

Memorandum

Date: October 13, 2023

From: Blake Burkard

To: Water Right File 63-34516

Subject: Licensing Review of Certified Water Right Examiner Report

Permit 63-34516 authorizes the supplemental use of ground water for the irrigation of 6 acres at Christine Donnell Elementary School in Boise. The field exam for this right was performed on May 18, 2023. The report was submitted by Certified Water Right Examiner Terry Scanlan (HDR Engineering Inc.) on June 5, 2023. The purpose of this memo is to review the recommendations made in the field exam report.

Ownership:

Permit 63-34516 is owned by West Ada School District, who operates Christine Donnell Elementary. The proof statement was submitted with a signature and an illegible title. The signer was Spencer McLean, Administrator of Buildings and Grounds at West Ada. There were no other ownership concerns.

Overlap:

The examiner identified that the place of use receives irrigation water from the Boise-Kuna Irrigation District, where surface water is delivered to a wet well. Since permit 63-34516 is a supplemental water right and conditions of approval prevent the diversion of ground water as a primary source, there are no enlargement concerns.

Point of Diversion and Place of Use:

The report confirms the POD location and source via photographs, a well driller's report, and satellite imagery. The included map shows the location of the well to be where the *Wells* layer has a corresponding point. The POD shape for the right should be moved this location. Since it is within the same QQ no amendment is required. The reviewer used NAIP imagery to calculate the irrigated area as 5.6 acres.

Diversion Rate and Volume:

The examiner performed a measurement by recording flow with the installed totalizer over an 11-minute period. The system, when irrigating, can divert water at 0.23 cfs. Additionally, an analysis of the sprinklers was conducted by using the installed pressure gauge and sprinkler specifications. The sprinklers, running at 62 psi, are capable of conveying 0.21 cfs. Since the measuring device installed is approved by IDWR, I concur with Patrick's recommendation for

licensing this permit with a rate of 0.23 cfs. I also agree with the reviewer's volume recommendation, which is based on the acres irrigated and the field headgate standard.

Conditions:

The reviewer confirmed that the conditions of approval had been met, and that conditions standardly removed should not be carried to licensure. I also recommend adjusting the annual volume limit to reflect the reduction in acreage from 6.0 to 5.6 acres. Condition 121 should also be updated to 103.

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

RECEIVED**JUN 05 2023****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. 63-34516

1. Owner West Ada School District Phone No. 208-350-5228
 Current address 1303 E. Central Dr. Meridian, ID 83642
2. Examiner's name Patrick Kelly and Terry Scanlan (Examiner 23-129) EXAM DATE May 18, 2023
3. Accompanied by TJ Martin Email _____
 Address 7075 S. 5-Mile Rd. Boise, ID 83709
 Relationship to permit holder Staff Phone No. 208-912-7812
4. Source Ground Water tributary to _____

B. OVERLAP REVIEW

1. Other water rights with the same place of use Boise Kuna Irrigation District rights
2. Other water rights with the same source and point of diversion None

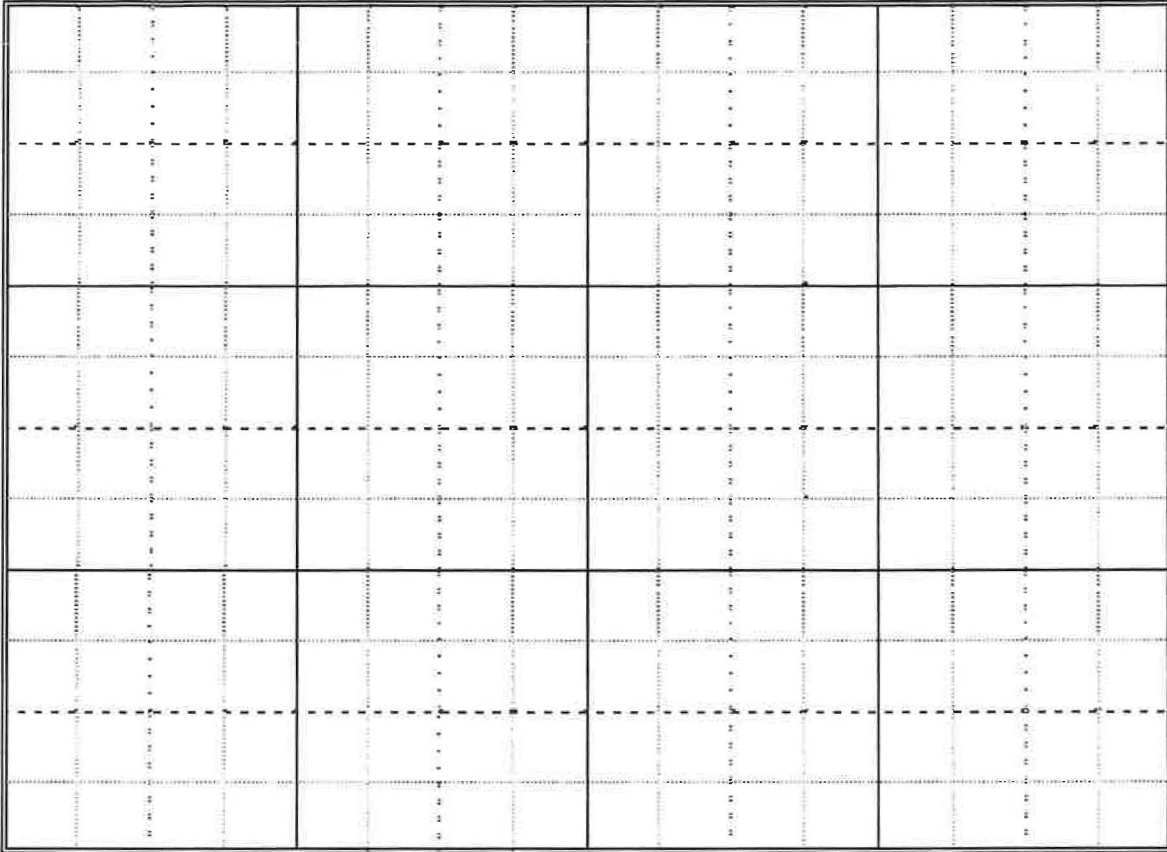
C. DIVERSION AND DELIVERY SYSTEM**1. Point(s) of Diversion:**

Ident. No.	Gov't Lot	¼	¼	¼	Sec	Twp	Rge	County	Method of Determination/Remarks
			NE	SE	03	02N	01E	Ada	Tag # D0080218
									GPS: 43 32.276, -116 18.993

2. Place(s) of Use: Method of determination 2021 satellite imagery, digital mapping tools

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
02N	01E	03													5.6				5.6

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
D0080218	Hilachi	20	G27451E	Goulds	6-inch

*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
CDSA Flow Meter	Magnetic	Badger	M2000	1808-060	4"	unknown

2. **Measurements:** _____

Well is equipped with a Badger Meter M2000. Totalizer readings were recorded over an 11-minute period

E. NARRATIVE/REMARKS/COMMENTS

Narrative attached to this report.

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?

F. FLOW CALCULATIONS☐ Additional computation sheets attached

Measured Method:

Badger M2000 totalizer @ 11:46 = 14286111; @ 11:57 = 14287256; Total gallons = 1045 = 104.1 gpm = 0.23 cfs

Rainbird 8005 with 12S nozzles divert 12 gpm per sprinkler head

4 sprinkler per zone, 2 zones at one time = 8 sprinklers

8 sprinklers x 12 gpm per sprinkler = 96 gpm

5.6 acres x 0.06 cfs/acre = 0.34 cfs

G. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{I,R} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 5.6 \text{ ac} \times 4.5 \text{ af/ac} = 25.2 \text{ af}$$

$$V_{D,R} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation Season}) \times 1.9835 = 0.23 \text{ cfs} \times 260 \text{ days} \times 1.9835 = 118.6 \text{ af}$$

$$V = \text{Smaller of } V_{I,R} \text{ and } V_{D,R} = 25.2 \text{ af}$$

2. Volume Calculations for Other Uses:

No other uses permitted.

H. RECOMMENDATIONS**1. Recommended Amounts**

Beneficial Use	Period of Use		Rate of Diversion Q (cfs)	Annual Volume V (afa)
	From	To		
Irrigation	03/01	11/15	0.23	25.2
Totals:			0.23	25.2

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

Terry M. Scanlan

Date

June 1, 2023

Reviewer

TH

Date

12/6/24



Ownership

Water right permit 63-34516 was applied for and issued in the name of West Ada School District (WASD). Christine Donnell School of the Arts (CDSA) is a member of the WASD. Water from the POD is applied to a POU owned and operated by WASD. Changes to ownership are not recommended.

Water Right Overlap

Water right permit 63-34516 is the only ground water right associated with the property for irrigation purposes. The school property receives 10 shares from Boise-Kuna Irrigation District (BKID). BKID shares provide 3.75 af/share (totaling 37.5 af for the CDSA property), ordered as inches on demand from BKID. Water from BKID is delivered through the Paris Lateral out of headgate number 5.20. A box at the SE corner of the property controls surface water delivered to the wet well.

According to Randy, the BKID ditch rider, the school usually orders 9 inches (81 gpm) of water. The school custodian informed me that they have been having issues getting surface water to the wet well and have had to rely on the ground water source more lately.

Point of Diversion

Water right permit 63-34516 was issued with one point of diversion legal descriptions to recognize a new well. Coonse Well Drilling drilled a new well on-site with IDWR Metal Tag I.D. No. D0080218. The well is located at the south end of the property within NE¼SE¼ Sec. 3, Twp. 2 North, Rge. 1 East of Ada County. GPS coordinates are 43 32.76, -116 18.993 degrees and decimal minutes. A well drillers report is included in Attachment A. Amendments to the POD are not recommended.

Place of Use

2021 aerial imagery and ArcMap tools were used to measure a total of 5.6 acres of irrigation on the property within the NE¼SE¼ Sec. 3, Twp. 2 North, Rge. 1 East of Ada County. Permit 63-34516 was permitted with a 6-acre place of use within the legal description. Amendments to the POU are not recommended.

