STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

Permit No: 95-09277
Exam Date: 8/23/2016

A. GENERAL INFORMATION

1. Current Owner:

NORTHERN WATER LLC C/O NORM WALDO
27769 W HWY 53 HAUSER ID 83854 (208)661-8609

2. Accompanied by: Norm Waldo

3. **SOURCE:**
GROUND WATER

B. OVERLAP REVIEW

1. Other water rights with the same place of use: 95-9385
2. Other water rights with the same point-of-diversion: 95-9385

C. DIVERSION AND DELIVERY SYSTEM

1. **LOCATION OF POINT(S) OF DIVERSION:**

GROUND WATER SE¼SE¼ Sec. 3, Twp 51N, Rge 05W, B.M. KOOTENAI County
GROUND WATER SE¼SE¼ Sec. 3, Twp 51N, Rge 05W, B.M. KOOTENAI County

Method of Determination: Maps and GPS. POD locations at

D0041375 at 116° 56.513, 47° 47.437 (A0003284)
D0041376 at 116° 56.505, 47° 47.435 (A0003283)

2.

PLACE OF USE: FIRE PROTECTION

			NE				NW				SW				SE				Totals
Twp	Rge	Sec	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
51N	05W	3									X	X	X	X	X	X	X	X	

Method of Determination: Google Earth and Arcmap.

3.

_X_ Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable.

_X_ 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.

Well or Diversion ID No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
D0041375	GRUNDFOS	25		150S250-14	
D0041376	GRUNDFOS	25		150S250-14	

*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: Measurement required by DEQ. Results of that pump test is attached.

E. FLOW CALCULATIONS

_X_ Additional Computation Sheets Attached

Measured Method: Applicants engineer supplied the pump curves for the two well and what the pumps can produce. See attached.

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$V_{I.R.}$ = (Acres Irrigated) x (Irrigation Requirement) =
$V_{D.R.}$ = [Diversion Rate (cfs)] x (Days in Irrigation season) x 1.9835 =
V = Smaller of $V_{I.R.}$ and $V_{D.R.}$ =

2. Volume Calculations for Other Uses: Domestic stub-ins for 38 parcels = 1.2 AF X 38 = 45.6 AF

G. NARRATIVE/REMARKS/COMMENTS

Field exam with Norm Waldo showed two wells serving a large subdivision. Each well was equipped with a 25hp grundfos pump. I was unable to perform flow measurement because wells pumped directly into the main line that fed a 120.000 gallon storage tank. DEQ had required a pump test on the two wells with average well production for both wells at 130gpm. Applicant's engineer, Russ Helgeson provided the pump curve that showed one was capable of around 152gpm and the other was 143gpm. Both of these numbers allow the applicant to divert up to the 0.50 cfs which was applied for.

Applicant had applied for 3 phases of the subdivision, but when proof was submitted and at time of exam, only two had been built and stubbed in. The application had been protested and the resolution to the protest was an annual volume for municipal was 72 acre feet. Reviewing the protest agreement at time of licensing, IDWR was unsure how the 72 acre feet was decided on. A map showing the 3 phases of development was submitted with the application showing 64 lots. A stub in map that Mr. Helgeson supplied in 2017 showed there being 16 connections in phase 1 and 22 connections in phase 2. Because IDWR does not have clear instruction on how protest resolution annual volume was decided, we will issue the license for 1.2 acre feet per lot. The 38 connections times 1.2 acre feet is equal to an annual volume of 45.6 acre feet.

Applicant used the same two wells to serve adjacent subdivision. License 95-9385 was issued in 2015, also in the name of Northern Water LLC. The water from these two rights fed the lower reservoir mentioned above and a 2nd 180,000 gallon reservoir at the top of the hill. Reservoir storage is covered under the 24 hour rule. This right will be overlapped with 95-9385 using condition X35 which will limit the two rights to a diversion rate of 0.66 cfs which is equal to the maximum diversion rate of the system.

This license will issued for 0.25 cfs for municipal with an annual volume of 45.6 acre feet. Fire protection will be issued for 0.50 cfs with no annual volume. The permit had two redundant conditions, one was 020 and a 2nd was written in. The 2nd condition will be removed at licensing and condition 020 will be left on. Condition X59 will be added and condition F06 will be added to describe the two rights diverted from the same wells.

Have conditions of permit approval been met? X Yes ____ No

H. RECOMMENDATIONS

1. Recommended Amounts

BENEFICIAL USE	PERIOD OF USE	DIVERSION RATE	ANNUAL VOLUME
FIRE PROTECTION	01/01 to 12/31	0.50 CFS	
MUNICIPAL	01/01 to 12/31	0.25 CFS	45.6 AF
	Totals:	0.500 CFS	45.60 AF

2. Recommended Amendments

____ Change P.D. as reflected above ____ Add P.D. as reflected above X None

____ Change P.U. as reflected above ____ Add P.U. as reflected above X None

I. AUTHENTICATION

Field Examiner's Name____________________ Date 12/5/2017

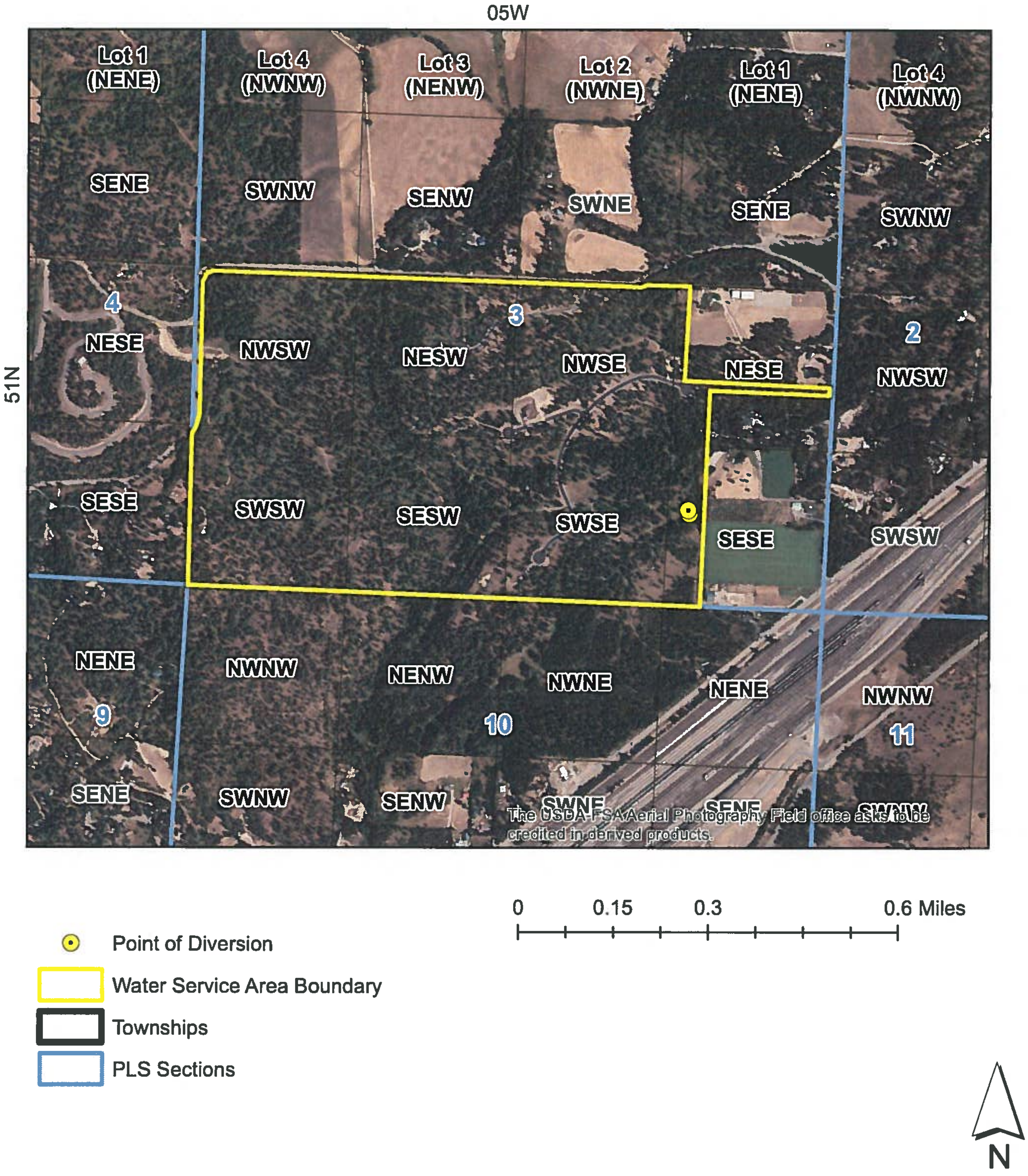
Reviewer____________________ Date____________________

Northern Water Llc

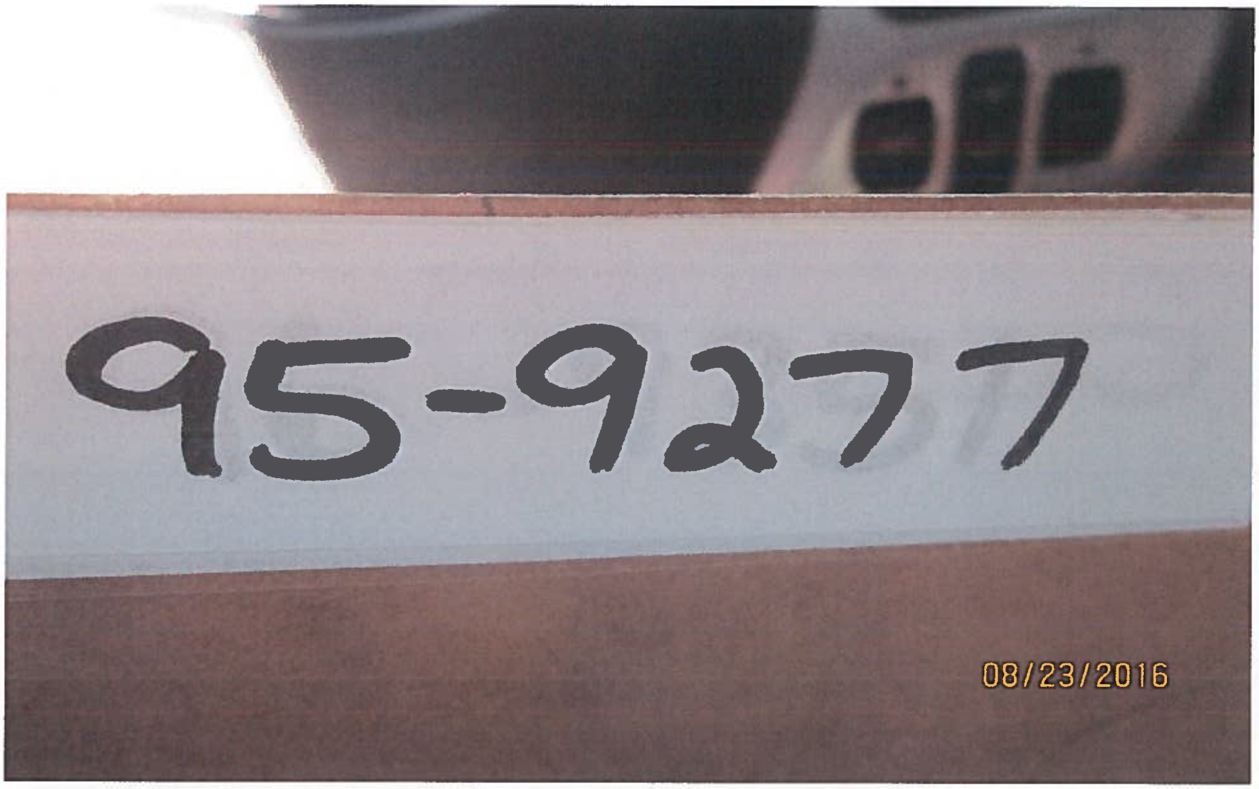
Attachment to Field Exam

95-9277

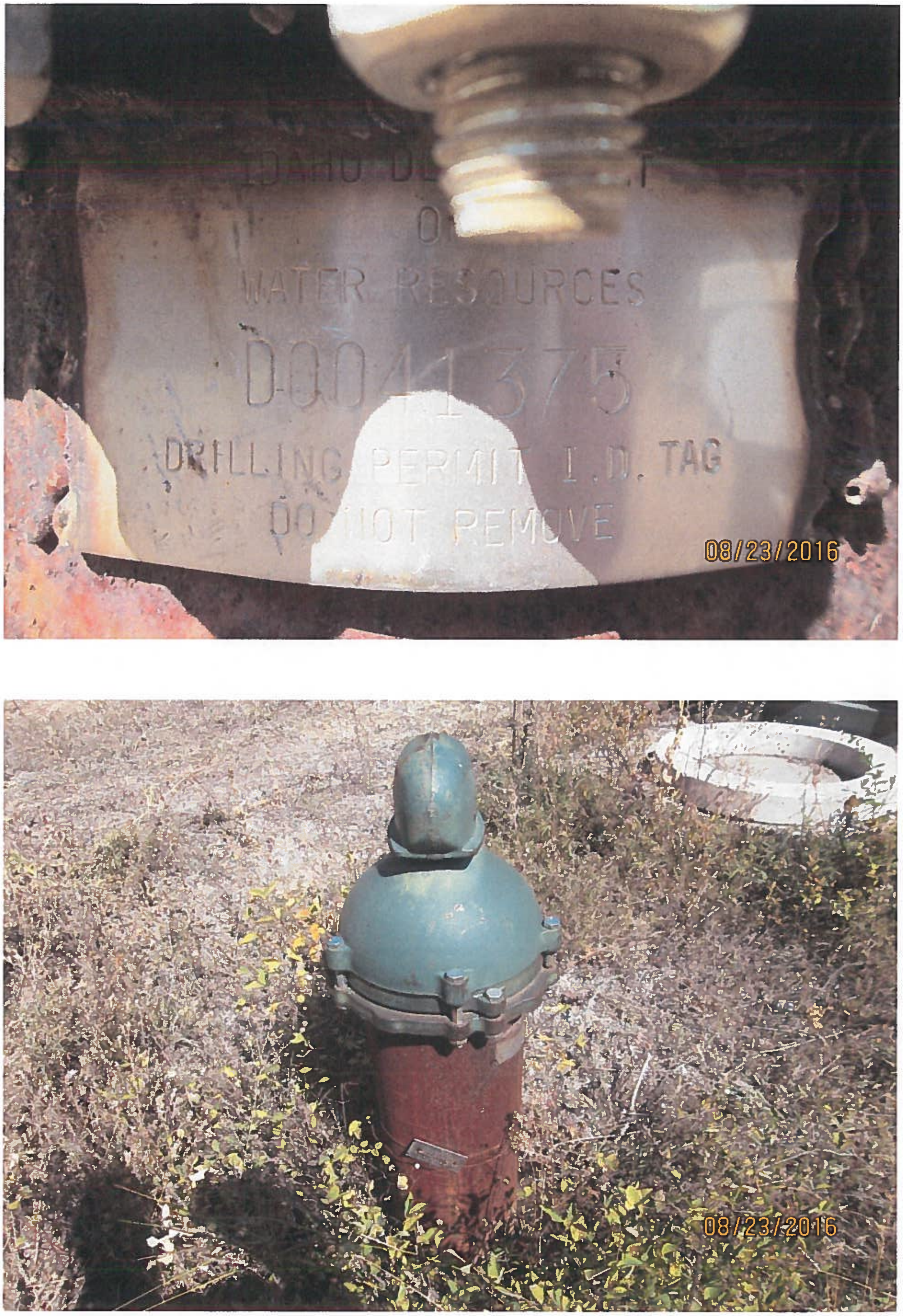
MUNICIPAL / FIRE PROTECTION



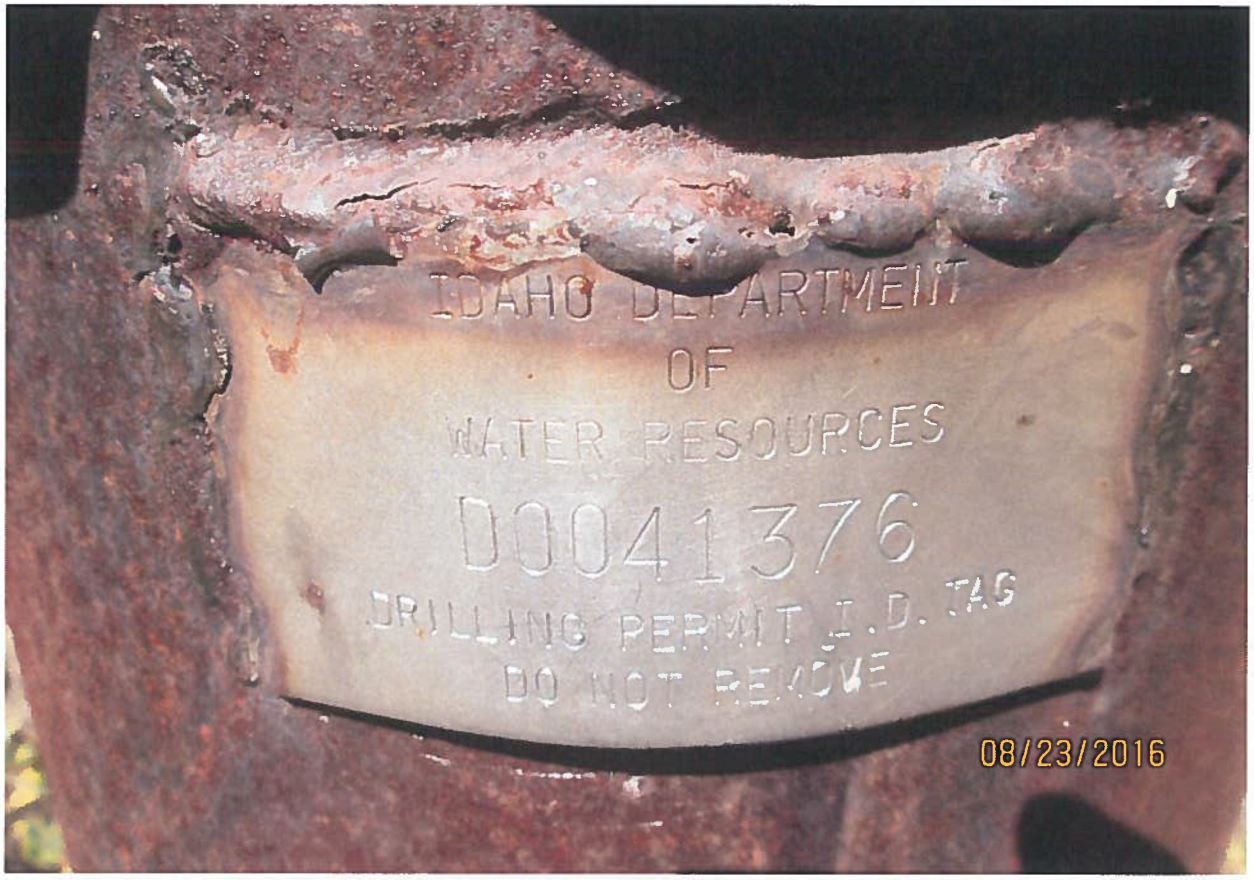
The USDA-FSA Aerial Photography Field office asks to be credited in derived products.



Well D0041375. 25hp Grundfos pump with diversion rate of 130 gpm.



Well D0041376. 25hp Grundfos pump with diversion rate of 130 gpm.



Control panel.

LC LOST CREEK LC
08/23/2016

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LOST CREEK
08/23/2016

08/23/2016

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08/23/2016

From: Russ Helgeson <rhelgeson@roadrunner.com>
Sent: Thursday, April 06, 2017 1:20 PM
To: Frederick, Adam
Subject: Lost Creek Water

Adam,

You were correct regarding the number of lots at Lost Creek, 16 lots in Phase I and 22 lots in Phase II. And Phase III has not been built.

Russ Helgeson

Frame & Smetana
603 N. Fourth St.
Coeur d'Alene, ID 83814
208-664-2121

NORTHERN WATER LLC
27769 W HWY 53
HAUSER, ID 83854
208-661-8609

RECEIVED
APR - 3 2017
IDWR/NORTHER

April 3, 2017

State of Idaho
Department of Water Resources
7600 N Mineral Drive, Ste 100
Coeur d'Alene, ID 83815-7763

ATTN: Adam Frederick
Senior Water Resource Agent

RE: Water Right License 95-9277
Water Conservation Plan

Per your letter dated March 20, 2017 we are submitting a copy of our current water conservation plan with this letter.

If you have any questions or concerns, please do not hesitate to contact me.

