

[illegible]

Method of Determination:

3. X Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable. **SEE AERIAL**

 AERIAL Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be

1:24,000 or greater.

 X Aerial Photo Attached (required for irrigation of 10+ acres).

 X Photo of Diversion and System Attached

4. <u>Well</u>						<u>Pump Serial No. or Discharge</u>
<u>ID No.*</u>	<u>Motor Make</u>	<u>Hp</u>	<u>Motor Serial No.</u>	<u>Pump Make</u>		<u>Size</u>
<u># 4</u>	<u>unknown</u>	<u>20</u>	<u>unknown</u>	<u>Grundfos</u>		<u>230S200-6 rated @ 230 gpm</u>
<u># 5</u>	<u>unknown</u>	<u>15 ?</u>	<u>unknown</u>	<u>unknown</u>		<u>unknown</u>

*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

2. Measurements: **NONE TAKEN**

E. FLOW CALCULATIONS Additional Computation Sheets Attached

WELL # 4:

[1] Theoretical calculation using 20 hp pump, 70% efficiency and a total head = 250' from the pump curve.

$$\frac{8.8 \times 20 \text{ hp} \times .7}{250'} = \frac{123.2}{250} = 0.49 \text{ cfs}$$

[2] pump curve @ at the peak efficiency of 70% - 76 %, this pump can produce in the range of 220 gpm to 300 gpm [0.49 cfs – 0.67 cfs] and at a total head in the range of 200 to 400 feet.

WELL # 5:

[1] Theoretical calculation using 15 hp pump, 70% efficiency, z = 39' pumping level from well log and 30 psi for domestic systems.

$$\frac{8.8 \times 15 \text{ hp} \times .7}{39' + [2.31 \times 30 \text{ psi}]} = \frac{92.4}{108} = 0.86 \text{ cfs}$$

[2] 250 gpm pumped during well development = 250 = 0.56 cfs

448.8 gpm per cfs

[3] 6" pipe diameter can carry maximum of 0.98 cfs in properly designed system

Measured Method: ***none taken***

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation: ***NOT APPLICABLE***

$$V = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) =$$

$$V = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 =$$

$$V = \text{Smaller of } \frac{V}{\text{I.R.}} \text{ and } \frac{V}{\text{D.R.}} =$$

2. Volume Calculations for Other Uses: ***INTERNAL DOMESTIC***

$$V_{dr} = [0.46 \text{ CFS}] [365 \text{ DAYS/YEAR}] [1.0935] = 333.03 \text{ AFA}$$

$$V_{ir} = [0.6 \text{ afa}] [85 \text{ homes}] = 51 \text{ afa}$$

G. NARRATIVE/REMARKS/COMMENTS

The Permit was issued for 0.46 cfs for the domestic use in 85 housing units or apartments. The correct fee was paid. I was accompanied on the field exam by Mike Dittenber, Executive Director and Josh Reed, PE, Pharmer Engineering.

The permits states both wells are in the NWNW, however, Well # 4 is close to a QQ line but is in the SENW. A licensing amendment will be needed to correct the legal description. Well # 5 is a replacement well for well # 3. There have been 4 wells plus the replacement well drilled on the site over the years. Currently wells # 4 and 5 are the 2 wells that are operational.

Water from both wells is pumped to the pump house and then to a 58,000 gallon water tank adjacent to the pump house. The wells cycle on and off. Well #4 runs 12 hours during the day and well # 5 runs 12 hours during the night. From the tank, the water is pumped back to the pump house and then to distribution lines to the housing units. There are no booster pumps; the water flows to the housing units by gravity.

Water right no. 63-3597 is both a POD and POU overlap. The right is for 0.78 cfs/ 97 afa for domestic purposes which included 159 housing units, the office, daycare and 2 acres of irrigation. The total number of units can change by 1 or 2 depending on the need. Presently there are 243 total units because a larger unit was needed. There is currently a very small community center that is served by the well. The community center has a sink and two handicap bathrooms.

No pump or motor specs were seen the day of the exam and neither Mike nor Josh could find verification of them. They did not know at what depth the pump was set. Josh had the bid specs but not the as-built. He later provided the following for well # 4: a 20 hp Grundfos pump # 230S200-6 rated at 230 gpm. He also provide a pump curve which indicated that at the peak efficiencies of 70% to 76% and a total head in the range of 250 feet to 400 feet, the system is capable of producing the 250 gpm to 300 gpm[0.49 cfs – 0.67 cfs]. No information was found regarding well # 5 pump or motor but Josh said the specs called for a 15 hp pump.

When calculating a theoretical flow for well #4, I used the total head of 250 feet based on the pump curve. This is reasonable because the well is 439 feet deep, is screened from 390 feet to 415 feet, and the static water level is 22 feet bls. So, there is a long column of water and I don't know where the pump is set. The flow results I received from all methods for well # 4 ranged from 0.49 cfs to 0.86 cfs.

Methods used to calculate flow from well # 5 yielded 0.56 cfs – 0.98 cfs.

Based on calculations, the system capacity is in the range of can produce at least 1.35 cfs. The total needed for both water rights is 0.78 cfs for 63-3597 + 0.46 cfs for 63-12221 = 1.24 cfs. The system is able to produce the quantity needed.

The IDWR standard chart for domestic use indicates approximately 0.46 cfs for about 85 homes [the chart is not precise]. I recommend that 0.46 cfs and 51 afa will be recommended for licensing 63-12221. The volume is based on 0.6 afa per household.

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

H. RECOMMENDATIONS

- 1) Permit amount 0.46 cfs
- 2) Beneficial use limit 0.46 cfs
- 3) System measurement 1.22 cfs
- 4) Proof fee amount 1.0 cfs

1. Recommended Amounts

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
DOMESTIC	01/01 to 12/31	0.460 CFS	
<u>Totals:</u>		0.460 CFS	51.00 AF