Well and System

The well was drilled by Coonse Well Drilling in late 2018. According to the well driller's report, the well is 255 feet deep with 8-inch steel casing to 215 feet below surface. Stainless steel wire-wrap, 30-slot screens were placed from 215 to 245 feet. SPF Water Engineering conducted a step-rate pumping test of the well November 16, 2018. The well was tested for a total of 217 minutes at rates of 100 to 160 gpm. A final pumping level of 110.1 feet diverting 160 gpm (0.36 cfs) yields a specific capacity of 10.44 gpm per foot of drawdown. A graph of the data collected from the pumping test is shown in Figure 1.

The well pump and motor system design was submitted by Jason Thompson P.E., of SPF Water Engineering in April 2019. One (1) Goulds VIS 6CLC 6 Stages Submersible Pump rated for 160 gpm at 320 ft. TDH and one (1) 20-hp 6-inch Hitachi Submersible Motor was ordered and installed. Pump and motor specs are included in Attachment B.

The pressurized irrigation system consists of sprinklers and drip lines on a rotation schedule in the evenings, outside of school hours. Water from the well is diverted into the sprinkler mainline. Surface water out of a wet well enters the same pipe and each source can be isolated by valves.

Christine Donnell Irrigation Well
Drawdown and Recovery
11/16/2018 Test Date

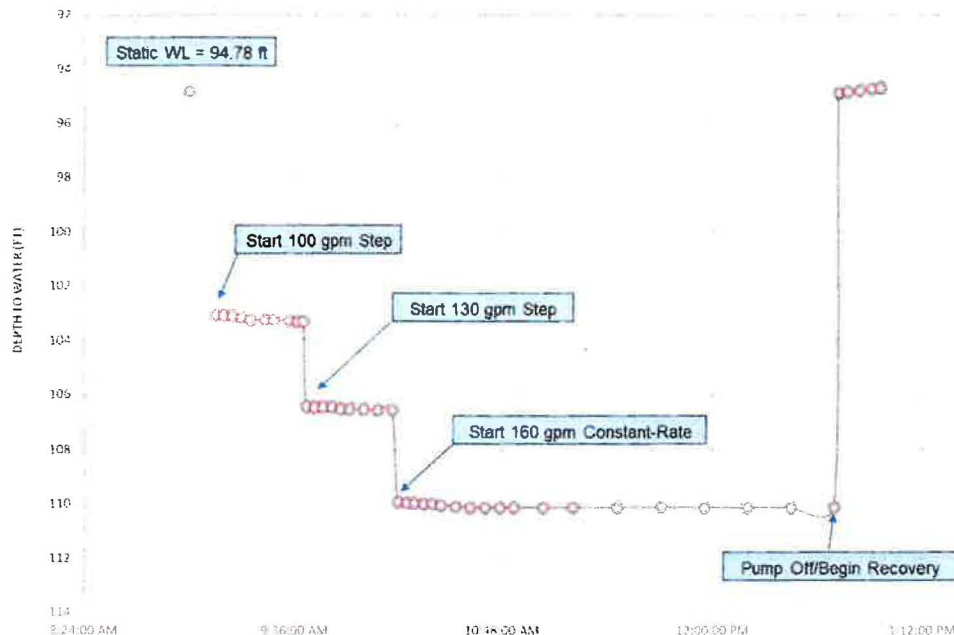


Figure 1. CDSA Irrigation Well Pumping Test

Water Measurement

Diversion rates were directly measured from the systems measuring device. The system is equipped with a Badger M2000, which is an IDWR approved magnetic flow meter. Totalizer readings were used to measure an average flow rate over an 11-minute period. A total of 1,045 gallons were diverted representing a 104.1 gpm (0.23 cfs) diversion rate. The field examiner observed diversion rates consistent with this average during the exam.

The irrigation system cycles through several zones over an 8-hour period. Zones with the highest diversion consist of four Rainbird 8005 series rotors using 12S nozzles. The school yard is irrigated with up to 2 zones at any given time. The system is equipped with a pressure gauge reading 62 psi during the exam. A sprinkler sheet included in this report shows that these sprinklers are rated for 12 gpm per sprinkler. 2 zones are expected to divert approximately 96 gpm, or 0.21 cfs at 60 psi.

Conditions of Approval

Permit 63-34516 was issued with a condition stating the right shall provide no more than 0.02 cfs per acre when averaged over a 24-hour period. This authorizes a higher diversion rate up to 0.06 cfs/acre to allow the school to irrigate during an 8-hour period.

Ground water is used to supplement surface water shares delivered by BKID.

All conditions of approval have been met.

Recommendations

The well was drilled under supervision and tested by a registered engineer. Results of the well test conducted November 18, 2018, demonstrates a sufficiency of supply. The well is equipped with a pump and motor rated to divert at least 160 gpm. The sprinkler system is likely the limiting factor of the system, which was measured diverting 0.23 cfs at the time of the exam. The permit authorizes up to 6 acres of irrigation. 2021 satellite imagery and digital mapping tools were used to measure 5.6 acres of irrigation. The standard 4.5 af/acre headgate requirement was used to recommend a maximum annual volume of 25.2 af.

LEGEND

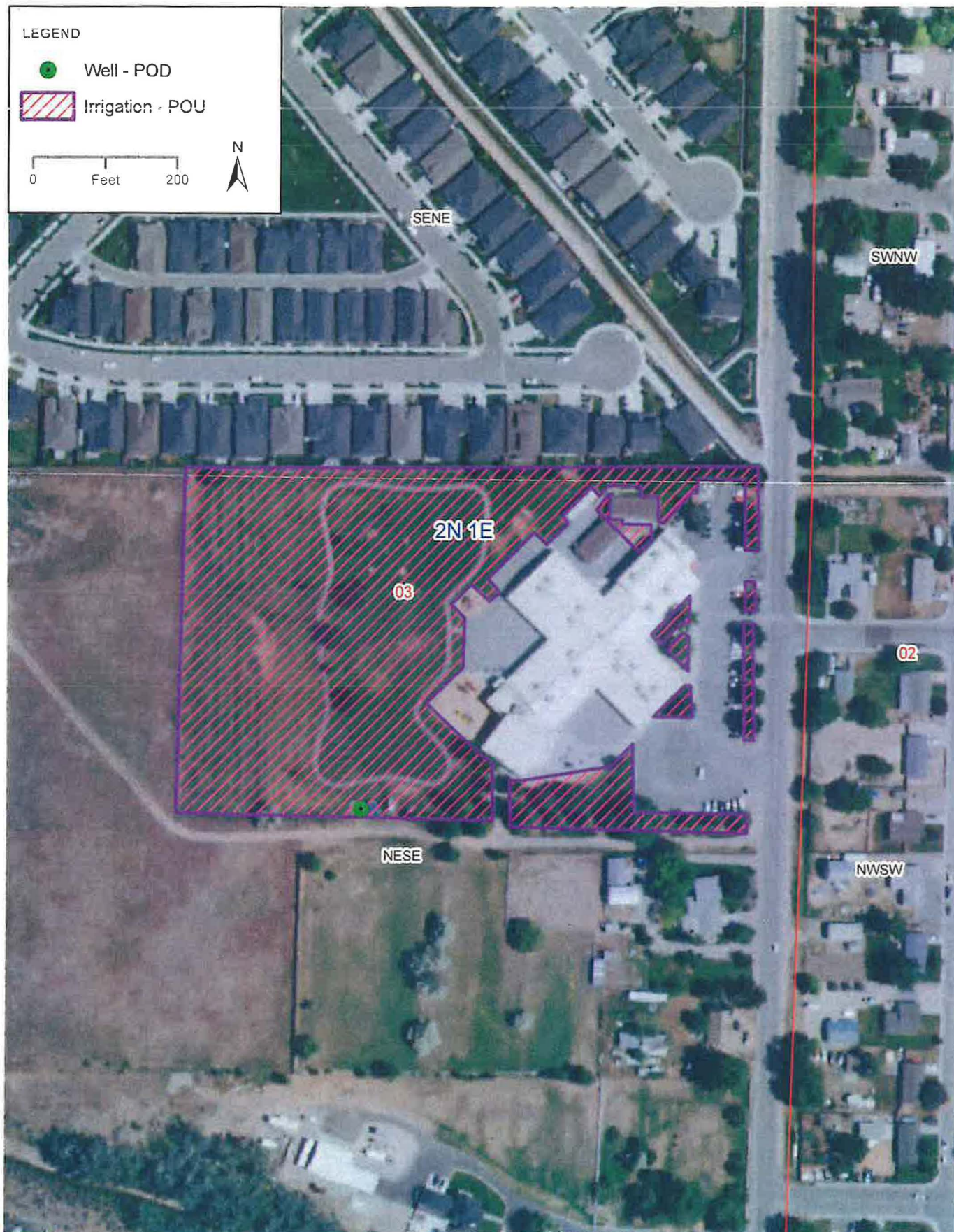


Well - POD



Irrigation - POI

0 Feet 200



DATA SOURCE: NAIP 2021

63-34516 BENEFICIAL USE FIELD EXAM

SYSTEM DIAGRAM

WEST ADA SCHOOL DISTRICT

APPENDIX A – WELL DRILLER'S REPORT

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0080218

Drilling Permit No. 887841Water right or injection well # 63-34516

2. OWNER:

Name West Ada School District (Christine Donnell)Address 1303 E Central DriveCity Meridian State ID Zip 83642

3. WELL LOCATION:

Twp. 2 North ☒ or South ☐ Rge. 1 East ☒ or West ☐Sec. 3 1/4 NE 1/4 SE 1/4Gov't Lot _____ County AdaLat. 43 ° 32.276 (Deg. and Decimal minutes)Long. 116 ° 18.993 (Deg. and Decimal minutes)Address of Well Site 7075 S Five Mile Rd.City Boise

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 ³)	Placement method/procedure
ben/cem	5	195	110.4cu/ft	tremie

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/Schedule	Material	Casing Liner	Threaded	Welded
12"	0	40	.250	steel	☒	☐	☒
8"	+2	215	.322	steel	☒	☐	☒
					☐	☐	☐
					☐	☐	☐

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 40

9. PERFORATIONS/SCREENS:

Perforations ☐ Y ☐ N Method _____Manufactured screen ☒ Y ☐ N Type JohnsonMethod of installation placed

