

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 81-11986

Exam Date: 5/17/2012

1. Current Owner: BILLY E MAYER
189 OUGHT SEVEN RD
KOOSKIA ID 83539
(208)926-7073
2. Accompanied by: Billy Mayer
Phone No: (208)926-7540, (208)926-7073
Address: 189 Ought Seven Rd, Kooskia, ID 83539
Relationship to Permit Holder: self

3. SOURCE

MIDDLE FORK CLEARWATER RIVER

TRIBUTARY

CLEARWATER RIVER

B. OVERLAP REVIEW

1. Other water rights with the same place of use: None. In the same QQ is 81-11985 Domestic internal/external, spring source, but different POU.
2. Other water rights with the same point of diversion: None.

C. DIVERSION AND DELIVERY SYSTEM1. LOCATION OF POINT(S) OF DIVERSION:

MIDDLE FORK CLEARWATER RIVER L4 SW1/4SW1/4 Sec. 12, Twp 32N, Rge 05E, B.M. IDAHO County

Method of Determination: Garmin Map 76S, ArcMap 2009 and 2011.

2.

PLACE OF USE: FIRE PROTECTION

Twp Rge Sec	NE				NW				SW				SE				Totals
	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
32N 05E 12											X	X					
											L4	L3					

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	
32N 05E 12												1.5					
											4.9	1.3					6.2
											L4	0.2					0.2
												L3					

Total Acres: 6.4

Method of Determination: Garmin Map 76S, ArcMap 2009 and 2011.

** See original survey showing POU as L3 SE SW. (attached).*

6/22/2012

6/27/2012

3. ☒ Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable.
- ☐ Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be 1:24,000 or greater.
- ☒ Aerial Photo Attached (required for irrigation of 10+ acres).
- ☒ Photo of Diversion and System Attached

4.

<u>Well or Diversion</u> <u>ID No.*</u>	<u>Motor Make</u>	<u>Hp</u>	<u>Motor Serial No.</u>	<u>Pump Make</u>	<u>Pump Serial No. or Discharge</u> <u>Size</u>
Submersible	Goulds	5 Hp	55GS50		2 inch

**At time of the field examination, the water was too high in the river to have the pump in operation without it being washed away.

D. FLOW MEASUREMENTS

1. Measurements:

**At time of the field examination, the water was too high in the river to have the pump in operation without it being washed away. For this reason, no physical measurement was taken.

Irrigation: CFS for 6.5 acres X 0.02 cfs/acre = 0.13 cfs (approved permit for 0.14 cfs, 7 acres)

Gould pump fact sheet: 55GS50 4" Gould Submersible range is 23 – 80gpm (0.05 cfs – 0.17cfs)

Pipe Conversion for 2 inch PVC = 0.11 cfs

Theoretical (no physical measurement taken, due to high water in the river, therefore psi estimated at 30 psi, since very small irrigation system):

$(8.8 \times 5 \text{ Hp} \times 0.7 \text{ eff}) / [15 \text{ ft lift} + (2.31 \times 30 \text{ psi})] = 0.36 \text{ cfs capacity}$

Fire Protection (approved permit is for 0.09 cfs, which is for the same acres as that for irrigation use).

6/5/2006 conditional recommendation comments in file, state that IDFG did not anticipate proposed withdrawal of 0.14 cfs (diversion rate approved on permit) will have significant effect on flows in the Middle Fk Clearwater at or below the point of diversion. They also did not anticipate that the proposed withdrawal would adversely impact fish, wildlife or habitat. For this reason, conditions X15 and X16 were included.

RECOMMEND:

Fire Protection: Allow 0.09 cfs as permitted

Irrigation: 0.13 cfs, for 6.5 acres

Total Diversion Rate: 0.13 cfs

E. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 6.4 \text{ acres} \times 3.0 = 19.2 \text{ af}$

$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.13 \text{ cfs} \times 1.9835 \times 231 \text{ days} = 59.5 \text{ af}$

$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = 19.2 \text{ af}$

2. Volume Calculations for Other Uses:

Fire Protection: No Volume placed on the license (effective 3/31/2012 new B/U Rules).

RECOMMEND: Irrigation 6.4 acres, 19.2 af; Total Annual Volume: 19.2 af

F. NARRATIVE/REMARKS/COMMENTS

5 Hp Goulds submersible pump serial 55GS50 is normally put in the river at the POD, screened with less than 1/4 inch Slots (meeting condition **X15**), 2 inch discharge to 2 inch poly pipe that goes under the road through a culvert, than continues (buried) to the middle of the field running northeast. From there, it splits and changes to 2 inch PVC above the ground running northwest and southeast, with risers on it for connecting rainbirds mounted on wheels (2 run at one time). The psi was unknown, so 30 psi is used since this a small irrigation system (IDWRs standard for small irrigation systems). At the time of the field examination there was a very high level of water and if it were placed in the river, it would be washed away. When irrigation is not taking place, the pump is locked in the shop (meeting the condition **195**, in the manner of providing control of the diversion). For this reason, a theoretical, pipe conversion calculations, and gallon per minute range was taken from the Goulds pump fact sheet, for determining an estimate of the capacity of the system. It was evident that the fields had been irrigated.