2. Recommended Amendments

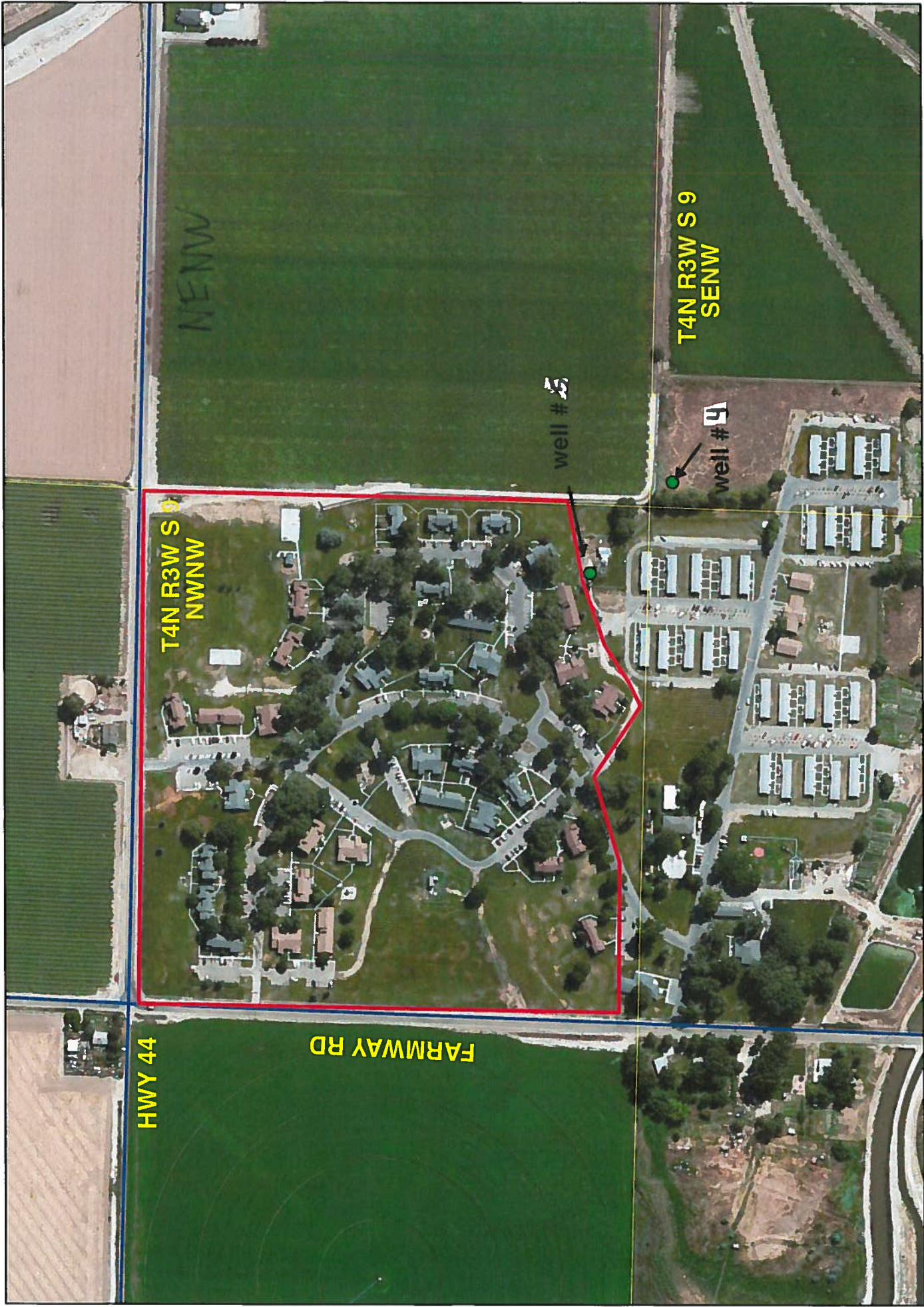
☒ Change P.D. as reflected above ☐ Add P.D. as reflected above ☐ None

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

I. AUTHENTICATION

Field Examiner's Name Wendy Uinic Date 8-16-12

Reviewer _____ Date _____



63-12221-2011 BING AERIAL. Points of diversion, wells # 4 and # 5. Place of use outlined in orange. Use is internal domestic. No irrigation. 8-18-12 .. Viday music note - I corrected well # 4.



63-12221-2011 BING AERIAL. Blow up of the 2 wells, #4 and #5, the pump house and tank. I was the wells labelled wrong and corrected them 8-15-12 Vicky Vukobratovic note:



Memorandum

1998 W. Judith Lane
Boise, Idaho 83705
Phone (208) 433-1900
Fax (208) 433-1901
www.pharmereng.com

To: Vicky Music, IDWR
CC: Mike Dittenber, CHA
From: Pharmer Engineering
Date: July 9, 2012
Re: Caldwell Housing Authority Field Exam

This memorandum is meant to summarize data pertaining to the current Caldwell Housing Authority water system. Currently the CHA provides water to residents through two groundwater wells labeled Well #4 and Well #5.

Below is list of the information which was requested by IWDR.

1. Water Use
 - Domestic
 - Some supplemental irrigation around CHA main office
2. Pump Information
 - Pump #4 – 15 hp @ 300 gpm
 - Pump #5 – 15 hp @ 250 gpm
 - Contract specifications for pumps are attached
3. Water Volumes Used
 - Water volumes were recorded in the past
 - Currently not recorded
 - Water usage over ten days in August 2007
 - Well #4 - 973,045 gallons
 - Well#5 - 214,500 gallons
 - Average – 118,755 GPD
 - Water usage over ten days in May 2008
 - Well #4 – 758,000 gallons
 - Well#5 – 170,000 gallons
 - Average – 92,800 GPD

- Water usage based on Hydrology and Hydraulic Systems, Second Addition, Gupta
 - Average Day Demand – 111 GPCD (includes distribution losses)
 - Maximum Day Demand – 200 GPCD (180% of ADD)
 - Current Population
 - MDD – 320,000 GPD
 - ADD – 177,600 GPD
 - Future Population –(WWTP Facility Plan 2011)
 - MDD – 400,000 GPD
 - ADD – 222,000 GPD

4. Water System Drawings

- See attached

5. Number of Housing Units

- Current
 - 248 units
 - 1,600 residents
- Future (WWTP Facility Plan 2011)
 - 308 units
 - 2,000 residents

6. Laundry Facilities

- 13 washers
- 2 heavy duty washers

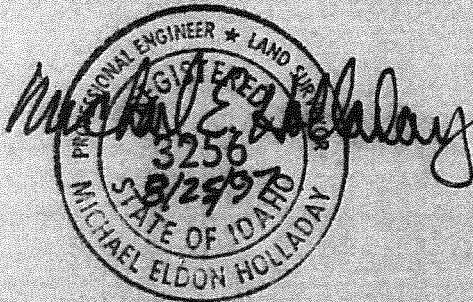
7. Irrigation used onsite

- Supplied from Black Canyon Irrigation Company

HOUSING AUTHORITY OF THE CITY OF CALDWELL

SPECIFICATIONS FOR

Water System Improvements



August, 1997

Prepared By



Payette, Idaho
Project No. 101396
IDOC Block Grant # ICDBG-97-III-8-H

*"This report was funded in part with funds from
the Idaho Department of Commerce Block Grant Program and
the Idaho Water Resource Fund."*

DIVISION 15 MECHANICAL

- E. During chlorination process all valves and accessories shall be operated.
- F. After chlorination water shall be flushed from the system at its extremities until water tests are equal chemically and bacteriologically to those of the water supply.