From (ft)	To (ft)	Slot size	Number/ft	Diameter (nominal)	Material	Gauge or Schedule
215	245	.030	---	8"	stainless	

Length of Headpipe _____ Length of Tailpipe _____

Packer ☐ Y ☒ N Type _____

10. FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft ³)	Placement method
6-9 silica	195	245	2750lbs	tremie

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) 93ft Static water level (ft) 93ftWater temp. (°F) 58degF Bottom hole temp. (°F) _____

Describe access port _____

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)
17	160	240

Test method:

Pump	Bailer	Air	Flowing artesian
☒	☐	☐	☐

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
12"	0	2	top soil		X
"	2	8	brown clay		X
"	8	26	brown sandy clay		X
"	26	42	sand and gravel		X
"	42	65	gravel and sand		X
"	65	115	coarse tan sand	X	
"	115	132	coarse sand and gravel	X	
"	132	142	tan clay		X
"	142	182	gravel and sand	X	
"	182	185	tan clay		X
"	185	188	coarse tan sand	X	
"	188	197	tan clay		X
"	197	255	coarse sand and gravel	X	
			finished at 245		

RECEIVED

DEC 03 2018

WATER RESOURCES
WESTERN REGIONCompleted Depth (Measurable) 245Date Started: Nov 2, 2018Date Completed: Nov 16, 2018

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 Coonse Well DrillingCo. No. 409Principal Driller Ray E. Coonse Date Nov 16, 2018Driller [Signature] Date Nov 16, 2018

Operator II _____ Date _____

Operator I Todd Love Date Nov 16, 2018

* Signature of Principal Driller and rig operator are required

APPENDIX B – PUMP AND MOTOR SPECS

PERFORMANCE ON DESIGN CURVE AT 3450 RPM

	Shut Off	Design [2]	Run Out [5]		
Flow (USGPM)	0.0	160.0	0.0	Best Efficiency	74.70 % at 172.0 USgpm
TDH-Bowl (ft)	465.0	329.0	0.0	Design Flow % BEP	93.02 %
TDH-Disch Flange (ft)	390.0	243.5	0.0	Pump Efficiency	71.29 %
Bowl Efficiency (%)	-	74.50	-	Overall Efficiency	0.00 %
Guaranteed Bowl Efficiency (%)	-	72.26	-	NOL Power	18.7 Hp at 217.0 USgpm
Power (Hp)	-	17.9	-	Guaranteed NOL Power	19.4 Hp at 217.0 USgpm
Guaranteed Power (Hp)	-	18.6	-	Max Power (NOL) at Max Trim	20.3 Hp at 217.0 USgpm
NPSHr (ft) [1]	-	10.9	-	Guaranteed Max Power (NOL) at Max Trim	21.1 Hp at 217.0 USgpm
NPSH Margin (ft) [1]	-	98.0	-	Specified NPSH Ratio	1.1
Hydraulic Thrust(lb)	976.5	690.9	0.0	Thrust Load Power Loss	0.30208 Hp
Thrust (lb)	1602.0	1258.6	0.0	Total Flow Derate Factor	1.00
Pressure-Bowl (psi)	201.3	142.4	0.0	Total Head Derate Factor	1.00
Pressure-Disch Flange (psi)	168.8	105.4	0.0	Total Efficiency Derate Factor	1.00
Min Submergence (Inch) [3]	-	14.10	-	Actual Submergence	947.89 in
Friction Loss (ft) [4]	-	9.57	0.00	Shaft Friction Power Loss	-0.04 Hp
Lineshaft Elongation (Inch)	0.07563	0.05351	-	Min Flow (MCSF)	43.0 USgpm
Column Elongation (Inch)	0.11760	0.00735	-	kWh per 1000 gal	0.00000
Lateral (Inch)	0.08803	0.17616	-	Impeller Running Clearance	0.13 in

[1] at 1st impeller eye [2] rated values [3] from bottom of pump [4] from bowl to disch flange [5] based on user entered TDH

OPERATING CONDITIONS

Specified Flow	160.00 USgpm
Design TDH (Bowl)	329.0 ft
Rated Speed	3450 RPM
Atmospheric Pressure	15 psi
TPL	153.88 ft
Pumping Level	75.00 ft
NPSHa at 1st Impeller	108.9 ft
Well Diameter	8 inch [203mm]
	Casing

FLUID CHARACTERISTICS

Fluid	Water
Fluid Temperature	68.0 °F
Specific Gravity	1.0000
Viscosity	1.0017 cP
Vapor Pressure	0.3393 psi
Density	62 lbs/ft³

MATERIALS & DIMENSIONS
Bowl Data

Bowl Material	Cast Iron with Glass Enamel
Bowl Material Derate Factor	1.00
Impeller Material	316SS
Additional Stage Impeller Material	316SS
Impeller Matl Derate Factor	1.00
Bowl Shaft Material	416SS
Impeller Attachment	Taper Lock
Taper Lock Material	416SS
Discharge Bowl Material	Cast Iron
Suction Type	Bell
Bowl Bolting Material	Carbon Steel
Motor Adapter	6" [152.4 mm]
Motor Adapter Bearing	Bronze
Discharge Bowl Bearing	Bronze
Intermediate Bowl Bearing	Bronze
Impeller Trim	4.06 in

Bowl Data

Max Impeller Trim	4.22 in
Thrust K-Factor	2.1 Lb/Ft
Bowl Pressure Limit	590 psi
Available Lateral	0.25 in
Shut Off Lateral	0.08803 in
Design Lateral	0.17616 in
Bowl Assembly Length (BL)	45.09 in
Bowl Shaft Diameter	1 1/2" [38.1 mm]
Impeller Balance	Manufacturer's Standard
Bowl Wear Ring	Not Included
Impeller Wear Ring	Not Included
Bowl Diameter (D)	5.88 in
Min Column Diameter	3 in
Max Column Diameter	4 in
Bowl Shaft Length	85.50 in
Bowl Shaft Power Limit	520.70 Hp

DO NOT USE FOR CONSTRUCTION UNLESS CERTIFIED

Certified By	
Project	Christine Donnell Irrigation Well Pump
Tag	
PO Number	
Serial Number	

Bowl Specials
Column Data

Column Type	Threaded
Column Diameter	4" [102mm]
Column Pipe Material	Carbon Steel

Column Data

Max Column Section Length	252 in
----------------------------------	--------

Column Specials
Head Data

Well Diameter	8 inch [203mm] Casing
Discharge Elbow Material	Carbon Steel
Head Flanged Rating	150 # Flange

Head Data

Well Head Size	4" [102mm]
Sanitary Well Seal	Yes

Head Specials
Motor Data

Driver Type	Submersible
Motor Manufacturer	
Voltage	200 V
Phase / Frequency	3 PH / 60 Hz
Enclosure	SUBM
Motor Frame	6
Motor Adapter	6" [152.4 mm]
ML [Motor Length]	31.50 in
MD [Motor Base Diameter]	6.00 in
Insulation Class	F

Motor Data

Service Factor	1.15
Motor Provided By	Xylem
Motor Mounted By	Customer
Motor Part Number	6M208
Driver Size Criteria	Max power on design curve (NOL)
Allow Service Factor	No

Motor Specials
Coating Data

Bowl OD	Goulds Water Technology
Column ID	Standard Blue Enamel
Column OD	Not Included
Column Bearing Retainer	Not Included
Can ID	Not Included

Coating Data

Head ID	Not Included
Head OD	Goulds Water Technology
Enclosing Tube OD	Standard Blue Enamel
Steel Sub Base	Not Included

Testing Data
Miscellaneous Specials
Weight Data

Total Bowl Weight	155 lbs
Unit Bowl Weight	55 lbs / 20 lbs
Total Column Weight	1586 lbs
Unit Column Weight	11 lbs

Weight Data

Head Weight	71 lbs
Motor Weight	170 lbs
Total Weight	1982 lbs
Total Rotating Weight	428 lbs

INFO, WARNING & ERROR MESSAGES
DO NOT USE FOR CONSTRUCTION UNLESS CERTIFIED

Certified By	
Project	Christine Donnell Irrigation Well Pump
Tag	
PO Number	
Serial Number	



SUBMITTAL

Quote ID: 9001-190117-071:0:3 QTY: 1
VIS-WFTM 6CLC, 6 Stages

Our offer does not include specific review and incorporation of any Statutory or Regulatory Requirements and the offer is limited to the requirements of the design specifications. Should any Statutory or Regulatory requirements need to be reviewed and incorporated then the Customer is responsible to identify those and provide copies for review and revision of our offer.

Our quotation is offered in accordance with our comments and exceptions identified in our proposal and governed by our standard terms and conditions of sale – Xylem Americas attached hereafter.

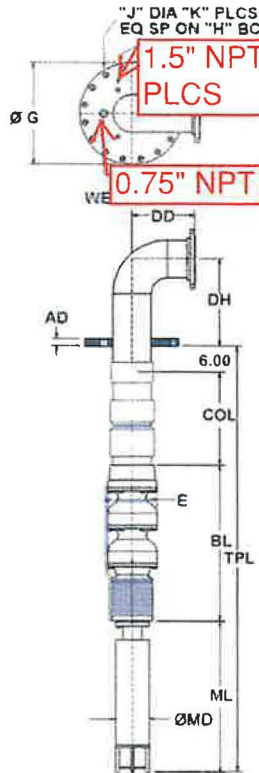
For units requiring performance test, all performance tests will be conducted per ANSI/HI 14.6 standards unless otherwise noted in the selection software submittal documents. Test results meeting with grade 2B tolerances for pumps with a rated shaft power of 134HP or less and grade 1B for greater than 134HP will be considered passing.

Customer is responsible for verifying that the recommendations made and the materials selected are satisfactory for the Customer's intended environment and Customer's use of the selected pump. Customer is responsible for determining the suitability of Xylem recommendations for all operating conditions within Customer's and/or End User's control. Xylem disclaims all warranties, express or implied warranties, including, but not limited to, warranties of merchantability and fitness for a particular purpose and all express warranties other than the limited express warranty set forth in the attached standard terms and conditions of sale – Xylem Americas attached hereafter.

