

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

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DEPARTMENT OF
WATER RESOURCES

A Beneficial Use Field Report is prepared by a water right examiner as the result of an examination to clearly confirm and establish the extent of the beneficial use of water established in connection with a permit during the development period authorized by the permit and any extensions of time previously approved.

A. GENERAL INFORMATIONPermit No. 37-22380

1. Owner Walker Sand and Gravel Ltd Co Phone No. (208) 788-4525
Current address P.O. Box 400, Bellevue, ID 83313
2. Examiner's name Charles G. Brockway, P.E. EXAM DATE November 28, 2018
3. Accompanied by Terry Hampton Email _____
Address P.O. Box 400, Bellevue, ID 83313
Relationship to permit holder Facility Manager Phone No. (208) 788-4525
4. Source Groundwater tributary to _____

B. OVERLAP REVIEW

1. Other water rights with the same place of use 37-8136, 37-8532, 37-20834
2. Other water rights with the same source and point of diversion 37-8136, 37-8532, 37-20833, 37-20834

C. DIVERSION AND DELIVERY SYSTEM**1. Point(s) of Diversion:**

Ident. No.	Gov't Lot	¼	¼	¼	Sec	Twp	Rge	County	Method of Determination/Remarks
		SE	NW	SW	24	1N	18E	Blaine	New Crusher Well
		SE	NW	SW	24	1N	18E	Blaine	Old Crusher Well
		NE	NW	SW	24	1N	18E	Blaine	Shop Well
		SW	NE	SW	24	1N	18E	Blaine	Valley Paving (VP) Well

2. Place(s) of Use: Method of determination Site inspection, aerial photo

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
1N	18E	24									Ind	Ind	Ind	Ind					
1N	18E	24									D			D					

3. **Delivery System Diagram:** Indicate all major components and distances between components. Indicate weir size/ditch size/pipe diameter (inside), as applicable. Use the space provided or ☐ see attached.

Scale: 1" = _____

- ☒ Copy of USGS Quadrangle attached showing location(s) of point(s) of diversion and place(s) of use (**required**)
☒ Aerial photo attached (required for irrigation of 10+ acres)
☒ Photo of diversion and system attached

4.

Well or Diversion Identification No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
See attached sheet					

*Code to correspond with no. on map and aerial photo

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
Portable strap-on flow meter	Sonic	Fuji	Portaflow X	N5L3138	n/a	4/20/2018

2. **Measurements:** _____
 Combined flow from both wells = 3281 gpm or 7.31 cfs. See attached narrative for more information.

See attached narrative.

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper appears to be a standard notebook page.

Has the permit holder met all conditions of permit approval, including any mitigation requirements and/or measuring device installation requirements? ☒ Yes ☐ No If no, what must be done to meet the permit requirements?

[illegible]

F. FLOW CALCULATIONS☒ Additional computation sheets attached

Measured Method:

Old Crusher and New Crusher wells measured combined flow 3,281 gpm or 7.31 cfs

Shop well previously determined and licensed 0.40 cfs. VP well previously measured and licensed 0.57 cfs.

Total system 8.28 cfs. Previously-licensed flow 5.78 cfs; incremental flow under 37-22380 is 2.50 cfs.

Total system at high aquifer level 9.39 cfs = max. installed capacity; incremental flow under 37-22380 is 3.61 cfs.

G. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = \underline{n/a}$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation Season}) \times 1.9835 = \underline{n/a}$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = \underline{n/a}$$

2. Volume Calculations for Other Uses:

See attached narrative. Previously-licensed volume is sufficient for ongoing industrial uses.

Domestic use: 20 homes x 0.4 afa = 8.0 afa

H. RECOMMENDATIONS

1. Recommended Amounts

Beneficial Use	Period of Use		Rate of Diversion Q (cfs)	Annual Volume V (afa)
	From	To		
Industrial	1/1	12/31	3.61	-0-
Domestic	1/1	12/31	0.10	8.0
Totals:			3.61	8.0

2. Recommended Amendments

☐ Change P.D. as reflected on page 1☐ Add P.D. as reflected on page 1☐ None☒ Change P.U. as reflected on page 1☐ Add P.U. as reflected on page 1☐ Other**I. AUTHENTICATION**

Field Examiner's Signature



Date

11/30/2018



Reviewer

Date

Supplemental Sheet for Beneficial Use Exam 37-22380
Section C.4.

Well or Diversion Identification No.	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
New Crusher Well	U.S. Electric	150	R-6350-06-122	SimFlo	See narrative
Old Crusher Well	North American Electric	150	1701091-SB-YS	HydroFlow	See narrative
Shop Well	Franklin Electric	10	2366129020	Grundfos	Model No. 150S100-5 / 4" discharge
VP Well	Franklin	25	2366159020	Franklin	4" discharge

Narrative in Support of Beneficial Use Exam for Water Right 37-22380

Brockway Engineering, PLLC
Charles G. Brockway, P.E. / November 30, 2018



A. System Description

This permit allows a diversion rate of 4.0 cfs for Industrial purposes and 0.1 cfs for Domestic purposes. A licensing examination was made on November 28, 2018. Water is used in the Walker Sand and Gravel quarry and processing facility south of Bellevue, Idaho. The water is used for washing gravel and sand, washing trucks, filling water trucks, water supply for a shop, and general clean-up needs throughout the plant area. A comprehensive documentation of the plant history, supply sources, and distribution system has been made in conjunction with the licensing of water rights 37-20834, 37-8136, and 37-8532 in 2008. The reader is referred to these reports contained in IDWR files. During the present site visit, it was found that the facilities and the water system were nearly identical to those existing during the 2008 exam, with the exception of a new pump and motor on the Old Crusher Well. A diagram of the system is included with this report.

Four (4) wells supply water to the distribution system: the New Crusher Well, the Old Crusher Well, the Shop Well, and the Valley Paving (VP) Well. The Shop and VP wells are small wells with flow rates determined during the 2008 licensing process at 0.40 cfs and 0.57 cfs, respectively. It was verified that these wells are in an identical configuration with the same pumps as in 2008, excepting that the line from the VP Well to irrigation under 37-20833 has been removed (this right is in the water supply bank). During the 2008 licensing, all wells except the Old Crusher Well were pumping to the system and the total combined licensed rate was limited to 5.78 cfs. Subsequently, permit 37-22380 was approved on 11/20/2008 for the purpose of increasing the total system flow by 4.0 cfs.

B. Flow measurements

The Old Crusher Well has been fitted with a vertical pump and motor and tied into the 10" mainline near the New Crusher Well as shown on the photo essay. The pump in the Old Crusher Well is a Hydroflow 8-stage 9ZC vertical pump with a 10" column and 10" discharge head, driven by a 150HP vertical motor. The pump curve is included. The motor is driven by a variable-speed drive which can overspeed the pump to 66 Hz (1980 RPM) under normal operating conditions – this is the way the pump was operated during the exam and the pump curve reflects this condition.

The pump in the New Crusher Well is the same as it was in 2008: Simflo 2-stage 1 x SJ14C and 1 x SR14C, driven by a 150 HP vertical motor. The motor is a fixed-speed, 1770 RPM unit. The pump curve is included.

The two crusher wells each discharge to 10" steel mainlines which are manifolded together to supply the bulk of the gravel processing units. A 4-inch steel pipe takes off from the manifold and runs southward to supply the remainder of the units. See attached photo diagram. There are no permanent flow meters installed anywhere on any well.

The measuring location for the Fuji Portaflow X was on the 10" pipe downstream of the manifold. The flow to the 4-inch line could not be included in this measurement due to the piping configuration. Therefore, this flow was measured separately in the 4-inch line where it comes out of the ground to supply the gravel processing units, about 200' south of the wells. The attached diagram shows the measuring points.

The data in Table 1 was collected for the system in different configurations. Flows were calculated from a 5-minute totalized volume taken after the system stabilized. The flow meter signal during all measurements was excellent and the flow fluctuation was less than +/- 20 gpm. The gravel processing units were set to deliver a typical maximum usable water flow which passed through the units and into a drainage system to the infiltration pond.