SECTION 15D. DOMESTIC WATER WELL PUMPS AND MOTORS:

15D.1 GENERAL REQUIREMENTS:

These specifications cover a complete submersible motor driven deep well turbine pump.

Operation Conditions are:

- 1. Size of well (inside diameter) 10 inch
- 2. Depth of well 200 feet
- 3. Standing water level below top of well Unk feet
- 4. Pumping level below top of well at rated capacity 145 feet
- 5. Pumping head or pressure above top of well (including friction loss) 145 feet
- 6. Total pumping head (4 plus 5) 290 feet
- 7. Capacity of pump 300 GPM
- 8. Water temperature 50 +/- (°F)
- 9. Length of drop pie (excluding bowl unit and motor) 145 feet
- 10. Distance from top of well to magnetic starter 300± feet
- 11. Power voltage 240 phase 2 Hertz 60

The total pumping head excludes the friction loss from the bowl unit through the surface plate which shall be allowed by the bidder. The efficiency of the pumping unit shall be as high as possible to minimize operating costs; efficiency will be one of the selection criteria.

15D.2 MOTOR:

Motor shall conform to the latest National Electrical Manufacturers Association (NEMA) specifications for submersible motors. The motor thrust bearing shall be sized to carry the weight of all rotating parts plus the hydraulic thrust of the pump regardless of the direction of rotation. The thrust bearing shall have sufficient capacity to permit the pump to operate for short periods with the discharge valve closed. The motor shall be of the squirrel cage induction type, suitable for "across the line" starting. The motor shall be capable of continuous operation under water at the conditions specified. The power output shaft shall be 416 stainless steel (SAE 51416) or equivalent corrosion resistant material.

**HOUSING AUTHORITY OF
THE CITY OF CALDWELL
CALDWELL, IDAHO**

**SPECIFICATIONS
AND CONTRACT
FOR**

**Farmway Village
Well No 5 Improvements
Well Construction**

April 2004



HECO Ref. No. PR101303

Prepared By

Holladay Engineering Company
Payette, ID

DIVISION 2 SITE WORK

- F. Contractor must hold a current public works license in the State of Idaho, water well drillers license from the Idaho Department of Water Resources and provide performance and payment bonds as required in the General Conditions of this Agreement.
- G. The drill permit is to be obtained by the Contractor based on the DEQ approved design by the Engineer.
- H. Pump will be a 6" 15-hp submersible pump from Well No. 3, provided pump test is satisfactory.

DIVISION 2 END

Caldwell Housing Authority

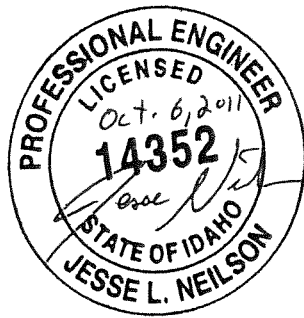
WWG 337-2011-3

Wastewater Facility Plan

Wastewater Treatment Plant
Caldwell, Idaho

Prepared for:

Caldwell Housing Authority
22730 Farmway Road
Caldwell, Idaho 83607



Prepared by:

Jesse Neilson, P.E.
Pharmer Engineering, L.L.C.
1998 W. Judith Lane
Boise, Idaho 83705

DRAFT APPROVED FOR PUBLIC COMMENT

By: [Signature]
Date: 12/19/11

Future Conditions

Future Growth

The CHA is different from a typical municipal wastewater plant in that it does not serve a City. The only growth which can take place is controlled and implemented by the CHA. Since this facility planning document is designed to provide information over a 20 year period it is difficult to model the 2031 population using the typical population growth model techniques.

Due to the issues with the developing a reliable growth model the estimates for the future build out population is based on conversations with the housing authority staff. The current maximum population is 1,600 residents (248 units) based occupancy rates and the number of residents/unit. According to the CHA Director, it is predicted that future growth may add an additional 60 units over the next twenty years. Assuming each unit holds 4 new residents, the additional residents will total 240 people.

To account for any additional units or increased growth which is not anticipated this report uses a 10 percent factor of safety to leave the final estimate at 2,000 residents. Table 4 summarizes the population estimates developed within this Plan.

Table 4 Population Estimates

Parameter	Population (residents)
Current Population. (2011)	1,600
Future Population. (2031)	1,840
Future Population. (2031) w/ additional 10%	2,000

