

State of Idaho
Department of Water Resources
Water Right License
WATER RIGHT NO. 45-14501

PRIORITY: February 22, 1979

Maximum Diversion Rate: 0.62 CFS

It is hereby certified that:

RONALD S SORENSEN 988 E 1000 S ALBION ID 83311 And/Or

SERN C SORENSEN PO BOX 53 ALBION ID 83311

has complied with the terms and conditions of the permit, issued pursuant to Application for Permit dated February 22, 1979, and has submitted Proof of Beneficial Use on May 10, 1984. An examination confirms water is diverted from:

SOURCE:
GROUND WATER

and a water right has been established as follows:

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>
IRRIGATION	04/01 to 10/15	0.62 CFS

LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER SE¼NE¼ Sec. 12, Twp 12S, Rge 24E, B.M. CASSIA 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	
12S	24E	12												4.0	36.0		33.0		73.0

Total Acres: 73

CONDITIONS OF APPROVAL

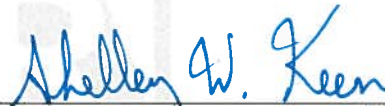
1. Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 140.
2. The right holder shall maintain a measuring device and lockable controlling works of a type approved by the Department in a manner that will provide the watermaster suitable control of the diversion.
3. If surface water rights 45-14224, 45-14226, 45-14228, and 45-14230 appurtenant to the place of use for this right are unavailable for any reason other than drought or curtailment by priority (for example abandoned, forfeited, sold, transferred, leased, used on another place of use, or disallowed by court decree), the right holder shall not divert ground water for irrigation purposes on the land with appurtenant surface water rights without an approved transfer pursuant to Section 42-222, Idaho Code, or approval of the Department if a transfer is not required.

State of Idaho
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WATER RIGHT NO. 45-14501

4. The right holder shall make full beneficial use of water rights 45-14224, 45-14226, 45-14228, and 45-14230 for irrigation of the lands authorized to be irrigated under this right. The right holder shall limit the diversion of ground water under this right for land with an appurtenant surface water right(s) to those times when the surface water supply is not available or reasonably sufficient to irrigate the place of use authorized under this right.
5. Rights 45-14224, 45-14226, 45-14228, 45-14230, and 45-14501 when combined shall not exceed a total diversion rate of 3.54 cfs, a total annual maximum diversion volume of 612 af at the field headgate, and the irrigation of 153 acres.
6. Rights 45-7322 and 45-14501 when combined shall not exceed a total diversion rate of 0.88 cfs and a total annual maximum diversion volume of 329 af.
7. 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.

This license is issued pursuant to the provisions of Section 42-219, Idaho Code. The water right confirmed by this license is subject to all prior water rights and shall be used in accordance with Idaho law and applicable rules of the Department of Water Resources.