Xylem does not guarantee any pump intake configuration. The hydraulic and structural adequacies of these structures are the sole responsibility of the Customer or his representatives. Further, Xylem accepts no liability arising out of unsatisfactory pump intake field operating conditions. The Customer or his representatives are referred to the Hydraulic Institute Standards for recommendations on pump intake design. To optimize the hydraulic design of a field pump intake configuration, the Customer should strongly consider performing a detailed scale model pump intake study. However, the adequacies of these recommendations are the sole responsibility of the Customer.

DO NOT USE FOR CONSTRUCTION UNLESS CERTIFIED

Certified By	
Project	Christine Donnell Irrigation Well Pump
Tag	
PO Number	
Serial Number	



DIMENSIONS

J [Mounting Flange Hole Dia]	0.88 in
H [Mounting Flange Bolt Circle]	11.75 in
Dim G [Mounting Flange Dia]:	13.50 in
DD [Disch Flange Stickout]	7.38 in
DH [Disch Flange Height]	11.00 in
AD [Mounting Flange Thickness]	0.94 in
Column Length (COL)	1764.00 in
E	6.28 in
BL [Bowl Assembly Length]	45.09 in
TPL [Total Pump Length]	1846.59 in
ML [Motor Length]	31.50 in
MD [Motor Base Diameter]	6.00 in

PUMP DATA

Column Diameter	4" [102mm]
Lineshaft Diameter	1 in [25.4 mm]
Specified Flow	160.00 USgpm
Specified TDH	320.00 ft
Pumping Level	75.00 ft
Motor Manufacturer	
Driver Type	Submersible
Selected Motor Power	20.00 Hp
Phase / Frequency	3 PH / 60 Hz
Voltage	200 V

WEIGHTS

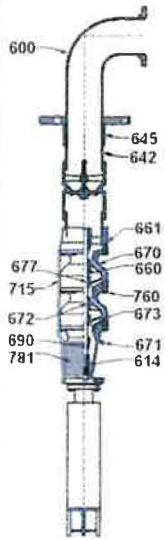
Total Bowl Weight	155 lbs
Unit Bowl Weight	55 lbs / 20 lbs
Total Column Weight	1586 lbs
Unit Column Weight	11 lbs
Head Weight	71 lbs
Motor Weight	170 lbs
Total Weight	1982 lbs
Total Rotating Weight	428 lbs

NOTES

1	Total Pump Length $\pm$ 1.0 inch.
2	Tolerance on all dimensions is .12 or $\pm$.12 inch per 5 ft, whichever is greater.
3	All dimensions shown are in inches unless otherwise specified.
4	Drawing not to scale.
5	1/2" NPT – Gauge Conn (plugged)
6	Driver may be rotated at 90° intervals about vertical centerline for details refer to driver dimension drawing.
7	Refer to product IOM for impeller setting requirements.
8	This assembly has been designed so that its natural frequency responses avoid the specific operating speeds by an adequate safety margin. The design has assumed the foundation to be rigid.

DO NOT USE FOR CONSTRUCTION UNLESS CERTIFIED

Certified By	
Project	Christine Donnell Irrigation Well Pump
Tag	
PO Number	
Serial Number	

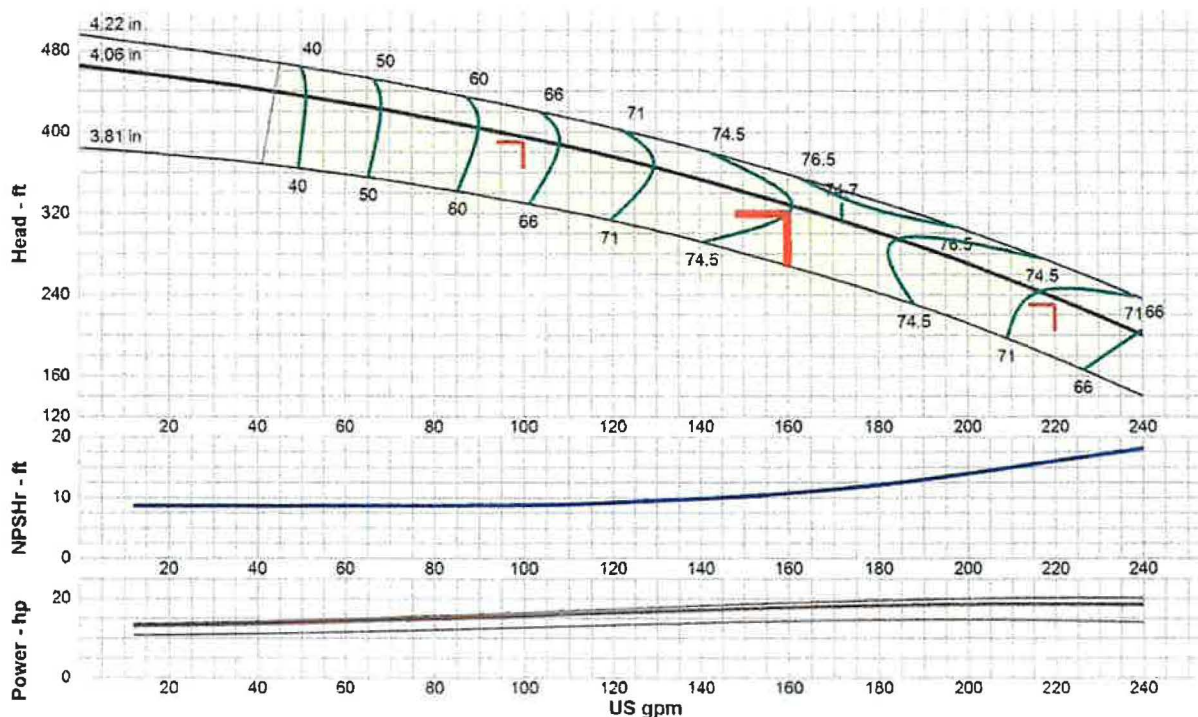


BILL OF MATERIALS

ITEM	PART NAME	CODE	MATERIAL	ASTM#
Head Assembly				
600	Well Head	9645	Carbon Steel Fab	A53
Column Assembly				
642	Column Pipe Material	6501	Black Pipe Sch 40	A 53
645	Column Coupling	9645	Carbon Steel Fab	A53
Bowl Assembly				
614	Coupling-Sub Motor	2218	SST 416	A582M
660	Shaft - Bowl	2227	SST 416	A582 S41600
661	Discharge Bowl	1003	Cast Iron CI30	A48 CLASS 30B
664	Bearing - Discharge Bowl	1618	Bronze Bismuth	B584 Modified
670	Bowl - Intermediate	6911	Cast Iron CI30 Enamel	A48
671	Motor Adapter	1018	Ductile Iron 65-45-12	A536
672	Bearing - Intermediate Bowl	1618	Bronze Bismuth	B584 Modified
673	Impeller	1203	SST 316	A744M
677	Taper Lock-Impeller	2217	SST 416	A582M
680	Wear Ring-Bowl	N/A	Not Included	N/A
681	Wear Ring - Impeller	NA	Not Included	NA
690	Bearing - Motor Adapter	1618	Bronze Bismuth	B584 Modified
715	Guard-Cable	3215	SST 304	A240M
758	Capscrew-(Motor)	2228	SST 304	A276
781	Screen-Suction	3211	SST 316	A240M
789	Washer - Upthrust	6266	Tivar 1000	None
	Check Valve	1018	Ductile Iron 65-45-12	A536

DO NOT USE FOR CONSTRUCTION UNLESS CERTIFIED

Certified By	
Project	Christine Donnell Irrigation Well Pump
Tag	
PO Number	
Serial Number	



CURVE DATA

Specified Flow	160.00 USgpm	Shut Off TDH (Disch Flange)	390.0 ft	kWh per 1000 gal	0.00000
Specified TDH	320.00 ft	Shut Off Pressure (Bowl)	201.3 psi	NPSHr at Design	10.9 ft
Atmospheric Pressure	15 psi	Shut Off Pressure (Disch Flange)	168.8 psi	Specified NPSH Ratio	1.1
TPL	153.88 ft	Bowl Efficiency at Design	74.50 %	NPSH Margin at Design	98.0 ft
Pumping Level	75.00 ft	Guaranteed Bowl Efficiency	72.27 %	Min Submergence at Design	14.10 in
NPSHa at Grade	33.9 ft	Best Efficiency	74.70 %	Actual Submergence	947.89 in
NPSHa at 1st Impeller	108.9 ft	BEP Flow	172.0 USgpm	Shaft Friction Power Loss	-0.04 Hp
Well Diameter	8 inch [203mm]	Design Flow % BEP	93.02 %	Thrust Load Power Loss	0.30208 Hp
Fluid	Water	Pump Efficiency	71.29 %	Hydraulic Thrust at Design	690.9 lb
Fluid Temperature	68.0 °F	Friction Loss at Design	9.57 ft	Thrust at Design	1258.6 lb
Specific Gravity	1.0000	Power at Design	17.9 Hp	Hydraulic Thrust at Shut Off	976.5 lb
Viscosity	1.0017 cP	Guaranteed Power	18.6 Hp	Thrust at Shut Off	1602.0 lb
Vapor Pressure	0.3393 psi	NOL Power	18.7 Hp	Bowl Material	Cast Iron with Glass Enamel
Density	62 lbs/ft³	Guaranteed NOL Power	19.4 Hp	Bowl Material Derate Factor	1.00
Design Flow	160.0 USgpm	Max Power (NOL) Flow	217.0 USgpm	Impeller Material	316SS
Min Flow (MCSF)	43.0 USgpm	Max Power (NOL) at Max Trim	20.3 Hp	Impeller Matl Derate Factor	1.00
Design TDH (Bowl)	329.0 ft	Guaranteed Max Power (NOL) at Max Trim	21.1 Hp	Total Flow Derate Factor	1.00
Design TDH (Disch Flange)	243.5 ft	Max Power (NOL) Flow at Max Trim	217.0 USgpm	Total Head Derate Factor	1.00
Design Pressure (Bowl)	142.4 psi	Recommended Power	20.00 Hp	Total Efficiency Derate Factor	1.00
Design Pressure (Disch Flange)	105.4 psi	Allow Service Factor	No	Curve ID	E6206CFPC2
Shut Off TDH (Bowl)	465.0 ft				

DO NOT USE FOR CONSTRUCTION UNLESS CERTIFIED

Certified By	
Project	Christine Donnell Irrigation Well Pump
Tag	
PO Number	
Serial Number	



FEATURES

SINGLE PHASE:

Single Phase, 6" motors available in 5 - 15 HP, 230 volt models.