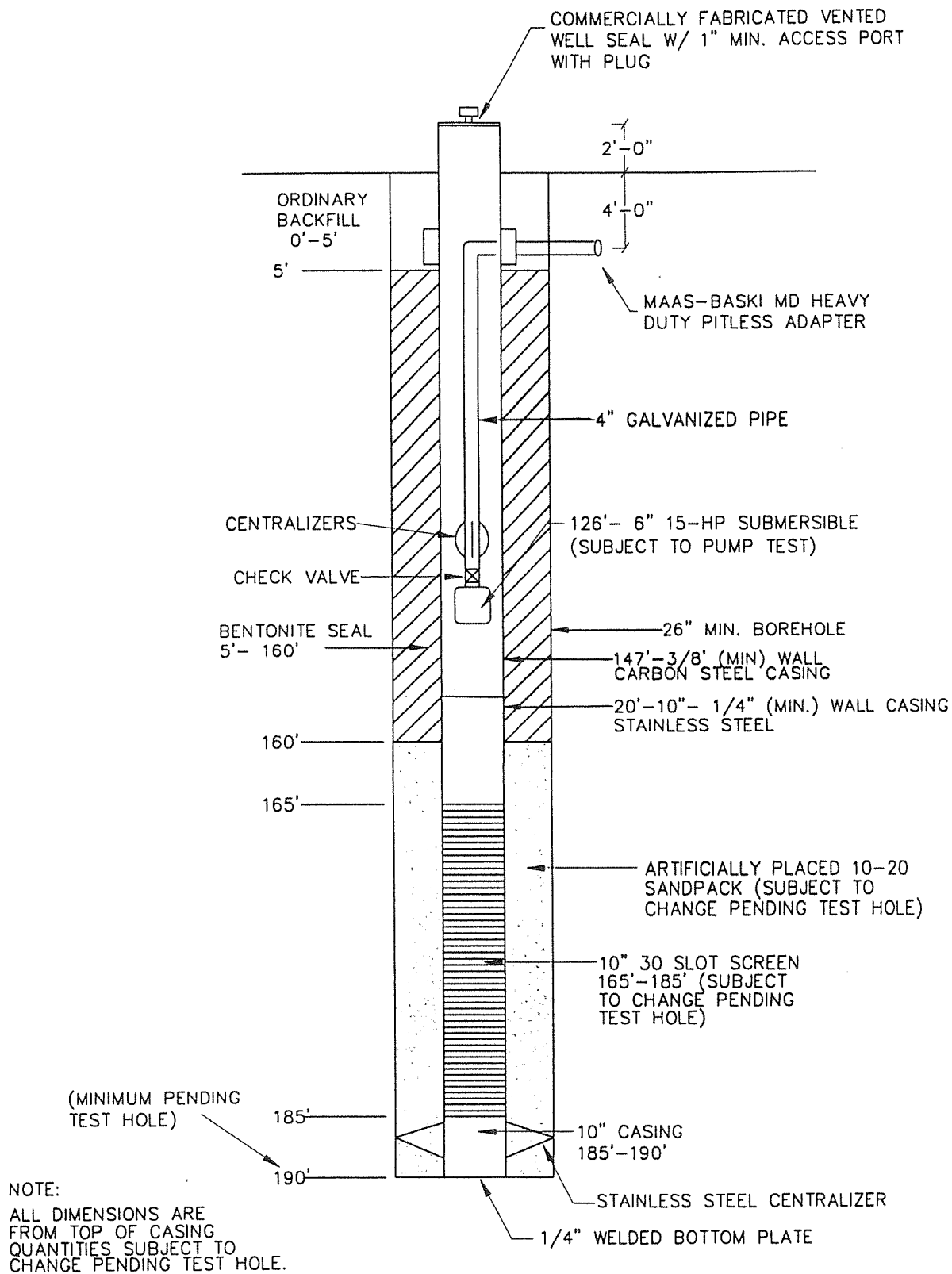
Future Flows and Loads

The design flows for the future conditions were estimated from the population estimate of 2,000 future residents with an average influent flow of 100 gallons per capita day (gpcd). The peak hourly flow rate was calculated from the 10 State Standard method using the following equation:

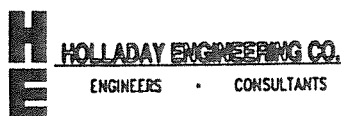
$$\frac{Q_{peak\ Hourly}}{Q_{Design\ Ave}} = \frac{18 + \sqrt{P}}{4 + \sqrt{P}}$$

- P = population in thousands

The peaking factor based on this equation and a population of 2,000 residents is 3.586. The estimated flows based upon the build out population total, assumed 100 gpcd wastewater values, and the peak hour design value developed from the above equation are provided below in Table 5.



NOT TO SCALE



32 N MAIN
P.O. BOX 235
PAYETTE, IDAHO 83661
208-642-3304
FAX: 208-642-2158
EMAIL: Heco@primenet.com

CALDWELL HOUSING AUTHORITY
WELL NO. 4
CONSTRUCTION DIAGRAM

DESIGN	101396C
DATE	6/26/97
REVISION	8/11/97
PLANNED BY	8/11/97
DESIGNED BY	CMD
CHECKED BY	WBS

NATIVE SOIL BACKFILL (> 50% CLAY)
MOUNDED TO DRAIN AWAY FROM WELL

NSF-APPROVED COMMERCIALY FABRICATED
VENTED WELL SEAL W/ 1" MIN. ACCESS PORT
AND PLUG

20" (MIN) BOREHOLE
20" CASING 0.365
WALL TO BE PLACED
AND REMOVED

TEAGUE GRANULAR BENTONITE
OR EQUAL PLACED DURING
EXTRACTION OF TEMPORARY
CASING OR BETWEEN 20" CASING
AND 10" LINER.

MASS-BASKI MD HEAVY
DUTY WELDED PITLESS ADAPTER
(NSF-APPROVED)

10" - 0.365" WALL CASING

4" GALVANIZED PIPE

CENTRALIZER 20'

BENTONITE 50'

150'

15 SLOT SS
8" SCREEN
150'-165'

EXTERNAL FILTER PACK
(COLORADO SILCA SAND)
OR EQUAL. PLACED AS 20"
CASING IS REMOVED.

CHECK VALVE

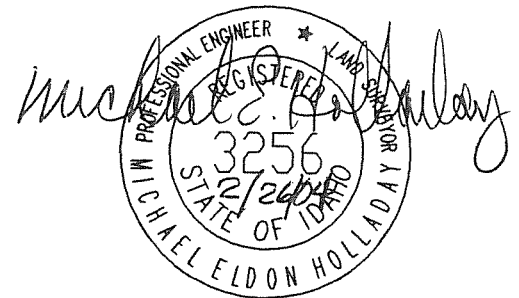
6" 15HP SUBMERSIBLE

165'
CENTRALIZER 170'

10" SUMP 165'-175'

175'

0.365 WELDED BOTTOM PLATE



NOT TO SCALE



HOLLADAY ENGINEERING CO.

ENGINEERS • CONSULTANTS

32 N. MAIN P.O. BOX 235 FAYETTE, ID 83661
(208) 642-3304 • FAX# (208) 642-2158
EMAIL: holladay@micron.net

REUSE OF DOCUMENTS

THIS DOCUMENT, AND THE IDEAS
AND DESIGN INCORPORATED
HEREIN, AS AN INSTRUMENT OF
PROFESSIONAL SERVICE IS THE
PROPERTY OF HOLLADAY ENG.
CO. AND IS NOT TO BE USED,
IN WHOLE OR IN PART, FOR ANY
OTHER PROJECT WITHOUT THE
WRITTEN AUTHORIZATION OF
HOLLADAY ENG. CO.