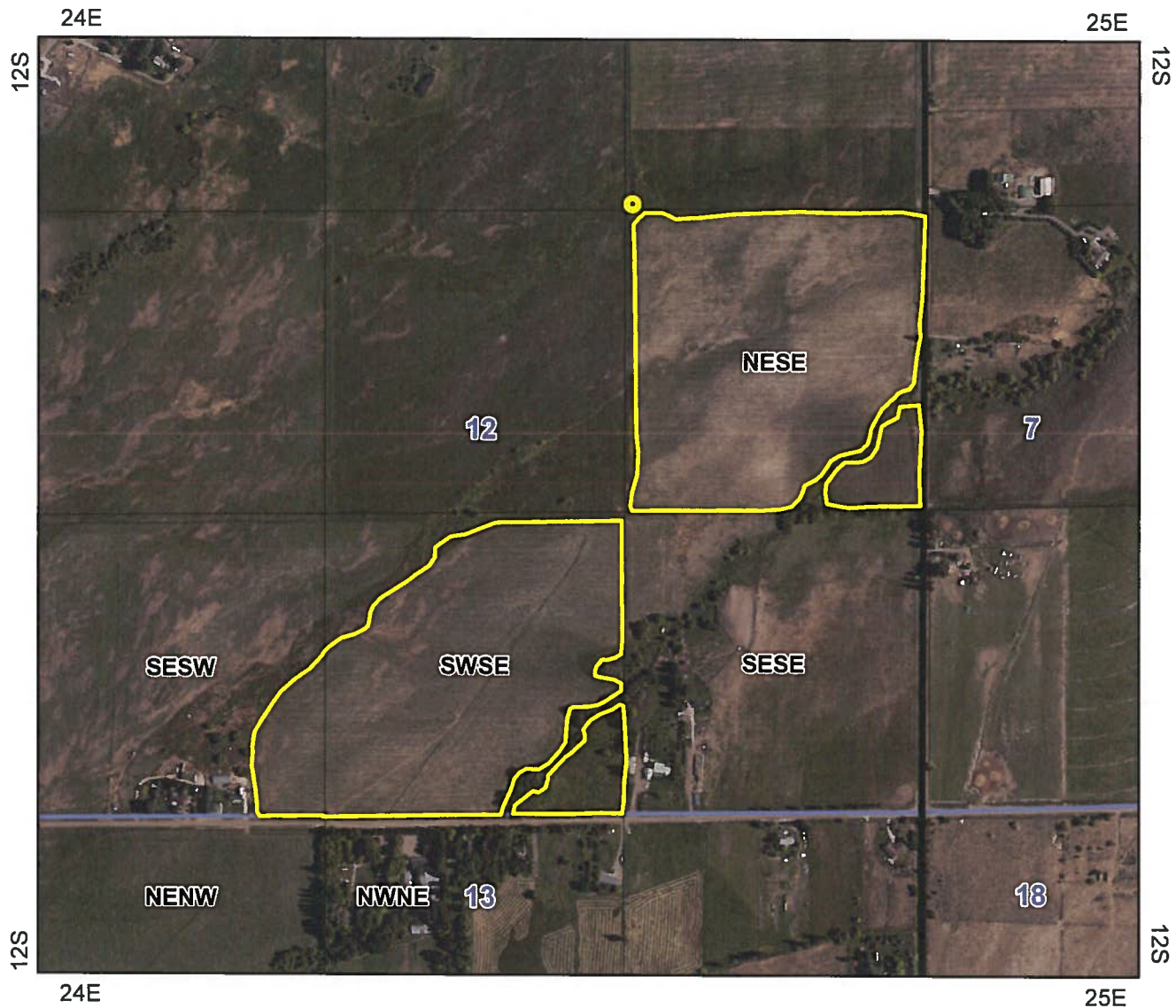
Signed this 13th day of January, 2017.



SHELLEY W. KEEN
Water Rights Section Manager

State of Idaho
Department of Water Resources
Attachment to Water Right License
45-14501

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

0 0.075 0.15 0.3 Miles





State of Idaho

DEPARTMENT OF WATER RESOURCES

322 East Front Street • P.O. Box 83720 • Boise, Idaho 83720-0098

Phone: (208) 287-4800 • Fax: (208) 287-6700 • Web Site: www.idwr.idaho.gov

GARY SPACKMAN
Director

C.L. "BUTCH" OTTER
Governor

January 19, 2017

RONALD S SORENSEN
988 E 1000 S
ALBION ID 83311

SERN C SORENSEN
PO BOX 53
ALBION ID 83311

RE: License No. 45-14501

Issuance of License

Dear Water Right Holder(s):

The Department of Water Resources has issued the enclosed Water Right License confirming that a water right has been established in accordance with your permit. Please be sure to thoroughly review the conditions of approval and remarks listed on your license.

The license 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.

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 208-287-4951.

Sincerely,

A handwritten signature in blue ink that reads "Pamela Skaggs".

Pamela Skaggs
Water Rights Supervisor

Enclosure(s)

c: WATER DISTRICT #140

CERTIFICATE OF SERVICE

I hereby certify that on January 20, 2017 I mailed a true and correct copy, postage prepaid, of the foregoing PRELIMINARY ORDER (**Approved License**) to the person(s) listed below:

RE: WATER RIGHT NO.

45-14501

**RONALD S SORENSEN
988 E 1000 S
ALBION ID 83311**

**SERN C SORENSEN
PO BOX 53
ALBION ID 83311**

**WATER DISTRICT #140
BRIAN HIGGS
355 W 500 S
BURLEY ID 83318**



Darla Block
Technical Records Specialist

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: File 45-7373

FROM: Daniel Nelson – Staff Hydrologist

DATE: January 10, 2017

SUBJECT: Resumption of Processing permit 45-7373

On August 25, 2016, I sent a letter to the current owners of the property associated with this permit. Unfortunately, I did not receive a written response from them. Therefore, I am moving forward with the licensing process for permit 45-7373. Please see my licensing review memo dated August 25, 2016 for additional details.