Require CentriPro Control Boxes as shown on Order Number chart.

THREE PHASE:

Three Phase, 6", 5 - 30 HP, 230 and 460 volt models have an exclusive voltage change plug feature. Stock one model and a different voltage plug to reduce inventory cost.

Change Plug Order Numbers are:

- PLUG-230V • PLUG-460V

6 - 10" Three Phase available from 5 - 200 HP, see charts for available voltages.

NOTE: See color brochure (BRCP6SM) for more information and cutaway views.



NSF/ANSI STANDARD 61

Drinking Water System Components - Health Effects

6" Single Phase Motors 6-10" Three Phase Motors



CentriPro

a xylem brand

6" SINGLE PHASE MOTORS AND REQUIRED CONTROL BOXES

Motor Order No.	HP	kW	Volts	Phase	Motor Dia. vs Flange Dia.	S.F.	Rated Input		Service Factor		L.R. Amps	Control Box Order No. ①
							Amps	Watts	Amps	Watts		
6M051	5	3.7	230	1	6" x 6"	1.15	24	4987	27.5	5735	124	CB05MC3R
6M071	7.5	5.5					36	7675	41	8950	167	CB07MC3R
6M101	10	7.5					50	10135	58	11830	202	CB10MC3R
6M151	15	11					72	15180	85	18050	275	CB15MC3R

① NEMA 3R control boxes will be replacing the current models.

6-10" THREE PHASE MOTORS

Motor Order No.	HP	kW	Volts	Phase	Motor Dia. vs Flange Dia.	S.F.	Rated Input		Service Factor		L.R. Amps
							Amps	Watts	Amps	Watts	
6M058	5	3.7	200	3	6" x 6"	1.15	17.5	4910	19.5	5610	124
6M052	5	3.7	230				15.0	4857	17.0	5520	110
6M054	5	3.7	460				7.5	4857	8.5	5520	55
6M078	7.5	5.5	200				25.4	7180	28.5	8230	158
6M072	7.5	5.5	230				22.0	7127	26.0	8140	144
6M074	7.5	5.5	460				11.0	7127	13.0	8140	72
6M108	10	7.5	200				33.3	9360	37.2	10700	236
6M102	10	7.5	230				29.0	9407	33.0	10730	208
6M104	10	7.5	460				14.5	9407	16.5	10730	104
6M158	15	11	200				47.4	13700	53.5	15710	347
6M152	15	11	230				42.0	13700	46.0	15800	320
6M154	15	11	460				21.0	13700	23.0	15800	160
6M208	20	15	200				61.2	18040	69.5	20820	431
6M202	20	15	230				54.0	17930	60.0	20650	392
6M204	20	15	460				27.0	17930	30.0	20650	196
6M258	25	18.5	200				77.3	22740	87.5	26190	578
6M252	25	18.5	230				68.0	22470	76.0	25800	530
6M254	25	18.5	460				34.0	22470	37.0	25800	265
6M308	30	22	200				91.8	27000	104.0	31120	674
6M302	30	22	230				82.0	27130	94.0	31160	610
6M304	30	22	460				41.0	27130	47.0	31160	305
6M404	40	30	460	3	6" x 6"	1.15	53.0	35530	60.0	41100	340
66M504	50	37	460		70.0		45210	79.0	52380	465	
86M504	50	37	460		66.1		44501	74.1	50891	518	
86M604	60	45	460		76.8		51866	86.8	59576	562	
8M754	75	55	460		96.0		65900	109.0	76100	650	
8M1004	100	75	460		127.0		87600	145.0	101300	795	
8M1254	125	90	460		160.0		110800	180.0	126000	980	
8M1504	150	110	460		195.0		130700	220.0	152000	1060	
10M2004	200	150	460		10 "x 10"		235.0	171100	270.0	198600	1260

5-30 HP, 3 Phase 230 and 460 Motors have adjustable voltage feature, change voltage plugs to convert from 230V to 460V operation. Spare Change Plug Order No's are: PLUG-230V or PLUG-460V.

Commercial, Irrigation and Agricultural Water

6" SINGLE PHASE MOTORS

Motor Order No.	HP	kW	Volts	Phase	F.L. Efficiency %	KVA Code	Resistance - Ohms		
							R - Y	B - Y	R - B
6M051	5	3.7	230	1	74.8	G	2.172	0.512	2.627
6M071	7.5	5.5			72.9	F	1.401	0.400	1.774
6M101	10	7.5			73.6	E	1.052	0.316	1.310
6M151	15	11			73.7	D	0.678	0.230	0.850

6-10" THREE PHASE MOTORS

Motor Order No.	HP	kW	Volts	Phase	F.L. Efficiency %	KVA Code	Line - Line Resistance	Time Delay Fuse	
								Standard	Dual Element
6M058	5	3.7	200	3	75.9	K	0.618	50	25
6M052	5	3.7	230		76.8	K	0.806	45	20
6M054	5	3.7	460		76.8	K	3.050	25	10
6M078	7.5	5.5	200		77.9	J	0.504	80	40
6M072	7.5	5.5	230		78.5	J	0.651	70	30
6M074	7.5	5.5	460		78.5	J	2.430	35	15
6M108	10	7.5	200		79.7	K	0.315	100	50
6M102	10	7.5	230		79.3	K	0.448	90	40
6M104	10	7.5	460		79.3	K	1.619	45	20
6M158	15	11	200		81.7	K	0.213	175	70
6M152	15	11	230		81.7	K	0.312	150	60
6M154	15	11	460		81.7	K	1.074	70	30
6M208	20	15	200		82.7	J	0.189	200	90
6M202	20	15	230		83.2	J	0.258	175	70
6M204	20	15	460		83.2	J	0.861	90	35
6M258	25	18.5	200		82.0	K	0.146	250	110
6M252	25	18.5	230		83.0	K	0.210	225	90
6M254	25	18.5	460		83.0	K	0.666	110	45
6M308	30	22	200		82.9	J	0.119	300	125
6M302	30	22	230		82.5	K	0.166	250	100
6M304	30	22	460		82.5	K	0.554	125	50
6M404	40	30	460		84.0	H	0.446	175	70
66M504	50	37	460		82.5	J	0.388	225	90
86M504	50	37	460		83.8	K	0.331	225	125
86M604	60	45	460		86.3	J	0.278	250	150
8M754	75	55	460		84.9	H	0.218	300	125
8M1004	100	75	460		85.2	H	0.164	400	175
8M1254	125	90	460		84.2	G	0.132	500	225
8M1504	150	110	460		85.6	G	0.115	600	250
10M2004	200	150	460		87.2	F	0.0929	800	350

GENERAL FEATURES OF CANNED AND REWINDABLE WATER-TIGHT MOTORS

6" AND 8"x6" CANNED DESIGN MOTOR FEATURES

- **Replaceable Plug-in Motor Lead** - All 6" motor leads are stranded copper for flexibility and strength. Leads are 150" long and field replaceable.
- **Insulation** - The canned motor's stator coil is mounted in a stainless steel frame and is completely sealed in a stainless steel cylinder. The coil wire features moisture resistant insulation which is completely water-proofed for long life.
- **Heat Resistant** - The space between the stator's stainless steel protective can and its frame is filled with a specially formulated patented resin that protects the motor against thermal fluctuation and internal stress.

8-10" REWINDABLE WATER-TIGHT MOTOR FEATURES

- **Insulation Wire** - The coil conductor insulation material is a specially developed denatured polypropylene, which offers excellent leak-resistant characteristics. Three barriers are applied to the copper conductors to provide complete insulation against the motor's cooling fluid. This design is the result of extensive research and is of superior quality. It insures that CentriPro motors will have an extremely long service life.

MOTOR FEATURES - BOTH DESIGNS

Maximum Water Temperature 6, 8 & 10" Motors

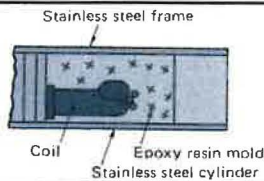
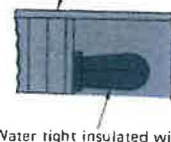
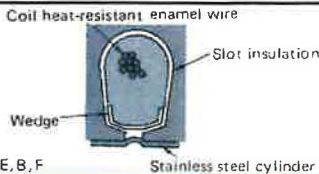
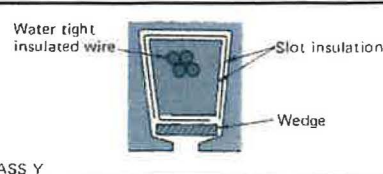
Size	HP	Temperature Range	Minimum Flow Rate	Ph Range
6"	5 - 40	95° F (35° C)	.5 Ft/sec.	6.5 - 8.0
8x6"	50 - 60	77° F (25° C)	.5 Ft/sec.	6.5 - 8.0
8"	75 - 150	77° F (25° C)	.5 Ft/sec.	6.5 - 8.0
10"	200	77° F (25° C)	.5 Ft/sec.	6.5 - 8.0

- **Sand Resistant Slinger and Lip Seals** - CentriPro submersible motors feature double-row, grease packed, lip seals to prevent sand from entering the motor. A carbon steel slinger with a baked on epoxy coating prevents sand from entering the lip seal area. Additional

protection against sand intrusion is provided by the close tolerance slinger guide with a .02" fit. This design is field-proven in West Texas wells which are considered to be some of the worst sandy well applications. Best of all, these features are standard for a CentriPro motor, so there is no need to stock one motor for clean wells and another more expensive motor for the more abrasive, sandy jobs.