**PROPOSED WELL NO. 5 DESIGN
CALDWELL HOUSING AUTHORITY**

JOB NO:	101303
DATE:	2/24/04
REVISED:	
PLOTTED:	2/24/04
DRAWN BY:	DLM
CHECKED BY:	MEH

WELL DRILLER'S REPORT

Office Use Only				
Well ID No.	820607			
Inspected by				
Twp	Rge	Sec		
1/4	1/4	1/4		
Lat:	:	Long:	:	:

1. WELL TAG NO. D 0031772
DRILLING PERMIT NO. 63-12221
Water Right or Injection Well No. _____

2. OWNER:

Name Caldwell Housing Authority
Address P.O. Box 70
City Caldwell State Id. Zip 83606

3. LOCATION OF WELL by legal description:

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

Twp. 4 North ☒ or South ☐
Rge. 3 East ☐ or West ☒
Sec. 9 1/4 NW 1/4 NW 1/4
Gov't Lot _____ County Canyon
Lat: _____ Long: _____
Address of Well Site Lebor Camp Rd. City Caldwell

(Give at least name of road + Distance to Road or landmark)

Lt. _____ Blk. _____ Sub. Name Well No. 5

4. USE:

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

5. TYPE OF WORK check all that apply

(Replacement etc.)

☐ New Well ☐ Modify ☐ Abandonment ☐ Other Replacement

6. DRILL METHOD:

☐ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other Reverse

7. SEALING PROCEDURES

Seal Material	From	To	Weight / Volume	Seal Placement Method
<u>Bentonite 3/4"</u>	<u>0</u>	<u>109'</u>	<u>34,000</u>	<u>Dry Pour</u>

Was drive shoe used? ☐ Y ☒ N Shoe Depth(s) _____Was drive shoe seal tested? ☐ Y ☐ N How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
<u>10"</u>	<u>+2</u>	<u>152'</u>	<u>365</u>	<u>Steel</u>	☒	☐	☒	☐
<u>8"</u>	<u>167'</u>	<u>177'</u>	<u>365</u>	<u>Steel</u>	☒	☐	☒	☐

Length of Headpipe _____ Length of Tailpipe 10'Packer ☐ Y ☒ N Type _____

9. PERFORATIONS/SCREENS PACKER TYPE

Perforation Method _____

Screen Type & Method of Installation Johnson Wire Wrap

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
<u>152'</u>	<u>167'</u>	<u>.015</u>		<u>8"</u>	<u>SS</u>	☒	☐

10. FILTER PACK

Filter Material	From	To	Weight / Volume	Placement Method
<u>CSS 10# 20</u>	<u>109'</u>	<u>181'</u>		

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

21.6" ft. below ground Artesian pressure _____ lb.

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

Sanitary Well cap

12. WELL TESTS:

☒ Pump ☐ Bailor ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
<u>250 GPM</u>	<u>17.5 ft</u>	<u>39'</u>	<u>6 hrs</u>

Water Temp. _____ Bottom hole temp. _____

Water Quality test or comments: _____

Depth first Water Encounter _____

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

Water

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Y	N
	0	4	Topsoil		
	4	13	Burnt Bin Clay		
	13	61	River Rocks		
	61	101	Bin Clay & KS Sand		
	101	121	Fine Sand		
	121	132	Tan Clay		
	132	140	Fine Sand		
	140	150	Tan Clay		
	150	180	Fine Sand		
	180	181	Sandy Clay		

RECEIVED

SEP 07 2004

WATER RESOURCES
WESTERN REGIONCompleted Depth 177' (Measurable)Date: Started 7-16-04 Completed 8-18-04

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 Riverside Inc Firm No. 332

Principal Driller _____ Date _____

and _____ Date 8-20-04

Driller or Operator II _____ Date _____

Operator I _____ Date _____

Principal Driller and Rig Operator Required.

Operator I must have signature of Driller/Operator II.

Music, Vicky

From: Joshua Reed [jreed@pharmereng.com]
Sent: Monday, July 16, 2012 2:53 PM
To: Music, Vicky
Cc: Mike Dittenber
Subject: CHA well pump information
Attachments: Well 4 pump information.pdf

Vicky,

I have attached the information which we discussed in our phone call this afternoon. The pump technical data from Well #4 is attached and was located through a DEQ records request. No information was found on the specific pump installed in Well #5. Once you've had a chance to review the information, please let me know how you would like to proceed.

Thanks for your time,

Josh Reed, P.E.
Pharmer Engineering, L.L.C.
1998 W. Judith Lane
Boise, ID 83705
www.pharmereng.com

Buisness: 208.433.1900
Direct: 208.908.5753
Fax: 208.433.1901
jreed@pharmereng.com

Model 230S

230 GPM

Technical Data

DIMENSIONS AND WEIGHTS

230S 200-6

MODEL NO.	FLG.	HP	MOTOR SIZE	DISCH. SIZE	DIMENSIONS IN INCHES					APPROX. SHIP WT.
					A	B	C	D	E	
230S75-2	A	7.5	4"	3"	48.6	29.8	18.9	3.8	5.6	88
230S100-3	A	10	4"	3"	67.8	43.9	23.9	3.8	5.8	148
230S75-2	A	7.5	6"	3"	43.0	24.2	18.9	5.4	5.7	124
230S100-3	A	10	6"	3"	49.3	25.4	23.9	5.4	5.7	140
230S150-4	A	15	6"	3"	66.4	28.0	28.4	5.4	5.7	161
230S200-6	A	20	6"	3"	63.4	30.6	32.6	5.4	5.7	179
230S200-6	A	20	6"	3"	67.6	30.6	37.3	5.4	5.7	180
230S250-7	A	25	6"	3"	74.9	33.1	41.7	5.4	5.7	202
230S250-8	A	25	6"	3"	79.3	33.1	48.2	5.4	5.7	209
230S300-9	A	30	6"	3"	86.3	35.7	50.6	5.4	5.7	228
230S400-10	A	40	6"	3"	95.9	40.81	55.1	5.4	5.7	268
230S400-11	A	40	6"	3"	100.3	40.81	59.5	5.4	5.7	273
230S400-12	A	40	6"	3"	104.8	40.81	64.0	5.4	5.7	279
230S400-13	A	40	6"	3"	109.2	40.81	68.4	5.4	5.7	284
230S600-14	A	60	6"	3"	128.2	65.31	72.9	5.4	5.7	368
230S600-15	A	60	6"	3"	132.6	65.31	77.3	5.4	5.7	393
230S600-16	A	60	6"	3"	137.1	65.31	81.6	5.4	5.7	399
230S600-17	A	60	6"	3"	148.7	61.31	87.4	5.4	5.7	438
230S600-18	A	60	6"	3"	153.1	61.31	91.8	5.4	5.7	445
230S600-19	A	60	6"	3"	157.6	61.31	96.3	5.4	5.7	449
230S600-17	A	60	8"	3"	133.1	45.78	87.4	7.5	7.6	544
230S600-18	A	60	8"	3"	137.6	45.78	91.8	7.5	7.6	551
230S600-19	A	60	8"	3"	142.0	45.78	96.3	7.5	7.6	555
230S750-20*	B	75	8"	4"	158.1	50.78	107.3	7.5	7.6	668
230S750-22*	B	75	8"	4"	167.0	50.78	116.2	7.5	7.6	681

NOTES: All models suitable for use in 6" wells, unless equipped with 8" motor.