Sincerely,

NGWaldo

Norman G. Waldo
Managing Member

Enc: Water Conservation Plan

ATTACHMENT

RECEIVED
APR - 3 2017
IDWR/NORTHERN

NORTHERN WATER LLC
27769 W HWY 53
HAUSER, ID 83854

WATER CONSERVATION PLAN

MARCH 31, 2017

The water conservation plan is handled by Lost Creek Estates Water Association (LCEWA). LCEWA will continue to encourage users to utilize water conservation methods of xeriscaping, water usage, and other conservation methods. Part of this plan is to implement water conservation tips for all users. Working together to practice easy conservation techniques, such as water-wise landscaping, is a huge step toward ensuring enough water for now and into the future.

METHODS TO ENCOURAGE WATER CONSERVATION:

- Xeriscape

  Xeriscape is a creative way of landscaping that utilizes water-saving plants and landscapes that can actually save money, time and effort.
  Beautiful Xeriscape-type plants and landscape designs at local nurseries or landscape designers can easily be found. The following are some common rules of thumb in preparing an effective landscape plan using Xeriscape principles.

- Plant drought resistant trees and plants.

  Many beautiful trees and plants thrive with far less watering than other species.

- Limit the lawn area.

  Encourage more land to be left natural in lieu of landscaping.
  Less lawn area generally equates with less water usage.

- Understand your irrigation system.

  Locate the time clock and learn how to set it.
  Know where the shut-off valve is in case of and emergency.
  Be sure your irrigation system is designed correctly and provides “head to head” coverage.

- Understand how weather affects your lawn.

  High temperatures and low humidity will cause your lawn to use more water. Wind will also increase water loss.
  Adjust your irrigation system seasonally according to the weather. Do not water during winter months or rainy weather.

- Learn your soil type.

  Sandy soils do not hold water as long as clay soils and may require more water to keep lawns looking nice. On the other hand, with proper watering, you can promote deep-root growth in sandy soils that go longer without water than you think.

- Trees and shrubs.

  Trees and shrubs have a much deeper root system than your lawn.
  They should be watered deeply, no more than once a week.

- Once a lawn is established, it doesn't require daily watering.

  New lawns: irrigate twice a day for the first week, once a day for the next two weeks, and then every other day for the next two weeks.
  Established lawns: irrigate once every 2-3 days during the summer.
  In the fall water once every 4-5 days.
  Set sprinkler run time to apply a .7 – 1 inch of water each irrigation time.
  Irrigate in the early morning hours before sunrise.

- Fertilization.

  Fertilizer should be applied in the spring and fall only. Apply no more than one pound of actual nitrogen in one application per 1,000 square feet. The lawn will need about four pounds of actual nitrogen or four applications at the suggested rate.

- If there is noticeable run-off, run-off may be corrected by the following suggestions:

  1. Pre-wet your lawn with a short cycle of 5-10 minutes and come back one hour later and run sprinklers again for an additional 20-30 minutes.
  2. Heavy soil will benefit from the addition of organic matter. A light application of organic fertilizer should be applied after aeration.
  3. Aerate soil twice a year.
  4. De-thatching or aeration will remove thatch build-up, but you need to learn why thatch is accumulating. The most common causes are over-fertilization and mowing too short.
  5. Aeration may help, but you may also look at changing the area to something else that can be drip-irrigated (shrubs or trees.)

CURRENT CONSERVATION PRACTICES:

- Charge the customers a fee that pays for the operation, maintenance and depreciation of the water system.

- Encourages residents to follow the water conservation guidelines published by EPA in (Water Conservation Plan Guidelines", Environmental Protection Agency, 1998).

- LCEWA has a full time water operator, Bob Chandler, which has helped in finding and fixing problems of the water system. This has increased conservation of water.

State of Ida o
DEPARTMENT OF WATER RESOURCES
Northern Region • 7600 N. Mineral Drive, Suite 100 • Coeur d'Alene, Idaho 83815-7763
Phone: (208) 762-2800 • Fax: (208) 762-2819 • Website: www.idwr.idaho.gov

C.L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Director

March 29, 2017

NORTHERN WATER LLC
27769 W HWY 53
HAUSER ID 83854

Re: Water Right License 95-9277

Permit Holder(s):

The Idaho Department of Water Resources (Department) is in the final stages of issuing Northern Water LLC a license for water right 95-9277. The location of the water right falls within the jurisdiction of the Rathdrum Prairie Ground Water Management Area and is subject to the Department's 2005 final order adopting a ground water management plan. Section 3.5.1 of the management plan requires a conservation plan for all new water rights or changes to existing water rights held by municipal purveyors whose systems are regulated as public water supply systems.

Each plan may include the elements as listed in guidelines published by EPA ("Water Conservation Plan Guidelines", Environmental Protection Agency, 1998). These guidelines are primarily designed for public water supply systems. However, any water user can follow the steps described in the guidelines to evaluate the existing conditions and systems, identify and evaluate opportunities for conservation measures and develop strategies and timetables to meet defined, measurable goals.

The conservation plan may include the following components:

- Measurable conservation planning goals
- Summary of existing system characteristics and water use conditions
  - Water system profile
  - Description of planning facilities
- Current and future conservation opportunities
  - Identification of water conservation measures
  - Analysis of benefits and costs
- Select water conservation measures
- Implementation mechanisms, timetable and assessment strategy

Prior to the issuance of the above said license, please submit a copy of your current water conservation plan. If one has not been developed, please do so within the next 30 days so as not to delay finalization of Northern Water LLC water right license.

If you have any questions, don't hesitate to contact me at this office.

Thank you.

Sincerely,

Adam Frederick
Senior Water Resource Agent

From: Russ Helgeson <rhelgeson@roadrunner.com>
Sent: Friday, March 24, 2017 11:03 AM
To: Frederick, Adam
Subject: FW: LOST CREEK AS BUILTS
Attachments: L116 LOST CREEK BOOSTER PLAN.pdf; L116 LOST CREEK PH2 COVER SHEET (1 of 5).pdf; L116 LOST CREEK PH2 DETAIL (3 of 5).pdf; L116 LOST CREEK PH2 RES (4 of 5).pdf; L116 LOST CREEK PH2 WATER PLAN (2 of 3).pdf; L116 LOST CREEK PH2 WELL (5 of 5).pdf; L116 LOST CREEK SOUTH COVER SHEET (1 OF 3).pdf; L116 LOST CREEK SOUTH WATER PLAN (2 of 3).pdf; L116 LOT CREEK SOUTH DETAIL SHEET (3 of 3).pdf; Lost Creek Well Pump Curves.PDF

Hi Adam,

Attached are the plans we prepared for 2 phases of Lost Creek. I have also included a copy of the pump curve for the original pumps installed In the project wells.

Please let me know if you need any additional information.

Thanks,

Russ Helgeson

Frame & Smetana
603 N. Fourth St.
Coeur d'Alene, ID 83814
208-664-2121

ATTACHMENT

RECEIVED
MAR 24 2017
IDWR/NORTHERN

UNITED PUMP
COMPANY

SALES • SERVICE • INSTALLATION
FOR SUBMERSIBLE, SEWAGE & IRRIGATION
LICENSED ELECTRICAL CONTRACTOR

March 3, 2006

Waldo Construction
1831 Lost Springs Ranch Rd.
Post Falls, ID 83854
Ph# 773-6805

Attn: Mr. Norm Waldo

SUBJECT: Lost Creek Estates

We are pleased to submit the following estimate for the proposed water system for the Lost Creek Estates project. This quotation is based upon plans supplied by Mr. Jack Smetana of Frame and Smetana Consulting Engineers. The plans are dated October 14, 2005. The control / telemetry system is priced out based upon the use of a radio system to communicate between all three sites listed below. Pricing for the project will be as follows:

WELL SITE:

- 2 ea. – 25hp Grundfos production pump (# 150S250-14) installed in pre-existing wells. Well drilling to be done by others.
- 1 ls. – 3" galvanized drop pipe for both pumps.8 hr.
- 4 ea. – 3" DI Flomatic in line check valves in the wells.
- 1 ls. - #8/4 Flat jacked cable for well pump motor leads down both wells.
- 2 ea. – 3" weld-on pitless adapter
- 2 ea. - 8" Vented Well Cap
- 1 ea. – Custom fabricated steel electrical panel stand (powder coated)
- 2 ea. – 25hp / 480v / 3ph combination pump starter panel
- 1 ea. – 480v / 3ph / 200amp meter socket
- 1 ea. – 480v / 3ph / 200amp panel board for individual circuits
- 1 ea. – Main control panel for well pumps / reservoir fill (PLC & radio telemetry).
- 1 ls. – Conduit, wire, gutter and fittings to complete electrical install.
- System start up and field readings
- Labor to install

BOOSTER PUMP SITE:

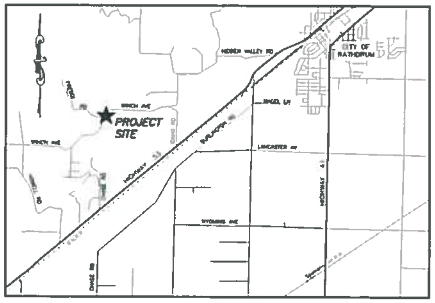
- 1 ea. – 3hp / 240v / 1ph Berkley Type "C" centrifugal pump.
- 1 ea. – 2" Cycle Stop hydraulic pressure sustaining valve.
- 1 ea. – PC144 Challenger pressure tank.
- 1 ls. – 3" DI piping manifold (suction and discharge).
- 2 ea. – DI pipe spools through the floor for suction & discharge.
- 1 ls. – Galv. piping plumbing pump into system.
- 1 ea. – 200amp / 1ph / 240v electrical service for building equipment.
- 1 ea. – Main control panel for duplex booster pump control (PLC & radio telemetry).
- 1 ls. – 240v Building heater.
- 1 ls. – Electrical lights and outlets for building (interior & exterior).

POST OFFICE BOX 1690 • HAYDEN LAKE, IDAHO 83835 • TEL: (208) 772-7867 • (800) 682-9641 • FAX: (208) 772-7229

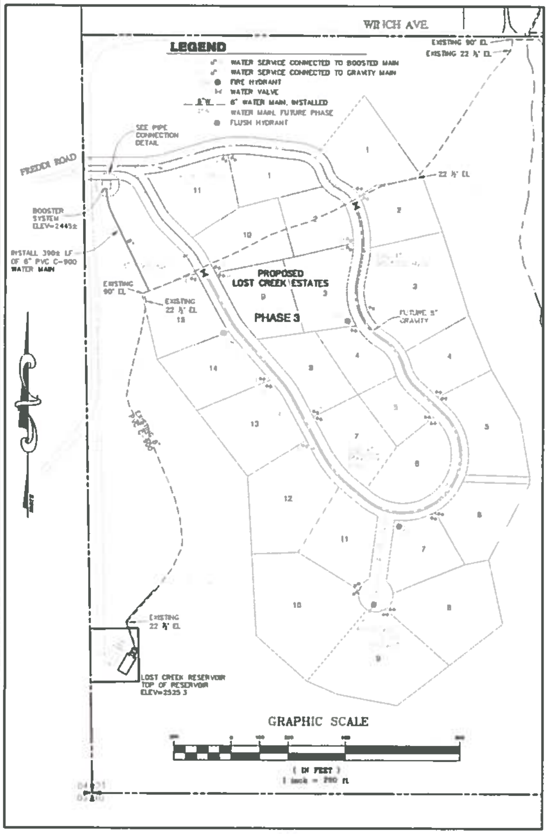
ATTACHMENT

NORTHERN WATER L.L.C.
LOST CREEK BOOSTER SYSTEM

SECTION 3, TOWNSHIP 51 NORTH, RANGE 5 WEST, B.M.,
KOOTENAI COUNTY, IDAHO,



VICINITY MAP
NTS



SITE PLAN

Item#	Description
1.	Pump house (see pump house construction specifications)
2.	8" x 8" x 4" tee, 8" gate valve, 4" gate valve with MJ adapters, thrust blocks and 8" capped stub to north
3.	4" Dresser coupling
4.	4" ductile iron (DI) piping and fittings with flanges as required
5.	4" DI riser with tee and cap or blind flange on top. Wrap all floor penetrations.
6.	4" gate valve with wheel handle
7.	3" gate valve with wheel handle
8.	3" No. 402BT Flomatic check valve
9.	3" galvanized or DI piping and fittings
10.	4" tee with 4" x 3" reducers and compound pressure/vacuum gauge.
11.	Goulds 3656 Series end-suction centrifugal pump, 2 h.p., 3500 R.P.M., 240-volt, single-phase, 5 1/16" impeller trim, designed for 50 g.p.m. at 85' T.D.H., 60 g.p.m. at 77' T.D.H. Inlet pressure is 32± p.s.i.
12.	Elevated pump base (concrete or powder-coated steel)
13.	2" discharge tee with gauge, sample tap, and pressure relief valve vented thru wall.
14.	2" gate valve with wheel handle
15.	2" galvanized or DI discharge piping and fittings
16.	4" tee with 4" x 2" reducers and gauge.
17.	3" Badger RecordAll II Turbo Meter with reducers. Install per manufacturer's recommendation for proper spacing. Contractor shall supply spacer nipple for meter removal.
18.	4" tee
19.	2" Badger Record All II Turbo Flow Meter with reducers. Install per manufacturer's recommendation for proper spacing. Contractor shall supply spacer nipple for meter removal.
20.	200A electrical service
21.	100A circuit breaker style main disconnect switch.
22.	100A manual transfer switch and portable generator receptacle compatible with well system receptacle.
23.	Electrical boxes, gutter and equipment for pump operation per electrical panel specifications & 100A load center with main for building electrical loads.
24.	3 K.W./240-volt space heater with thermostat
25.	120-volt exhaust fan with louver and thermostat
26.	Telemetry control box and equipment for reservoir fill and alarm control. Expand and modify existing panel per operation specifications.
27.	120v motorized intake louver
28.	Outside-mounted porch light and alarm

BOOSTER PUMP CONTROL

The booster pumps shall operate as a duplex alternating system, primarily cycling based on the water level of the Wild Ridge reservoir as follows:

Elevation + 0.1' - High water alarm
0 - Pump off (approximately 4" below overflow)
- 1.0' - One booster pump on
- 1.5' - Both booster pumps on
- 4.0' - Low water alarm

The booster pump controls shall also feature override protection as follows:

Lost Creek reservoir low alarm level - limit to single-booster pump run
Lost Creek reservoir low-low alarm level - both booster pumps off
Low pressure sensor in pump house discharge - both booster pumps off

Contractor shall provide 3 sets of O&M manual information upon project completion and start-up.

ELECTRICAL PANEL

The electrical panel shall include but not be limited to the following equipment:

- 200-amp, single-phase service
- Disconnects - single-phase
- Two - 2 h.p. contactors
- Two H-O-A switches
- Conduit and wireways
- Duplex receptacles
- Lights and switches - two lights inside and one outside pump house
- Lightning arrestor
- Elapse time hour meters for each starter
- Alternating relay

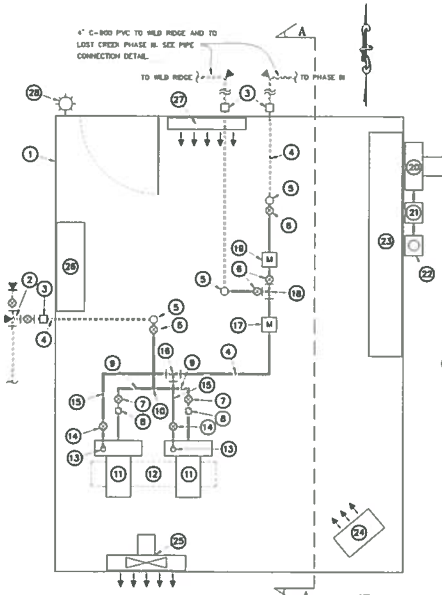
All work to conform to the requirements of the National Electrical Code. The Contractor shall submit shop drawings for approval showing the proposed equipment to be used and a control circuit and telemetry diagram for the booster pump controls.

PUMP HOUSE CONSTRUCTION SPECIFICATIONS

Contractor shall furnish a completely constructed pump house including all clearing, stripping and grading. Contractor shall be responsible to secure all necessary permits including but not limited to building and electrical. Basic features include:

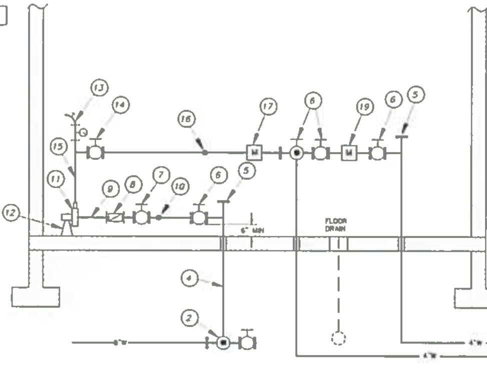
- Building to have mono-poured, in-place concrete slab
- 2" x 6" framing
- Engineered trusses
- Metal siding and roofing
- Trim package
- Insulation in walls and roof
- One 3'0" x 6'8" door
- 1' overhang on entire building
- Plywood on interior of entire main pump house
- Interior to be painted white
- Duplex outlets and ceiling lights
- Floor drain to daylight with flapper valve.

Submit shop drawings, including proposed building dimensions, for owner's review and approval.


4" C-900 PVC TO WILD RIDGE AND TO LOST CREEK PHASE III. SEE PIPE CONNECTION DETAIL
TO WILD RIDGE
TO PHASE III
A
A

BOOSTER PUMP DETAIL
NTS

NOTE:
SCHEMATIC LAYOUT IS CONCEPTUAL AND FOR GUIDANCE ONLY. CONTRACTOR TO SUBMIT DETAILED SHOP DRAWING FOR REVIEW AND APPROVAL, INCLUDING PUMPHOUSE SIZE VERIFICATION



SECTION A-A
NTS

GENERAL NOTES AND SPECIFICATIONS

THIS PLAN SHEET IS SUPPLEMENTAL TO THE APPROVED PLANS TITLED "WATER SYSTEM PLANS FOR LOST CREEK ESTATES" MAY 2005. ALL SPECIFICATIONS, REQUIREMENTS, AND DETAILS ARE INCORPORATED HEREIN BY REFERENCE.

THE CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FOLLOWING FINAL APPROVAL BY THE ENGINEER. DAMAGE DUE TO SETTLEMENT UNDER ROADWAYS SHALL BE GUARANTEED FOR A PERIOD OF TWO YEARS FROM FINAL APPROVAL. ALL WORK AND MATERIALS SHALL BE GOVERNED BY THE LATEST EDITION OF IDAHO STANDARDS FOR PUBLIC WORKS CONSTRUCTION (ISPWC), THE HIGHWAY STANDARDS FOR ASSOCIATED HIGHWAY DISTRICTS, AND BE SUBJECT TO THE APPROVAL OF THE IDAHO DEPARTMENT OF HEALTH & WELFARE, POST FALLS HIGHWAY DISTRICT, AND NORTHERN WATER L.L.C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING UTILITIES. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED AS SOON AS POSSIBLE AND AT THE CONTRACTOR'S EXPENSE.

POLYVINYL CHLORIDE (PVC) PIPE FOR MAIN LINES SHALL CONFORM TO THE REQUIREMENTS OF CLASS 150 C-900 PVC. PIPE JOINTS SHALL BE STANDARD RUBBER RING. FITTINGS SHALL BE CAST IRON FLANGE AND MECHANICAL JOINT AS SHOWN ON THE PLANS.

VALVES SHALL BE RESILIENT SEAT GATE VALVES CORRESPONDING TO ISPWC SECTION 402 AND SHALL HAVE CAST IRON VALVE BOXES AND LIDS. THRUST BLOCKS ARE REQUIRED AS DETAILED.

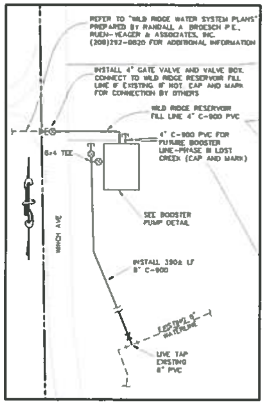
PIPE BEDDING AND BACKFILL MEETING THE REQUIREMENTS OF ISPWC DIVISION 300 SHALL BE REQUIRED FOR THE ENTIRE LENGTH OF PIPE LAID. MINIMUM DEPTH OF COVER TO THE TOP OF THE PIPE SHALL BE FIVE FEET UNLESS OTHERWISE SPECIFIED.

HYDROSTATIC TESTING AND DISINFECTION WILL BE IN ACCORDANCE WITH SECTION 401 OF THE ISPWC SPECIFICATIONS.

THE CONTRACTOR SHALL NOTIFY THE NORTHERN WATER L.L.C. AT LEAST 48 HOURS PRIOR TO CONNECTION TO EXISTING WATER MAINS. THE CONTRACTOR SHALL ALSO PROVIDE A CONSTRUCTION SCHEDULE AND PROVIDE AT LEAST 24 HOURS NOTICE BEFORE ANY BACKFILLING, DISINFECTION, OR HYDROSTATIC TESTING. NO PIPING OR FITTINGS SHALL BE BACKFILLED PRIOR TO INSPECTION AND APPROVAL BY THE ENGINEER. NORTHERN WATER L.L.C. RESERVES THE RIGHT TO INSPECT CONSTRUCTION AT ANY TIME, AND DIRECT THE CONTRACTOR TO MAKE FIELD ADJUSTMENTS AS REQUIRED.

THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE PUBLIC SAFETY REGULATIONS. TRAFFIC CONTROL AND SIGNING SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. THE CONTRACTOR IS RESPONSIBLE TO SECURE ALL PERMITS REQUIRED AND INCLUDE ANY ASSOCIATED FEES IN BID AMOUNT, INCLUDING POST FALLS HIGHWAY DISTRICT.

DISRUPTION TO THE EXISTING WATER SERVICES SHALL BE MINIMIZED, AND IN NO CASE SHALL AN EXISTING SERVICE BE SHUT OFF FOR MORE THAN 4 HOURS. CONTRACTOR SHALL NOTIFY USER AT LEAST 24 HOURS IN ADVANCE OF POTENTIAL WATER OUTAGES.


REFER TO "WILD RIDGE WATER SYSTEM PLANS" PREPARED BY RANDALL A. BROESCH P.E., RUEN-YEAGER & ASSOCIATES, INC. (208)292-0820 FOR ADDITIONAL INFORMATION
INSTALL 4" GATE VALVE AND VALVE BOX. CONNECT TO WILD RIDGE RESERVOIR FILL LINE IF EXISTING. IF NOT, CAP AND MARK FOR CONNECTION BY OTHERS
WILD RIDGE RESERVOIR FILL LINE 4" C-900 PVC
4" C-900 PVC FOR FUTURE BOOSTER LINE-PHASE III LOST CREEK (CAP AND MARK)
8x4 TEE
SEE BOOSTER PUMP DETAIL
WRICH AVE
INSTALL 390± LF 8" C-900
EXISTING 8" WATERLINE
LIVE TAP EXISTING 8" PVC

PIPE CONNECTION DETAIL
SCALE: 1"=60'

NO.	DATE	REVISION

DESIGN BY
JAS
DRAWN BY
DWJ
CHECKED BY
JAS
PLOT DATE
12/30/13

The delivery of this drawing should not be construed to provide an express warranty or guarantee to anyone that the unauthorized use of this drawing implies the review and approval by the Design Professional. Any unauthorized use of this information is at the sole risk and liability of the user.

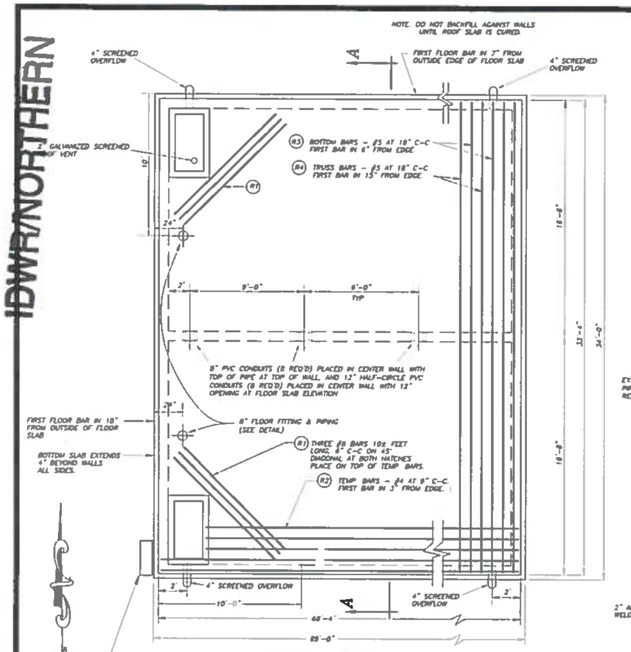
FRAME & SMETANA, PA
Consulting Engineers
603 North 4th Street, Coeur d'Alene, Idaho, 83814
Ph (208)664-2121/Fax 765-5502
Email smetana@roadrunner.com

LOCATION
NORTHERN WATER LLC
KOOTENAI COUNTY, IDAHO

SHEET TITLE
LOST CREEK BOOSTER SYSTEM

SECTION-TOWNSHIP-RANGE
3-51N-5W
PROJECT NO.
L116
CAD FILE
L116-BOOSTER2.dwg
DRAWING NO
BOOSTER

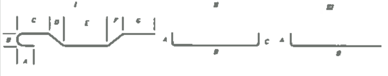
ATTACHMENT

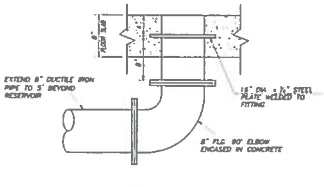

NOTE. DO NOT BACKFILL AGAINST WALLS UNTIL ROOF SLAB IS CURED.
4" SCREENED OVERFLOW
FIRST FLOOR BAR IN 7" FROM OUTSIDE EDGE OF FLOOR SLAB
4" SCREENED OVERFLOW
2" GALVANIZED SCREENED ROOF VENT
R3 BOTTOM BARS – #5 AT 18" C–C FIRST BAR IN 6" FROM EDGE
R4 TRUSS BARS – #5 AT 18" C–C FIRST BAR IN 15" FROM EDGE
R1
10'
24"
2'
9'–0"
8'–0" TYP
18'–8"
33'–4"
34'–0"
8" PVC CONDUITS (8 REQ'D) PLACED IN CENTER WALL WITH TOP OF PIPE AT TOP OF WALL, AND 12" HALF-CIRCLE PVC CONDUITS (8 REQ'D) PLACED IN CENTER WALL WITH 12" OPENING AT FLOOR SLAB ELEVATION
FIRST FLOOR BAR IN 18" FROM OUTSIDE OF FLOOR SLAB
8" FLOOR FITTING & PIPING (SEE DETAIL)
BOTTOM SLAB EXTENDS 4" BEYOND WALLS ALL SIDES.
R1 THREE #8 BARS 10± FEET LONG, 6" C–C ON 45° DIAGONAL AT BOTH HATCHES PLACE ON TOP OF TEMP BARS.
R2 TEMP BARS – #4 AT 9" C–C FIRST BAR IN 3" FROM EDGE.
4" SCREENED OVERFLOW
4" SCREENED OVERFLOW
2'
10'–0"
A
68'–4"
69'–0"
ELECTRICAL BOX AND CONDUIT

PLAN VIEW

SCALE 1/4" = 1'

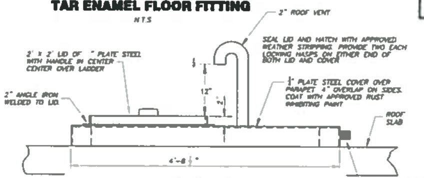
MARK	QTY	SIZE	SHAPE	DIMENSIONS							LENGTH
				A	B	C	D	E	F	G	
R1	6	#8	STRAIGHT								10' – 0"
R2	45	#4	STRAIGHT								68' – 0"
R3	94	#5	STRAIGHT								16' – 8"
R4	90	#5	I	4½"	4"	2'–4"	4"	10'–8"	4"	8'–4"	22' – 8"
R5	273	#4	III	22"	8'–2"						10' – 0"
R6	22	#4	STRAIGHT								68' – 0"
R7	88	#4	II	22"	8'–8"	22"					12' – 4"
R8	87	#4	II	27"	32'–8"	27"					37' – 2"
R9	44	#4	II	27"	67'–8"	27"					72' – 2"
R10	22	#4	II	27"	32'–8"	27"					37' – 2"




8" FLOOR SLAB
6"
EXTEND 8" DUCTILE IRON PIPE TO 5' BEYOND RESERVOIR
16" DIA x ¼" STEEL PLATE WELDED TO FITTING
8" FLG 90° ELBOW ENCASED IN CONCRETE

8" SCH. 40 STEEL WITH COAL TAR ENAMEL FLOOR FITTING

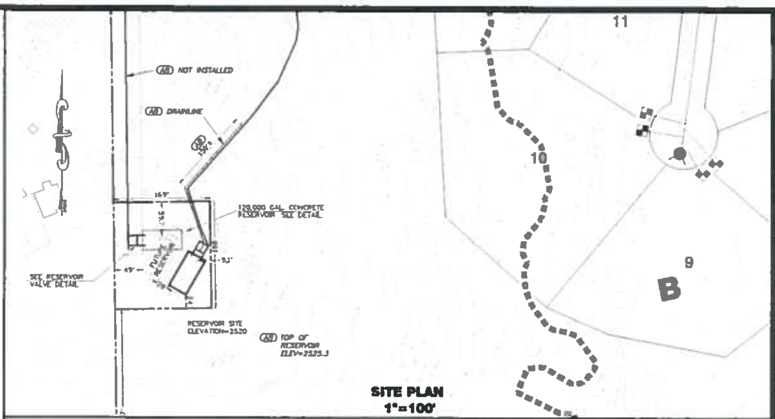
N.T.S


2" ROOF VENT
SEAL LID AND HATCH WITH APPROVED WEATHER STRIPPING. PROVIDE TWO EACH LOCKING HASPS ON EITHER END OF BOTH LID AND COVER
2' x 2' LID OF " PLATE STEEL WITH HANDLE IN CENTER CENTER OVER LADDER
¼" PLATE STEEL COVER OVER PARAPET 4" OVERLAP ON SIDES. COAT WITH APPROVED RUST INHIBITING PAINT
2" ANGLE IRON WELDED TO LID.
12"
ROOF SLAB
4'–8"
WATERTITE ELECTRICAL FITTING FOR FLOAT WIRES

LID DETAIL

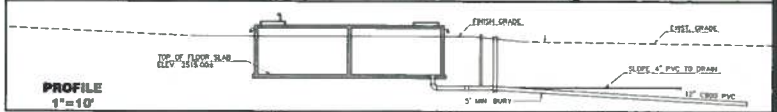
SCALE 1" = 1'

NOTE. CROWN LID AND HATCH TO PREVENT PONDING


AB NOT INSTALLED
AB DRAINLINE
169'
120,000 GAL. CONCRETE RESERVOIR SEE DETAIL
49'
93'
SEE RESERVOIR VALVE DETAIL
RESERVOIR SITE ELEVATION=2520
AB TOP OF RESERVOIR ELEV=2525.3
11
10
9
B

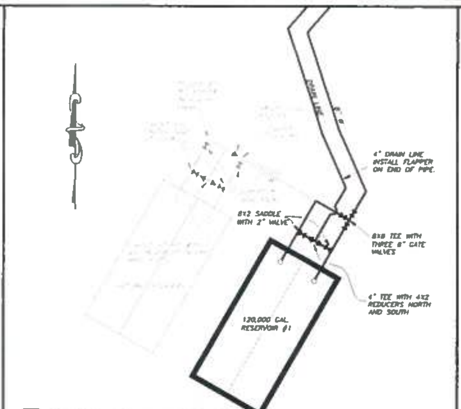
SITE PLAN

1"=100'



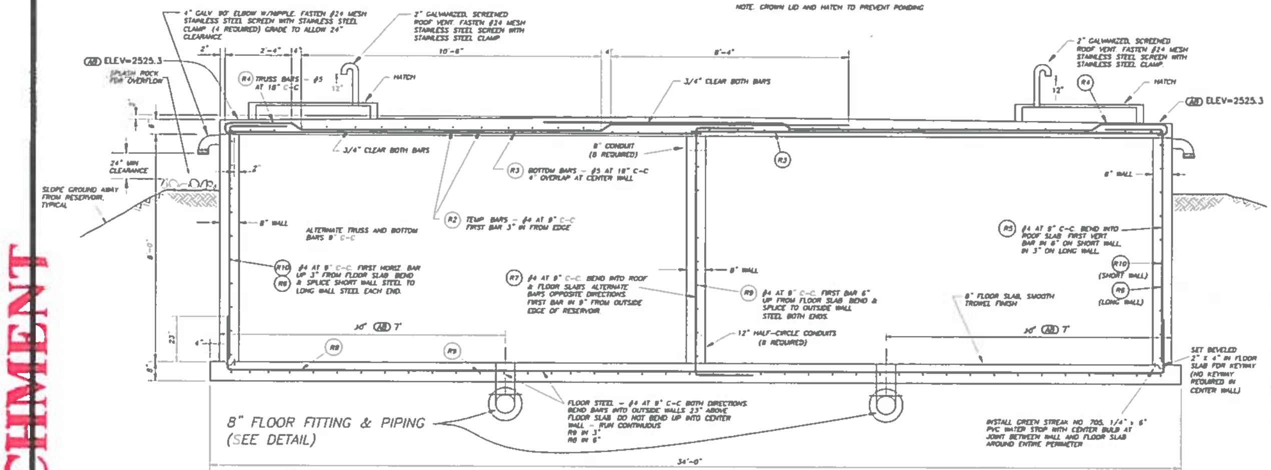
PROFILE

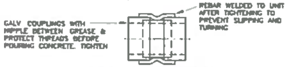
1"=10'


DRAIN LINE
4" DRAIN LINE INSTALL FLAPPER ON END OF PIPE.
8X2 SADDLE WITH 2" VALVE
8X8 TEE WITH THREE 8" GATE VALVES
4" TEE WITH 4X2 REDUCERS NORTH AND SOUTH
120,000 GAL. RESERVOIR #1

AB RESERVOIR VALVE DETAIL

NTS


4" GALV. 90° ELBOW W/NIPPLE. FASTEN #24 MESH STAINLESS STEEL SCREEN WITH STAINLESS STEEL CLAMP (4 REQUIRED) GRADE TO ALLOW 24" CLEARANCE
2" GALVANIZED SCREENED ROOF VENT. FASTEN #24 MESH STAINLESS STEEL SCREEN WITH STAINLESS STEEL CLAMP
AB ELEV=2525.3
SPLASH ROCK FOR OVERFLOW
2"
2'–4"
10'–8"
4"
8'–4"
R4 TRUSS BARS – #5 AT 18" C–C
12"
HATCH
3/4" CLEAR BOTH BARS
24" MIN CLEARANCE
SLOPE GROUND AWAY FROM RESERVOIR, TYPICAL
3/4" CLEAR BOTH BARS
8" CONDUIT (8 REQUIRED)
R3 BOTTOM BARS – #5 AT 18" C–C 4" OVERLAP AT CENTER WALL
R3
8" WALL
ALTERNATE TRUSS AND BOTTOM BARS 9" C–C
R2 TEMP BARS – #4 AT 9" C–C FIRST BAR 3" IN FROM EDGE
R10 R8 #4 AT 9" C–C. FIRST HORIZ. BAR UP 3" FROM FLOOR SLAB. BEND & SPLICE SHORT WALL STEEL TO LONG WALL STEEL EACH END.
R7 #4 AT 9" C–C. BEND INTO ROOF & FLOOR SLABS. ALTERNATE BARS OPPOSITE DIRECTIONS. FIRST BAR IN 9" FROM OUTSIDE EDGE OF RESERVOIR.
8" WALL
R9 #4 AT 9" C–C. FIRST BAR 6" UP FROM FLOOR SLAB. BEND & SPLICE TO OUTSIDE WALL STEEL BOTH ENDS.
12" HALF-CIRCLE CONDUITS (8 REQUIRED)
8" FLOOR SLAB, SMOOTH TROWEL FINISH
R5 #4 AT 9" C–C. BEND INTO ROOF SLAB. FIRST VERT. BAR IN 6" ON SHORT WALL, IN 3" ON LONG WALL.
R10 (SHORT WALL)
R8 (LONG WALL)
8" WALL
10' AB 7'
R8
R9
8'–0"
23"
4"
8"
SET BEVELED 2" x 4" IN FLOOR SLAB FOR KEYWAY (NO KEYWAY REQUIRED IN CENTER WALL)
8" FLOOR FITTING & PIPING (SEE DETAIL)
FLOOR STEEL – #4 AT 9" C–C BOTH DIRECTIONS. BEND BARS INTO OUTSIDE WALLS 23" ABOVE FLOOR SLAB. DO NOT BEND UP INTO CENTER WALL – RUN CONTINUOUS R9 IN 3" R8 IN 6"
INSTALL GREEN STREAK NO. 705, 1/4" x 6" PVC WATER STOP WITH CENTER BULB AT JOINT BETWEEN WALL AND FLOOR SLAB AROUND ENTIRE PERIMETER
34'–0"


GALV. COUPLINGS WITH NIPPLE BETWEEN. GREASE & PROTECT THREADS BEFORE POURING CONCRETE. TIGHTEN
REBAR WELDED TO UNIT AFTER TIGHTENING TO PREVENT SLIPPING AND TURNING

WALL SLEEVES

N.T.S

ELEVATION VIEW A - A

SCALE 1/2" = 1'

RESERVOIR IS TO BE CONSTRUCTED ON UNDISTURBED OR COMPACTED SOIL WITH 4" OF PEA GRAVEL FOR A LEVELING COURSE. WATER SUBGRADE PRIOR TO PLACING SLAB. COMPACT TO 95% OF STANDARD PROCTOR.

RECORD DRAWING NOTE:

THESE RECORD DRAWINGS HAVE BEEN PREPARED BASED ON INFORMATION GATHERED DURING FIELD OBSERVATIONS AS WELL AS INFORMATION PROVIDED BY OTHERS. THE ACCURACY OR COMPLETENESS OF INFORMATION PROVIDED BY OTHERS HAS NOT BEEN VERIFIED BY FRAME & SMETANA, P.A.

AB AS BUILT INFORMATION–PHASE I

RECORD DRAWING
JANUARY, 2007

SPECIFICATIONS

SCOPE.

The Contractor shall furnish all labor, materials, tools, equipment, and services necessary to construct a 120,000 gallon concrete reservoir, including all concrete work for the reservoir, related excavation and backfilling, two 24 inch x 48 inch hatchways

GENERAL.

All work shall be governed by the specifications for the Idaho Standards for Public Works Construction, the Idaho Department of Health and Welfare. The contractor shall be responsible for locating and protecting all existing utilities. All workmanship and materials shall be guaranteed by the contractor for a period of one year following final approval by the owner and engineer

CONCRETE CONSTRUCTION.

The minimum splice lap shall be 23 inches. Do not splice at diagonal in truss bars. Stagger splices a minimum of 30 inches. All deformed bar shall meet ASTM A305 or A408 for bond and diagonal tension, and ASTM A61 or A432 (FY = 60,000 psi) for steel stresses

Concrete shall have a 4 inch maximum slump, 4% entrained air, 3/4 inch aggregate, 5 sack, 3,000 psi minimum for the walls and floor, and 6 sack 3,750 psi minimum for the roof slab. An approved protective cure shall be placed on the concrete immediately after concrete finishing for a minimum of seven (7) days and the concrete shall be protected against freezing. The Contractor shall provide to the Engineer the results of two concrete cylinder tests for each of the floor slabs, walls, and roof slab. All concrete shall be thoroughly rodded and vibrated in forms such that no honeycombing will occur. All holes shall be filled smooth with a non-shrink grout. The Contractor shall guarantee the reservoir against cracking and leakage for the one year period specified above

INSPECTION AND TESTING.

The Contractor shall notify the Owner's Engineer at least 24 hours in advance of any required inspections. Items requiring inspection include, but are not limited to, concrete forming, steel placement, concrete pouring, materials installed prior to burial, and testing performed. Upon completion of the reservoir construction and prior to backfilling around the walls, the Contractor shall fill the reservoir to the overflow elevation and perform a 24 hour minimum hydrostatic test. At the end of the hydrostatic test, the Engineer shall visually inspect the walls and floor joints for leakage and determine the amount of leakage by comparing the water level in the reservoir at the beginning and end of the hydrostatic test period. The Contractor shall allow an adequate time for the concrete to absorb water prior to starting the hydrostatic test.

DISINFECTION OF RESERVOIR.

The Contractor shall disinfect the concrete reservoir and all related items with a minimum 50 ppm chlorine solution for a period of at least 24 hours. The Contractor shall be responsible for all costs associated with securing water for construction and testing and disposing of the chlorinated water. It is anticipated that the chlorinated water can be disposed of through a fire hydrant on the site. Care should be taken to protect against erosion.

EXCAVATION AND BACKFILL.

Excess backfill shall be wasted on-site to provide a gradual slope for drainage away from the reservoir.