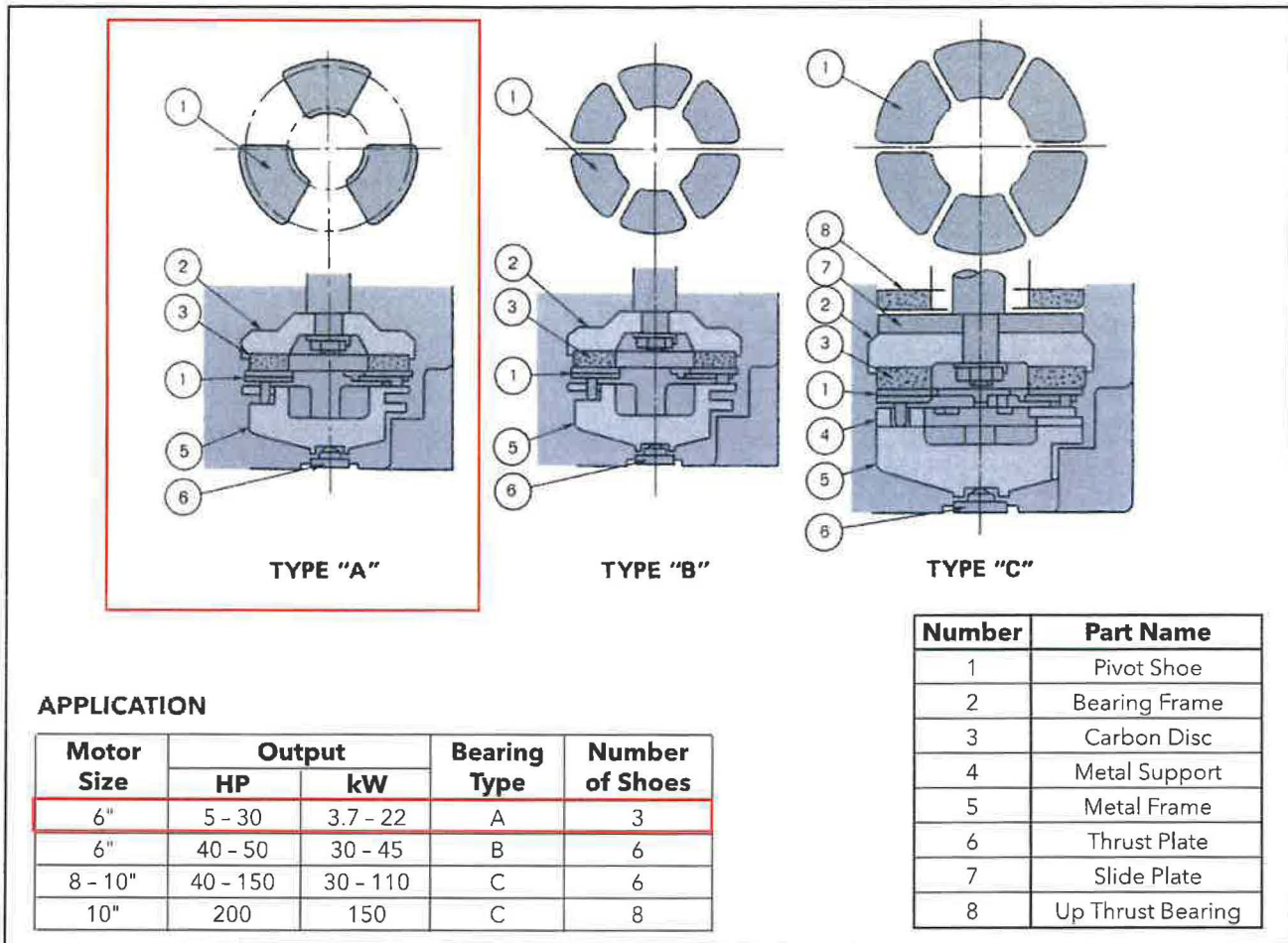
- **High Torque Characteristics** - The stator laminations are constructed of high quality, electrical grade, silicon steel which provide high torque even when the motor is subjected to nominal voltage variations.
- **Balancing** - The rotor balance rings (one on each end of the rotor) allow for excellent dynamic balance for the rotating element of the motor.
- **Carbon Sleeve Bearings** - Two carbon, water-lubricated, guide bearings are used to properly align the shaft. The bearings have a large surface area to better support the shaft, reducing whipping, while acting as a steady bushing.
- **Water-Filled Design** - The internal cooling water is mixed with antifreeze and antirust liquid to allow the motor to be stored at -22° F (-30° C). Two water plugs are provided for filling or draining the anti-freeze fluid during maintenance. These plugs are also used to top off and to check the water level.
- **Complete Corrosion and Water-Tight Protection** - All main motor components are made of stainless steel: including the can housing (water tight type motors have baked epoxy coated carbon steel housings), shaft and bolts. All other motor parts are finished with the baked epoxy coating.
- **Baked Epoxy Coating** - All external and internal cast iron parts are coated with a baked epoxy resin that provides excellent resistance to water and corrosion.
- **Quality Control** - All CentriPro submersible motors are manufactured and tested under the most stringent quality control procedures, providing long service life and trouble-free operation.

CONSTRUCTION AND INSULATION DETAILS

TYPE	6" and 8"x6" CANNED DESIGN	8-10" REWINDABLE WATER-TIGHT DESIGN
Construction	 Stainless steel frame Coil Epoxy resin mold Stainless steel cylinder	 Baked epoxy coated carbon steel frame Water tight insulated wire
Slot Insulation	 Coil heat-resistant enamel wire Slot insulation Wedge CLASS E,B,F Stainless steel cylinder	 Water tight insulated wire Slot insulation Wedge CLASS Y

SPECIAL TECHNOLOGY

HIGH PERFORMANCE THRUST BEARING



The field proven KINGSBURY design thrust bearing creates a wedge of water between the pivot shoe and carbon disc. Our innovative design permits high thrust loads to be placed on the bearings while showing no measurable wear after several years of severe duty operation. This allows for long pumping life, virtual trouble free operation and low maintenance. For all 6" motors, the 300 lbs. maximum continuous up thrust is absorbed between the upper carbon sleeve bearing and the rotor balance ring. For all 8" - 10" motors, the 1000 lbs. maximum continuous up thrust is carried between the upper slide plate and the separate up thrust carbon bearing.

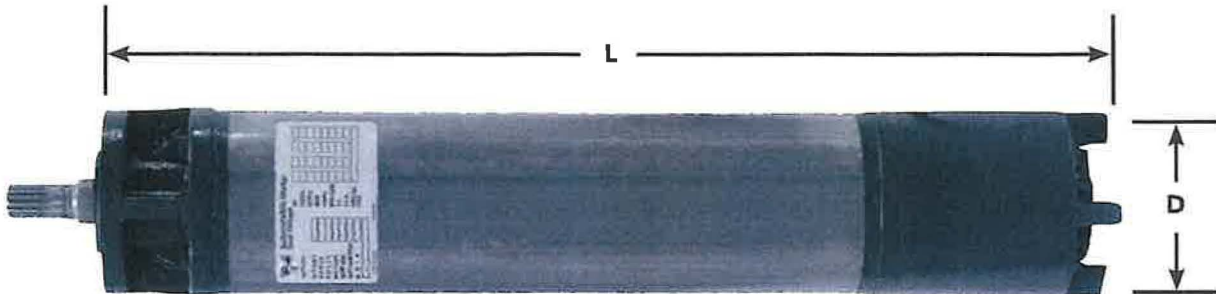
Motor Size	2P			
	Down Thrust		Up Thrust	
	lbs.	kg	lbs.	kg
6" 5-30 HP	3,500	1,590	300 *(450)	136 *(200)
6" 40-50 HP	5,000	2,270	300 *(450)	136 *(200)
8x6" 50-60 HP	6,000	2,721	300 *(450)	136 *(200)
8"	10,000 ** (5,000)	4,540 ** (2,270)	1,000 ** (1,500)	450 ** (680)
10"	10,000	4,540	1,000	450

Note:

1. Thrust ratings showed are continuous except for values marked *.
2. * Momentary rating (3 minutes maximum).
3. ** 8" motor - 6" Flange when using standard stainless steel bolts (B&M), has a thrust value of 5,000 lbs. A thrust value of 10,000 lbs. can be obtained by using high tensile stainless steel bolts (ASTM F593G).

6" and 8"x6" CANNED DESIGN MOTORS

SIZE AND WEIGHT - 2 POLE 3600 RPM 60 Hz – 3000 RPM 50 Hz



Motor Size	Phase	Output		D inch (mm)	L		Net Weight	
		HP	kW		inch	mm	lbs.	kg
6"	1Ø	5	3.7	5.5 (140)	26.97	685	110	50
		7.5	5.5		29.92	760	128	58
		10	7.5		29.92	760	128	58
		15	11		33.46	850	148	67
	3Ø	5	3.7		22.95	583	95	43
		7.5	5.5		24.80	630	99	45
		10	7.5		26.97	685	110	50
		15	11		29.92	760	128	58
		20	15		31.50	800	137	62
		25	18.5		36.22	920	161	73
		30	22		38.19	970	176	80
		40	30		40.55	1030	187	85
		50	37		41.73	1060	198	90
		50	37		41.61	1057	353	160
		60	45				364	165
8"x6"				6.89 (175)				

*Gross Weight: See page 12.

Motor Size	Phase	Output		460V, 415V, 400V, 380V			230V, 208V		
		HP	kW	Lead Wire Size		A x B inch (mm)	Lead Wire Size		A x B inch (mm)
				mm ²	AWG		mm ²	AWG	
6"	1Ø	5-15	3.7-11	—	—	—	3.5	#12	0.82x0.33 (20.8x8.2)
	3Ø	5-25	3.7-18.5	3.5	#12	0.82x0.33 (20.8x8.2)	3.5	#12	0.82x0.33 (20.8x8.2)
		30	22	5.5	#10	0.99x0.38 (25.1x9.6)	5.5	#10	0.99x0.38 (25.1x9.6)
		40	30	3.5	#12	0.82x0.33 (20.8x8.2)	—	—	—
		50	37	8.0	#8	1.09x0.41 (27.7x10.4)			
8"x6"	60	45							

6" CANNED DESIGN MOTORS *(continued)*

TYPE OF LEAD WIRE - 600V CLASS

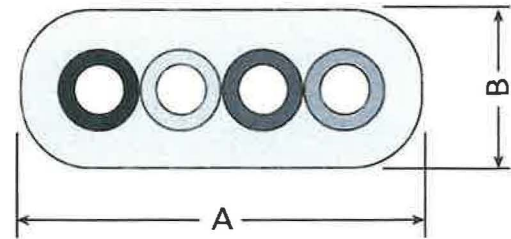
Ethylene-Propylene Rubber Insulated Chloroprene

Cabtyre Cable

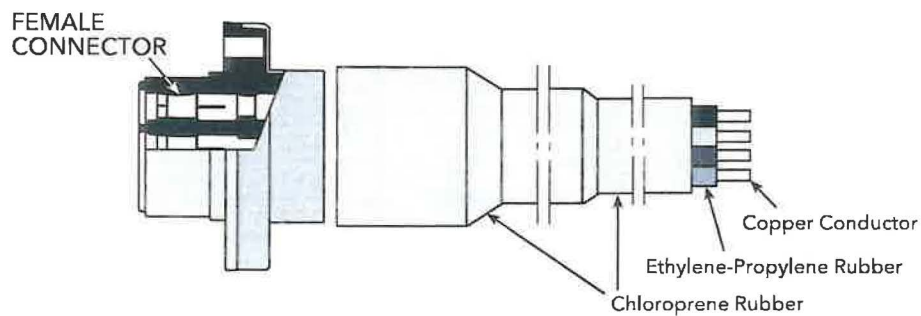
Plug-In (Field replaceable.)