Pressure was measured with a pressure gauge in the discharge of the New Crusher Well, and by a pressure transducer at the discharge of the Old Crusher Well. Valving is in place to allow each well to be isolated.

The pumping level in the New Crusher Well was measured at 81 feet at a rate of 2,162 gpm. Unfortunately, after that measurement was taken and the probe lifted above the water, it would no longer descend to get a reading. Based on the pumping test at the time of drilling (see Section E), the drawdown is minimal and therefore the pumping level is likely very close to 81 feet over the range of flows tested. An attempt to measure the water level in the Old Crusher Well was unsuccessful. Although an access port exists, the probe would not descend due to the insufficient space between the casing and pump column. The Old Crusher Well pumping level is likely similar to the 81 feet measured at the New Crusher Well.

Table 1. Flow measurements.

No.	Condition	Flow in 10" line (gpm)	Flow in 4" line (gpm)	Total flow (gpm)	Discharge pressure (psi)
1	New well on 4" line closed	2162	0	2162	33
2	New well on, 4" line on	1918	337	2267	29
3	Old well on at 66 Hz, 4" line closed	2055	0	2055	31
4	Old well on at 66 Hz, 4" line on	1767	319	2086	26
5	Both wells on, 4" line closed	3073	0	3073	53
6	Both wells on, 4" line open (max. flow condition)	2840	441	3281	46

The maximum-flow condition occurs with both wells active. This flow is 3,281 gpm or 7.31 cfs. The Shop Well and VP Well have not changed and their previously-licensed flows total 0.97 cfs. Therefore, the total system capacity on 11/28/2008 is $7.31 + 0.97 = 8.28$ cfs. However, actual installed capacity is higher due to seasonal aquifer level fluctuation, as described in Section D.

C. Domestic use

The 0.1 cfs rate for domestic purposes is intended to cover water usage at an existing RV and trailer park used for employee housing. This usage is described in the field exam for 37-20834. IDWR was unable to cover this usage in the 2008 licensing process, and so it needed to be covered under a new permit.

The housing area consists of 20 individual hookups with trailers or RVs connected semi-permanently. No irrigation occurs at the trailer park. The peak diversion rate requirement at full occupancy cannot be directly measured. IDWR Guidelines for Domestic Use of Water (Administrative Memo 6/4/1980) would allow 0.2 cfs for 20 homes. The permit rate of 0.1 cfs is half this amount and is a very reasonable value given the nature of the housing.

E. Estimation of system capacity at high aquifer level

Although the crusher wells are extremely productive (e.g. the drawdown in the New Crusher Well at the time of drilling was only 2.8 feet at a discharge of 2,520 gpm), the pumping capacity is affected by major seasonal fluctuations in aquifer level at this location. Water level data in the Old Crusher Well casing has been collected by Walker Sand and Gravel staff from April 2006 through July 2008. During this time, the Old Crusher Well was an open casing with no pump installed, allowing a simple measurement with a probe. Water level data in the same well has also been collected by IDWR with a water level transducer and datalogger from 10/16/2014 through 10/22/2018. Figure 1 shows this record of water levels. Although the Old Crusher Well was usually running at the time the data was recorded, the very low drawdown does not render the data appreciably different from the static level.

The high point in the aquifer typically occurs in June or July, and the low point occurs in late fall or winter. The magnitude of seasonal fluctuation appears to have ranged from 15 feet in 2015 to 36 feet in 2017. The highest level during the permit development period was 32 feet, compared to 72 feet at the end of the record on October 22, 2018.

The impact of these large aquifer fluctuations on system capacity should be considered in the licensing process. Because the field exam took place near the lowest seasonal period in the aquifer, the actual maximum capacity is significantly greater than measured. As the aquifer level increases, the "lift" will decrease, reducing the total dynamic head (TDH) requirement and increasing the flow rate delivered by the well pumps in accordance with their performance curves.

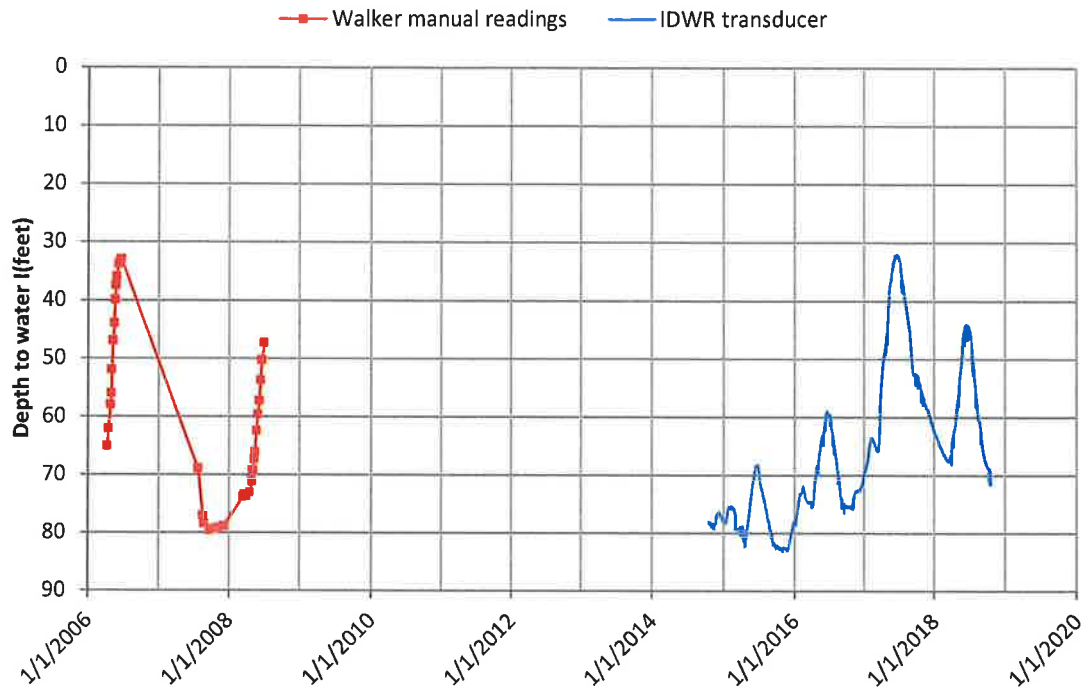


Figure 1. Water level data in the New Crusher Well.

The actual maximum capacity can be estimated from a standard system curve / pumping curve analysis. The data collected during the November 28, 2018 field exam was used to develop a system curve representing the relationship between pressure head at the surface and flow rate. A pump curve representing the TDH supplied by each pump at the surface was created. The TDH at the surface is equal to the published performance curve TDH minus the pumping lift and head losses through the pump column and discharge head. Comparing the observed performance of the New Crusher Well pump with its earlier performance in 2008, a deterioration of 15% has occurred, which is to be expected after 10 years of operation. This deterioration factor is included in the pump curve for the New Crusher well. The composite pump curve when both well pumps are on was found by adding the flow rates on the individual well pump curves for a given TDH (because the pumps are in parallel). Figure 2 shows the results of this analysis.

On Figure 2, the measured operating point is correctly predicted by the intersection of the system curve and pump curve with the aquifer at its 11/28/2018 level. Based on the water level data, the aquifer in June-July could easily be 40 feet higher than this level (the 2017 high point was 49 feet higher). The composite pump curve shifted up 40 feet is the pump curve at the high aquifer level. At this condition, the system capacity is about 3,780 gpm (8.42 cfs) or 15% higher than measured. This is a significant difference and is a better indication of the true installed capacity of the crusher wells given the natural fluctuations in the aquifer. The total system capacity would then be $8.42 + 0.97$ (Shop and VP wells) = 9.39 cfs.