An assignment of permit was received by the Department on June 1, 2005 assigning 0.29 cfs = 7 inches to irrigate 14.4 acres in the NWNW of Section 13, Township 12 South, Range 24 East to Ronald L. and Carla R. Osborne. This assignment has been processed, and permit 45-7373 was split into permits 45-14501 and 45-14502. Due to the decreed record in the database, we were unable to split the original permit or use the same number of the original permit. We had to create two separate permit numbers due to limitations in the Workflow system.

The Osborne portion of the split is water right 45-14502. A notice of intent to void will be sent to Osborne, since their portion of the permit was never developed. The notice of intent to void will include acknowledgement of the split of the permit.

The original owner of the Permit 45-7373 (Sorensen) portion of the split will be 45-14501. The Sorensen's could receive a license with a diversion rate of 0.62 cfs and a diversion volume of 188 af to irrigate 73 acres in the SESW, NESE, and SWSE of Section 12 in Township 12 South, Range 24 East. The point of diversion is from a well owned by the neighbor in the SENE of Section 12 in Township 12 South, Range 24 East. An amendment has already been approved to include the point of diversion listed in the SENE of Section 12, so no new amendment is necessary.



State of Idaho

DEPARTMENT OF WATER RESOURCES

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C.L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Interim Director

August 25, 2016

HELEN SORENSEN AND
BONNIE SORENSEN
PO BOX 171
ALBION ID 83311

RE: PERMIT TO APPROPRIATE WATER 45-7373

Dear Ms. Sorensen;

A copy of this letter will be sent to both Helen Sorensen and Bonnie Sorensen.

I want to thank you, Helen, for speaking with me on August 25th about the permit Sern and Ronald Sorensen filed for ground water for the property in the Albion area. Water right permit 45-7373 was filed for ground water use from a neighbors well for supplemental water for the farm in Section 12 of Township 12 South, Range 5 East. I have enclosed a computer generated copy of the permit for your records. The permit was recently decreed in the Snake River Basin Adjudication, but it needs to be licensed before it can be finalized.

I have reviewed the field examination that was performed on the permit, and the field exam states that the well hasn't been used in several years due to lack of access to the well on the neighbor's property. The neighbor also has a water right on this well, so if we licensed the permit, we would be required to put a combined limitation on your permit that would prevent you from diverting water if your neighbor was using the water on his property. This means that if you were to drill a new well, you would not be able to use your well when your neighbor is using their well. The permit if licensed would only provide a approximately 0.62 cfs (approximately 31 inches of water) for 72 acres.

I think we could work through some of these issues to license this water right, but the subsequent license would be severely limited.

In our telephone conversation, you stated that you didn't think it would be worth pursuing this permit, and wished to relinquish the permit instead of trying to resurrect the water use. Sadly, you also informed me that Sern and Ronald Sorensen had passed away. Once again, I want to let you know that I am truly sorry for your loss.

A permit is considered personal property, so it isn't tied to the land until the license is issued. Therefore, you and Bonnie cannot relinquish the permit without proof that Sern and Ronald Sorensen made you and Bonnie beneficiaries of their prospective estates. In order for you and Bonnie to relinquish this permit, you will need to fill out the enclosed relinquishment form, and both you and Bonnie will need to sign the form. Whereas neither you nor Bonnie were included as owners of the permit, you will need to provide the death certificates, and the court documents transferring their property to you and Bonnie.

For your convenience, we have included the Relinquishment of Permit Form along with the computer generated copy of the permit. The Relinquishment of Permit Form can be mailed back to me at PO Box 83720, Boise, Idaho 83720-0098. There is no fee for relinquishing the permit.

These forms can also be located on our website at <http://www.idwr.idaho.gov/RulesStatutesForms/WaterRights/WaterRightForms.htm>. Thank you for your time and attention to this matter. If you have any questions, please don't hesitate to contact me.

Respectfully,

A handwritten signature in black ink, appearing to read "Daniel Nelson", with a long horizontal flourish extending to the right.

