about remainder 600 ft of well depth. No consistent with application.

10/16/14

Christian P. - phone call. Probably test around 2/15, water to disperse on ground but away from the well to minimize any effects on test. This sounds ok.

for top of file - Reference sheet

Pg. 1/1

AFFIDAVIT OF PUBLICATION

County of Elmore } ss.
State of Idaho

I, **Brenda M. Fincher**, do solemnly swear that I am the Publisher of the:

Mountain Home News

A weekly newspaper of general circulation, published once a week, in Mountain Home, Idaho, that the notice attached hereto which is a part of publication thereof; was published in said newspaper for 2 consecutive weeks, the first publication having been made on the 18th day of June, 2014, and the last publication having been made on the 25th day of June, 2014; every Wednesday issue of the paper during the period and time of publication and that the notice was published in the paper proper and not in a supplement thereof.

And I further swear that the said Mountain Home News has been continuously and uninterruptedly published in said Elmore County during the period of 78 consecutive weeks prior to the first publication of the attached notice.

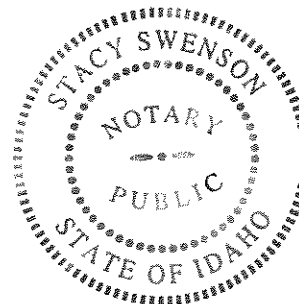
Brenda M. Fincher
Publisher

Subscribed and sworn to me this 30th day of June, 2014.

[Signature]
Notary Public

Residing in Mountain Home, Elmore County, Idaho.

My commission expires **11-17-2017**.



RECEIVED

JUL 02 2014

WATER RESOURCES
WESTERN REGION

NOTICE

The following application has been filed to appropriate the public waters of the State of Idaho:

✓
OK
7/16/14
RS.
51-13106
HALF MOON LLC
911 E WINDING CREEK DR STE 150
EAGLE, ID 83616
Point of Diversion SWSE S24 T06S R11E
ELMORE County Source GROUND
WATER
Point of Diversion NENW S25 T06S R11E
ELMORE County Source GROUND
WATER
Use: IRRIGATION 03/15 to 11/15 4 CFS
Total Diversion: 4 CFS
Date Filed: 9/27/2013
Place of Use: IRRIGATION
T06S R11E S24 NESW SESW
SE(ALL)
T06S R11E S25 NE(ALL) NW(ALL)
Total Acres: 490

Permits will be subject to all prior water rights. For additional information concerning the property location, contact Western Region office at (208) 334-2190; or for a full description of the right(s), please see www.idwr.idaho.gov/apps/ExtSearch/WRFiling.asp. Protests may be submitted based on the criteria of Idaho Code § 42-203A. Any protest against the approval of this application must be filed with the Director, Dept. of Water Resources, Western Region, 2735 Airport Way, Boise ID 83705 together with a protest fee of \$25.00 for each application on or before 7/7/2014. The protestant must also send a copy of the protest to the applicant.

GARY SPACKMAN, Director
One Publication: June 18, 2014
Last Publication: June 25, 2014