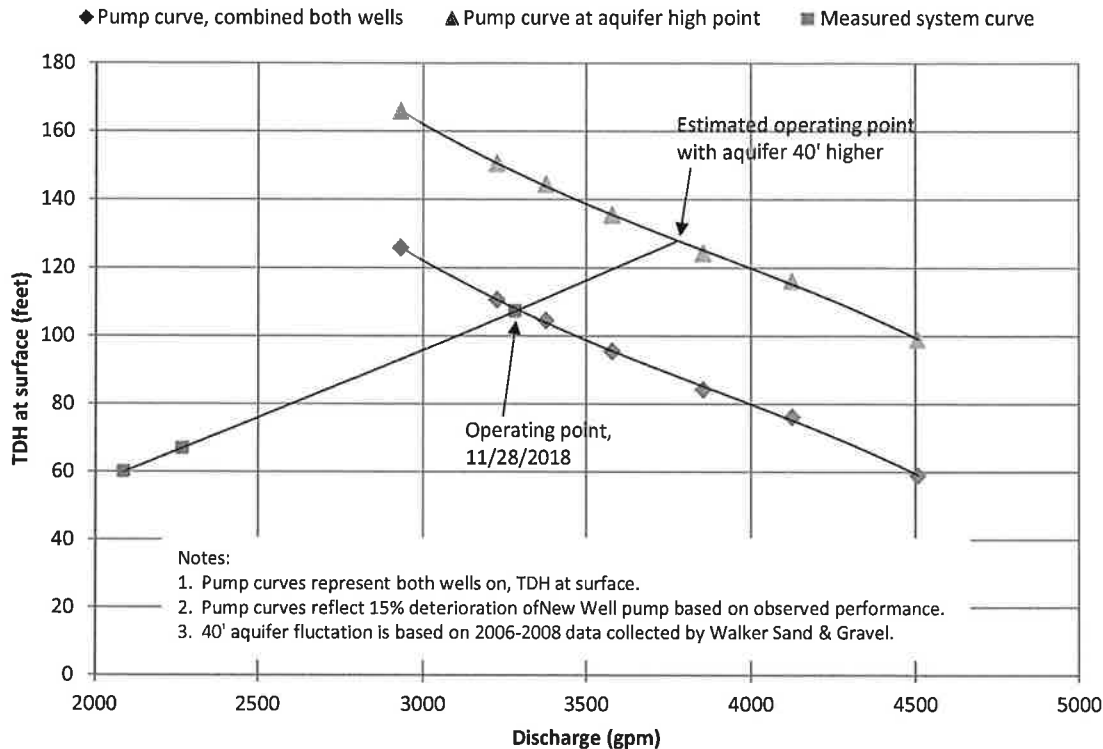


Figure 2. System curve and pump curves for the two crusher wells.

Therefore, the additional developed flow under permit 37-22380, beyond the previously-licensed rate of 5.78 cfs, is $9.39 - 5.78 = 3.61$ cfs.

Since the system capacity was estimated using the pump curve analysis as described above, and not actually measured, it is recommended that IDWR allow the permittee to conduct additional testing during the high point in the aquifer (June or July 2019) in order to confirm the estimate.

E. Infiltration ponds

All water from the gravel processing units flows into a drainage system consisting of a 15-inch pipeline, which discharges into a ditch and thence to the recharge ponds delineated in the map provided with the permit application. However, at present most of these ponds are being dried out and slated for cleaning, and water is being shunted to the east to a temporary infiltration facility. These areas are delineated on the attached 2017 aerial photo map. The water surface area in the temporary facility does not exceed the historic area or the area contemplated when IDWR approved permit 37-22380 as a non-consumptive right; therefore, the change in infiltration area should not limit the use of 37-22380. The permit can be licensed as a non-consumptive right as was its predecessor 37-20834. All consumptive use is covered by earlier right 37-8136.

F. Recommendations

Permit 37-22380 should be licensed for 3.61 cfs, with a limit of 9.39 cfs in combination with water rights 37-8136, 37-8532, 37-20833, and 37-20834.

PODs on permit 37-22380 should be the four wells described above, since all four wells pump into the system and are used for the purposes authorized under the permit.

The annual volume authorized by previous rights is sufficient for contemplated industrial needs. Therefore, no additional volume is proposed to be licensed for industrial purposes under 37-22380.

The domestic portion should be licensed for 0.1 cfs and IDWR's standard 0.4 afa per unit, or $20 \times 0.4 = 8.0$ afa.