NO	DATE	REVISION
1	10-05	PER IDEQ COMMENTS
2	1-10-07	PHASE 1 AS-BUILTS
3	5-10-07	REVISIONS PER DEQ COMMENTS

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DESIGN BY	JAS
DRAWN BY	JAN
CHECKED BY	JAS
PLOT DATE	12/30/13

FRAME & SMETANA, PA
Consulting Engineers
603 North 4th Street, Coeur d'Alene, Idaho, 83814
Ph (208)664-2121/Fax 765-5502
Email smetana@roadrunner.com

LOCATION
LOST CREEK ESTATES
WINCH ROAD KOOTENAI COUNTY, IDAHO

SHEET TITLE
120,000 GALLON WATER RESERVOIR

SECTION-TOWNSHIP-RANGE
3-51N-5W

PROJECT NO.
L116

CAD FILE
L116-RES

DRAWING NO.
4 OF 5

RECEIVED
MAR 2 4 2017
IDWR/NORTHERN

ATTACHMENT

WATER SYSTEM PLANS
FOR
LOST CREEK ESTATES - SOUTH LOTS
SECTION 3, TOWNSHIP 51 NORTH, RANGE 5 WEST,
KOOTENAI COUNTY, IDAHO,
MARCH 2016

WATER SPECIFICATIONS

GENERAL

THE CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FOLLOWING FINAL APPROVAL BY THE ENGINEER. DAMAGE DUE TO SETTLEMENT UNDER ROADWAYS SHALL BE GUARANTEED FOR A PERIOD OF TWO YEARS FROM FINAL APPROVAL. ALL WORK SHALL BE GOVERNED BY THE LATEST EDITION OF THE SPECIFICATIONS FOR IDAHO STANDARDS FOR PUBLIC WORKS CONSTRUCTION, AND BE SUBJECT TO THE APPROVAL OF THE IDAHO DEPARTMENT OF HEALTH & WELFARE, AND THE NORTHERN LAKES FIRE PROTECTION DISTRICT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING UTILITIES. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED AS SOON AS POSSIBLE AND AT THE CONTRACTOR'S EXPENSE.

PIPE, FITTINGS & VALVES

POLYVINYL CHLORIDE (PVC) PIPE FOR MAIN LINES SHALL CONFORM TO THE REQUIREMENTS OF AWWA C-900 CLASS 150 PVC OR C-905-150 PVC. PIPE JOINTS SHALL BE STANDARD RUBBER RING. FITTINGS SHALL BE CAST IRON FLANGE AND MECHANICAL JOINT AS SHOWN ON THE PLANS OR APPROVED EQUAL. VALVES SHALL BE RESILIENT SEAT GATE VALVES CORRESPONDING TO ISPWC SPECIFICATION 402 AND SHALL HAVE CAST IRON VALVE BOXES AND LIDS. ALL MECHANICAL JOINTS LESS THAN 10 FEET APART SHALL BE TIED TOGETHER WITH (2) ¾". PLATED ALL THREAD RODS. THE BOTTOM OF T'S, CROSSES, AND VALVES SHALL BE SUPPORTED BY A CONCRETE PAD. ALL MATERIALS SHALL BE NEW, AWWA APPROVED AND OF U.S. ORIGIN. INSTALL PROPERLY SIZED TRUST BLOCKS AT ALL BENDS, TEES AND CAPS. PLACE 2 CU. FT. OF WASHED ROCK AROUND THE BOTTOM OF ALL VALVES. ALL VALVES AND FITTINGS SHALL BE WRAPPED IN POLYETHYLENE PRIOR TO CONCRETE PLACEMENT. ALL EQUIPMENT IN CONTACT WITH DRINKING WATER MUST BE LISTED UNDER NSF STANDARD 61.

SERVICES

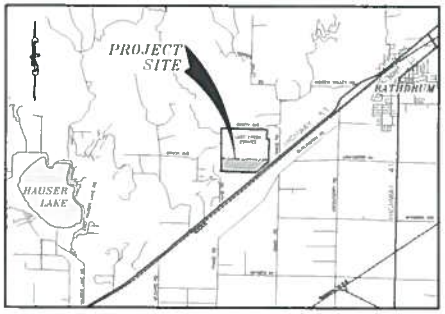
SERVICES WILL BE INSTALLED IN THE FUTURE WHEN FUTURE PROPERTY OWNERS DETERMINE THEIR BUILDING SITE LOCATION. SERVICES SHALL BE INSTALLED TO EACH LOT AS NOTED ON THE PLAN AND DETAIL SHEET. THE END OF THE SERVICE LINE SHALL BE MARKED BY A TEN FOOT LENGTH OF #2 REBAR (1/4") BEND INTO A "U" AND BURIED WITH AN EIGHT FOOT WOODEN 2" x 4". THE REBAR SHALL BE PLACED VERTICALLY TO A POINT SIX INCHES BELOW THE GROUND SURFACE AND THE 2" x 4" PLACED VERTICALLY ALONGSIDE WITH FIVE FEET BURIED AND THREE FEET STICKING OUT OF THE GROUND. THE EXPOSED PORTION SHALL BE PAINTED A BRIGHT BLUE

TRENCHING, TESTING, DISINFECTION

CONSTRUCTION SHALL BE IN ACCORDANCE WITH SECTION 300 AND SECTION 400 OF THE IDAHO STANDARDS FOR PUBLIC WORKS CONSTRUCTION. PIPE BEDDING AND BACKFILL MEETING THE REQUIREMENTS OF SECTION 305 SHALL BE REQUIRED FOR THE ENTIRE LENGTH OF PIPE LAID. THE CONTRACTOR IS RESPONSIBLE TO SECURE ALL PERMITS REQUIRED AND INCLUDE ANY ASSOCIATED FEES IN BID AMOUNT. HYDROSTATIC TESTING AND DISINFECTION WILL BE IN ACCORDANCE WITH SECTION 401 OF THE SPECIFICATIONS (PRESSURE TEST SHALL BE AT 150 PSI FOR 2 HOURS). MINIMUM DEPTH OF COVER TO THE TOP OF THE PIPE SHALL BE FIVE FEET. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE PUBLIC SAFETY REGULATIONS. TRAFFIC CONTROL AND SIGNING SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. ALL PIPE SHALL BE BEDDED WITH APPROVED MATERIAL TO A THICKNESS OF 6" ON SIDES AND BOTTOM, AND 12" ON TOP. ALL PIPES SHALL HAVE A MINIMUM COVER OF 5 FEET FROM TOP OF PIPE TO FINISHED GRADE.

NOTIFICATIONS & INSPECTIONS

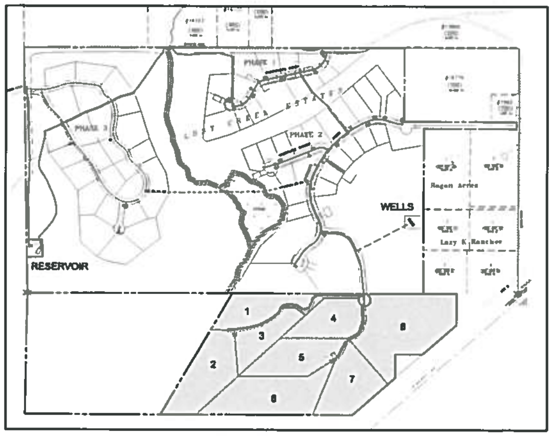
THE CONTRACTOR SHALL PROVIDE A CONSTRUCTION SCHEDULE AND PROVIDE AT LEAST 24 HOURS NOTICE TO THE ENGINEER BEFORE ANY BACKFILLING, DISINFECTION, OR HYDROSTATIC TESTING. THE CONTRACTOR SHALL NOTIFY THE NORTHERN LAKES FIRE PROTECTION DISTRICT AT LEAST 24 HOURS PRIOR TO THE INSTALLATION OR TESTING OF ANY FIRE HYDRANTS. FIRE DISTRICT APPROVAL SHALL BE REQUIRED PRIOR TO BACKFILLING. NO PIPING OR FITTINGS SHALL BE BACKFILLED PRIOR TO INSPECTION AND APPROVAL BY THE ENGINEER.



VICINITY MAP

PLAN INDEX

SHEET	DESCRIPTION
1	COVER SHEET
2	SOUTH LOTS WATER PLAN
3	DETAILS



LOST CREEK ESTATES

CALL 48 HOURS BEFORE YOU DIG

811

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES IS SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NO.	DATE	REVISION

RUSSELL D HELGESON
3-22-16

DESIGN BY RDH
DRAWN BY DWJ
CHECKED BY RDH
PLOT DATE 3/15/16

FRAME & SMETANA, PA
Consulting Engineers

LOCATION: LOST CREEK ESTATES
KOOTENAI COUNTY, IDAHO
SHEET TITLE: SOUTH LOTS WATER PLAN
SECTION-TOWNSHIP-RANGE 3-51N-5W
PROJECT NO. L116
CAD FILE L116 SOUTH COVER
DRAWING NO. 1 OF 3

Lost Creek Estates - Well System

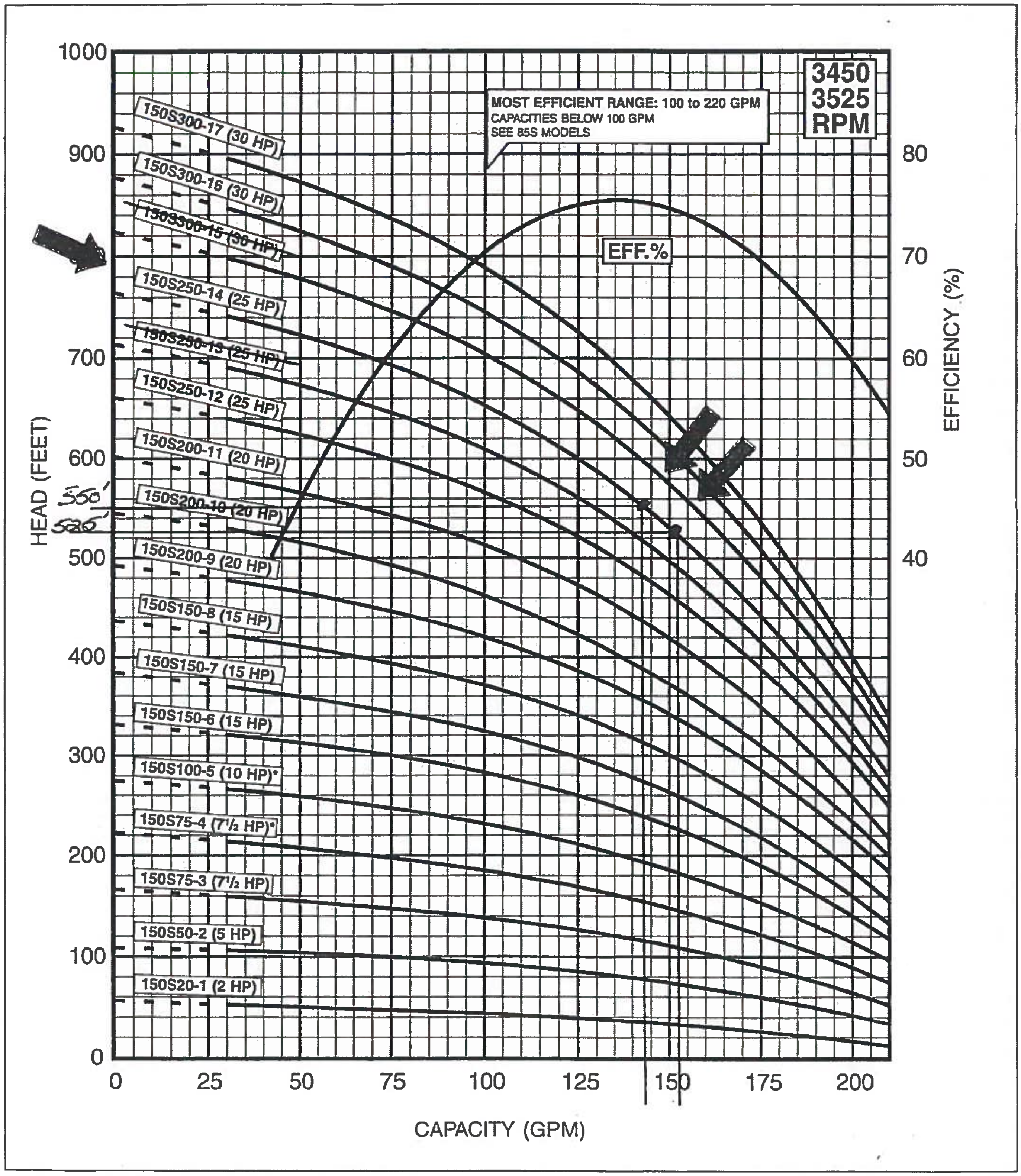
ATTACHMENT

MAR 24 2017

IDWR/NORTHERN

PERFORMANCE CURVES 150 GPM MODEL 150S

FLOW RANGE: 30 -220 GPM **OUTLET SIZE: 3" NPT** **NOMINAL DIA. 6"**

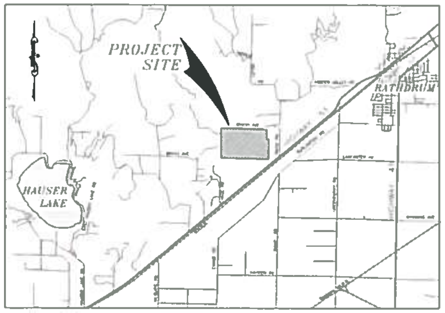


SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
4" MOTOR STANDARD, 2-10 HP/3450 RPM
6" MOTOR STANDARD, 7.5-60 HP/3450 RPM.
8" MOTOR STANDARD, 75 HP/3525 RPM.
* Alternate motor sizes available.

Performance conforms to ISO 9906 Annex A
@ 5 ft. min. submergence.

ATTACHMENT

WATER SYSTEM PLANS
FOR
LOST CREEK ESTATES
SECTION 3, TOWNSHIP 51 NORTH, RANGE 5 WEST,
KOOTENAI COUNTY, IDAHO,
MAY 2005



VICINITY MAP

WATER SPECIFICATIONS

GENERAL

THE CONTRACTOR SHALL GUARANTEE ALL MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FOLLOWING FINAL APPROVAL BY THE ENGINEER DAMAGE DUE TO SETTLEMENT UNDER ROADWAYS SHALL BE GUARANTEED FOR A PERIOD OF TWO YEARS FROM FINAL APPROVAL. ALL WORK SHALL BE GOVERNED BY THE LATEST EDITION OF THE SPECIFICATIONS FOR IDAHO STANDARDS FOR PUBLIC WORKS CONSTRUCTION, AND BE SUBJECT TO THE APPROVAL OF THE IDAHO DEPARTMENT OF HEALTH & WELFARE, AND THE NORTHERN LAKES FIRE PROTECTION DISTRICT THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL EXISTING UTILITIES ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED AS SOON AS POSSIBLE AND AT THE CONTRACTOR'S EXPENSE.

PIPE, FITTINGS & VALVES

POLYVINYL CHLORIDE (PVC) PIPE FOR MAIN LINES SHALL CONFORM TO THE REQUIREMENTS OF AWWA C-900 CLASS 150 PVC OR C-905-150 PVC. PIPE JOINTS SHALL BE STANDARD RUBBER RING. FITTINGS SHALL BE CAST IRON FLANGE AND MECHANICAL JOINT AS SHOWN ON THE PLANS OR APPROVED EQUAL VALVES SHALL BE RESILIENT SEAT GATE VALVES CORRESPONDING TO ISPWC SPECIFICATION 402 AND SHALL HAVE CAST IRON VALVE BOXES AND LIDS ALL MECHANICAL JOINTS LESS THAN 10 FEET APART SHALL BE TIED TOGETHER WITH (2) ¾" PLATED ALL THREAD RODS. THE BOTTOM OF T'S, CROSSES, AND VALVES SHALL BE SUPPORTED BY A CONCRETE PAD ALL MATERIALS SHALL BE NEW, AWWA APPROVED AND OF U.S. ORIGIN INSTALL PROPERLY SIZED TRUST BLOCKS AT ALL BENDS, TEES AND CAPS. PLACE 2 CU. FT. OF WASHED ROCK AROUND THE BOTTOM OF ALL VALVES. ALL VALVES AND FITTINGS SHALL BE WRAPPED IN POLYETHYLENE PRIOR TO CONCRETE PLACEMENT ALL EQUIPMENT IN CONTACT WITH DRINKING WATER MUST BE LISTED UNDER NSF STANDARD 61

SERVICES

SERVICES SHALL BE INSTALLED TO EACH LOT AS NOTED ON THE PLAN AND DETAIL SHEET THE END OF THE SERVICE LINE SHALL BE MARKED BY A TEN FOOT LENGTH OF #2 REBAR (1/4") BEND INTO A "U" AND BURIED WITH AN EIGHT FOOT WOODEN 2" X 4" THE REBAR SHALL BE PLACED VERTICALLY TO A POINT SIX INCHES BELOW THE GROUND SURFACE AND THE 2" X 4" PLACED VERTICALLY ALONGSIDE WITH FIVE FEET BURIED AND THREE FEET STICKING OUT OF THE GROUND. THE EXPOSED PORTION SHALL BE PAINTED A BRIGHT BLUE.

(AB) NO REBAR PROVIDED ON 2 X 4

TRENCHING, TESTING, DISINFECTION

CONSTRUCTION SHALL BE IN ACCORDANCE WITH SECTION 300 AND SECTION 400 OF THE IDAHO STANDARDS FOR PUBLIC WORKS CONSTRUCTION PIPE BEDDING AND BACKFILL MEETING THE REQUIREMENTS OF SECTION 305 SHALL BE REQUIRED FOR THE ENTIRE LENGTH OF PIPE LAID THE CONTRACTOR IS RESPONSIBLE TO SECURE ALL PERMITS REQUIRED AND INCLUDE ANY ASSOCIATED FEES IN BID AMOUNT HYDROSTATIC TESTING AND DISINFECTION WILL BE IN ACCORDANCE WITH SECTION 401 OF THE SPECIFICATIONS (PRESSURE TEST SHALL BE AT 150 PSI FOR 2 HOURS) MINIMUM DEPTH OF COVER TO THE TOP OF THE PIPE SHALL BE FIVE FEET CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE PUBLIC SAFETY REGULATIONS TRAFFIC CONTROL AND SIGNING SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES ALL PIPE SHALL BE BEDDED WITH APPROVED MATERIAL TO A THICKNESS OF 6" ON SIDES AND BOTTOM, AND 12" ON TOP ALL PIPES SHALL HAVE A MINIMUM COVER OF 5 FEET FROM TOP OF PIPE TO FINISHED GRADE

NOTIFICATIONS & INSPECTIONS

THE CONTRACTOR SHALL PROVIDE A CONSTRUCTION SCHEDULE AND PROVIDE AT LEAST 24 HOURS NOTICE TO THE ENGINEER BEFORE ANY BACKFILLING, DISINFECTION, OR HYDROSTATIC TESTING. THE CONTRACTOR SHALL NOTIFY THE NORTHERN LAKES FIRE PROTECTION DISTRICT AT LEAST 24 HOURS PRIOR TO THE INSTALLATION OR TESTING OF ANY FIRE HYDRANTS FIRE DISTRICT APPROVAL SHALL BE REQUIRED PRIOR TO BACKFILLING NO PIPING OR FITTINGS SHALL BE BACKFILLED PRIOR TO INSPECTION AND APPROVAL BY THE ENGINEER

PLAN INDEX

SHEET	DESCRIPTION
1..........	COVER SHEET
2..........	MASTER WATER PLAN (INCLUDES PHASE 1 & PHASE 2 AS-BUILT INFORMATION, PHASE 3 NOT CONSTRUCTED)
3.........	DETAILS (PHASE 1 AS-BUILT INFORMATION)
4..........	RESERVOIR (PHASE 1 AS-BUILT INFORMATION)
5..........	WELL/BOOSTER SYSTEM (WELL - PHASE 1 AS-BUILT INFORMATION) (BOOSTER SYSTEM - PART OF PHASE 3 NOT CONSTRUCTED)

BOOSTER - SUPPLEMENTAL SHEET FOR BOOSTER SYSTEM SPECIFICATIONS AND DETAIL.