See August 22, 2011 email from Bryan Nordlund (Bryan.Nordlund@noaa.gov) in reference to calculating the velocity (email is attached to the field examination). $0.13/0.25 = 0.5$ feet per second (meeting condition **X16**).

Directions to the POU: north on Hwy 95, turn right at Grangeville/Hwy 13 thru Kooskia, cross the bridge and turn right on Hwy 12, between mile post 85 and 86 turn left on Ought Seven Rd. and follow the road to the end (logged cabin).

Have conditions of permit approval been met? ☒ Yes ☐ No

G. RECOMMENDATIONS**1. Recommended Amounts**

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
FIRE PROTECTION	01/01 to 12/31	0.090 CFS	
IRRIGATION	03/15 to 11/15	0.130 CFS	19.20 AF
<u>Totals:</u>		0.130 CFS	19.20 AF

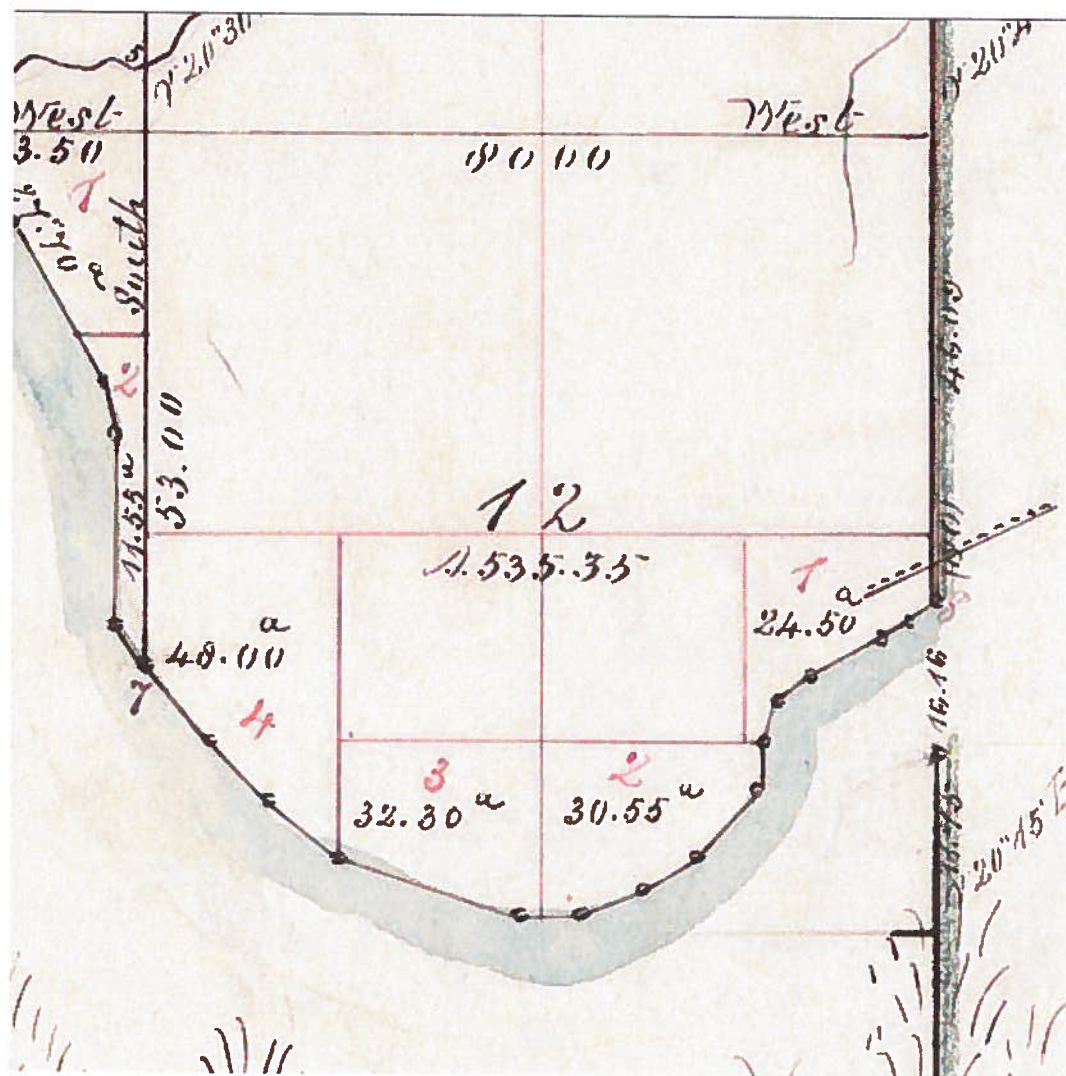
2. Recommended Amendments

☒ Change P.D. as reflected above ☐ Add P.D. as reflected above ☐ None

☒ Change P.U. as reflected above ☐ Add P.U. as reflected above ☐ Other

H. AUTHENTICATION

Field Examiner's Name *Judy Herremway* Date *6/21/2012*



Original Survey T32N, R05E, Section 12



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MANUFACTURER

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Home > Pumps > Goulds Pumps > Goulds Submersible Well Pumps > 4" Submersible Pumps and Motors > GS 4" Pump 33-80 GPM Range, 1-7.5 HP, High Capacity > 55GS50 Goulds 4" Submersible Well Pump (5 Required HP, 15 Stages, 23 - 80 GPM Range, 2 Discharge)

55GS50 Goulds 4" Submersible Well Pump (5 Required HP, 15 Stages, 23 - 80 GPM Range, 2 Discharge)

= 0.05 - 0.17 cfs

MSRP: ~~61,566.00~~Price: [Please Call For Price & Availability 800-223-4898](#)**Call for Discounted Price!**[Description](#)[Details](#)[Reviews](#)**Applications**

Below ground well pump for residential and small municipal water supply as well as light irrigation applications. 4 Maximum Well Size.

Features

Powered for Continuous Operation

Field Serviceable

Sand Resistant Construction

Stainless Steel Metal Parts

FDA Compliant Non-Metallic Parts

Stainless steel casing

Tech Specs

Brand	Goulds Pumps
Model Number	55GS50
Brand	Goulds Pumps
Type	Goulds 4" Well Pump, Wet End
Series	55GS Well Pump
Required HP	5
Stages	15
Water End Length (in)	39.1
Water End Weight (lbs)	22
Flow Range GPM	23 - 80
Best Efficiency GPM	58
Discharge Connection	2
Minimum Well Size	4
Rotation	CCW

Support Documents (pdf)[Notes & Pump Curve](#)

Motor	Not Included
Notes & Pump Curve	See Support Documents

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From: Edl, Michele
Sent: Wednesday, October 12, 2011 10:24 AM
To: Hemenway, Sandy