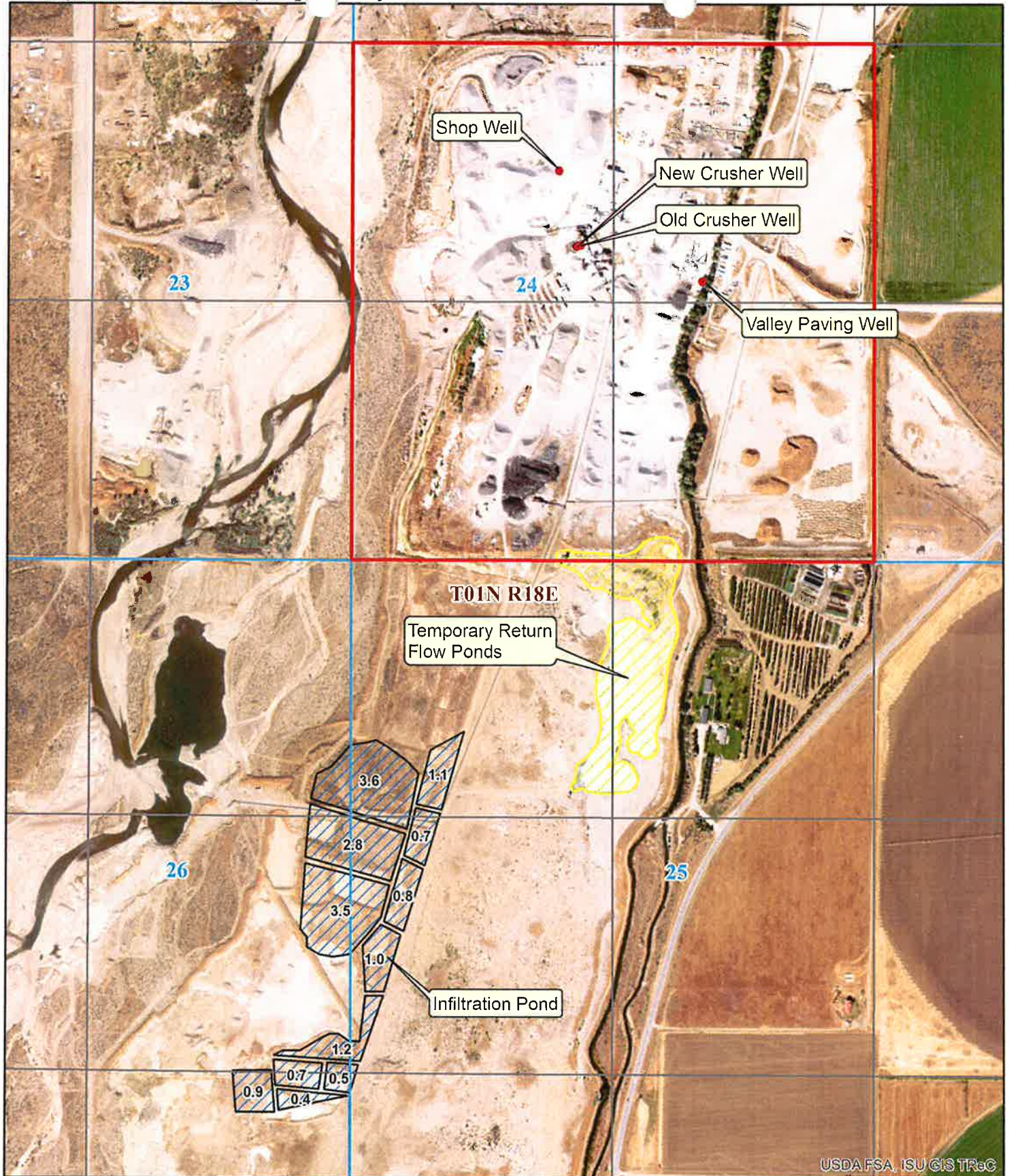


0 100 200 400 Feet

WALKER SAND & GRAVEL
37-22380 LICENSING EXAM

● Wells





0 250 500 1,000 Feet

WALKER SAND & GRAVEL

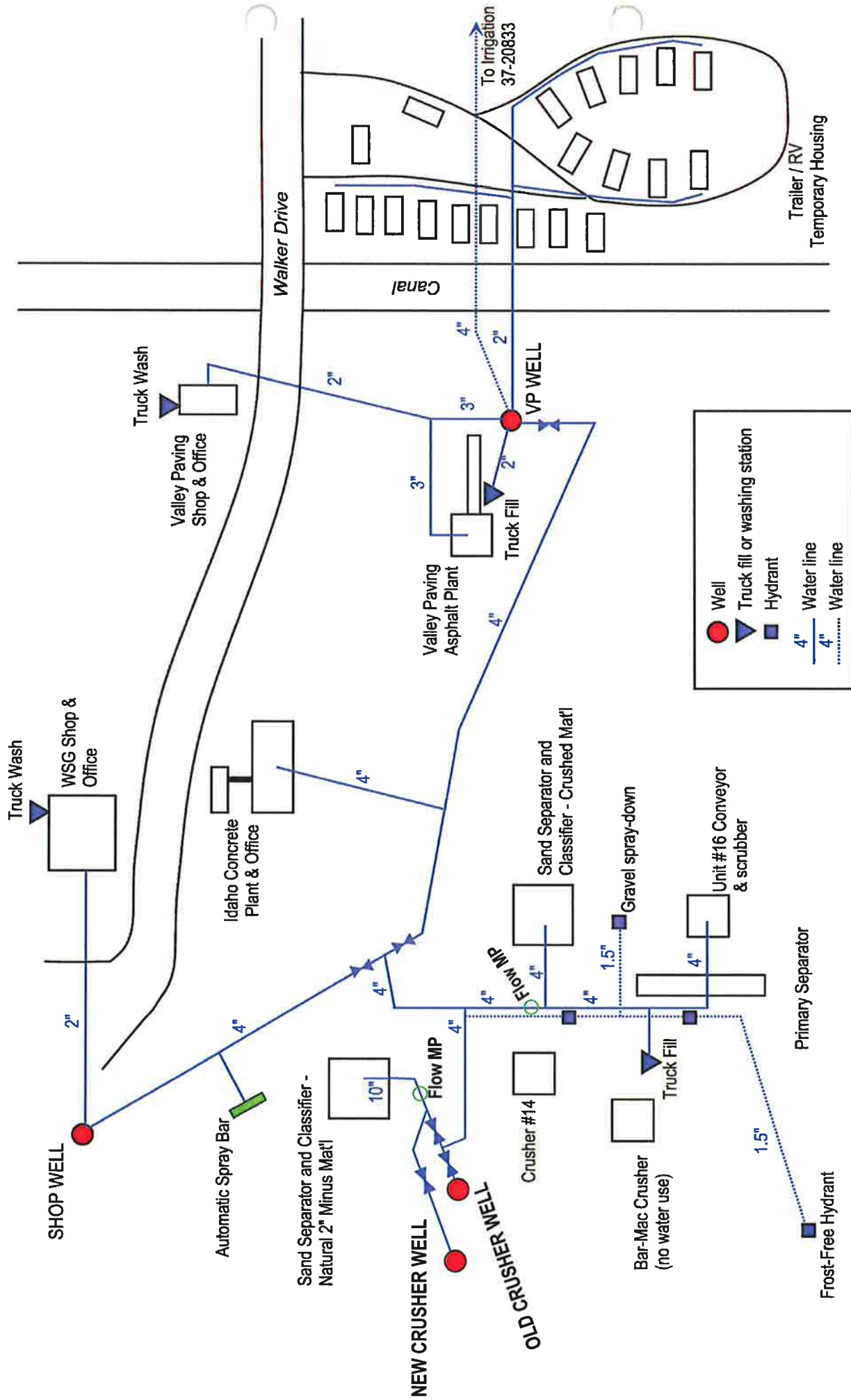
37-22380 LICENSING EXAM

BROCKWAY ENGINEERING, PLLC.
ICB - Date: 12/3/2018

NAIP 2017 AERIAL

- Wells
- Place of Use
- Infiltration Pond
- Temp. Return Flow Ponds





WALKER SAND & GRAVEL WATER SYSTEM LAYOUT
PERMIT 37-22380

New Crusher well (pump installed 2006)

1 x SJ14C + 1 x SR14C, both full diam

140' of 10" column, 10" discharge head

Pumping level 81 feet

Deterioration factor 0.85 (based on observed performance)

Flow (gpm)	(cfs)	SJ14C TDH (ft)	SR14C TDH (ft)	Total w/ deter	Column vel (ft/s)	Head loss (ft)	TDH at surface	Pressure at surface (psi)
1000	2.23	116	124	204	4.1	1.4	122	53
1200	2.67	109	118	193	4.9	2.0	110	48
1400	3.12	104	112	184	5.7	2.7	100	43
1600	3.57	98	107	174	6.5	3.6	90	39
1800	4.01	94	103	167	7.4	4.5	82	36
2000	4.46	90	101	162	8.2	5.6	76	33
2200	4.90	85	97	155	9.0	6.7	67	29
2400	5.35	78	93	145	9.8	8.0	56	24
2600	5.79	70	90	136	10.6	9.4	46	20
2800	6.24	61	85	124	11.4	10.9	32	14

Old Crusher well (pump installed Nov. 2018)

8 stage 9ZC Hydroflow at 66 Hz or 1980 rpm (oversped, as tested)