RECORD DRAWING NOTE:
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PH1(AB) AS BUILT INFORMATION-PHASE I
PH2(AB) AS BUILT INFORMATION-PHASE II

RECORD DRAWING
PHASE 1 - JANUARY, 2007
PHASE 2 - JULY, 2013

CALL BEFORE YOU DIG
1-800-428-4950
48 HOURS PRIOR TO ANY WORK

NO.	DATE	REVISION
1	10-05	PER DEQ COMMENTS
2	1-10-07	PHASE 1 AS-BUILTS
3	5-10-07	REVISIONS PER D.E.Q. COMMENTS
4	7-23-13	PHASE 2 AS-BUILTS

DESIGN BY
JAS
DRAWN BY
JAN
CHECKED BY
JAS
PLOT DATE
12/30/13

[illegible]

FRAME & SMETANA, PA
Consulting Engineers
603 North 4th Street, Coeur d'Alene, Idaho, 83814
Ph.(208)664-2121/Fax 765-5502
Email smetana@roadrunner.com

LOCATION
LOST CREEK ESTATES
WINCH ROAD, KOOTENAI COUNTY, IDAHO

SHEET TITLE
WATER SYSTEM PLANS
COVER SHEET

SECTION-TOWNSHIP-RANGE
3-51N-5W

PROJECT NO.
L116

CAD FILE
L116-COVER

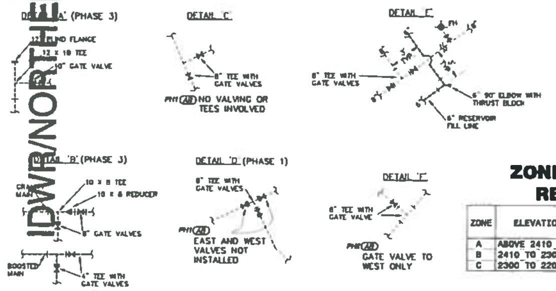
DRAWING NO
1 OF 5

RECEIVED
MAR 2 4 2017
IDWR/NORTHERN

ATTACHMENT

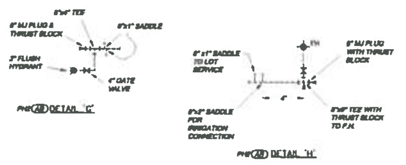
LOST CREEK ESTATES
MASTER WATER PLAN

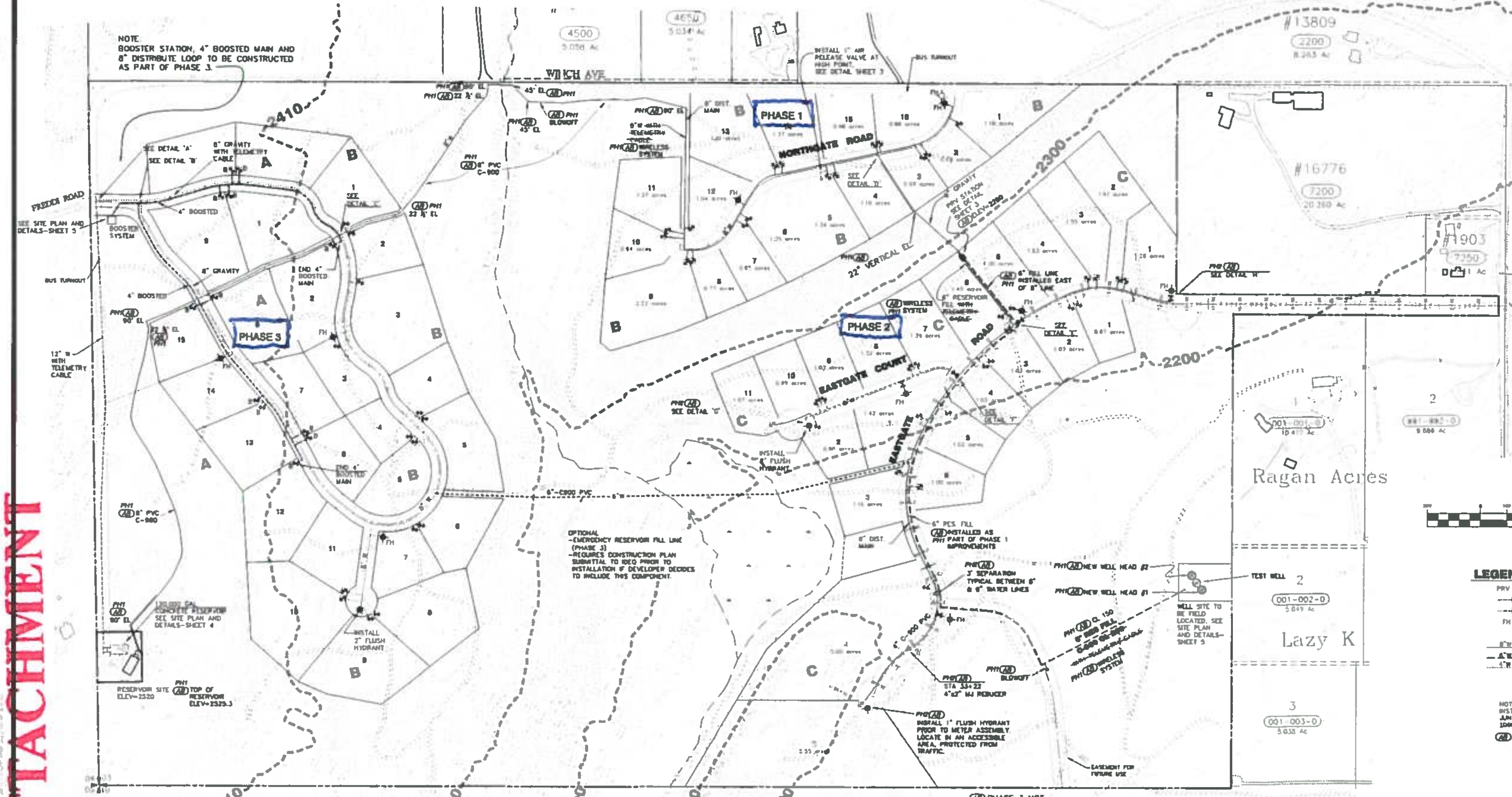
SECTION 3, TOWNSHIP 51 NORTH, RANGE 5 WEST, B.M.,
KOOTENAI COUNTY, IDAHO,



ZONE PRESSURE SUMMARY
RESERVOIR ELEV 2520

ZONE	ELEVATION	PRESSURE RANGE
A	ABOVE 2410	FROM BOOSTER PUMP STATION 65 TO 85 psi
B	2410 TO 2300	GRAVITY FROM RESERVOIR 48 psi TO 95 psi
C	2300 TO 2200	PRV ELEVATION 2260 (104 psi)-50 psi TO 85 psi


8"x8" TEE
8" MJ PLUG & THRUST BLOCK
8"x1" SADDLE
2" FLUSH HYDRANT
4" GATE VALVE
DETAIL 'G'
8"x1" SADDLE TO LOT SERVICE
FH
8" MJ PLUG WITH THRUST BLOCK
8"x2" SADDLE FOR IRRIGATION CONNECTION
8"x8" TEE WITH THRUST BLOCK TO F.H.
DETAIL 'H'


NOTE
BOOSTER STATION, 4" BOOSTED MAIN AND 8" DISTRIBUTE LOOP TO BE CONSTRUCTED AS PART OF PHASE 3
WHICH AVE
NORTHGATE ROAD
EASTGATE COURT
FREDDI ROAD
22" VERTICAL EL
PHASE 1
PHASE 2
PHASE 3
2410
2300
2200
A
B
C
#13809
#16776
#1903
Ragan Acres
Lazy K
TEST WELL
001-002-0
001-003-0
WELL SITE TO BE FIELD LOCATED. SEE SITE PLAN AND DETAILS-SHEET 5
OPTIONAL
-EMERGENCY RESERVOIR FILL LINE (PHASE 3)
-REQUIRES CONSTRUCTION PLAN SUBMITTAL TO IDEQ PRIOR TO INSTALLATION IF DEVELOPER DECIDES TO INCLUDE THIS COMPONENT.
RESERVOIR SITE ELEV=2520
TOP OF RESERVOIR ELEV=2525.3
INSTALL 2" FLUSH HYDRANT
INSTALL 1" FLUSH HYDRANT PRIOR TO METER ASSEMBLY. LOCATE IN AN ACCESSIBLE AREA, PROTECTED FROM TRAFFIC.
NEW WELL HEAD #2
NEW WELL HEAD #1
EASEMENT FOR FUTURE USE
BUS TURNOUT
TURN LANE

PHASE 3 NOT CONSTRUCTED

GRAPHIC SCALE
(IN FEET)
1 inch = 200 ft

LEGEND

- PRV ■ PRESSURE REDUCING VALVE STATION (PRV)
- WATER SERVICE CONNECTED TO BOOSTED MAIN
- WATER SERVICE CONNECTED TO GRAVITY MAIN
- FH FIRE HYDRANT
- WATER VALVE
- 8" WATER MAIN
- 6" RESERVOIR FILL LINE
- WATER MAIN, FUTURE PHASE
- ■ FLUSH HYDRANT

NOTE
INSTALL TELEMETRY ~~CABLE~~
JUNCTION ~~BOX AT~~ APPROXIMATELY
~~1000 FT~~ INTERVALS

(AB) SPREAD SPECTRUM WIRELESS SYSTEM INSTALLED

PH1(AB) AS BUILT INFORMATION-PHASE I
PH2(AB) AS BUILT INFORMATION-PHASE II

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RECORD DRAWING
PHASE 1 - JANUARY, 2007
PHASE 2 - JULY, 2013

NO.	DATE	REVISION
1	10-05	PER IDEQ COMMENTS
2	1-10-07	PHASE 1 AS-BUILTS
3	3-10-07	REVISIONS PER DEQ COMMENTS
4	8-8-13	PHASE 2 AS-BUILTS
5	3-18-16	UPDATE PHASE 3 LAYOUT

3-18-16
RUSSELL D. HELGESON

DESIGN BY JAB
DRAWN BY DWJ
CHECKED BY RDH
PLOT DATE 3/18/16

FRAME & SMETANA, PA
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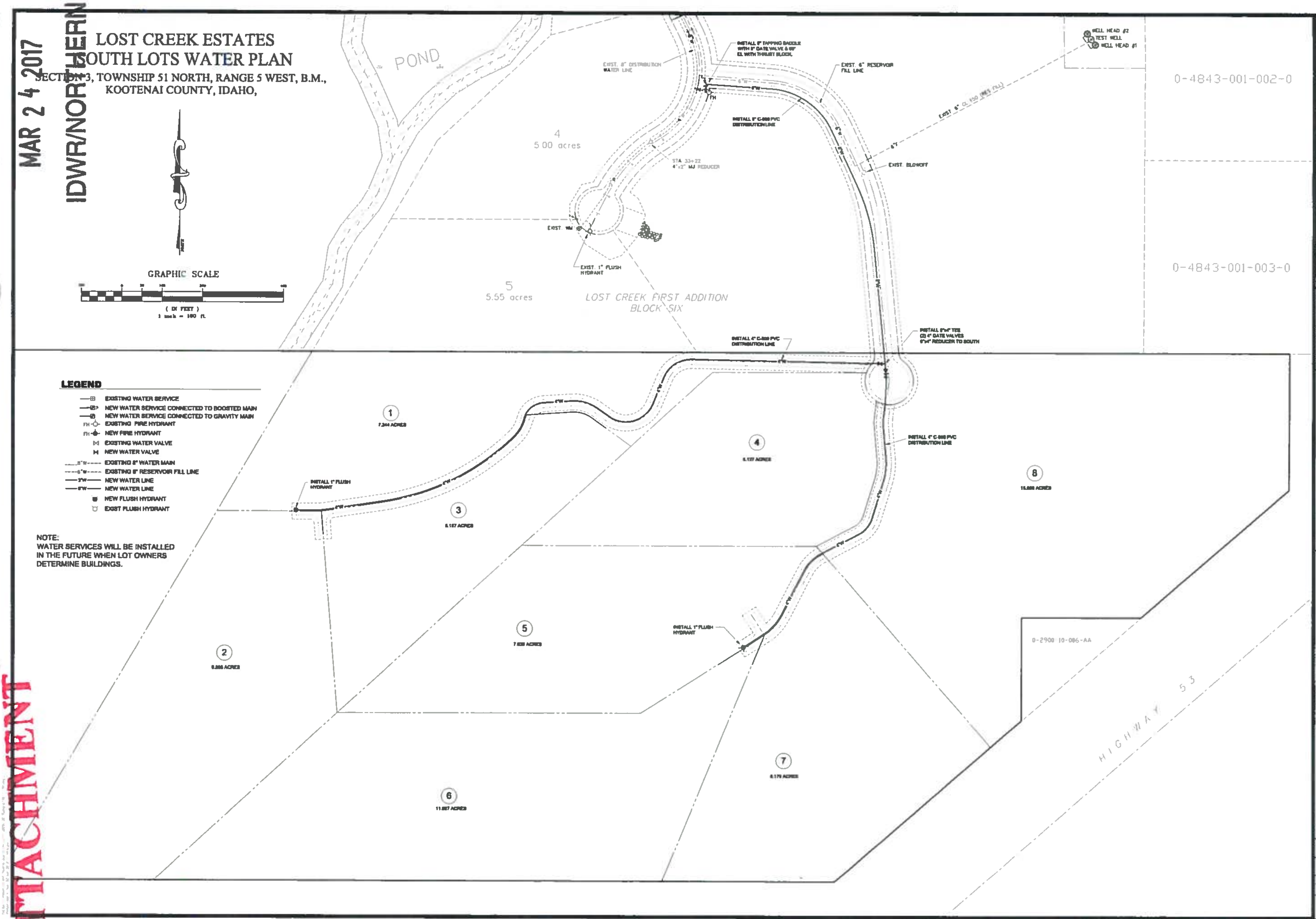
803 North 4th Street, Coeur d'Alene, Idaho, 83814
Ph. (208)664-3121/Fax 765-5822
Email:smetana@roadrunner.com

LOCATION: LOST CREEK ESTATES
KOOTENAI COUNTY, IDAHO
SHEET TITLE: MATSER WATER PLAN
SECTION-TOWNSHIP-RANGE 3-51N-5W
PROJECT NO. L118
CAD FILE L118-AB-2016
DRAWING NO 2 of 5

LOST CREEK ESTATES
SOUTH LOTS WATER PLAN

SECTION 3, TOWNSHIP 51 NORTH, RANGE 5 WEST, B.M.,
KOOTENAI COUNTY, IDAHO,



LEGEND

—⊞	EXISTING WATER SERVICE
—⊞	NEW WATER SERVICE CONNECTED TO BOOSTED MAIN
—⊞	NEW WATER SERVICE CONNECTED TO GRAVITY MAIN
FH ○	EXISTING FIRE HYDRANT
FH ●	NEW FIRE HYDRANT
⋈	EXISTING WATER VALVE
⋈	NEW WATER VALVE
----8"W----	EXISTING 8" WATER MAIN
----6"W----	EXISTING 6" RESERVOIR FILL LINE
——3"W——	NEW WATER LINE
——8"W——	NEW WATER LINE
●	NEW FLUSH HYDRANT
○	EXIST FLUSH HYDRANT

NOTE:
WATER SERVICES WILL BE INSTALLED
IN THE FUTURE WHEN LOT OWNERS
DETERMINE BUILDINGS.

NO.	DATE	REVISION

3-22-16

DESIGN BY RDH
DRAWN BY DWJ
CHECKED BY RDH
PLOT DATE 03/22/16

FRAME & SMETANA, PA
Consulting Engineers

LOCATION: LOST CREEK ESTATES
KOOTENAI COUNTY, IDAHO

SHEET TITLE: SOUTH LOTS WATER PLAN

SECTION-TOWNSHIP-RANGE
3-51N-5W

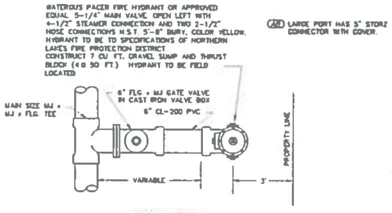
PROJECT NO.
L116

CAD FILE
L116 SOUTH

DRAWING NO.
2 OF 3

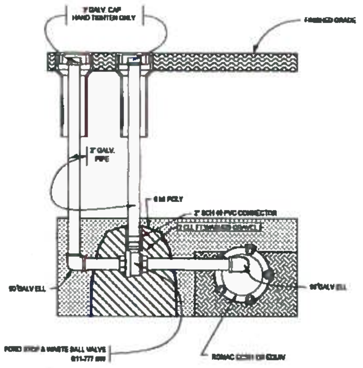
ATTACHMENT

ATTACHMENT


WATEROUS PACER FIRE HYDRANT OR APPROVED EQUAL 5-1/4" MAIN VALVE OPEN LEFT WITH 4-1/2" STEAMER CONNECTION AND TWO 2-1/2" HOSE CONNECTIONS N.S.T. 5'-6" BURY, COLOR YELLOW. HYDRANT TO BE TO SPECIFICATIONS OF NORTHERN LAKES FIRE PROTECTION DISTRICT CONSTRUCT 7 CU FT. GRAVEL SUMP AND THRUST BLOCK (4.0 SQ FT.) HYDRANT TO BE FIELD LOCATED
AB LARGE PORT HAS 5" STORZ CONNECTOR WITH COVER.
MAIN SIZE MJ x MJ x FLG. TEE
6" FLG x MJ GATE VALVE IN CAST IRON VALVE BOX
6" CL-200 PVC
PROPERTY LINE
VARIABLE
3'

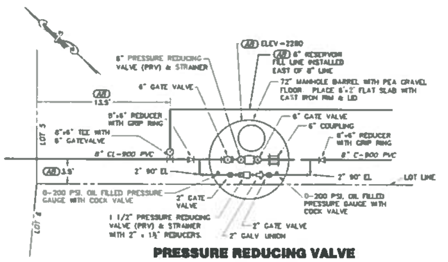
TYPICAL FIRE HYDRANT DETAIL

N.T.S.

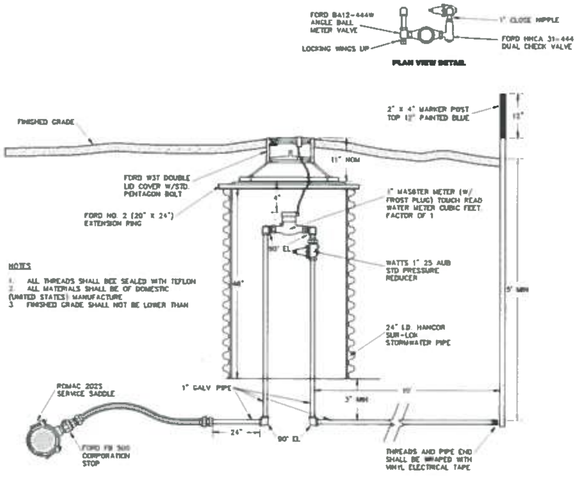


2" FLUSH HYDRANT

N.T.S.


AB ELEV = 2280
AB 6" RESERVOIR FILL LINE INSTALLED EAST OF 8" LINE
6" PRESSURE REDUCING VALVE (PRV) & STRAINER
6" GATE VALVE
72" MANHOLE BARREL WITH PEA GRAVEL FLOOR. PLACE 8'x2' FLAT SLAB WITH CAST IRON RIM & LID
AB 13.5'
8"x6" REDUCER WITH GRIP RING
6" GATE VALVE
6" COUPLING
8"x6" TEE WITH 6" GATEVALVE
8"x6" REDUCER WITH GRIP RING
8" CL-900 PVC
8" C-900 PVC
LOT 5
AB 3.5'
2" 90° EL
2" 90° EL
LOT LINE
0-200 PSI. OIL FILLED PRESSURE GAUGE WITH COCK VALVE
2" GATE VALVE
0-200 PSI. OIL FILLED PRESSURE GAUGE WITH COCK VALVE
1 1/2" PRESSURE REDUCING VALVE (PRV) & STRAINER WITH 2" x 1½" REDUCERS.
2" GATE VALVE
2" GALV UNION
LOT 4

PRESSURE REDUCING VALVE STATION

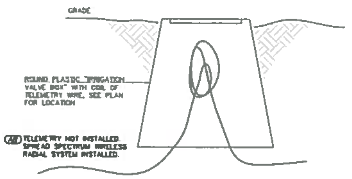

FORD BA12-444W ANGLE BALL METER VALVE
1" CLOSE NIPPLE
FORD HHCA 31-444 DUAL CHECK VALVE
LOCKING WINGS UP
PLAN VIEW DETAIL
2" x 4" MARKER POST TOP 12" PAINTED BLUE
12"
FINISHED GRADE
11" NOM
FORD W3T DOUBLE LID COVER W/STD. PENTAGON BOLT
FORD NO. 2 (20" x 24") EXTENSION RING
4"
1" MASTER METER (W/ FROST PLUG) TOUCH READ WATER METER CUBIC FEET FACTOR OF 1
90° EL
WATTS 1" 25 AUB STD PRESSURE REDUCER
48"
5' MIN
24" I.D. HANCOR SUR-LOK STORMWATER PIPE
ROMAC 202S SERVICE SADDLE
1" GALV PIPE
3" MIN
24"
90° EL
FORD FB 500 CORPORATION STOP
THREADS AND PIPE END SHALL BE WRAPED WITH VINYL ELECTRICAL TAPE

NOTES

1. ALL THREADS SHALL BEE SEALED WITH TEFLON
2. ALL MATERIALS SHALL BE OF DOMESTIC (UNITED STATES) MANUFACTURE
3. FINISHED GRADE SHALL NOT BE LOWER THAN

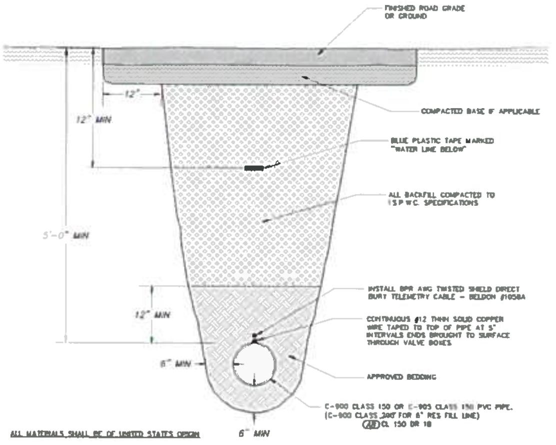
DOMESTIC SERVICE DELIVERY (1")

N.T.S.