Subject: FW: approach velocity and fish screening

Sandy,

Here is the email response I received from Bryan Nordlund of NOAA. The link to Mr. Nordlund came from Keith Kirkendall, (NOAA Fisheries, South Idaho Branch Chief) here in Boise. Mr. Nordlund refers to IDFG criteria in this message so I expect that Walt Poole already has Mr. Nordlund as one of his contacts.

From: Bryan Nordlund [<mailto:Bryan.Nordlund@noaa.gov>]
Sent: Monday, August 22, 2011 1:49 PM
To: Keith Kirkendall
Cc: Edl, Michele; Lynn Stratton
Subject: Re: approach velocity and fish screening

Michele - the basic reasoning behind the 0.4 fps approach velocity criterion is that it was found to be the maximum velocity a salmonid fry (as small as 27 mm) could swim against for an exposure time of 60 seconds in cold water (4 degrees C). In other words, this criterion protects the expected weakest swimming salmonids in the expected coldest water. Since approach velocity is the component of water velocity perpendicular to a fish screen, this theoretically keeps the fish from becoming impinged on the screen. Field testing of this theory has variable results - but generally results indicate that over 98% of the fry survive these screens in mark/recapture tests.

The minimum velocity used to be 0.5 fps, but was reduced to 0.4 fps when a U of W study showed that this really didn't provide optimal protection of the smallest fish expected in Northwest waters. I do note that IDFG uses 0.4 fps in waters that contain anadromous salmonids, and I think for ESA listed bull trout as well.

The simplest way to determine approach velocity is to calculate it - divide the measured flow rate (in cfs) by the effective screen area (in sq. feet). Effective screen area is submerged and not occluded by major structural members. In the case of non-vertical screens, it is the projection of the screen in the conveyance cross section parallel with the screen face. For example, a rotating drum screen would have a rectangular (or maybe square) projection as an effective area. There are many other subtleties, but that's the basics.

$$\frac{.13}{.25} = 0.5$$

Hope this helps. You can also call me at 360-534-9338 if need be.
Bryan

Keith Kirkendall wrote:
Hi Michele,

I am going to ask that you take up this conversation with one of my most seasoned hydraulic engineers and the primary force behind our criteria document - Bryan Nordlund. Bryan is cc'd on the email. He is out on a little vacation time currently but should be back in soon. If you

have a pressing need I can work with you and a couple other of our senior engineers.