Daniel Nelson
Staff Hydrologist
Idaho Department of Water Resources
Telephone (208) 287-4856
Fax (208) 287-6700 (attn: Dan Nelson)

CC BONNIE SORENSEN
988 E 1000 S
ALBION ID 8311

MEMORANDUM

TO: File 45-7373

FROM: Daniel Nelson – Staff Hydrologist

DATE: August 25, 2016

SUBJECT: Licensing Review of Water Right 45-7373

This field exam was performed by Amanda Folsom and written up by Kelly Christensen from our southern region office. There are a couple of issues that need to be addressed. Each will be addressed below:

Permit History:

This permit was filed in 1979 for 3.68 cfs to irrigate 184 acres. The original permit had a point of diversion located in the NENW of Section 13 and the NESE of Section 12. The land to be irrigated included the E ½ of the SE and the SWSE of Section 12, and the N1/2 of the NW of Section 13. A portion of the water was to be injected into Land Creek in the NENW of Section 13, and re-diverted in the NESE of Section 12. All of the points of diversion and acre descriptions were in Township, 12 South, Range 24 East, B.M. The application for permit stated the following:

“This filing is for supplemental water to be used when decreed right is not adequate. Replaces permit 45-7154, which has lapsed. If well is drilled at the upper site, water will be conveyed thru Land Creek to re-diversion point at the lower end of the property.”

The permit was approved on May 14, 1979 with conditions that required that the water right be regulated by the Water District 45F watermaster, and that the water being injected into and out of Land Creek be measured. A measurement port was required for the measurement device for the points of diversion to allow the Department to attain a measurement.

An application for amendment of permit was filed to change the point of diversion the SENE of Section 12, NESE of Section 12, or NENW of Section 13. The point of injection, re-diversion, and place of use remained the same. The comments state that the applicant have an agreement to use Mr. DeNaughels well in the SENE of Section 12. The amendment was approved on May 13, 1982. The database doesn't appear to have been updated to show the changes approved through the amendment.

Ownership:

The original permit and the amendment of permit were filed in the name of Sern C. and/or Robert Sorensen. On June 1, 2003, the Department received an assignment of permit. The Sern C. Sorensen assigned 14.4 acres in the NWNW of Section 13, Township 12 South, Range 24 East, 0.29 cfs = to 7 inches to Ronald L. Osborne and Carla R. Osborne. The permit allocates up to an inch per acre, so 14.4 acres would be allowed 0.29 cfs or 14.4 inches of water. The 7 inches description would only provide 0.14 cfs or ½ of what is needed for these acres. According to the field exam, there wasn't any water developed for this portion of the water right, so I am recommending that the 0.29 cfs be used for the split of this water right.

The Department's current tax lot data shows that the Osbornes own 27.5 acres in the NWSW of Section 13, Helen Sorensen Trustee owns the majority of the land in the NENW of Section 13, and SESW and SWSE of Section 12, and Ronald Sorensen owns a home lot in the SENW and the entire NESE of Section 12.

The field exam found that the only property where the permit was put to beneficial use was in the NESE and SWSE of Section 12. This land is owned by Helen Sorensen Trustee and Ronald Sorensen. The field exam stated that no water was injected into Land Creek and the points of diversions in the NENW of Section 13 and the NESE of Section 12 were not developed. Water Measurement Information System (WMIS) data confirms that no wells were developed at these locations. The only well that appears to have been used was the well in the SENE previously owned by Mr. DeNaughels.

Per discussions with Department staff, the permit should be split per the amendment. The portion owned by Osborns has not been developed, so a notice of intent void the permit should be sent for this portion of the permit. The remaining portion of the permit can be licensed, but it will need to be reduced to what was discovered by the field examiner.

Points of Diversion:

As stated above, only one point of diversion was established for this permit. The location of the point of diversion is in the SENE of Section 12. This point of diversion is located on another individuals property, and the owner of this permit has not had access to the well in some time. Tax lot records show that the property where the point of diversion is located is now owned by a different owner than the person who owned the property when this permit was filed. The field examiner did provide power records showing that the well was used between 1989 and 1994. Proof of beneficial use was received on this permit in 1986, so the records provided by the field examiner do not show use of the well during the development period.

This point of diversion is also listed as a point of diversion for water right 45-7322. A field examination was done on this well in 1981. At the time of the field exam for 45-7322, the well had a 40 Hp pump on the well. The field examiner for this permit stated that the well pump had been upgraded to a 60 Hp pump. The amendment for permit 45-7373 to include the well associated with 45-7322 was not filed until 1982, so there was no mention of water being diverted from the well for permit 45-7373 in the 1981 field exam for water right 45-7322. The increase in the well does support the possibility that this well was used for both water right 45-7322 and permit 45-7373.