Color Coded

USA Standard
(Black, Yellow, Red, Green)



CHLOROPRENE CABTYRE CABLE

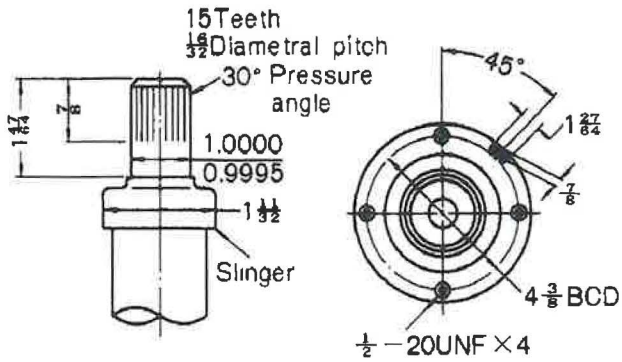


6" CENTRIPRO REPLACEMENT MOTOR LEADS

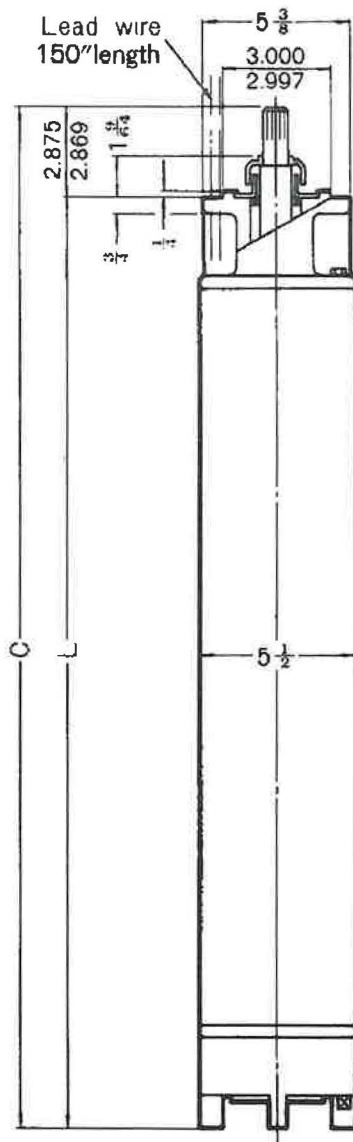
Order No.	Description	Used On
CPML-12	150", 12 / 4	5-15 HP 1Ø; 5 - 25 and 40 HP, 460V, 3Ø
CPML-10	150", 10 / 4	30 HP, 230/460V and 50 HP, 3Ø
CPML-8	150", 8 / 4	Optional for 30-50 HP, 3Ø, any voltage

DIMENSIONAL DATA

6", 3600 RPM, 2 POLE



Shaft End



Output		Phase	C		L	
HP	kW		inch	mm	inch	mm
5	3.7	1	29.84	758	26.97	685
7.5	5.5		32.79	833	29.92	760
10	7.5		32.79	833	29.92	760
15	11		36.33	923	33.46	850
5	3.7	3	25.82	656	22.95	583
7.5	5.5		27.67	703	24.80	630
10	7.5		29.84	758	26.97	685
15	11		32.79	833	29.92	760
20	15		34.37	873	31.50	800
25	18.5		39.09	993	36.22	920
30	22		41.06	1043	38.19	970
40	30		43.42	1103	40.55	1030
50	37		44.60	1133	41.73	1060

Xylem |'zīləm|

- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

We're 12,700 people unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyze, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation.

For more information on how Xylem can help you, go to www.xyleminc.com



Xylem Inc.
2881 East Bayard Street Ext., Suite A
Seneca Falls, NY 13148
Phone: (866) 325-4210
Fax: (888) 322-5877

P.O. Box 5487
Lubbock, TX 79408
Phone: (806) 763-7867
Fax: (800) 453-4749

www.centripro.com

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APPENDIX C – SPRINKLER SPEC SHEET

8005 Nozzle Performance

Pressure psi	Nozzle	Radius ft.	Flow gpm	Precip In/h	Precip In/h
50	04	39	3.8	0.48	0.56
	06	45	5.6	0.53	0.62
	08	49	6.6	0.53	0.61
	10	53	9.3	0.64	0.74
	12	57	11.1	0.66	0.76
	14	59	12.6	0.70	0.81
	16	61	14.3	0.74	0.85
	18	63	16.1	0.78	0.90
	20	65	18.6	0.85	0.98
	22	65	20.7	0.94	1.09
	24	63	22.3	1.08	1.25
	26	65	24.3	1.11	1.28
60	04	39	3.8	0.48	0.56
	06	45	6.1	0.58	0.67
	08	49	8.4	0.67	0.78
	10	53	10.1	0.69	0.80
	12	59	12.0	0.66	0.77
	14	61	14.3	0.74	0.85
	16	65	15.9	0.72	0.84
	18	65	17.8	0.81	0.94
	20	67	20.1	0.86	1.00
	22	71	23.2	0.89	1.02
	24	69	24.7	1.00	1.15
	26	73	26.7	0.96	1.11
70	04	39	4.7	0.60	0.69
	06	45	6.7	0.64	0.74
	08	49	9.0	0.72	0.83
	10	55	11.1	0.71	0.82
	12	59	13.2	0.73	0.84
	14	63	15.3	0.74	0.86
	16	67	17.2	0.74	0.85
	18	67	19.3	0.83	0.96
	20	71	22.0	0.84	0.97
	22	73	25.2	0.91	1.05
	24	75	27.0	0.92	1.07
	26	75	29.4	1.01	1.16
80	04	39	5.0	0.63	0.73
	06	45	7.1	0.68	0.78
	08	49	9.8	0.79	0.91
	10	55	11.8	0.75	0.87
	12	61	14.2	0.73	0.85
	14	63	16.4	0.80	0.92
	16	67	18.6	0.80	0.92
	18	69	20.9	0.85	0.98
	20	71	23.9	0.91	1.05
	22	75	27.3	0.93	1.08
	24	77	29.2	0.95	1.10
	26	79	31.5	0.97	1.12

Pressure psi	Nozzle	Radius ft.	Flow gpm	Precip In/h	Precip In/h
90	12	61	14.7	0.76	0.88
	14	65	17.9	0.82	0.94
	16	69	20.0	0.81	0.93
	18	71	22.2	0.85	0.98
	20	73	25.3	0.91	1.06
	22	75	29.1	1.00	1.15
	24	79	31.0	0.96	1.10
	26	79	33.7	1.04	1.20
100	20	75	26.8	0.85	0.97
	22	77	30.7	1.00	1.15
	24	79	32.8	1.01	1.17
	26	81	36.3	1.07	1.23

Precipitation rates based on half-circle operation

■ Square spacing based on 50% diameter of throw

▲ Triangular spacing based on 50% diameter of throw

Performance data collected in zero wind conditions

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1.
See page 224 for complete ASAE Test Certification Statement.



8005 Cutaway

8005 Nozzle Performance					METRIC	
Pressure bar	Nozzle	Radius m	Flow m ³ /h	Flow l/m	Precip mm/h	Precip mm/h
3.5	4	11.9	0.86	14.38	12	14
	6	13.7	1.28	21.34	14	16
	8	14.9	1.59	25.50	14	16
	10	16.1	2.10	35.43	16	19
	12	17.5	2.52	42.27	16	19
	14	18.0	2.89	48.18	18	21
	16	18.7	3.28	54.59	19	22
	18	19.2	3.69	61.43	20	23
	20	19.9	4.25	70.83	21	25
	22	20.0	5.08	79.07	25	29
	24	19.3	5.11	85.10	27	32
	26	20.0	5.57	92.67	28	32
4.0	4	11.9	0.93	14.38	13	15
	6	13.7	1.37	22.71	15	17
	8	14.9	1.75	30.44	16	18
	10	16.3	2.30	37.63	17	20
	12	17.7	2.70	44.74	17	20
	14	18.5	3.17	52.85	19	21
	16	19.6	3.54	58.98	18	21
	18	19.7	3.97	66.10	20	24
	20	20.3	4.50	74.95	22	25
	22	21.3	5.23	85.94	23	27
	24	20.7	5.50	91.69	26	30
	26	21.8	6.01	99.26	25	29
4.5	4	11.9	1.00	16.18	14	16
	6	13.7	1.45	24.28	15	18
	8	14.9	1.92	32.99	17	20
	10	16.5	2.40	40.22	18	20
	12	18.0	2.87	47.81	18	20
	14	18.9	3.37	56.12	19	22
	16	20.1	3.77	62.77	19	22
	18	20.1	4.22	70.36	21	24
	20	21.1	4.79	79.87	22	25
	22	22.0	5.51	91.80	23	26
	24	22.0	5.88	98.08	24	28
	26	22.6	6.42	106.44	25	29
5.0	4	11.9	1.06	18.08	15	17
	6	13.7	1.54	25.74	16	19
	8	14.9	2.09	34.83	19	22
	10	16.7	2.50	42.68	18	21
	12	18.3	3.05	50.92	18	21
	14	19.2	3.54	58.96	19	22
	16	20.4	3.99	66.44	19	22
	18	20.6	4.47	74.58	21	24
	20	21.6	5.11	85.08	22	25
	22	22.4	5.84	97.39	23	27
	24	23.0	6.26	104.29	24	27
	26	23.2	6.80	113.28	25	29