120' of 10" column, 10" discharge head

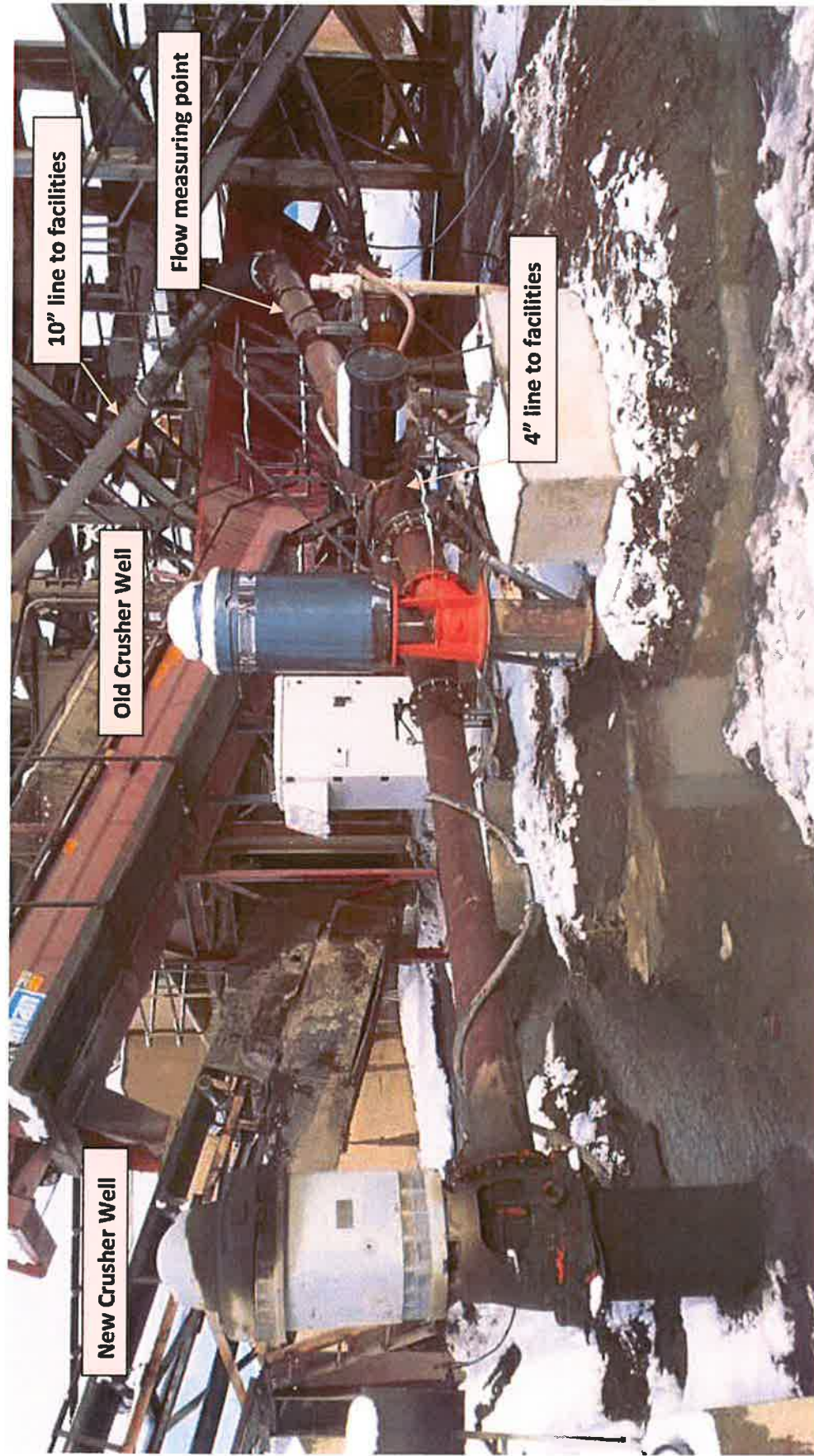
Pumping level 81 feet

Discharge		TDH (ft)	Column vel (ft/s)	Head loss (ft)	TDH at surface	Pressure at surface (psi)
(gpm)	(cfs)					
1500	3.34	314	6.1	2.9	230	100
1750	3.90	274	7.1	4.0	189	82
1875	4.18	245	7.7	4.6	159	69
2000	4.46	212	8.2	5.2	126	55
2042	4.55	197	8.3	5.4	111	48
2057	4.58	191	8.4	5.5	104	45
2080	4.63	182	8.5	5.6	95	41
2107	4.69	171	8.6	5.8	84	37
2125	4.73	163	8.7	5.9	76	33
2132	4.75	160	8.7	5.9	73	32
2165	4.82	146	8.8	6.1	59	26
2250	5.01	105	9.2	6.6	17	8

Combined pump curve for both wells

(add individual curve flows at same head)

TDH at surface (ft)	Flow (gpm) New well	Old well	Total flow (gpm)	TDH at sfc with 40' incr in aquifer
126	2000	933	2933	166
111	2042	1183	3225	151
104	2057	1320	3377	144
95	2080	1500	3580	135
84	2107	1750	3857	124
76	2125	2000	4125	116
59	2165	2345	4510	99





Overhead view of piping



Flow meter



4" line measuring point (crusher wells in background)



Processing facilities



Processing facilities



Processing facilities



Processing facilities from afar



Processing facilities, truck wash



Shop well – confirmed to be same as in 2008



Valley Paving Well – confirmed to be same as in 2008 (shelter replaced)



Flow meter readout for condition #1



Flow meter readout for condition #2



Flow meter readout for condition #3



Flow meter readout for condition #4



Flow meter readout for condition #5



Flow meter readout for condition #6

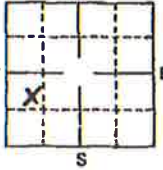


Flow meter readout for condition #2
in the 4" line



Flow meter readout for condition #6
in the 4" line

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORTUSE TYPEWRITER OR
BALLPOINT PENState law requires that this report be filed with the Director, Department of Water Resources
within 30 days after the completion or abandonment of the well.

1. WELL OWNER Name <u>Jim J. Walker dba Walker Sand & Gravel</u> Address <u>P. O. Box 400</u> <u>Bellevue, ID 83313</u> Owner's Permit No. <u>37-89-S-014-200</u>		7. WATER LEVEL Static water level <u>44'5"</u> feet below land surface. Flowing? ☐ Yes ☒ No G.P.M. flow _____ Artesian closed-in pressure _____ p.s.i. Controlled by: ☐ Valve ☐ Cap ☐ Plug Temperature <u>49</u> °F. Quality _____ Describe artesian or temperature zones below																																																																																									
2. NATURE OF WORK <u>WK #37-08136</u> ☒ New well ☐ Deepened ☒ Replacement ☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)		8. WELL TEST DATA ☐ Pump ☐ Bailor ☒ Air ☐ Other _____ <table border="1"><thead><tr><th>Discharge G.P.M.</th><th>Pumping Level</th><th>Hours Pumped</th></tr></thead><tbody><tr><td><u>± 500 (Lots)</u></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></tbody></table>		Discharge G.P.M.	Pumping Level	Hours Pumped	<u>± 500 (Lots)</u>																																																																																				
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3. PROPOSED USE ☐ Domestic ☐ Irrigation ☐ Test ☐ Municipal ☒ Industrial ☐ Stock ☐ Waste Disposal or Injection ☐ Other _____ (specify type)		9. LITHOLOGIC LOG <table border="1"><thead><tr><th rowspan="2">Bore Diam.</th><th colspan="2">Depth</th><th rowspan="2">Material</th><th colspan="2">Water</th></tr><tr><th>From</th><th>To</th><th>Yes</th><th>No</th></tr></thead><tbody><tr><td>12</td><td>0</td><td>1</td><td>Gravel</td><td></td><td></td></tr><tr><td></td><td>1</td><td>7</td><td>Boulders & gravel</td><td></td><td></td></tr><tr><td></td><td>7</td><td>45</td><td>Small gravel & sand</td><td></td><td></td></tr><tr><td></td><td>45</td><td>50</td><td>Small gravel & sand</td><td></td><td>T</td></tr><tr><td></td><td>50</td><td>65</td><td>Clay & small gravel</td><td></td><td></td></tr><tr><td></td><td>65</td><td>70</td><td>Clay & a little coarser gravel</td><td></td><td>X</td></tr><tr><td></td><td>70</td><td>75</td><td>Clay & sand</td><td></td><td></td></tr><tr><td></td><td>75</td><td>108</td><td>Sandy clay, heaving</td><td></td><td>X</td></tr><tr><td></td><td>108</td><td>135</td><td>Gravel & sand</td><td></td><td>X</td></tr><tr><td></td><td>135</td><td>143</td><td>Sand & clay</td><td></td><td></td></tr><tr><td></td><td>143</td><td>155</td><td>Big coarse gravel</td><td></td><td>X</td></tr><tr><td></td><td>153</td><td>165</td><td>Clay, sand & gravel</td><td></td><td></td></tr><tr><td></td><td>165</td><td>170</td><td>Coarse gravel</td><td></td><td>X</td></tr></tbody></table>		Bore Diam.	Depth		Material	Water		From	To	Yes	No	12	0	1	Gravel				1	7	Boulders & gravel				7	45	Small gravel & sand				45	50	Small gravel & sand		T		50	65	Clay & small gravel				65	70	Clay & a little coarser gravel		X		70	75	Clay & sand				75	108	Sandy clay, heaving		X		108	135	Gravel & sand		X		135	143	Sand & clay				143	155	Big coarse gravel		X		153	165	Clay, sand & gravel				165	170	Coarse gravel		X
Bore Diam.	Depth		Material		Water																																																																																						
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	165	170	Coarse gravel		X																																																																																						
4. METHOD DRILLED ☒ Rotary ☒ Air ☐ Hydraulic ☐ Reverse rotary ☐ Cable ☐ Dug ☐ Other _____																																																																																											
5. WELL CONSTRUCTION Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____ <table border="1"><thead><tr><th>Thickness</th><th>Diameter</th><th>From</th><th>To</th></tr></thead><tbody><tr><td><u>.250</u> inches</td><td><u>12 3/4</u> inches</td><td><u>+ 1</u> feet</td><td><u>168</u> feet</td></tr><tr><td>_____ inches</td><td>_____ inches</td><td>_____ feet</td><td>_____ feet</td></tr><tr><td>_____ inches</td><td>_____ inches</td><td>_____ feet</td><td>_____ feet</td></tr><tr><td>_____ inches</td><td>_____ inches</td><td>_____ feet</td><td>_____ feet</td></tr></tbody></table> Was casing drive shoe used? ☒ Yes ☐ No Was a packer or seal used? ☐ Yes ☒ No Perforated? ☒ Yes ☐ No How perforated? ☐ Factory ☒ Knife ☐ Torch Size of perforation <u>1/4</u> inches by <u>1 1/2</u> inches <table border="1"><thead><tr><th>Number</th><th>From</th><th>To</th></tr></thead><tbody><tr><td><u>720</u> perforations</td><td><u>110</u> feet</td><td><u>130</u> feet</td></tr><tr><td><u>480</u> perforations</td><td><u>145</u> feet</td><td><u>153</u> feet</td></tr><tr><td>_____ perforations</td><td>_____ feet</td><td>_____ feet</td></tr></tbody></table> Well screen installed? ☐ Yes ☒ No Manufacturer's name _____ Type _____ Model No. _____ Diameter _____ Slot size _____ Set from _____ feet to _____ feet Diameter _____ Slot size _____ Set from _____ feet to _____ feet Gravel packed? ☐ Yes ☒ No ☐ Size of gravel _____ Placed from _____ feet to _____ feet Surface seal depth <u>19</u> Material used in seal: ☐ Cement grout ☒ Bentonite ☐ Puddling clay ☐ _____ Sealing procedure used: ☐ Slurry pit ☒ Temp. surface casing ☐ Overbore to seal depth Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent Weld ☐ Cemented between strata Describe access port <u>flange</u>		Thickness	Diameter	From	To	<u>.250</u> inches	<u>12 3/4</u> inches	<u>+ 1</u> feet	<u>168</u> feet	_____ inches	_____ inches	_____ feet	_____ feet	_____ inches	_____ inches	_____ feet	_____ feet	_____ inches	_____ inches	_____ feet	_____ feet	Number	From	To	<u>720</u> perforations	<u>110</u> feet	<u>130</u> feet	<u>480</u> perforations	<u>145</u> feet	<u>153</u> feet	_____ perforations	_____ feet	_____ feet																																																										
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6. LOCATION OF WELL Sketch map location must agree with written location.  Subdivision Name _____ Lot No. _____ Block No. _____ County <u>Blaine</u> <u>NW 1/4 SW 1/4 Sec. 24, T. 1 N, R. 18 E.</u>		11. DRILLERS CERTIFICATION <u>DL</u> I/We certify that all minimum well construction standards were complied with at the time the rig was removed. <u>Walker Water Systems, Inc.</u> Firm Name <u>624 Pierce Street</u> Firm No. <u>15</u> <u>Twin Falls, Idaho 83301</u> Address _____ Date <u>6/23/89</u> Signed by (Firm Official) <u>Lud Walk</u> and (Operator) <u>Lud Walk</u>																																																																																									
10. Work started <u>6/9/89</u> finished <u>6/15/89</u>																																																																																											