Acres and Place of Use:

The field examiner found that 76 acres were irrigated from the well in the NESE (38 ac) and the SWSE (38 ac) of Section 12. This land has been irrigated over the years from water rights 45-14224 and 45-14226. Osborn owns water rights 45-14225 and 45-14227, which are splits from water rights 45-250A and 45-288A.

The mapping provided by the field examiner was done at the beginning of the Department using ESRI mapping products for licensing exams, so the map supplied with the field exam does seem a bit rough. I redid the map using current technology and current aerial photos and found 72 acre being irrigated with a portion of those acres being in the SESW. The field examiner cut off the place of use in the middle of a field, which I would consider to be an unlikely practice for a supplemental water right. Therefore, I gave them the entire field, which would include the acres in the SESW. I still found fewer acres than the field examiner, so this shouldn't be an issue. The field examiner's map didn't take out the stream area that ran through the SWSE, and I did remove these lands since they couldn't be irrigated from the well.

Diversion Rate:

The well hasn't run in some time. The Water Management Information System and various field visits from water district and Department staff confirmed that the well hasn't been used for the Sorensen property in many years. The field examiner's only option to calculate a diversion rate was to use a theoretical calculation. The theoretical calculation done by the field examiner seems reasonable, so the capacity of the well at the time of the field exam was reasonably close to the 1.96 cfs calculated.

However, it appears as though the pump in the well was changed from a 40 Hp pump at the time the field exam was done for water right 45-7322 to 60 Hp at the time of the field exam for this permit. According to the power records provided by the permit holder in the field exam, from 1986 to 1993 the demand averaged around 30 to 35 Kw. A 40 Hp pump requires approximately 30 to 34 Kw to operate under normal conditions and at start up power draws. A 60 Hp pump requires approximately 45 to 52 Kw to operate under normal conditions and at start up power draws. The power records show that the demand increased to 60 to 70 Kw in 1994, so I am assuming that the pump wasn't changed to a 60 Hp pump until 1994 or after the 1986 proof made date.

Whereas the system appears to have been limited to the 40 Hp pump at the time that proof of beneficial use was filed in 1986, I recommend that this permit be limited to the 40 Hp pump information. I performed an analysis on the possible diversion rate on the theoretical calculation attached to this memo. A measurement was done on the system with the 40 Hp pump in 1979, but that measurement was done with an open discharge system instead of a pressurized system. I used the information from the 1979 measurement to calculate the flow of the 40 Hp pump under pressurized conditions, and found a diversion rate of 0.62 cfs. This is the flow rate that I am recommending as the capacity of the pumping system when used under pressure conditions.

The field examiner found 76 acres being irrigated, but new mapping technology revealed that only 72 acres were actually irrigated. At a diversion rate of 0.02 cfs per acre the total amount that could be licensed is 1.44 cfs (72 acres X 0.02 cfs = 1.44 cfs). Since the capacity of the pump is 0.62 cfs, this license should be limited to 0.62 cfs with a condition that when water rights 45-7322 and 45-7373 are combined, they are limited to a total diversion rate of 0.88 cfs. Where these two rights are under separate ownership, it will be difficult to regulate these water rights if a new well is drilled.

Volume:

The field examiner correctly recommended a volume based on 76 acres, so the volume would need to be limited to 188 af for the 72 acres (4 af/ac X 72 ac = 188 af). This is a supplemental water right, so no volume will be placed on the permit. Water right 45-7322 also diverted out of the same well. During the development period, the well would divert into the pond at a rate of 0.88 cfs and would divert into the pressurized pipe for this permit at a rate of 0.62 cfs. In order to determine the volume capacity based on these two diversion rates, we first need to determine the capacity based on the open discharge system.

Under open discharge rate of 0.88 cfs, the system could divert 346 af over a 198 day season (0.88 cfs X 198 days X 1.9835 = 345.6 af). Water right 45-7322 was limited to maximum allowable volume of 289.3 af. The volume allotted to 45-7322 could be fulfilled in 166 days [289.3 / (0.88 cfs X 1.9835) = 165.7 days]. This would leave 32 days that the system would only be able to divert the 0.62 cfs allowed by this permit (198 days – 166 days = 32 days). Under a pressurized diversion rate of 0.62 cfs for 32 days, this system could only supply a volume for those 32 days of 39.4 af (0.62 cfs X 32 days X 1.9835 = 39.35 af). Therefore, an adjusted capacity of the system would be 329 af (289.3 af 45-7322 + 39.4 af remaining capacity = 328.7 af). This permit should have a condition that when it is combined with 45-7322 the total annual volume should be limited to 328.7 af.