Pressure bar	Nozzle	Radius m	Flow m ³ /h	Flow l/m	Precip mm/h	Precip mm/h
5.5	4	11.9	1.13	18.90	16	18
	6	13.7	1.62	26.84	17	20
	8	14.9	2.25	37.02	20	23
	10	16.8	2.70	44.60	19	22
	12	18.5	3.23	53.66	19	22
	14	19.2	3.72	61.98	20	23
	16	20.4	4.22	70.28	20	23
	18	21.0	4.74	78.97	21	25
	20	21.6	5.42	90.30	23	27
	22	22.8	6.19	103.15	24	28
	24	23.5	6.62	110.33	24	28
	26	24.1	7.14	119.05	25	28
6.0	12	18.6	3.30	55.07	19	22
	14	19.6	3.96	66.06	21	24
	16	20.9	4.45	74.12	20	24
	18	21.5	4.95	82.56	21	25
	20	22.1	5.65	94.18	23	27
	22	22.9	6.71	108.12	26	30
	24	23.9	6.92	115.31	24	28
6.2	14	19.8	4.06	67.75	21	24
	16	21.0	4.54	75.70	21	24
6.5	18	21.7	5.04	84.02	21	25
	20	22.5	5.89	98.19	23	27
	22	23.4	6.84	112.73	25	29
	24	24.1	7.22	120.25	25	29
6.9	26	24.3	7.91	131.76	27	31
	20	22.9	6.09	101.43	23	27
	22	23.5	6.97	116.19	25	29
	24	24.1	7.45	124.14	26	30
	26	24.7	8.24	137.39	27	31

Precipitation rates based on half-circle operation

■ Square spacing based on 50% diameter of throw

▲ Triangular spacing based on 50% diameter of throw

Performance data collected in zero wind conditions

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1. See page 224 for complete ASAE Test Certification Statement.



8005 Rain Curtain™ Nozzles

APPENDIX D – FIELD EXAM PHOTOGRAPHS

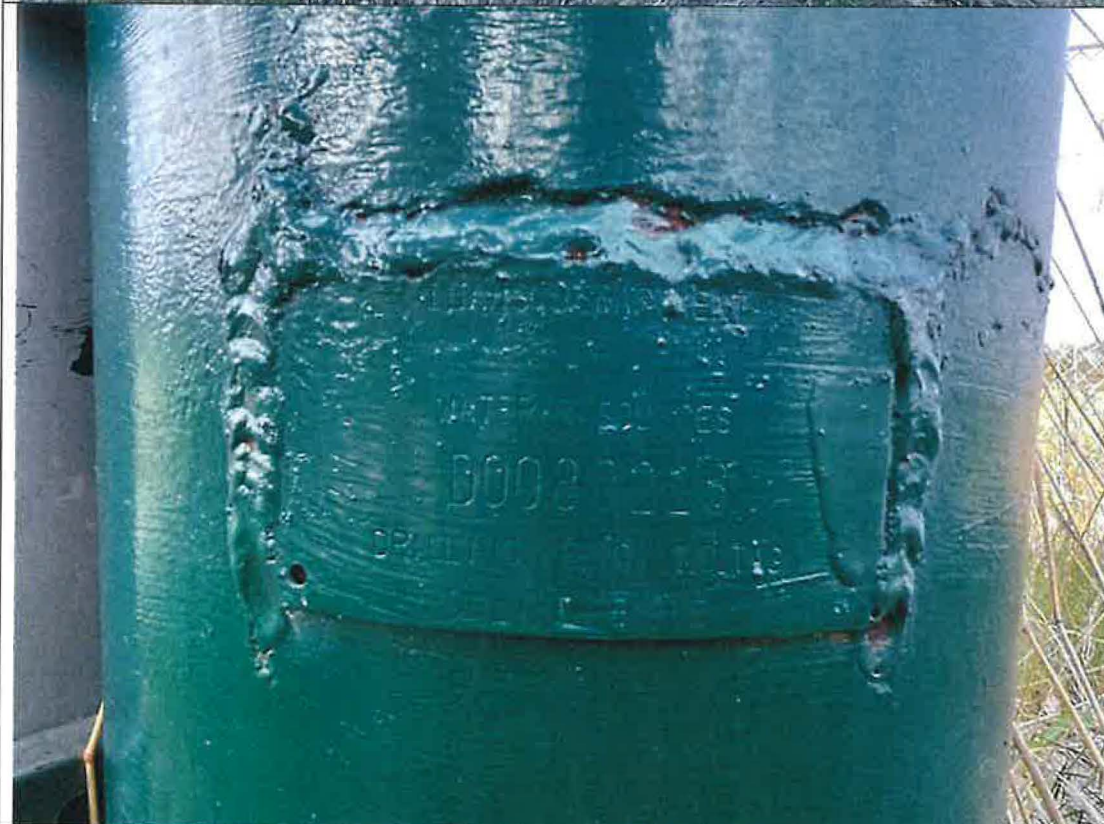


Point of Diversion

43 32.276
-116 18.993

NE¼SE¼
Sec. 3
Twp. 2 North
Rge. 1 East

Well located on south side of property. Well diverts ground water into irrigation mainline.



IDWR Metal Tag:
No. D0080218



Wet well.

Surface water delivered by Boise Kuna Irrigation District.



Motor Plate

Manufacturer: Hitachi
Model: 6M208
S/N: G27451E
hp: 20
Hz: 60
Phase: 3



4" Electromagnetic
Flow Meter

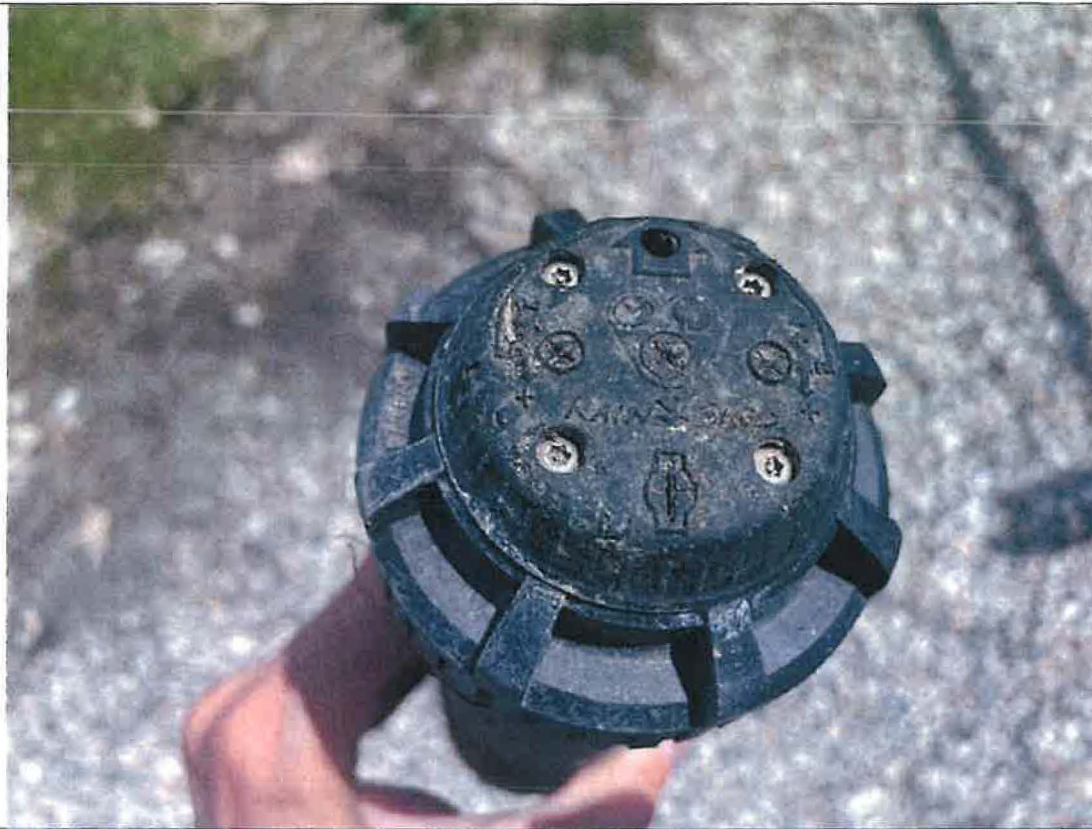
Make: Badger Meter
Model: M2000

SN: 1808-060/
50666555



Irrigation POU.

2 zones running with
8 sprinklers total
shown.



Rainbird 8005 Series



12S Nozzle

Hersley, Jean

From: Kelly, Patrick <Patrick.Kelly@hdrinc.com>
Sent: Monday, June 5, 2023 8:48 AM
To: IDWR File; Shearer, Justin
Cc: Tami Fleming
Subject: BUFE for West Ada School District Permit 63-34516
Attachments: 63-34516 BUFE signed.pdf

CAUTION: This email originated outside the State of Idaho network. Verify links and attachments BEFORE you click or open, even if you recognize and/or trust the sender. Contact your agency service desk with any concerns.

Justin,
Attached is a field exam report and proof for WASD. Please let me know if you need anything further.
Sincerely,

Patrick Kelly
Project Hydrologist

HDR Engineering, Inc.
412 E. Parkcenter Blvd., Suite 100
Boise, ID 83706
D 208.387.7000 M 208.954.4805
patrick.kelly@hdrinc.com



RECEIVED

Jun 05, 2023

DEPARTMENT OF
WATER RESOURCES

June 1, 2023

Justin Shearer
IDWR Western Region Office
200 E. Front St.
Boise, ID 83702

Subject: 63-34516 Beneficial Use Field Exam Report

Dear Justin,

On behalf of West Ada School District, I am pleased to submit the beneficial use field exam report for water right permit 63-34516. Proof of beneficial use for this permit is due July 1, 2023 and is included in this report.

Thank you very much for your service in this matter. Please contact Terry or I with any questions.

Sincerely,

A handwritten signature in blue ink that reads "Patrick Kelly".

Patrick Kelly
Project Hydrologist