Weights include pump end with motor in lbs.

Alternate motor sizes available.

* Built into sleeve, 1" M-NPT, 8" motor required.

MATERIALS OF CONSTRUCTION

COMPONENT	CYLINDRICAL SHAFT (2-18 Stgs.)
Check Valve Housing	304 Stainless Steel
Check Valve	304 Stainless Steel
Diffuser Chamber	304 Stainless Steel
Split Cone Nut	304 Stainless Steel
Split Cone	304 Stainless Steel
Impeller	304 Stainless Steel
Suction Interconnector	304 Stainless Steel
Inlet Screen	304 Stainless Steel
Straps	304 Stainless Steel
Cable Guard	304 Stainless Steel
Coupling	329/416 Stainless Steel
Coupling Key	302/304 Stainless Steel
Pump Shaft	431 Stainless Steel
Intermediate Bearings	NBR
Impeller Seal Ring	NBR/304 Stainless Steel
Check Valve Seat	NBR/316 Stainless Steel
Top/Lower Bearing	NBR/316 Stainless Steel
8" Motor Adaptor Plate	304 Stainless Steel
Upper/Washer	Carbon/Graphite HY22
Upper/Washer	316 S.S./Tungsten Carbide
Upper/Washer	304 Stainless Steel
Upper/Washer	304 Stainless Steel

NOTES: Specifications subject to change without notice.

* Required for 20-22 stage only.

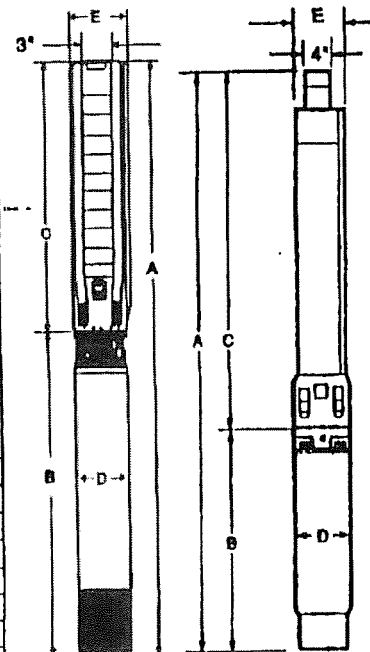
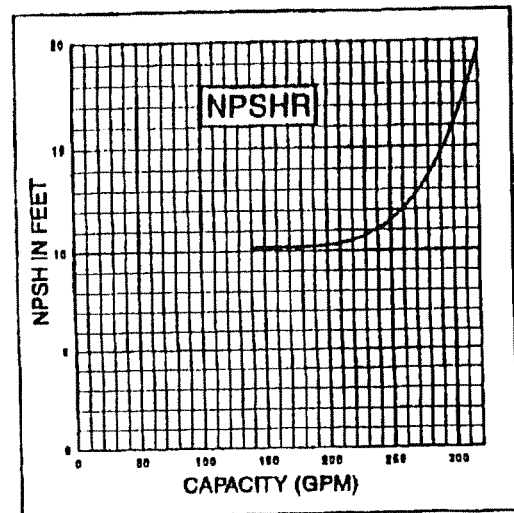


Fig. A

Fig. B



Performance Curves

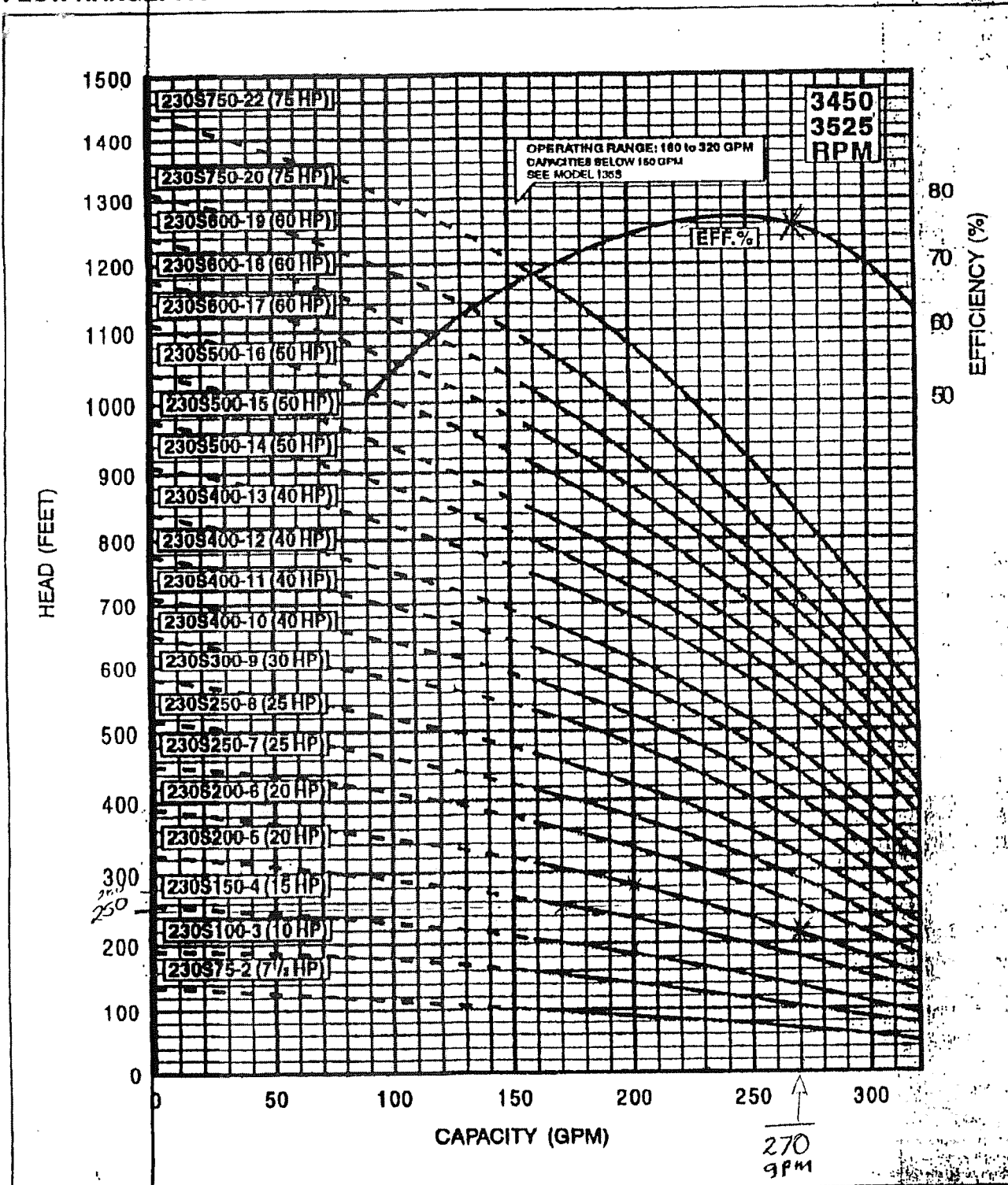
230 GPM

Model 230S

FLOW RANGE: 160-320 GPM

OUTLET SIZE: 3" NPT

NOMINAL DIA. 6"



SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

4" MOTOR STANDARD, 7.5 HP/3450 RPM.

6" MOTOR STANDARD, 10-40 HP/3450 RPM.

8" MOTOR STANDARD, 60-75 HP/3525 RPM.

* Also available with 8" motor.

Performance conforms to ISO 2548 Annex B
- 8 ft. min. submergence.

PD =

WL TO SURFACE

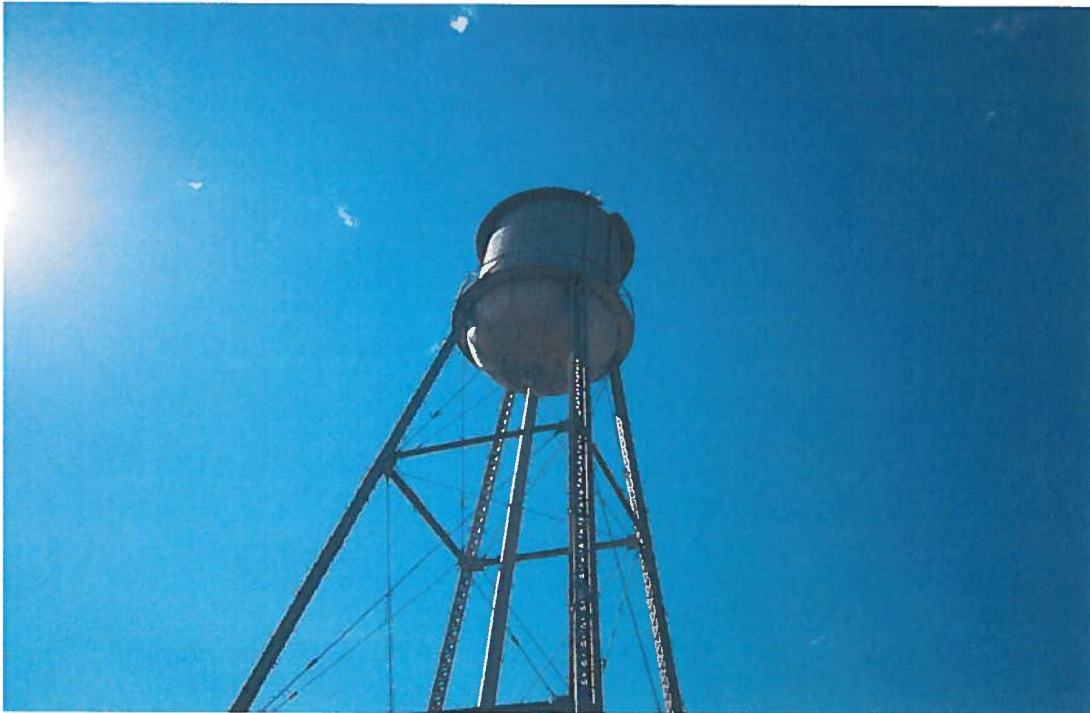
+ 38 PSI MAX

(ELEV. TANK)

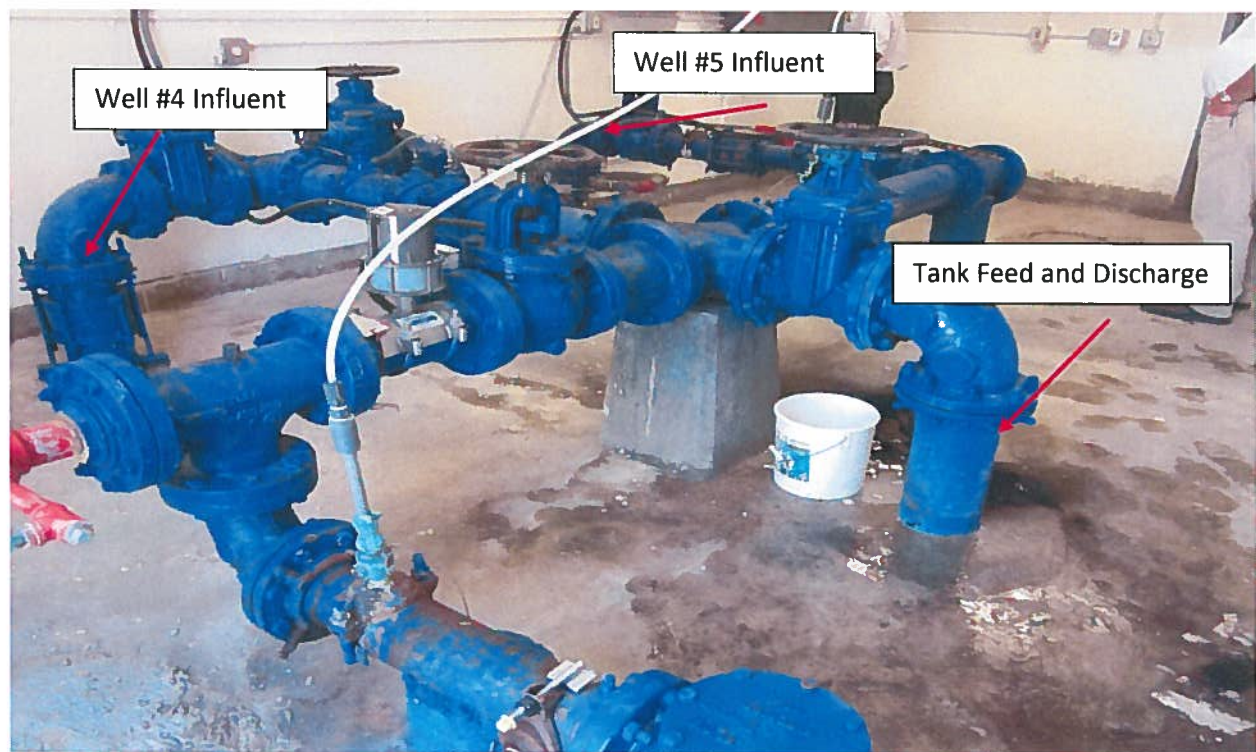
GRUNDFOS



Well # 5.