Overlapping Water Rights:

Surface water rights 45-14224 and 45-14226 from Long Creek are also used on the place of use proposed by this field exam. This right was filed as a supplemental water right to this surface water right. This permit should be licensed with supplemental conditions.

Water rights 45-7493, 45-14225, and 45-14227 overlap the portion of this permit that covers the Osborne property. However, per the original field exam, no water from the well has ever been used on this property.

Concerns:

This permit may have been used prior to 2000, but the well has not been available for use under this permit since long before the field exam was performed in 2004. The owner has made no attempt to drill a new well or amend the permit to add a new well for this permit. The original owners of the permit have passed away, and their spouses appear to be current owners of the permit. I have contacted the spouses, and they stated that they were no longer interested in the permit. I have sent them a relinquishment of permit form. I agreed to hold the permit until November 15, 2016 to receive the relinquishment form. The spouses are going away on vacation for three weeks, so they will not be able to return the form any sooner than November 15, 2016.

Another issue is that The Osbornes have submitted an assignment of permit for a portion of this permit. The field examiner state that the owner claimed that property owned by the Osbornes has never been irrigated from the original well, and no new well has been drilled to replace the original well. Staff have determined that once the irrigated portion is resolved, we will split the permit and send the Osbornes a notice of intent to void their portion of the permit.

With the above issues, I am concerned that we are going to license a permit that will not ever be utilized. I feel we have a plan in place that will resolve these concerns. The first issue is to resolve the Sorensen portion of the permit, and then resolve the Osborne portion. If we do not receive a relinquishment of permit from the Sorensen, we can license the permit as best we can, but it will be relatively useless if the neighbor is using water right 45-7322.

Conditions:

Conditions do not need to be addressed at this time, since it is anticipated that this permit will not be licensed.

Permit 45-7373

1987 NAIP Aerial Photol map

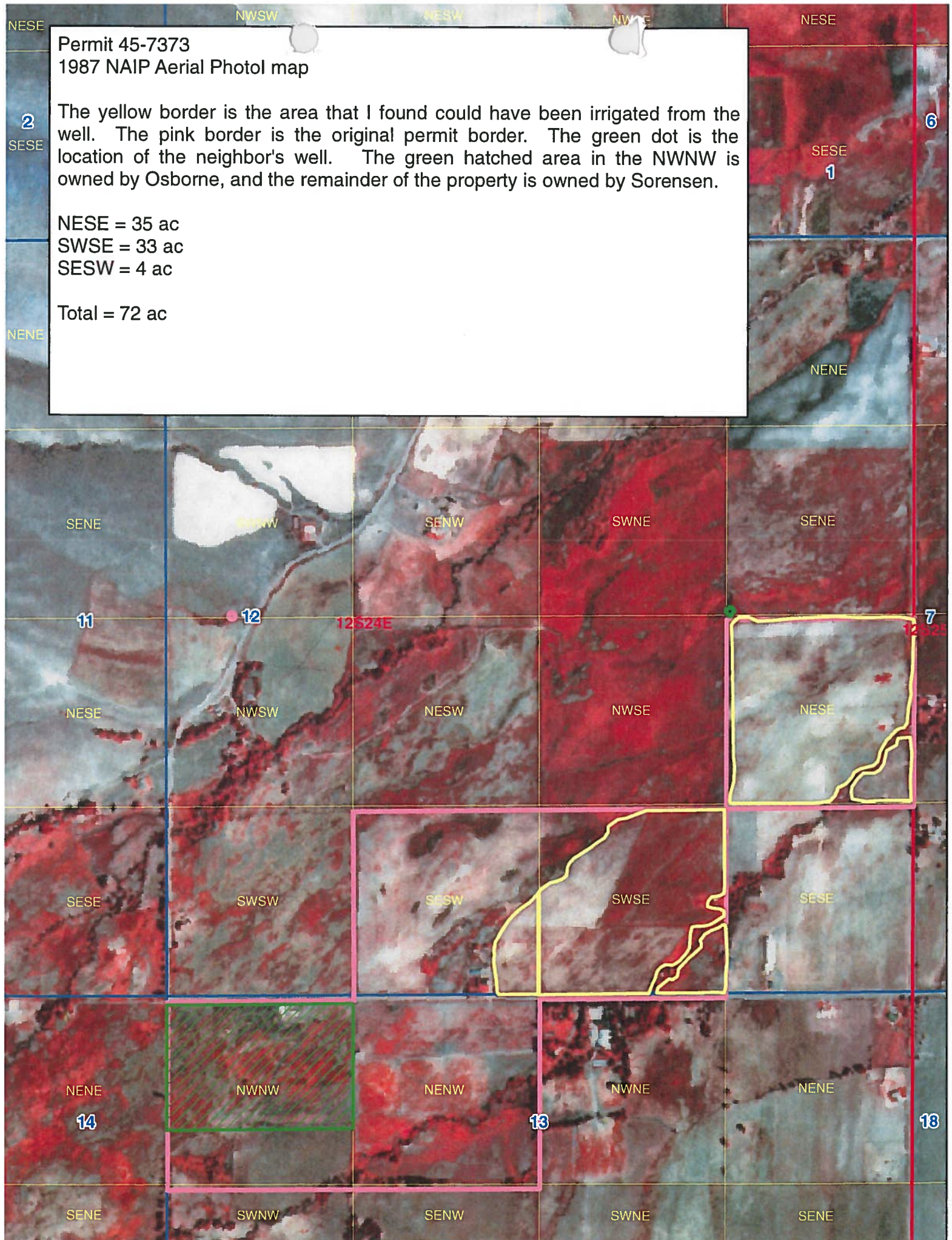
The yellow border is the area that I found could have been irrigated from the well. The pink border is the original permit border. The green dot is the location of the neighbor's well. The green hatched area in the NWNW is owned by Osborne, and the remainder of the property is owned by Sorensen.