GRADE
ROUND PLASTIC "IRRIGATION VALVE BOX" WITH COIL OF TELEMETRY WIRE, SEE PLAN FOR LOCATION
AB TELEMETRY NOT INSTALLED. SPREAD SPECTRUM WIRELESS RADIAL SYSTEM INSTALLED.

TELEMETRY JUNCTION BOX DETAIL

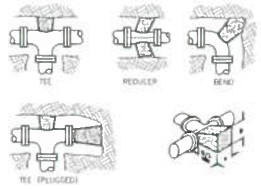
N.T.S.


FINISHED ROAD GRADE OR GROUND
12"
12" MIN
COMPACTED BASE IF APPLICABLE
BLUE PLASTIC TAPE MARKED "WATER LINE BELOW"
ALL BACKFILL COMPACTED TO I.S.P.W.C. SPECIFICATIONS
5'-0" MIN
12" MIN
INSTALL 8PR AWG TWISTED SHIELD DIRECT BURY TELEMETRY CABLE - BELDON #1058A
CONTINUOUS #12 THHN SOLID COPPER WIRE TAPED TO TOP OF PIPE AT 5' INTERVALS ENDS BROUGHT TO SURFACE THROUGH VALVE BOXES
6" MIN
APPROVED BEDDING
C-900 CLASS 150 OR C-905 CLASS 150 PVC PIPE. (C-900 CLASS 200 FOR 6" RES FILL LINE) AB CL 150 DR 18
6" MIN

ALL MATERIALS SHALL BE OF UNITED STATES ORIGIN

STANDARD FOR PIPELINE INSTALLATION (TYPICAL CROSS SECTION)

N.T.S.

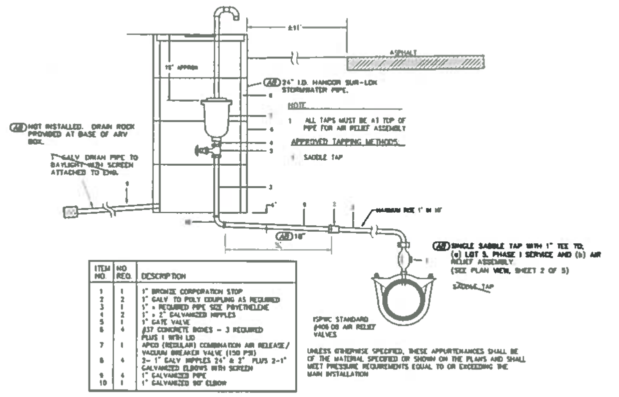


FITTING SIZES	TEES & PLUGS		90° BEND		45° BEND & WYES		REDUCERS & 22-1/2° BEND	
	A	B	A	B	A	B	A	B
4	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

BASED ON 2000 PSF SOIL BEARING AND 150 PSI TEST PRESSURE ALL THRUST BLOCKING SHALL BE CAST AGAINST UNDISTURBED OR CAREFULLY COMPACTED SOIL. THRUST BLOCKS SHALL BE FORMED AND PLACED SUCH THAT FLANGE BOLTS ARE CLEAR. NO CONCRETE SHALL BEAR AGAINST THE PIPE.

THRUST BLOCK DETAIL

N.T.S.


±11'
ASPHALT
18" APPROX
AB 24" I.D. HANCOR SUR-LOK STORMWATER PIPE.
AB NOT INSTALLED. DRAIN ROCK PROVIDED AT BASE OF ARV BOX.
1" GALV DRAIN PIPE TO DAYLIGHT WITH SCREEN ATTACHED TO END.
MAXIMUM RISE 1" IN 10'
AB 10'
AB SINGLE SADDLE TAP WITH 1" TEE TO; (a) LOT 5, PHASE I SERVICE AND (b) AIR RELIEF ASSEMBLY (SEE PLAN VIEW, SHEET 2 OF 5)
SADDLE TAP
ISPWC STANDARD #406.00 AIR RELIEF VALVES

NOTE

1. ALL TAPS MUST BE AT TOP OF PIPE FOR AIR RELIEF ASSEMBLY

APPROVED TAPPING METHODS:

1. SADDLE TAP

ITEM NO.	NO REQ.	DESCRIPTION
1	1	1" BRONZE CORPORATION STOP
2	2	1" GALV. TO POLY COUPLING AS REQUIRED
3	1	1" x REQUIRED PIPE SIZE POYETHELENE
4	2	1" x 2" GALVANIZED NIPPLES
5	1	1" GATE VALVE
6	4	#37 CONCRETE BOXES - 3 REQUIRED PLUS 1 WITH LID
7	1	APCO (REGULAR) COMBINATION AIR RELEASE/ VACUUM BREAKER VALVE (150 PSI)
8	4	2- 1" GALV NIPPLES 24" & 2" PLUS 2-1" GALVANIZED ELBOWS WITH SCREEN
9	4	1" GALVANIZED PIPE
10	1	1" GALVANIZED 90° ELBOW

UNLESS OTHERWISE SPECIFIED, THESE APPURTENANCES SHALL BE OF THE MATERIAL SPECIFIED OR SHOWN ON THE PLANS AND SHALL MEET PRESSURE REQUIREMENTS EQUAL TO OR EXCEEDING THE MAIN INSTALLATION

1" AIR RELIEF ASSEMBLY

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AB AS BUILT INFORMATION - PHASE I

RECORD DRAWING
JANUARY, 2007

NO	DATE	REVISION
1	10-05	PER IDEQ COMMENTS
2	1-10-07	PHASE 1 AS-BUILTS

DESIGN BY
JAS
DRAWN BY
JAN
CHECKED BY
JAS
PLOT DATE
12/30/13

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FRAME & SMETANA, PA
Consulting Engineers
603 North 4th Street, Coeur d'Alene, Idaho, 83814
Ph (208)664-2121/Fax 765-5502
Email smetana@roadrunner.com

LOCATION
LOST CREEK ESTATES
WINCH ROAD, KOOTENAI COUNTY, IDAHO

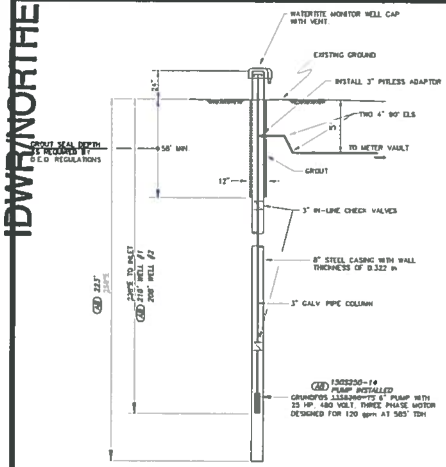
SHEET TITLE
DETAIL SHEET

SECTION-TOWNSHIP-RANGE
3-51N-5W
PROJECT NO.
L116
CAD FILE
L116-DET
DRAWING NO
3 OF 5

ATTACHMENT

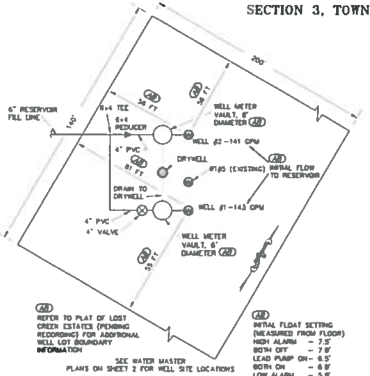
WELL AND BOOSTER SYSTEM DETAILS FOR LOST CREEK ESTATES

SECTION 3, TOWNSHIP 51 NORTH, RANGE 5 WEST, B.M., KOOTENAI COUNTY, IDAHO


WATERTITE MONITOR WELL CAP WITH VENT
EXISTING GROUND
INSTALL 3" PITLESS ADAPTOR
24"
TWO 4" 90° ELS
TO METER VAULT
GROUT SEAL DEPTH AS REQUIRED BY D.E.Q. REGULATIONS
58' MIN.
GROUT
12"
3" IN-LINE CHECK VALVES
8" STEEL CASING WITH WALL THICKNESS OF 0.322 in
3" GALV PIPE COLUMN
AB 225'
AB 210' WELL #1
208' WELL #2
PUMP TO INLET
AB 1303250-14 PUMP INSTALLED
GRUNDFOS 1358300-T5 6" PUMP WITH 25 HP, 480 VOLT, THREE PHASE MOTOR DESIGNED FOR 120 gpm AT 585' TDH

WELL SECTION VIEW

N.T.S.



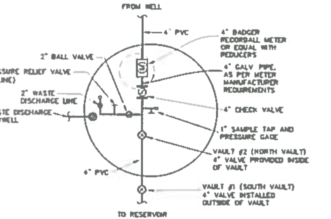
AB REFER TO PLAT OF LOST CREEK ESTATES (PENDING RECORDING) FOR ADDITIONAL WELL LOT BOUNDARY INFORMATION

AB INITIAL FLOAT SETTING (MEASURED FROM FLOOR)
HIGH ALARM - 7.5'
BOTH OFF - 7.0'
LEAD PUMP ON - 6.5'
BOTH ON - 6.0'
LOW ALARM - 5.0'
BOOSTER OFF - 2.0'
(LOW WATER PROTECTION)

SEE WATER MASTER PLANS ON SHEET 2 FOR WELL SITE LOCATIONS

AB TYPICAL WELL SITE

1"=30'


FROM WELL
4" PVC
4" BADGER RECORDALL METER OR EQUAL WITH REDUCERS
2" BALL VALVE
PRESSURE RELIEF VALVE (1" LINE)
4" GALV PIPE, AS PER METER MANUFACTURER REQUIREMENTS
2" WASTE DISCHARGE LINE
4" WASTE DISCHARGE TO DRYWELL
4" CHECK VALVE
1" SAMPLE TAP AND PRESSURE GAGE
VAULT #2 (NORTH VAULT) 4" VALVE PROVIDED INSIDE OF VAULT
4" PVC
VAULT #1 (SOUTH VAULT) 4" VALVE INSTALLED OUTSIDE OF VAULT
TO RESERVOIR FILL LINE

WELL METER VAULT AB

N.T.S.

NOTE: USE TWO VAULTS OR ONE LARGE VAULT FOR COMBINED VALVING

AB TWO VAULTS INSTALLED

AB NO TELEMETRY (WIRELESS SYSTEM INSTALLED)

WELL PUMP SYSTEM AND VALVING

CODES, ORDINANCES, AND LOCAL SPECIFICATIONS

All work under this project shall be performed in strict compliance with the rules and regulations of the National Board of Fire Underwriters and all other codes and ordinances of the local and state authorities. Where any conflict occurs between these plans and specifications and the local codes and ordinances in effect at the time, such codes and ordinances shall take precedence over these plans and specifications, only if these plans and specifications are inferior as to materials and workmanship called for by such codes and ordinances.

SUBMITTALS

Submit sufficient descriptive literature to demonstrate compliance with these specifications including:

-Shop drawings for electrical service and control panel
-Pump curves defining full range of pump performance, efficiency and horsepower
-Equipment operation, maintenance, and repair literature (3 copies)

GENERAL

All materials shall be new and shall meet state standards and be subject to the approval of the Owners. Piping, valves, and fittings shall be Class 125, or equal, unless otherwise noted. All exposed steel and cast iron pipe and fittings shall be painted with an approved rust preventative primer and enamel according to the manufacturer's recommendations. The Contractor shall be responsible for locating and protecting all existing utilities. Any damage to existing utilities shall be repaired as soon as possible and at the Contractor's expense.

SCOPE.

The Contractor shall furnish all labor, materials, tools, equipment, and services necessary to furnish and install a well pumping system, electrical equipment, meter and valving vault assembly, and accessories necessary for a complete and workable installation according to the intent of the plan drawings and specifications.

WELL PUMP AND MOTOR UNIT

The Contractor shall provide and install the submersible pumps and motors as shown on the plans.

PIPE FITTINGS AND VALVES.

The well pump installation and meter vault assembly shall include pipe, valves, and fittings installed as shown on the plan sheet.

TELEMETRY

Contractor shall provide the necessary materials, labor, and equipment to connect the telemetry cable to the new well pump controls for operation as described below. Submit wiring diagram and system description for review and approval.

AS-BUILT INFORMATION

The Contractor shall submit to the Engineer a complete set of as-constructed drawings showing all information regarding size, location, position, etc. of materials installed which vary from the original plan drawings.

An operation and maintenance manual shall be provided including information on all equipment used in the wells, meter vaults and booster station.

ELECTRICAL

All work to conform to the requirements of the National Electrical Code. The Contractor shall submit shop drawings for approval showing the proposed equipment to be used and a control circuit diagram for the well pump. The Contractor shall submit to the Engineer documentation of approval by the electrical inspector.

(a) ELECTRICAL PANEL. The electrical panel shall include, but not be limited to the following equipment:

-Required service
-Disconnects
-Motor starter panel
-H O A switch
-Conduit and wireways
-Telemetry controls
-Duplex receptacle
-Lightning arrestor
-Elapse time hour meter
-Duplex alternator
-Solid State BW sensor 24 volt
-Transformer
-Phase monitor

(b) WELL PUMP CONTROL. The lead well pump shall start when the reservoir level drops to the well pump-on float and shut off when the level reaches the well pump-off float (reservoir full). The well pumps shall alternate each cycle. If the water level in the reservoirs drops to the both pumps ON position, then both well pumps shall run until the water level reaches the pump-off float. Low and high water alarm floats shall be installed for remote notification at the well site and at the booster site.

CLEANING UP

Upon completion of the work, the Contractor shall remove from the vicinity of the work all plant, buildings, rubbish, unused materials, and other like material belonging to him or used under his direction during construction, and in the event of his failure to do so, the same may be removed by the Owner, at the expense of the Contractor.

INSPECTION, START-UP AND TESTING.

The Contractor shall notify the Owner's Engineer at least 24 hours in advance of any required inspections. Items requiring inspection include, but are not limited to, concrete forming and steel placement, concrete pouring, materials installed prior to burial, and testing performed. During the pump system start-up, the Contractor shall be required to demonstrate the proper operation electrically and mechanically of the well pumping system. The Contractor shall perform a certified well test as required by the Idaho Regulations for Public Water Systems. All pressure pipe, fittings, and valves shall be tested at a minimum of 200 psi for at least one hour. Allowable leakage shall be as determined by the Engineer based on accepted standards.

DISINFECTION

All pipe, valves, and fittings shall be clean of foreign debris prior to and during installation. The Contractor shall thoroughly flush all pipe, valves, fittings, and equipment after installation. All pipe, valves, fittings, and equipment shall be disinfected with a minimum 50 ppm chlorine solution for at least 24 hours. After chlorination, the system shall be thoroughly flushed. The Contractor shall be responsible for all water necessary for construction and testing.

REGULATIONS:

The Idaho Regulations for Public Drinking Water Systems and Idaho Standards for Public Works Construction shall be adopted for this project, and by reference, shall be made a part of these specifications.

The Contractor shall conform to all requirements especially those regulating well construction, testing, and ground water source completion. Equipment and/or materials, including drilling fluids, used in well construction shall meet NSF Standard 61.

TECHNICAL SPECIFICATIONS-NEW WELL CONSTRUCTION

(prepared by Quantum Engineering and Geologic Consulting, Jim DeSmet, P.E.)

1. TECHNICAL SPECIFICATIONS-GENERAL

1.1 Scope

These Specifications cover the complete drilling, casing, development, screening, and testing of two production wells for Lost Creek Estates located near Hauser, Idaho, hereafter referred to as the OWNER. The sequencing of operations is as follows:

The CONTRACTOR shall drill and install the required casing for two 8-inch wells. The wells will be drilled to approximately 250-feet of depth and pump tested to determine the capacity of the well. The wells will be drilled in the location as shown on the attached site vicinity and the well lot site plan. The well location and the well lot will be staked by Noble Engineering prior to drilling. Upon completion of drilling of the well, the CONTRACTOR, in consultation with the ENGINEER, shall determine the required screened intake zone for the wells. The CONTRACTOR shall then install the required screened interval(s) and then proceed with development and testing of the well as specified in this specification.

1.2 Location

The OWNER and the ENGINEER have determined the location of the new production well. The well driller shall use the location as shown on the attached preliminary plat/well lot plan and as staked in the field by Noble Engineering. The CONTRACTOR shall confine his disturbance to the smallest possible area. Upon completion of drilling, the well shall be incorporated into a dedicated well lot that shall provide fee simple title for the life of the well and contain a minimum 50-foot radius around the wellheads. This dedicated well lot and the well locations shall be surveyed and recorded with the plat. The dedicated well lot will be developed around the existing test well (#1/#5)

1.3 Minimum Well Construction Standards

The CONTRACTOR shall be required to conform to the applicable portions of the Minimum Well Construction Standards established by the State of Idaho Department of Water Resources. Well installations must also meet minimum requirements of the Recommended Standards for Water Works (10 State Standards, 1997 Edition) and Idaho Rules for Public Drinking Water Systems, IDAPA 58.01.08.

1.4 Drilling Log and Samples

The CONTRACTOR shall keep a log of the drilling that shows the following:

1. Depth, thickness, type, and general character and drilling characteristics of each material encountered.
2. Depth and thickness of each water-bearing zone encountered.
3. Depth of fluid level in the hole at the beginning and end of each drilling day and any appreciable changes in fluid level during drilling.
4. Direction of air circulation (if any) into or out of hole.
5. Volume of drilling water added.
6. Time and duration of all shutdown and standby periods with reasons therefore.
7. Description of casing and other materials used and position in well.

The log shall be carefully and accurately kept, with entries made in sequence, so that each may be correlated with the depth of the hole at that time. It shall be complete at the end of each drilling day and shall be open to inspection at any time during the work. Two (2) complete typewritten copies of the log shall be furnished to the ENGINEER within fifteen (15) days after completion of the work.

Formations shall be sampled every 10 feet, every change in formation, or as required by the ENGINEER. The CONTRACTOR shall save formation samples and label them for evaluation by the ENGINEER. (All samples shall be properly bagged labeled and correlated to the log.)

1.5 Licenses

In addition to the other licensing requirements specified in the OWNER/CLIENT contract documents, the CONTRACTOR shall have a valid Well Drilling License issued by the State of Idaho Department of Water Resources.

1.6 Abandonment

In the event that the CONTRACTOR fails to complete the well to the depth specified, or should he abandon the well because of loss of tools, equipment or for any other cause, or if the well shall fail to meet the requirements for plumb and alignment set forth, the CONTRACTOR shall abandon the well. The CONTRACTOR shall fill the abandoned well with clay and remove such casing as can be salvaged. Abandonment shall be done according to the Well Construction Standards developed by the Idaho Department of Water Resources. All salvaged casing or materials furnished by the CONTRACTOR shall remain his property.

The cost of abandonment of the well, including filling, shall be done solely by the CONTRACTOR on the abandoned well.

2. DRILL WELL, INSTALL AND GROUT CASING

2.1 Scope

This section includes the work necessary for the drilling of the well and for the installation of the well casing and the grouting of the surface seal. The work includes, but is not limited to, the mobilization required to bring the drilling equipment to the site, furnish and install all materials, equipment, labor required to drill the well and to construct the casing including, the necessary grouting of the casing, final site cleanup and demobilization.

It is estimated that the drilling will be in a variety of formations consisting of overburden, sand and gravel formations of the Rathdrum Aquifer and gneiss. Drilling is anticipated to a depth of approximately 250 feet bgs. Target water bearing formations are anticipated at depths of 150-225 feet bgs.

The OWNER and or his authorized representative reserve the right to cease drilling at his sole discretion.

2.2 Materials

1. Permanent Casing. The well, when completed, shall be cased with nominal eight (8) inch diameter steel casing which shall extend from two (2) feet above ground surface to a depth in excess of the depth of the water bearing formations are encountered. The nominal eight (8) inch diameter casing shall have a minimum wall thickness of at least 0.322 inches. Well casing shall conform to AWWA A-100 or ASTM A-53.

2. Bentonite Grout. Bentonite grout shall be installed in the annular space between the permanent well casing and the undisturbed soil outside the temporary well casing to a depth of at least fifty eight (58) feet from final grade. The grout shall consist of a pure Wyoming Bentonite or approved equal, granules, pellets or chips up to 3/8-inch in diameter. The driller shall have at least 50% excess bentonite grout available prior to grout placement.

2.3 Disinfection

All tools, bits, pipe and materials to be inserted into the borehole shall be cleaned and disinfected in accordance with the Well Construction Standards and permitting requirements of the Idaho Department of Water Resources. All downhole equipment shall be disinfected with 500-ppm chlorine prior to placement or use in the well. This applies to new well construction and to modifications to existing wells.

2.4 Workmanship

The CONTRACTOR shall maintain all equipment in good repair on the project at all times. Drilling will be permitted with approved cable tools or an air rotary tool with casing hammer capable of installing a screen and pulling back the casing in an assumed formation.

Drilling to accommodate the casing shall be performed with full-size clean, round, borehole results. No sand, dirt, rocks, mud, old cuttings, etc. or any other foreign material from the land surface shall be allowed to fall into the hole.