We're always looking for ways to help out in this specific area.

-keith

On 8/12/2011 9:22 AM, Edl, Michele wrote:

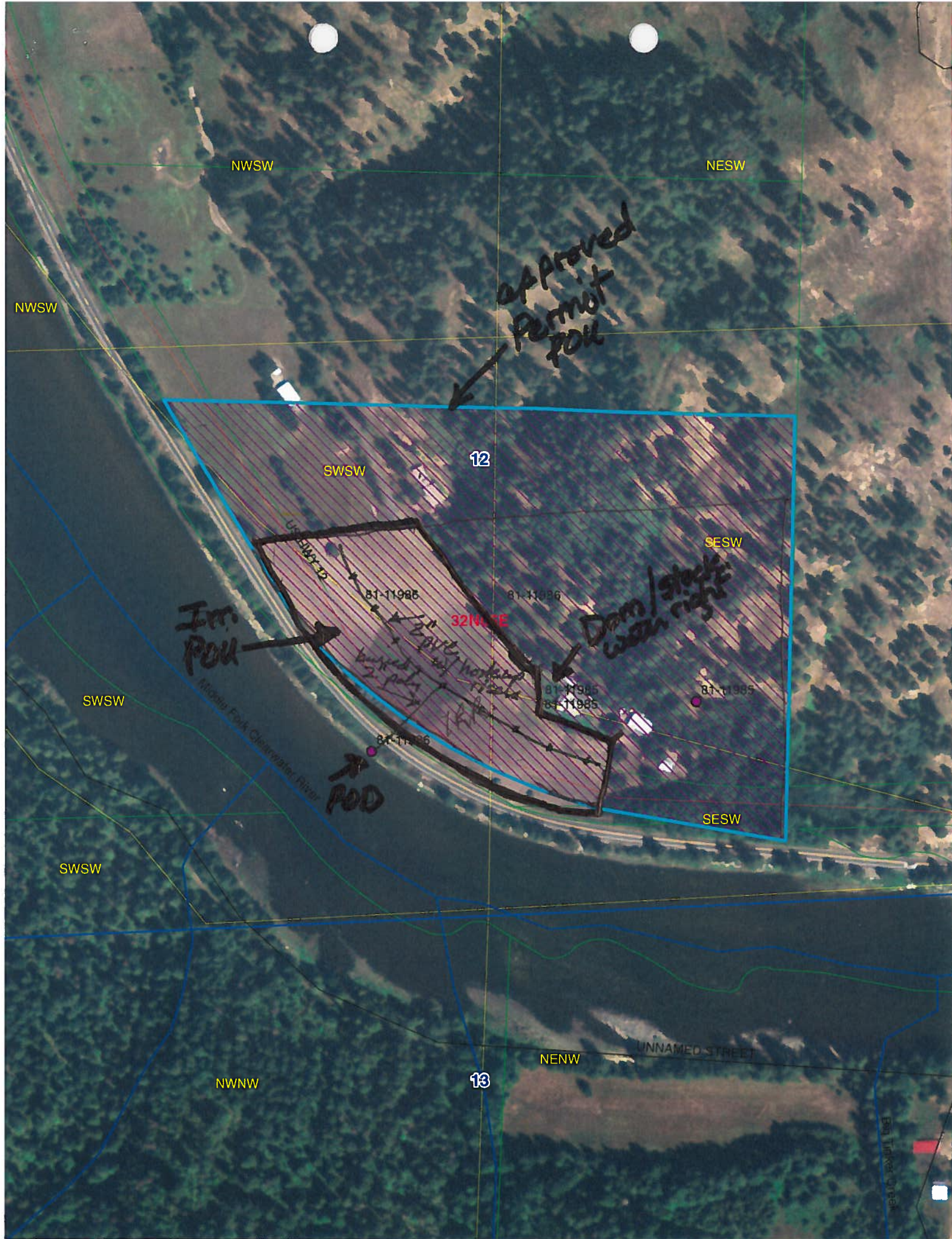
Mr. Lind,

Thank you very much for providing me this link. I really appreciate this timely, up to date information. I will be digesting it this weekend.

Mr. Kirkendall,

I would appreciate any information you can provide which would assist me with the reasoning behind the approach velocity of 0.5 fps, and with general alternatives for determining approach velocities without putting on scuba gear.

Michele Edl





81-11986 Mayer

S. Herkenway



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S. Hemmerling



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S. Hemerway