NESE = 35 ac

SWSE = 33 ac

SESW = 4 ac

Total = 72 ac



THEORETICAL HORSEPOWER EQUATION WORKSHEET (cjh 1/92)

Water Right No.: 45-7373
 Reviewer: Dan Nelson
 Date of Review: 8/26/2016

P/D No.:	Measurement 45-7622	Scenario 1	Scenario 2	Scenario 3	FX Theoretical
PUMP HORSEPOWER	40	40	40	60	60
BOOSTER HORSEPOWER	0	0	0	0	0
PUMPING LEVEL	258	50	258	258	50
DISCHARGE PRESSURE	10	60	60	60	60
RATE OF FLOW (cfs)	0.88	1.31	0.62	0.93	1.96
	393	586	279	418	880

The above calculates the formula =
$$Q = \frac{8.8 * (\text{Efficiency}) * \text{hp}}{\text{depth to water} + 2.31 * (\text{psi}) + \text{friction}}$$

Assumptions: 70 efficiency.
 No Friction

Examiners Notes:

The field examiner did a theoretical based on the well having a 60 Hp pump. However, power records suggest the well at the time of proof of beneficial use was filed had a 40 Hp pump. The field examiner asked the permit holder of the pumping water level of the well, and was told that the pumping water level was 50 feet. The well was originally drilled to 300 feet, and was deepened in 1988 to 700 feet deep. The well has a static water level of 25 feet. I used the numbers supplied by the field examiner in Scenario #1, and calculated a pump capacity of 1.31 cfs. I was concerned about the pumping water level because the well log does not support the owner's claim that the well had a pumping level of 50 feet. Therefore, I can't recommend 1.31 cfs as the capacity of the well.

A measurement was made on the well with the 40 Hp pump for the licensing of water right 45-7322 in 1979. The measurement showed a diversion rate of 0.88 cfs on an open discharge system. I used the theoretical calculation to determine a pumping water level of 258 feet in order for the 40 Hp pump to divert 0.88 cfs (see Measurement 45-7622 above). A pumping water level of 258 feet does make sense on well that was drilled to a depth of 300 feet and later deepened to 700 feet.

The field examiner was told that they was pressurized, so I used the 258 foot pumping water level to calculate what the flow rate would be for the 40 Hp pump in a pressurized system in Scenario #2., and calculated a diversion rate of 0.62 cfs. In Scenario #3, I calculated the diversion rate using the 60 Hp pump with the 258 foot depth. If we were to use the 60 Hp pump calculation for licensing this permit, I could not recommend more than 0.93 cfs. However, the power records are convinced me that the 40 Hp pump was used until 1994, therefore, I am recommending a diversion rate for this permit of 0.62 cfs.

The WMIS database didn't supply any calibration records, so I can only go with the theoretical calculations for this permit.