Drilling and casing operations shall be performed by the CONTRACTOR so as to prevent over excavation, caving, and voids behind the well casing and circulation of native materials behind and below the casing shoe.

No additives other than approved foam shall be allowed to aid in the drilling or casing of the well. It shall be the responsibility of the CONTRACTOR to stabilize the formations between casings and bore holes behind casings with material installed based on the approval of the ENGINEER.

Protection of the well and the formations in their natural state shall be continuously maintained by the CONTRACTOR.

The CONTRACTOR shall make his own arrangements for generator power, electrical power and water that he might require as a part of his work.

2.5 Plumbness and Alignment

The hole to accommodate the casing shall be drilled straight and plumb in accordance with the provisions of AWWA A-100-97 standards.

Upon completion of the installation of the casing, and in the presence of the ENGINEER or his authorized representative, the ENGINEER may require plumbness tests be performed to determine whether plumbness limitations have been met if pump installation becomes problematic. To demonstrate the compliance of the alignment with the requirements, the CONTRACTOR shall furnish all labor, tools, and equipment, and perform the tests described herein. Alignment shall be tested by lowering into the well to a depth of at least 100 feet a section of pipe twenty (20) feet long or a dummy of the same length. The outer diameter of the pipe or dummy shall be not more than two (2) inches smaller than the inside diameter of that part of the casing being tested. The dummy, when lowered into the casing, shall pass freely the entire depth of the well. Payment for the alignment test shall be considered incidental to drilling costs and no extra payment shall be made to the CONTRACTOR. Any additional work required for redrilling or straightening the well shall be at the CONTRACTOR's expense.

2.6 Casing and Drive Shoe

The casing shall be fitted with a heavy steel drive shoe prior to setting the casing. The casing shall be carefully installed in a manner so as to prevent any damage or distortion to the pipe. Welding shall be accomplished by skilled welders using adequate welding equipment. Finished welds shall be watertight, penetrate to the full thickness of the pipe and structurally equal to the pipe itself. Welding shall be done by electric arc using electrodes for the steel used in the pipe. Welded sections shall be equivalent in strength to the adjacent pipe. Unless otherwise directed by the ENGINEER, the casing shall extend at least 2-feet above the ground.

The temporary casing shall be equipped with a temporary steel plate tack welded to the top. This temporary plate shall be in place after drilling of the well and removed prior to placement of the pump equipment.

2.7 Surface Seal

An open free standing hole four (4) inches in diameter greater than the outside diameter of the permanent casing, or a temporary casing of at least two (2) pipe sizes larger than the permanent casing shall be installed to a minimum depth of fifty eight (58) feet below finish grade. This annular space shall be filled with bentonite after the permanent casing is installed. Upon completion of the drilling, the annular space shall be filled with the granular bentonite as the temporary casing is removed. The ENGINEER shall be notified and present for placement of the surface seal.

The OWNER will be responsible for construction and placement of the necessary pit(s) or pond(s) to contain and control drill cuttings and drilling water. Discharge of turbid water is prohibited other than to the drilling pit(s). If the pit(s) prove inadequate, additional pits are to be constructed. Construction of additional pits is to be done at the expense of the CONTRACTOR.

3. WELL PERFORATION OR WELL SCREEN

3.1 Scope

This item shall include all labor, equipment and materials necessary for perforation of the casing or installation of well screen in the water bearing formation(s).

3.2 Materials

No special materials are needed for perforation of the casing.

3.3 Workmanship

Perforation shall be done on the newly installed casing at the direction of the ENGINEER. The perforations shall be installed with a perforator having positive action and constructed to prevent distortion of the casing.

3.4 Well Screen

The well screen shall be manufactured according to AWWA standard A-100-97. The openings in the screen shall be constructed horizontal to the axis of the screen. The length of the screened interval shall be determined after drilling of the well and examination of the drilling log has been performed. The opening size and length of screen shall be determined after sieve analyses of the aquifer(s) formations have been performed. Sieve analyses shall be provided by the driller at the request of the ENGINEER.

4. DEVELOPMENT AND TESTING OF THE WELL

4.1 Scope

This item shall consist of furnishing all the labor, equipment, and materials necessary for the development of this well by surging, or airlift. Upon completion of the required development, the well shall be tested using a temporary pump supplied by the well driller, as specified. If airlift testing of the well provides sufficient data, a production pump may be installed in lieu of a test pump.

4.2 Materials

The CONTRACTOR shall develop the well by using air from the drill rig or the use of a jetting tool attached to the drill stem.

The test pump shall be capable of delivering at least 150% of the design capacity of the well.

A static water level probe tube shall be installed in the well while installing the test or production pump. The tubing shall have a minimum internal diameter of 1/2" and be constructed to allow free and unobstructed access with a typical static well probe. This permanent well probe line is to be installed for use during the pump test and the production pump for future static water level measurements.

4.3 Workmanship

Upon completion of the drilling and the installation of the well screen, the CONTRACTOR shall notify the ENGINEER that he is ready to begin development and shall develop the well by surging with air. If rotary equipment is used, development shall be accomplished by approved jetting equipment and development with the use of temporary pumps will not be required. Disposal of development water will be done in pit(s) constructed adjacent to the well.

Upon development of the well, the CONTRACTOR shall test the well to determine the yield and drawdown. Test pumping shall be coordinated and directed by the ENGINEER.

4.4 Well Pump Testing

It is contemplated that testing will be carried on for at least twenty-four (24) hour duration. The well is to be tested at 150% of the design capacity of the well. The CONTRACTOR shall be responsible for providing a means of safe refueling during operation to prevent any shutdowns during the test. The CONTRACTOR shall be responsible for making arrangements with the OWNER for the satisfactory disposal of water during the test period. Once clean, clear water is obtained from the well, the discharge can be piped to a nearby surface drainage channel. The CONTRACTOR is responsible for any erosion or sediment transport that may occur as a result of the test pumping.

The CONTRACTOR shall coordinate with the ENGINEER to perform the well testing. The ENGINEER shall measure the water surface elevation just prior to the start of the test and for time periods specified by the ENGINEER in the beginning of the test. After several hours of testing and stabilization of equipment and pumping rates, the CONTRACTOR will collect static water levels and pumping rates at least hourly. The CONTRACTOR will coordinate with the ENGINEER during the remainder of the test and collect data at the ENGINEER'S direction. Prior to the end of the pump test, the ENGINEER and the CONTRACTOR will coordinate shut down and collection of recovery data. The engineer will collect water quality samples prior to shut down and provide sample handling, tracking and reporting.

At least one pump tender shall be on hand at all times that the pump is in operation. The pump tender shall cooperate and coordinate with the ENGINEER for collection of static water levels and possible collection of interim field test samples. As part of the test pumping operation, the ENGINEER may require intermittent and variable pumping in an effort to increase the capacity of the well.

Prior to starting the test pumping, the well shall be disinfected with a 50-ppm chlorine solution for twenty-four (24) hours. A chlorine residual shall be checked upon start of the pump test.

RECORD DRAWING NOTE:

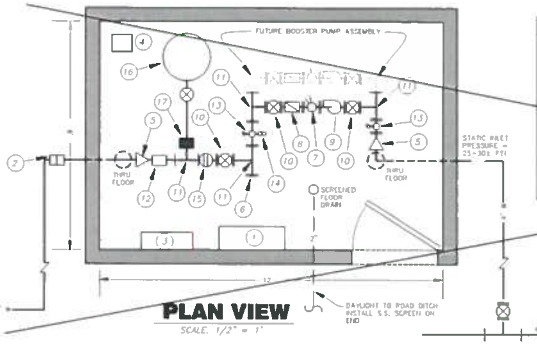
THESE RECORD DRAWINGS HAVE BEEN PREPARED BASED ON INFORMATION GATHERED DURING FIELD OBSERVATIONS AS WELL AS INFORMATION PROVIDED BY OTHERS. THE ACCURACY OR COMPLETENESS OF INFORMATION PROVIDED BY OTHERS HAS NOT BEEN VERIFIED BY FRAME & SMETANA, P.A.

AB AS BUILT INFORMATION-WELL SYSTEM ONLY

**RECORD DRAWING
JANUARY, 2007**

WELL SYSTEM

BOOSTER SYSTEM


FUTURE BOOSTER PUMP ASSEMBLY
STATIC INLET PRESSURE = 25-30 PSI
THRU FLOOR
SCREENED FLOOR DRAIN
12'
DAYLIGHT TO ROAD DITCH INSTALL S.S. SCREEN ON END

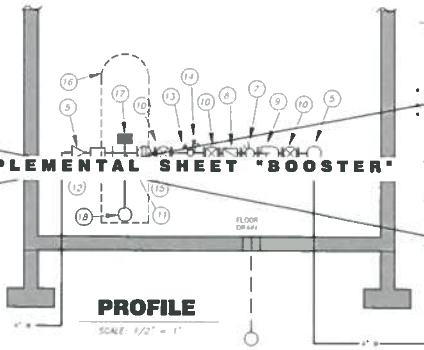
PLAN VIEW

SCALE: 1/2" = 1'

ITEM #	DESCRIPTION
1	ELECTRICAL PANEL
2	4" DRESSER COUPLING FOR DUCTILE TO PVC CONNECTION
3	SIMPLEX PUMP PANEL (EXPANDABLE FOR DUPLEX SYSTEM)
4	HEATER
5	REDUCER
6	BLIND FLANGE FOR PROVISIONS TO PUMP TO WASTE
7	AIR RELEASE VALVE
8	CHECK VALVE
9	PUMP
10	GATE VALVE
11	TEE
12	FLOW METER
13	PRESSURE GAUGE (COMBINATION GAUGE ON INLET SIDE)
14	HOSE BIB SAMPLE TAP
15	[illegible]
16	[illegible]
17	[illegible]
18	2" PIPING AND VALVING TO PRESSURE TANK

NOTE:
SCHEMATIC LAYOUT IS CONCEPTUAL AND FOR GUIDANCE ONLY. CONTRACTOR TO SUBMIT DETAILED SHOP DRAWING FOR REVIEW AND APPROVAL, INCLUDING PUMPHOUSE SIZE VERIFICATION

REFER TO SUPPLEMENTAL SHEET "BOOSTER"



PROFILE

SCALE: 1/2" = 1'

BOOSTER PUMP SYSTEM

AB NOT INSTALLED

SPECIFICATIONS

Contractor shall furnish and install a complete and operational reservoir booster system including, but not limited to:

- Simplex inline centrifugal pump, Berkley type "C" 1-½ [illegible] single phase designed for 100± gpm @ 40± psi.
- Provisions for future duplex system.
- Complete electrical system per NEC including UL listed enclosures, service, disconnect, timer for each motor, low pressure protection, audio/visual alarm with test button, silencer and indicator pilot.
- Alarm shall include notification for:
  - -Pump failure
  - -Low pressure
  - -Power failure
- The contractor shall submit shop drawings for approval showing the proposed mechanical and electrical materials and equipment to be used and a control circuit diagram.

RESERVOIR BOOSTER PUMP CONTROLS

Booster pump shall feature a cycle stop valve and pressure tank control set for operation at 40± psi. A low pressure cut-out switch set at 2.5 psi shall protect the pump from loss of prime.

SITE DEVELOPMENT

Grade site to provide all road access by service vehicle and positive drainage of stormwater away from reservoir and diverted to road ditch.

PUMPHOUSE CONSTRUCTION SPECIFICATIONS

CONTRACTOR SHALL FURNISH A COMPLETELY CONSTRUCTED PUMPHOUSE, INCLUDING ALL CLEARING, STRIPPING AND GRADING. CONTRACTOR SHALL BE RESPONSIBLE TO SECURE ALL NECESSARY PERMITS INCLUDING BUT NOT LIMITED TO BUILDING AND ELECTRICAL. BASIC FEATURES INCLUDE:
BUILDING TO HAVE MONO POURED IN PLACE CONCRETE SLAB 2 x 6 FRAMING
ENGINEERED TRUSSES
METAL SIDING AND ROOFING
TRIM PACKAGE
INSULATION IN WALLS AND ROOF
1 - 3'0" x 6'8" DOOR
ONE-FOOT OVERHANG ON ENTIRE BUILDING
PLYWOOD ON INTERIOR OF ENTIRE MAIN PUMPHOUSE
INTERIOR TO BE PAINTED WHITE
DUPLEX OUTLETS AND CEILING LIGHTS

DO NOT LOCATE DOOR UNDER EAVE

SUBMIT SHOP DRAWINGS FOR ENGINEER'S REVIEW AND APPROVAL

NO.	DATE	REVISION
1	10-05	PER DEQ COMMENTS
2	1-10-07	PHASE 1 AS-BUILTS
3	8-8-13	REFER TO BOOSTER SUPPLEMENTAL SHEET

DESIGN BY: JAS
DRAWN BY: JAN
CHECKED BY: JAS
PLOT DATE: 12/30/13

The delivery of this drawing should not be construed to provide an express warranty or guarantee to anyone that the unauthorized use of the drawing implies the review and approval by the Design Professional. Any unauthorized use of the information is at the sole risk and liability of the user.

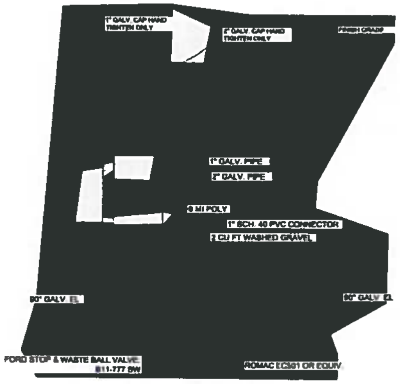
FRAME & SMETANA, PA
Consulting Engineers
603 North 4th Street, Coeur d'Alene, Idaho 83814
Ph (208)664-2121/Fax 765-5502
Email smetana@roadrunner.com

LOCATION: LOST CREEK ESTATES
KOOTENAI COUNTY, IDAHO

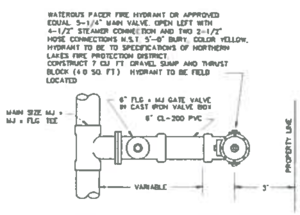
SHEET TITLE: WELL AND BOOSTER SYSTEM DETAILS

SECTION-TOWNSHIP-RANGE: 3-51N-5W
PROJECT NO.: L116
CAD FILE: L116-WELL
DRAWING NO: 5 OF 5

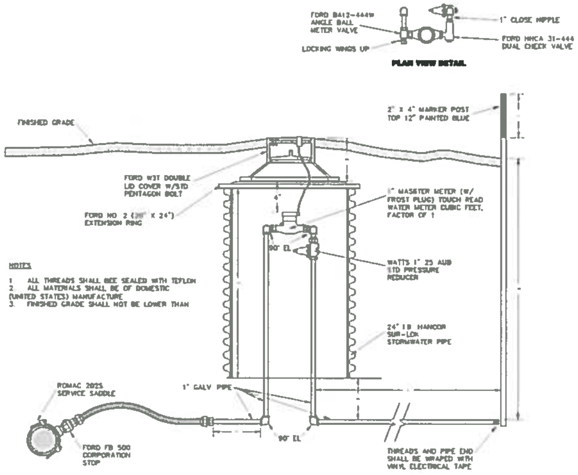
ATTACHMENT



1" FLUSH HYDRANT
N.T.S.


WATEROUS PACER FIRE HYDRANT OR APPROVED EQUAL 5-1/4" MAIN VALVE. OPEN LEFT WITH 4-1/2" STEAMER CONNECTION AND TWO 2-1/2" HOSE CONNECTIONS N.S.T. 5'-0" BURY. COLOR YELLOW. HYDRANT TO BE TO SPECIFICATIONS OF NORTHERN LAKES FIRE PROTECTION DISTRICT
CONSTRUCT 7 CU FT GRAVEL SUMP AND THRUST BLOCK (4.0 SQ. FT.) HYDRANT TO BE FIELD LOCATED
6" FLG x MJ GATE VALVE IN CAST IRON VALVE BOX
6" CL-200 PVC
MAIN SIZE MJ x MJ x FLG TEE
VARIABLE
3'
PROPERTY LINE

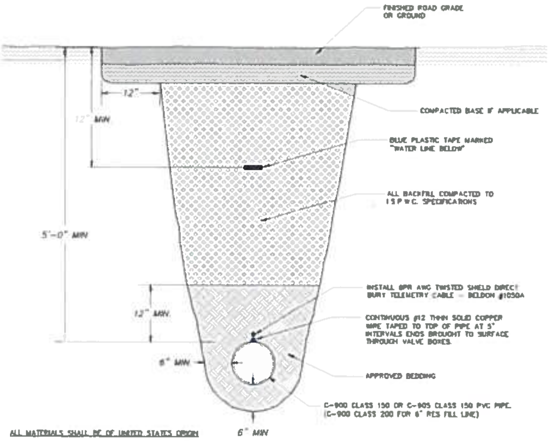
TYPICAL FIRE HYDRANT DETAIL
N.T.S.


FORD BA12-444W ANGLE BALL METER VALVE
LOCKING WINGS UP
1" CLOSE NIPPLE
FORD HHCA 31-444 DUAL CHECK VALVE
PLAN VIEW DETAIL
FINISHED GRADE
2" x 4" MARKER POST TOP 12" PAINTED BLUE
FORD W3T DOUBLE LID COVER W/STD PENTAGON BOLT
FORD NO. 2 (20" x 24") EXTENSION RING
4"
1" MASSTER METER (W/ FROST PLUG) TOUCH READ WATER METER CUBIC FEET, FACTOR OF 1
90° EL
WATTS 1" 25 AUB STD PRESSURE REDUCER
24" I.D. HANCOR SUR-LOK STORMWATER PIPE
ROMAC 202S SERVICE SADDLE
1" GALV. PIPE
90° EL
FORD FB 500 CORPORATION STOP
THREADS AND PIPE END SHALL BE WRAPED WITH VINYL ELECTRICAL TAPE

NOTES

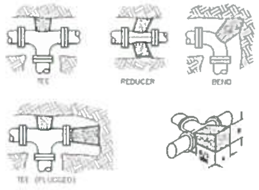
1. ALL THREADS SHALL BEE SEALED WITH TEFLON
2. ALL MATERIALS SHALL BE OF DOMESTIC (UNITED STATES) MANUFACTURE
3. FINISHED GRADE SHALL NOT BE LOWER THAN

DOMESTIC SERVICE DELIVERY (1") - FOR FURURE INSTALLATION
N.T.S.


FINISHED ROAD GRADE OR GROUND
12"
12" MIN
COMPACTED BASE IF APPLICABLE
BLUE PLASTIC TAPE MARKED "WATER LINE BELOW"
ALL BACKFILL COMPACTED TO I.S.P.W.C. SPECIFICATIONS
5'-0" MIN
INSTALL 6PR AWG TWISTED SHIELD DIRECT BURY TELEMETRY CABLE - BELDON #1050A
12" MIN
CONTINUOUS #12 THHN SOLID COPPER WIRE TAPED TO TOP OF PIPE AT 5' INTERVALS ENDS BROUGHT TO SURFACE THROUGH VALVE BOXES.
6" MIN
APPROVED BEDDING
C-900 CLASS 150 OR C-905 CLASS 150 PVC PIPE. (C-900 CLASS 200 FOR 6" RES FILL LINE)
6" MIN

ALL MATERIALS SHALL BE OF UNITED STATES ORIGIN

STANDARD FOR PIPELINE INSTALLATION (TYPICAL CROSS SECTION)
N.T.S.



FITTING SIZES	TEES & PLUGS		90° BEND		45° BEND & WYES		REDUCERS & 22-1/2° BEND	
	A	B	A	B	A	B	A	B
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

BASED ON 2000 PSF SOIL BEARING AND 150 PSI TEST PRESSURE ALL THRUST BLOCKING SHALL BE CAST AGAINST UNDISTURBED OR CAREFULLY COMPACTED SOIL. THRUST BLOCKS SHALL BE FORMED AND PLACED SUCH THAT FLANGE BOLTS ARE CLEAR. NO CONCRETE SHALL BEAR AGAINST THE PIPE.

THRUST BLOCK DETAIL
N.T.S.

CALL 48 HOURS BEFORE YOU DIG

THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES IS SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NO.	DATE	REVISION

RUSSELL D. HELGESON, JR.
2-22-16

DESIGN BY	RDH
DRAWN BY	DWI
CHECKED BY	RDH
PLOT DATE	02/22/16

FRAME & SMETANA, PA
Consulting Engineers
603 North 4th Street, Coeur d'Alene, Idaho, 83814
Ph.(208)664-3121/Fax.765-5302
Email:[illegible]

LOCATION
LOST CREEK ESTATES
KOOTENAI COUNTY, IDAHO

SHEET TITLE
SOUTH LOTS WATER PLAN
DETAIL SHEET

SECTION-TOWNSHIP-RANGE	3-51N-5W
PROJECT NO.	L116
CAD FILE	L116 SOUTH
DRAWING NO.	3 OF 3

From:	Craig.Borrenpohl@deq.idaho.gov
Sent:	Wednesday, March 22, 2017 2:03 PM
To:	Frederick, Adam
Subject:	FW: Message from "ricohcdadownstairs"
Attachments:	20170322135449457.pdf

As requested, I hope this provides what you are looking for but if there is other information please let me know and I will see what else may be in the file.
Craig

-----Original Message-----
From: ricoh@deq.idaho.gov [mailto:ricoh@deq.idaho.gov]
Sent: Wednesday, March 22, 2017 10:55 AM
To: Craig Borrenpohl
Subject: Message from "ricohcdadownstairs"

This E-mail was sent from "ricohcdadownstairs" (MP C4503).