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0034699
DRILLING PERMIT NO. 829835
Water Right or Injection Well No. 37-20834

2. OWNER:

Name Walker Sand & Gravel
Address P.O. Box 400
City Bellevue, State ID Zip 83313

3. LOCATION OF WELL by legal description:

You must provide address or Lot, Blk, Sub. or Directions to well.

Twp. 01 North ☒ or South ☐
Rge. 18 East ☒ or West ☐
Sec. 24 SE 1/4 NW 1/4 SW 1/4
Gov't Lot _____ County _____

Lat: _____ Long: _____
Address of Well Site 10716 Hwy. 75
City Bellevue
(Give all legal names of road + Distance to Road or Landmark)
Lt. _____ Blk. _____ Sub. Name _____

4. USE:

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

5. TYPE OF WORK check all that apply (Replacement etc.)

☒ New Well ☐ Modify ☐ Abandonment ☐ Other _____

6. DRILL METHOD:

☐ Air Rotary ☒ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

Seal Material	From	To	Weight / Volume	Seal Placement Method
<u>Bentonite</u>	<u>20</u>	<u>0</u>	<u>1250 lbs</u>	<u>Dry pour w/ hydration.</u>

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 204'

Was drive shoe seal tested? ☐ Y ☒ N How? N/A

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
<u>16</u>	<u>1.75</u>	<u>205</u>	<u>?</u>	<u>?</u>	☐	☐	☐	☐
<u>16</u>	<u>117</u>	<u>205</u>	<u>.312</u>	<u>steel</u>	☒	☐	☒	☐
<u>16</u>	<u>11.75</u>	<u>117</u>	<u>.375</u>	<u>steel</u>	☒	☐	☒	☐

Length of Headpipe _____ Length of Tailpipe _____

Packer ☐ Y ☐ N Type N/A

9. PERFORATIONS/SCREENS PACKER TYPE

Perforation Method Torch

Screen Type & Method of Installation _____

From	To	Shot Size	Number	Diameter	Material	Casing	Liner
<u>114</u>	<u>139</u>	<u>.250</u>	<u>300</u>	<u>8"</u>	<u>Steel</u>	☒	☐
<u>149</u>	<u>159</u>	<u>.250</u>	<u>120</u>	<u>8"</u>	<u>Steel</u>	☒	☐
<u>171</u>	<u>185</u>	<u>.250</u>	<u>168</u>	<u>8"</u>	<u>Steel</u>	☒	☐

10. FILTER PACK:

Filter Material	From	To	Weight / Volume	Placement Method
<u>1/2" washed</u>	<u>20</u>	<u>36</u>	<u>1.5cy</u>	<u>from surface</u>

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

48 ft. below ground Artesian pressure _____ lb.

Depth flow encountered _____ ft. Describe access port or control devices: _____

2" pipe @ ~ 30° w/ cap

12. WELL TESTS:

☐ Pump ☐ Bailor ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
<u>To be completed.</u>			

Water Temp. 49° Bottom hole temp. 50°

Water Quality test or comments: apparently good

Depth first Water Encounter 47'

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Y	N
<u>20</u>	<u>0</u>	<u>8</u>	<u>Sand, gravel, & coarse cobbles</u>		☒
<u>20</u>	<u>8</u>	<u>30</u>	<u>Sand & gravel</u>		☒
<u>16</u>	<u>30</u>	<u>49</u>	<u>Sand & gravel</u>		☒
<u>16</u>	<u>49</u>	<u>100</u>	<u>Sandy clay & gravel</u>	☒	
<u>16</u>	<u>100</u>	<u>118</u>	<u>Sandy clay, some gravel</u>		☒
<u>16</u>	<u>118</u>	<u>138</u>	<u>Sand & gravel</u>	☒	
<u>16</u>	<u>138</u>	<u>147</u>	<u>Sandy clay w/ gravel</u>	☒	
<u>16</u>	<u>147</u>	<u>165</u>	<u>Coarse gravel w/ sand</u>	☒	
<u>16</u>	<u>165</u>	<u>170</u>	<u>Sand & gravel w/ clay</u>	☒	
<u>16</u>	<u>170</u>	<u>177</u>	<u>Coarse gravel w/ sand</u>	☒	
<u>16</u>	<u>177</u>	<u>189</u>	<u>Sand & gravel w/ clay</u>		☒
<u>16</u>	<u>189</u>	<u>203</u>	<u>Brn. sandy clay w/ gravel</u>		☒
<u>16</u>	<u>203</u>	<u>205</u>	<u>Basalt, hard, black</u>		☒

RECEIVED
JUN 21 2005
Department of Water Resources
Southern Region

Completed Depth 205' (Measurable)