58,000 gallon water tank by well # 5 and pump house.



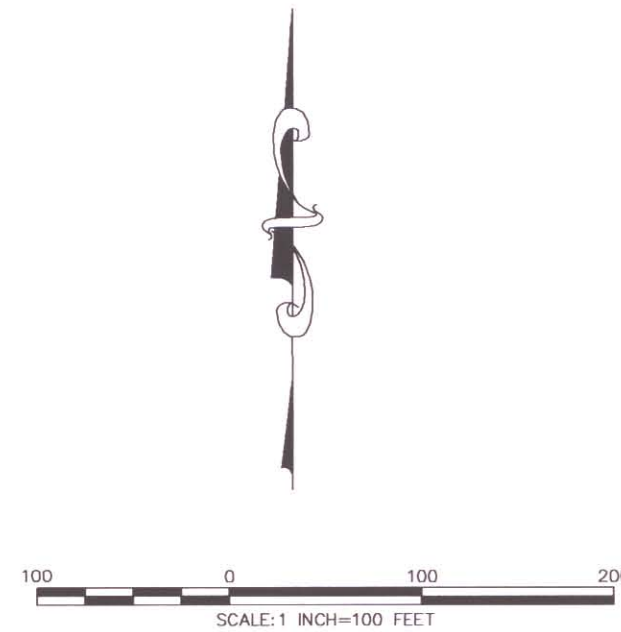
These 2 views are of inside the pump house. The tank feed transports water from both wells to the 58,000 gallon storage tank.



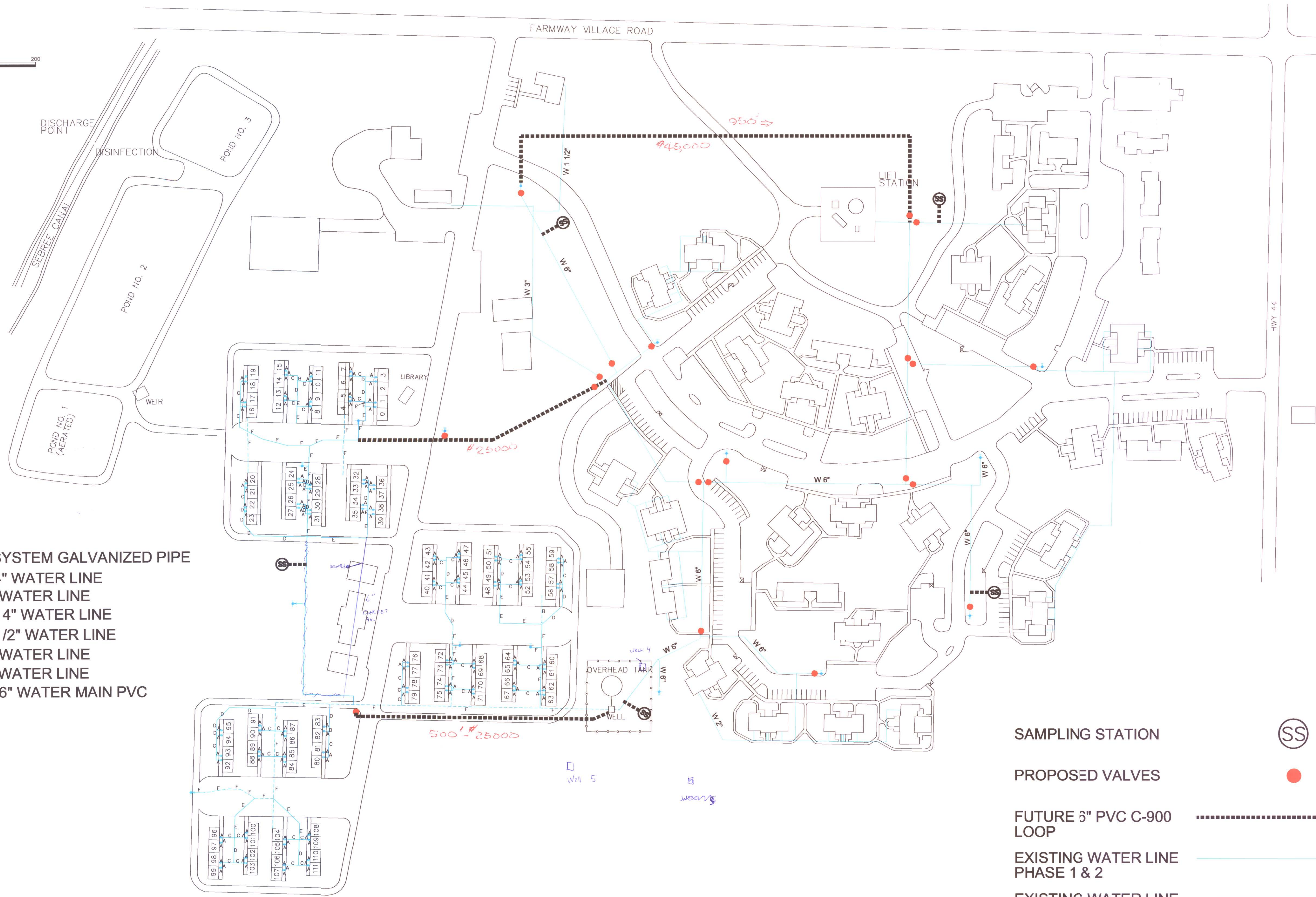
Well # 4.



View of the place of use, fourplexes in the north portion of the housing development.



- EXISTING WATER SYSTEM GALVANIZED PIPE
- A - 3/4" WATER LINE
 - B - 1" WATER LINE
 - C - 1/14" WATER LINE
 - D - 1 1/2" WATER LINE
 - E - 2" WATER LINE
 - F - 3" WATER LINE
 - W 6" - 6" WATER MAIN PVC



SAMPLING STATION



PROPOSED VALVES



FUTURE 6" PVC C-900 LOOP



EXISTING WATER LINE PHASE 1 & 2



EXISTING WATER LINE MASONRY UNITS



CALDWELL HOUSING AUTHORITY WATER PLAN