Date: Started 5/18/05 Completed 6/16/05

14. DRILLER'S CERTIFICATION

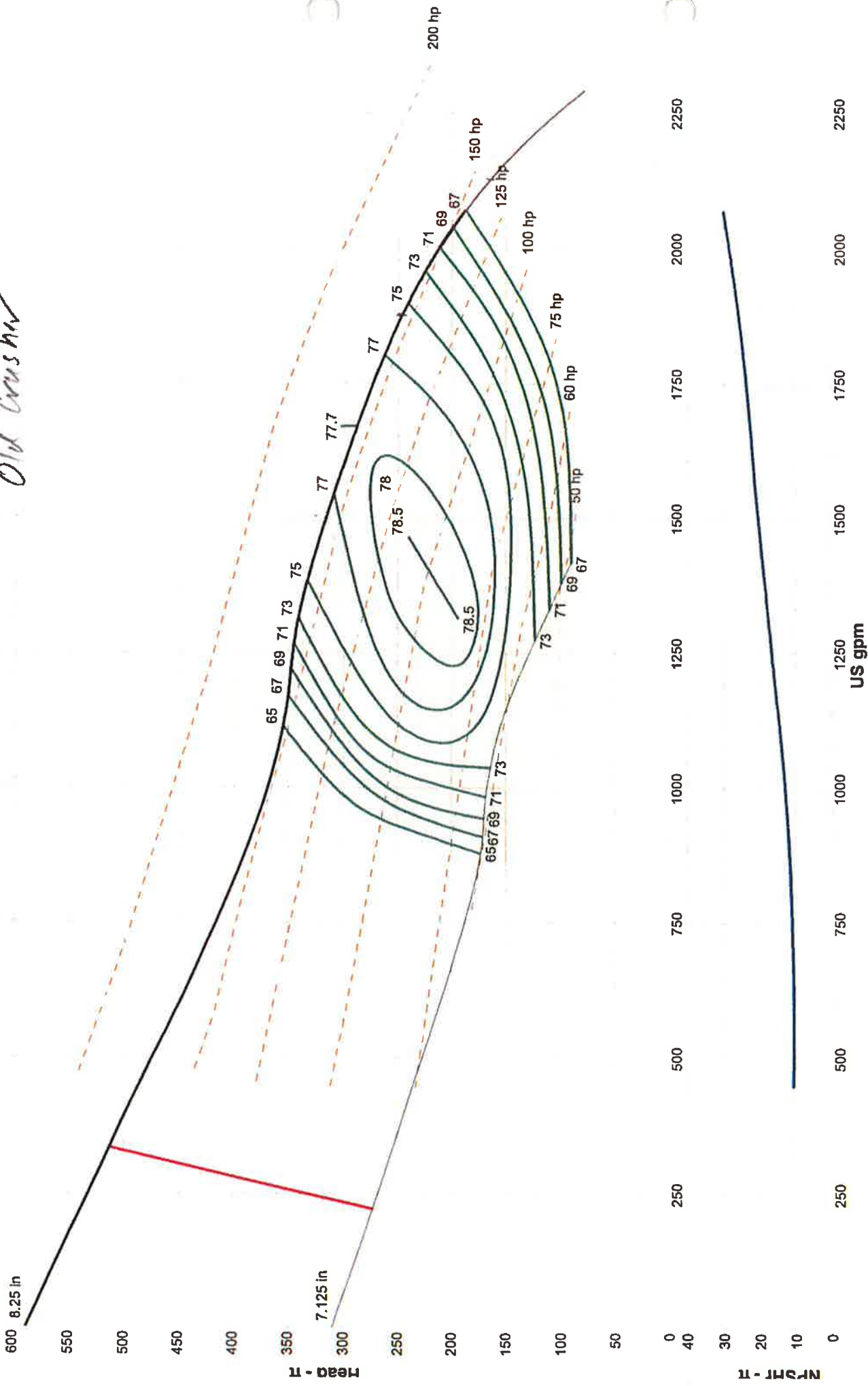
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name Stan Lloyd Drilling, LLC Firm No. 294

Principal Driller Alan Lloyd Date 6/17/05
and
Driller or Operator II _____ Date _____

Operator I _____ Date _____
Principal Driller and Rig Operator Required.
Operator I must have signature of Driller/Operator II.

Old Crusher



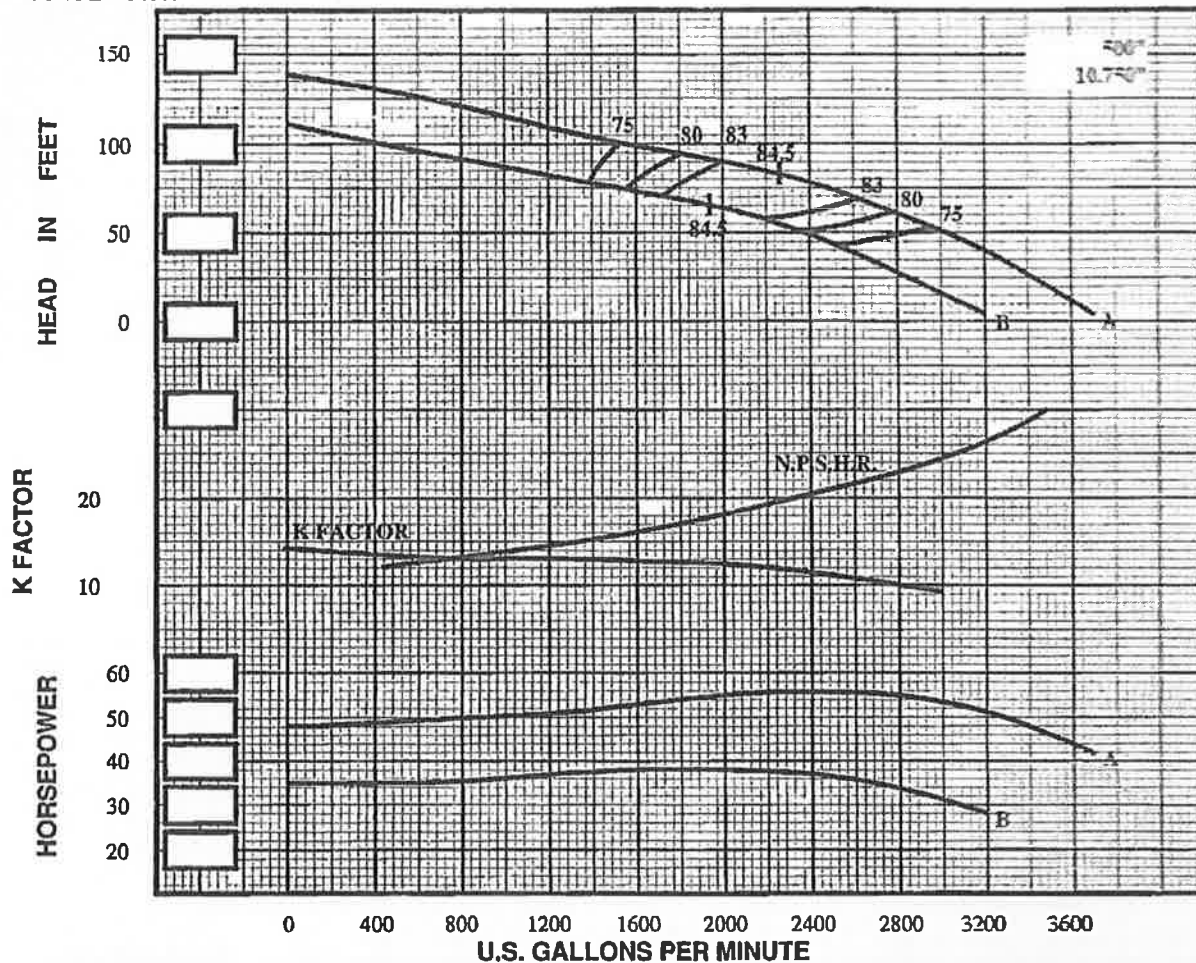
Company:
Name:
11/29/2018

Hydroflo Pumps USA, Inc.
Catalog: hydroflo vs pumps.60, Vers 18.3
Vertical - 1800

Size: 9ZC 8 stage
Speed: 1980 rpm
Dia: 8.25 in
Curve: 010311
Impeller: 9ZC SS ENCL.

Hydroflo Pumps
Fluid Solutions
A Laidlaw & Co. Company

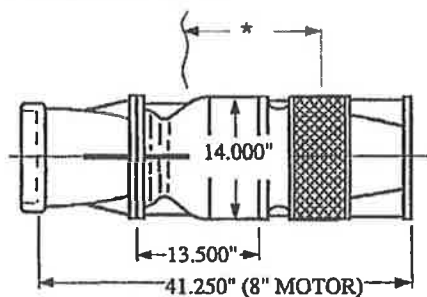
ONE ()
STAGE STAGE



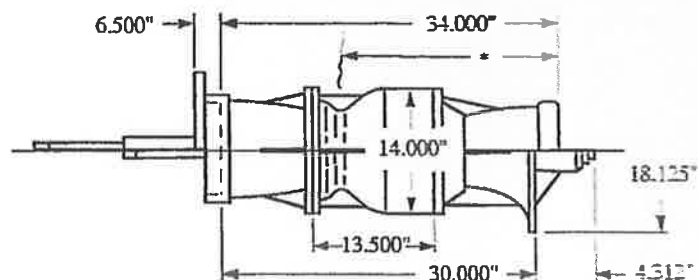
N.P.S.H.

IMPELLER TYPE = ENCLOSED	STD. SHAFT DIA. = 2.187"	NO. STAGES	EFF. CHANGE	MATERIAL	B.E.P. EFF. CHANGE
IMPELLER NO. = SM14M	MAX. SHAFT DIA. = 2.187"	1	-3	IMP. - C.I.	0
IMPELLER WT. - LBS. = 31.7	STD. LATERAL = 1.000	2	-1	IMP. - NI-RI	-2
ONE STAGE WT. - LBS. = 550.0	DISCHARGE SIZES = 10", 12"	3	0	IMP. - S.S.	-2
ADD'L STAGE WT. - LBS. = 235.0	SUCTION SIZES = 10"	4	0	BOWL - BRZ	-2
MAX. SPHERE SIZE = 1.312"	ONE STAGE WR ² = 2.182	5	0	BOWL - NI-RI	-1
MIN. SUBMERGENCE* = 19"				BOWL - S.S.	-2

Δ CONSULT FACTORY



SUBMERSIBLE TURBINE



LINESHAFT TURBINE

SECTION 202
 PAGE 58
 DATE 9/1/06
 SUPERCEDES All Previous

SR14C

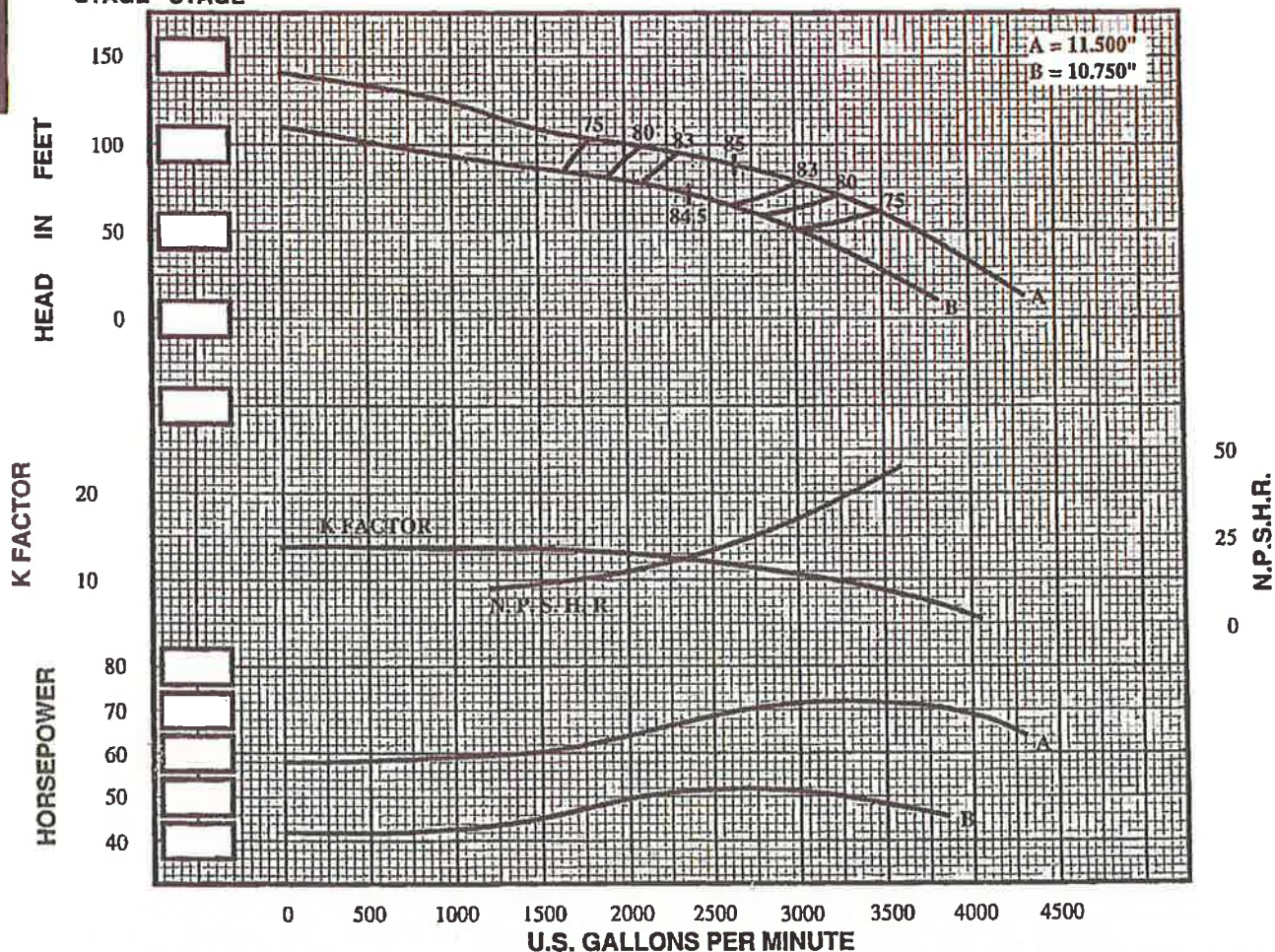
1770 R.P.M.

SIMFLO
 PUMPS

New Crusher - 2

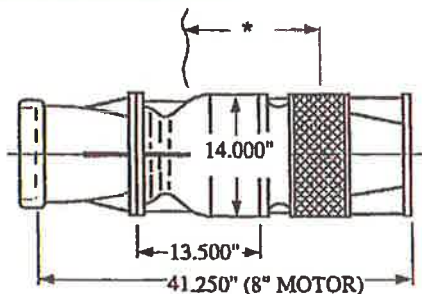
14RH

ONE ()
 STAGE STAGE

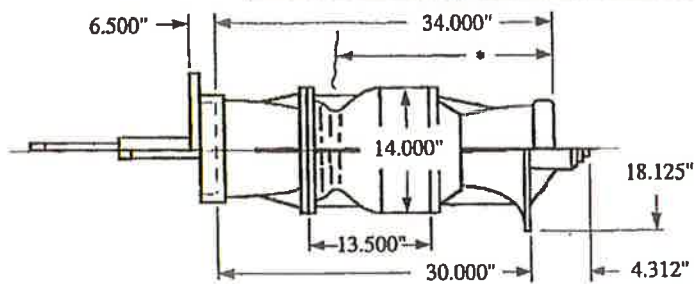


IMPELLER TYPE = ENCLOSED	STD. SHAFT DIA. = 2.187"	NO. STAGES	EFF. CHANGE	MATERIAL	B.E.P. EFF. CHANGE
IMPELLER NO. = SM14H	MAX. SHAFT DIA. = 2.187"	1	-2	IMP. - C.I.	0
IMPELLER WT. - LBS. = 29.0	STD. LATERAL = 1.000"	2	-1	IMP. - NI-RI	-2
ONE STAGE WT. - LBS. = 550.0	DISCHARGE SIZES = 10", 12"	3	0	IMP. - S.S.	-2
ADD'L STAGE WT. - LBS. = 235.0	SUCTION SIZES = 10"	4	0	BOWL - BRZ.	-1
MAX. SPHERE SIZE = 1.562"	ONE STAGE WR ² = 2.023	5	0	BOWL - NI-RI	-1
MIN. SUBMERGENCE* = 19"	= =			BOWL - S.S.	-2

Δ CONSULT FACTORY



SUBMERSIBLE TURBINE



LINESHAFT TURBINE