Scan Date: 03.22.2017 13:54:49 (-0400)
Queries to: ricoh@deq.idaho.gov

ATTACHMENT

RECEIVED
MAR 22 2017
IDWR/NORTHERN

#9140

QUANTUM Engineering
and Geologic Consulting

Reply 5/19/6 gjg

$\frac{195}{1.5x} - x = 130$ gpm

May 18, 2006

Gary Gaffney
Idaho Department of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, ID 83814

Re: Lost Creek Estates-Production Well Data Package
Correspondence #M401.11

Dear Gary:

This letter provides a summary of data for drilling, sampling and pump testing of two production wells at Lost Creek Estates. Both wells were pump tested at sustained rates of 195 gpm each for 6-hours. The production from these wells is well in excess of the minimum required for design (estimated at 130 gpm). As such, each well was pump tested at 150% of the design capacity for 6-hours of stabilized drawdown. This pump testing approach was rather than the alternative requirement of 24-hours of stabilized drawdown at 100% of the design capacity.

OK.

LC#1 and LC#2 produced 195 gpm with 9.7-feet and 1.2-feet of drawdown respectively. The greater drawdown from LC#1 is likely due to well loss. Both wells revealed hydraulic conductivity values of 1300 ft/day. Both well are clearly located in the Rathdrum Prairie Aquifer.

LC#1 revealed 94% recovery in 1.0 minute and 100% recover in 2.0 minutes. LC#2 revealed 100% recovery in approximately 15-seconds. LC#2 revealed approximately 0.5 feet of drawdown during the pump testing of LC#1.

Water quality sampling of the aquifer was performed during the test of LC#1. Samples were collected for primary and secondary inorganic (IOC) and primary organic contaminants (VOC and SOC) and radiochemical contaminants (RAD). Bacterial testing was not performed at the time of the pump test and should be performed after the pitless adapter is installed and prior to any connection to the system. All primary and secondary contaminants were below the standards for Public Drinking Water Systems.

The Langalier Index for LC#1 was 0.090. The slightly positive value for this index indicates the water should be neutral and not present corrosive tendencies. Actual lead and copper testing after five connections have been established will determine if corrosion abatement is necessary.

A first-quarter radiochemical sample was collected but is still being analyzed. This data will be forwarded as soon as it is available. Once the well is completed, the remaining three quarters must be collected to complete the four-quarter suite of samples.

Attached are supporting data for well logs, pump testing, record drawings and laboratory reports are attached for your review. Give me a call if you have any questions.

Sincerely,

James S. De Smet, PE, PG
Cc: Norm Waldo
Jack Smetana

RECEIVED

MAR 22 2017

IDWR/NORTHERN

ATTACHMENT

EM, UNITED UMP COMPANY (208) 772-7229 # 27 2

Form 238-7
11/97

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Inspected by______
Twp____ Rge____ Sec____
____1/4 ____1/4 ____1/4
Lat: : : Long: : :

1. WELL TAG NO. D0041375 Well #1
DRILLING PERMIT NO ~~Lost Creek Estates~~
Other IDWR No.

2. OWNER:
Name Waldo Construction, Inc.
Address 1831 Lost Springs Ranch Road
City Post Falls State ID Zip 83854

3. LOCATION OF WELL by legal description:

N

			X

W E S

Twp 51N North ☑ or South ☐
Rge 05W East ☐ or West ☑
Sec 03 ____ 1/4 SE 1/4 SE 1/4
10 Ac 40 Ac 160 Ac
Gov't Lot ____ County Kootenai
Lat ____ Long ____
Address of Well Site: (see next line)
North Idaho Rd; Production Well #1 City Post Falls
Lot ____ Blk ____ Sub. Name (see next line)

4. USE:
☐ Domestic ☑ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other

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/FILTER PACK			Amount	Method
Material	From	To	Sacks/Lbs	
Bentonite	0	65	52 Sacks	Dry Pour
Granular				

Drive Shoe Used? ☑ Y ☐ N Shoe Depth(s) Ring Bit 223
Drive Shoe Seal Tested? ☐ Y ☑ N How?

8. CASING/LINER

Diam	From	To	Gauge	Material	Casng	Liner	Weld	Thrded
8"	+2	-213	0.322	Steel	☑	☐	☑	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length Headpipe ____ Length Tailpipe ____

9. PERFORATIONS/SCREENS
☐ Perforations? Method
☑ Screens? Screen Type Stainless Steel

From	To	Slot	Nmbr	Diam	Material	Casng	Liner
212	222	.6		7	Stainless	☑	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL or ARTESIAN PRESSURE
147 ft. below ground. Artesian pressure ____ lb.
Depth flow encountered 147 ft. Describe access port or

11. WELL TESTS:
☐ Pump ☐ Bailer ☑ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pump Level	Time
150-200	100%	210	2 HR

Water Temp. Cold Bottom hole temp. Cold
Water Quality test or comments: (below) Depth first Water Encountered 147
Clear, Cold, No Smell

12. LITHOLOGIC LOG (Describe repairs or abandonment)

Bore Diam	From	To	Remarks: Lithology, Water Quality and Temperature	Water Y	Water N
12	0	1	Top Soil	☐	☑
12	1	65	Sand & Gravel Medium	☐	☑
10	65	135	Sand & Gravel Medium	☐	☑
10	135	180	Sand & Gravel Small	☑	☐
10	180	187	Sand & Gravel Medium	☑	☐
10	187	223	Sand & Gravel Small to Medium	☑	☐

Completed Depth 222 (Measurable)
Date: Started 4/3/2006 Completed 4/6/2006

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

Firm Name United Drilling Inc. Firm No 414
Firm Official and Date 4/12/2006

WELL ID: Lost Creek Estates #1

Pump Contractor: United Pump Corporation
Engineer/Geologist: Quantum Engineering
Well Tag: D0041375

Well Head Elev: 2150 ft (est. by altimeter)
SWL Elev.: 2007 (est. by altimeter)
Start Date: 4/25/06
Start Time: 15:41
End Date/Time: 4/25/06 22:00:00

INPUT

Construction:		
Casing dia. (d_c)	8	Inch
Annulus dia. (d_w)	10	Inch
Screen Length (L)	10	Feet
Depths to:		
water level (DTW)	143	Feet
Top of Aquifer	212	Feet
Base of Aquifer	222	Feet
Annular Fill:		
across screen – Gravel		
above screen – Open Hole		
Aquifer Material – Gravel		
FLOW RATE	195	GPM

COMPUTED

Aquifer thickness = 10 Feet

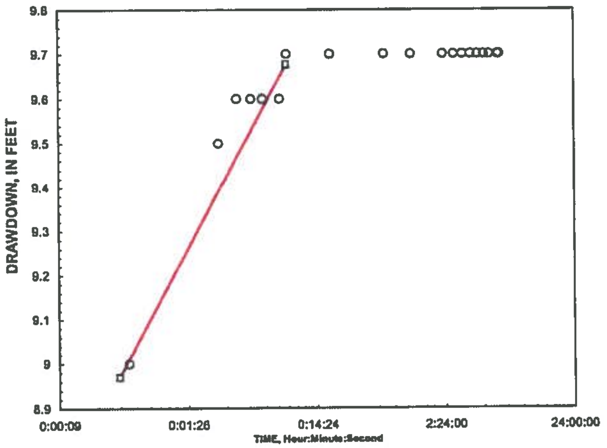
Slope = 0.544196772 Feet/log10

Input is consistent.

K = 1300 Feet/Day
T = 13000 Feet²/Day

Entry	Reduced Data Time, Date Hr:Min:Sec	Water Level Feet	Flow (gpm)	Comments
1	4/25/06 15:41:30	143.00		
2	4/25/06 15:42:00	152.00	187	clear
3	4/25/06 15:44:00	152.50	187	clear
4	4/25/06 15:45:00	152.60	187	clear
5	4/25/06 15:46:00	152.60	187	clear
6	4/25/06 15:47:00	152.60	190	clear
7	4/25/06 15:49:00	152.60	190	clear
8	4/25/06 15:50:00	152.70	195	clear
9	4/25/06 16:00:00	152.70	195	pH=7.57, T=10C, SC=190
10	4/25/06 16:30:00	152.70	195	clear
11	4/25/06 17:00:00	152.70	195	clear
12	4/25/06 18:00:00	152.70	195	clear
13	4/25/06 18:30:00	152.70	195	clear
14	4/25/06 19:00:00	152.70	195	clear
15	4/25/06 19:30:00	152.70	195	clear
16	4/25/06 20:00:00	152.70	195	clear
17	4/25/06 20:30:00	152.70	195	clear
18	4/25/06 21:00:00	152.70	195	clear
19	4/25/06 21:50:00	152.70	195	clear
20	4/25/06 22:00:00	152.70	195	clear

9.7' drawdown



22 00
15 50
6.10

OK – #1 rated at 130 gpm.

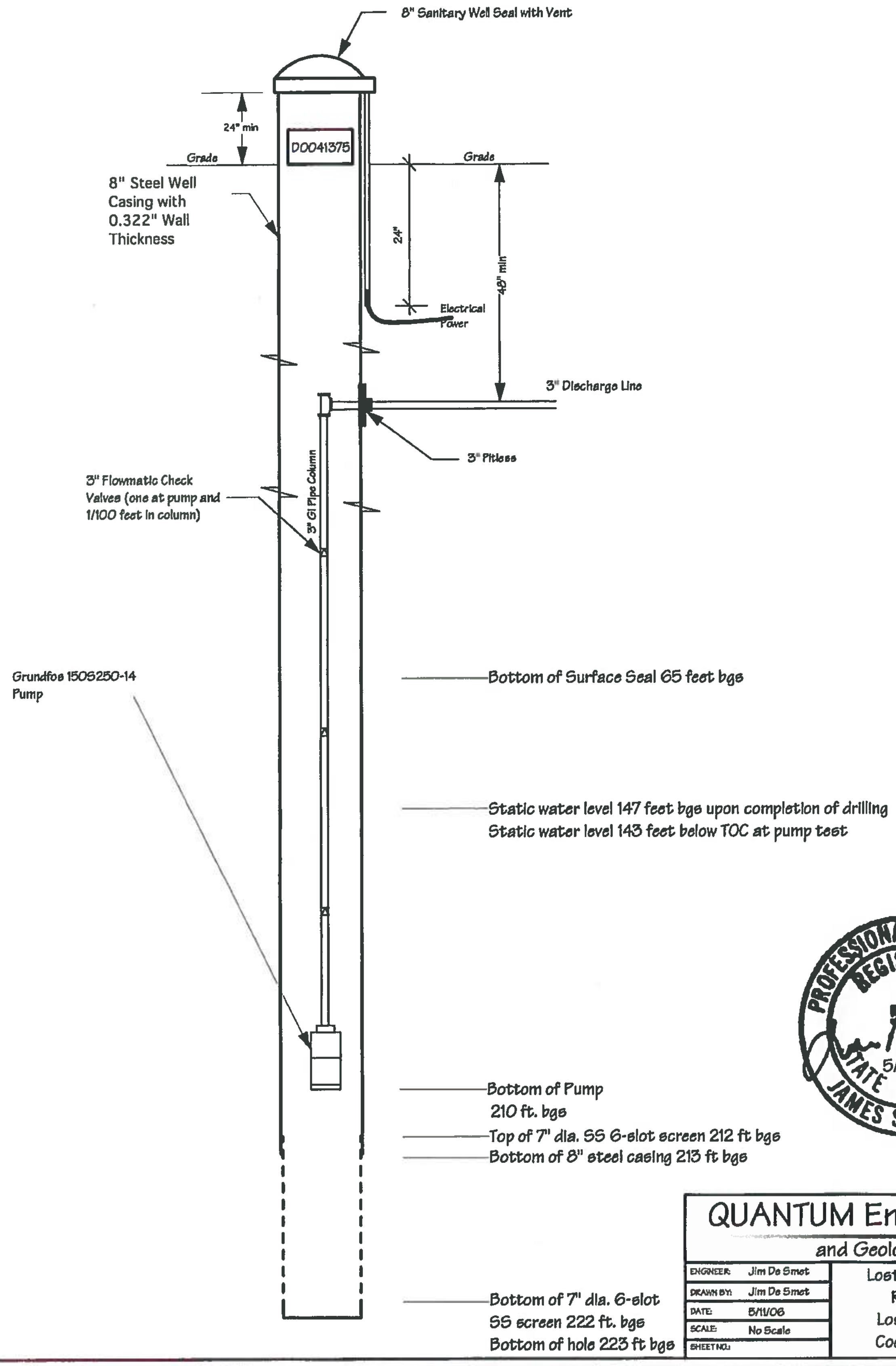
REMARKS:

Sustained pumping rate=195 gpm for 6 hours of stabilized drawdown

Recovery of 94% was obtained in 1 minute after completion of the test
Recovery of 100% was obtained in 2 minutes after completion of the test

ATTACHMENT

ATTACHMENT


8" Sanitary Well Seal with Vent
24" min
D0041375
Grade
Grade
8" Steel Well Casing with 0.322" Wall Thickness
24"
48" min
Electrical Power
3" Discharge Line
3" Pitless
3" GI Pipe Column
3" Flowmatic Check Valves (one at pump and 1/100 feet in column)
Grundfos 150S250-14 Pump
Bottom of Surface Seal 65 feet bgs
Static water level 147 feet bgs upon completion of drilling
Static water level 143 feet below TOC at pump test
Bottom of Pump 210 ft. bgs
Top of 7" dia. SS 6-slot screen 212 ft bgs
Bottom of 8" steel casing 213 ft bgs
Bottom of 7" dia. 6-slot SS screen 222 ft. bgs
Bottom of hole 223 ft bgs

JAMES S. DeSMET
5508
5/11/06

QUANTUM Engineering
and Geologic Consulting

ENGINEER:	Jim De Smet
DRAWN BY:	Jim De Smet
DATE:	5/11/06
SCALE:	No Scale
SHEET NO.:	

Lost Creek Estates #1
Record Drawing
Lost Creek Estates
Coeur d'Alene, Idaho

ATTACHMENT

RECEIVED
MAR 22 2017
IDWR/NORTHERN

05-11-06;01:54PM;UNITED . UMP COMPANY ;(208) 772-7 # 2

Form 238-7
11/97

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Inspected by ______
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

1. WELL TAG NO. D0041376 Well #2
DRILLING PERMIT NO Lost Creek Estates
Other IDWR No. ______

2. OWNER:
Name Waldo Construction, Inc.
Address 1831 Lost Springs Ranch Road
City Post Falls State ID Zip 83854

3. LOCATION OF WELL by legal description:

N

W					E
				X	

S

Twp 51N North ☑ or South ☐
Rge 05W East ☐ or West ☑
Sec 03 ____ 1/4 SE 1/4 SE 1/4
10 Ac 40 Ac 160 Ac
Gov't Lot ____ County Kootenai
Lat ____ Long ____
Address of Well Site: (see next line)
.5 Mi off NO ID RD from HWY 53 On L Well #2 City Post Falls
Lot ____ Blk ____ Sub. Name (see next line)

4. USE:
☐ Domestic ☑ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other ______

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/FILTER PACK			Amount	Method
Material	From	To	Sacks/Lbs	
Bentonite	0	65	68 Sacks	Dry Pour
Granular				

Drive Shoe Used? ☑ Y ☐ N Shoe Depth(s) Ring Bit 223
Drive Shoe Seal Tested? ☐ Y ☑ N How? ______

8. CASING/LINER

Diam	From	To	Gauge	Material	Casng	Liner	Weld	Thrded
8"	+2	-211	0.322	Steel	☑	☐	☑	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length Headpipe ______ Length Tailpipe ______

9. PERFORATIONS/SCREENS
☐ Perforations? Method ______
☑ Screens? Screen Type Stainless Steel

From	To	Slot	Nmbr	Diam	Material	Casng	Liner
210	220	.6		7	Stainless	☑	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL or ARTESIAN PRESSURE
147 ft. below ground. Artesian pressure ____ lb.
Depth flow encountered 147 ft. Describe access port or

11. WELL TESTS:
☐ Pump ☐ Bailer ☑ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pump Level	Time
150-200	100%	218	2Hr

Water Temp. Cold Bottom hole temp. Cold
Water Quality test or comments: (below) Depth first Water Encountered 147
Clear, Cold, No Smell

12. LITHOLOGIC LOG (Describe repairs or abandonment)

Bore Diam	From	To	Remarks: Lithology, Water Quality and Temperature	Water Y	Water N
12	0	1	Top Soil	☐	☑
12	1	65	Sand & Gravel Medium	☐	☑
10	65	135	Sand & Gravel Medium	☐	☑
10	135	180	Sand & Gravel Small	☑	☐
10	180	187	Sand & Gravel Medium	☑	☐
10	187	223	Sand & Gravel Small to Medium	☑	☐

Completed Depth 220 (Measurable)
Date: Started 4/7/2006 Completed 4/11/2006

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

Firm Name United Drilling Inc. Firm No 414
Firm Official and pres. Date 4/12/2006

WELL ID: Lost Creek Estates #2

Pump Contractor:	United Pump Corporation
Engineer/Geologist:	Quantum Engineering
Well Tag:	D0041376

Well Head Elev:	2150 ft (est. by altimeter)
SWL Elev.:	2009 (est. by altimeter)
Start Date:	4/25/06
Start Time:	8:23
End Date/Time:	4/25/06 14:45:00

INPUT

Construction:		
Casing dia. (d_c)	8	Inch
Annulus dia. (d_a)	10	Inch
Screen Length (L)	10	Feet
Depths to:		
water level (DTW)	141.3	Feet
Top of Aquifer	210	Feet
Base of Aquifer	220	Feet
Annular Fill:		
across screen –	Gravel	
above screen –	Open Hole	
Aquifer Material –	Gravel	
FLOW RATE	195	GPM

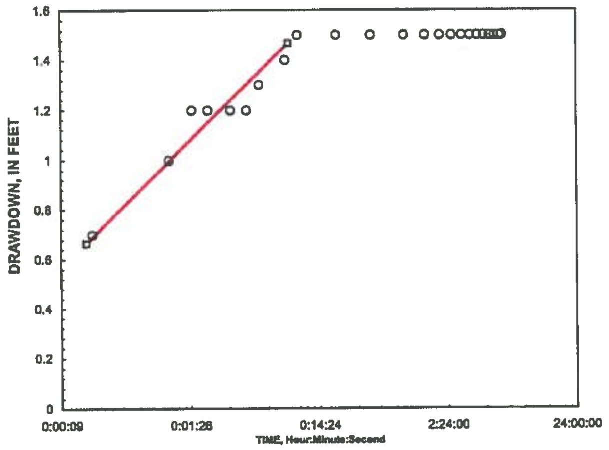
COMPUTED

Aquifer thickness = 10 Feet

Slope = 0.509853783 Feet/log10

Input is consistent.

K = 1300 Feet/Day
T = 13000 Feet²/Day



REMARKS:

Sustained pumping rate=195 gpm for 6 hours of stabilized drawdown

Recovery of 100% was obtained in 15 seconds after completion of the test

Entry	Reduced Data Time, Date Hr:Min:Sec	Water Level Feet	Flow (gpm)	Comments
1	4/25/06 8:23:00	141.30		
2	4/25/06 8:23:15	142.00	190	clear
3	4/25/06 8:24:00	142.30	190	clear
4	4/25/06 8:24:30	142.50	190	clear
5	4/25/06 8:25:00	142.50	190	clear
6	4/25/06 8:26:00	142.50	190	clear
7	4/25/06 8:27:00	142.50	190	clear
8	4/25/06 8:28:00	142.60	190	clear
9	4/25/06 8:31:00	142.70	190	clear
10	4/25/06 8:33:00	142.80	195	clear
11	4/25/06 8:43:00	142.80	195	pH=7.04, T=10C, SC=160
12	4/25/06 9:00:00	142.80	195	clear
13	4/25/06 9:30:00	142.80	195	clear
14	4/25/06 10:00:00	142.80	195	clear
15	4/25/06 10:30:00	142.80	195	clear
16	4/25/06 11:00:00	142.80	195	clear
17	4/25/06 11:30:00	142.80	195	clear
18	4/25/06 12:00:00	142.80	195	clear
19	4/25/06 12:30:00	142.80	195	clear
20	4/25/06 13:00:00	142.80	195	clear
21	4/25/06 13:30:00	142.80	195	clear
22	4/25/06 14:00:00	142.80	195	clear
23	4/25/06 14:30:00	142.80	195	clear
24	4/25/06 14:45:00	142.80	195	clear

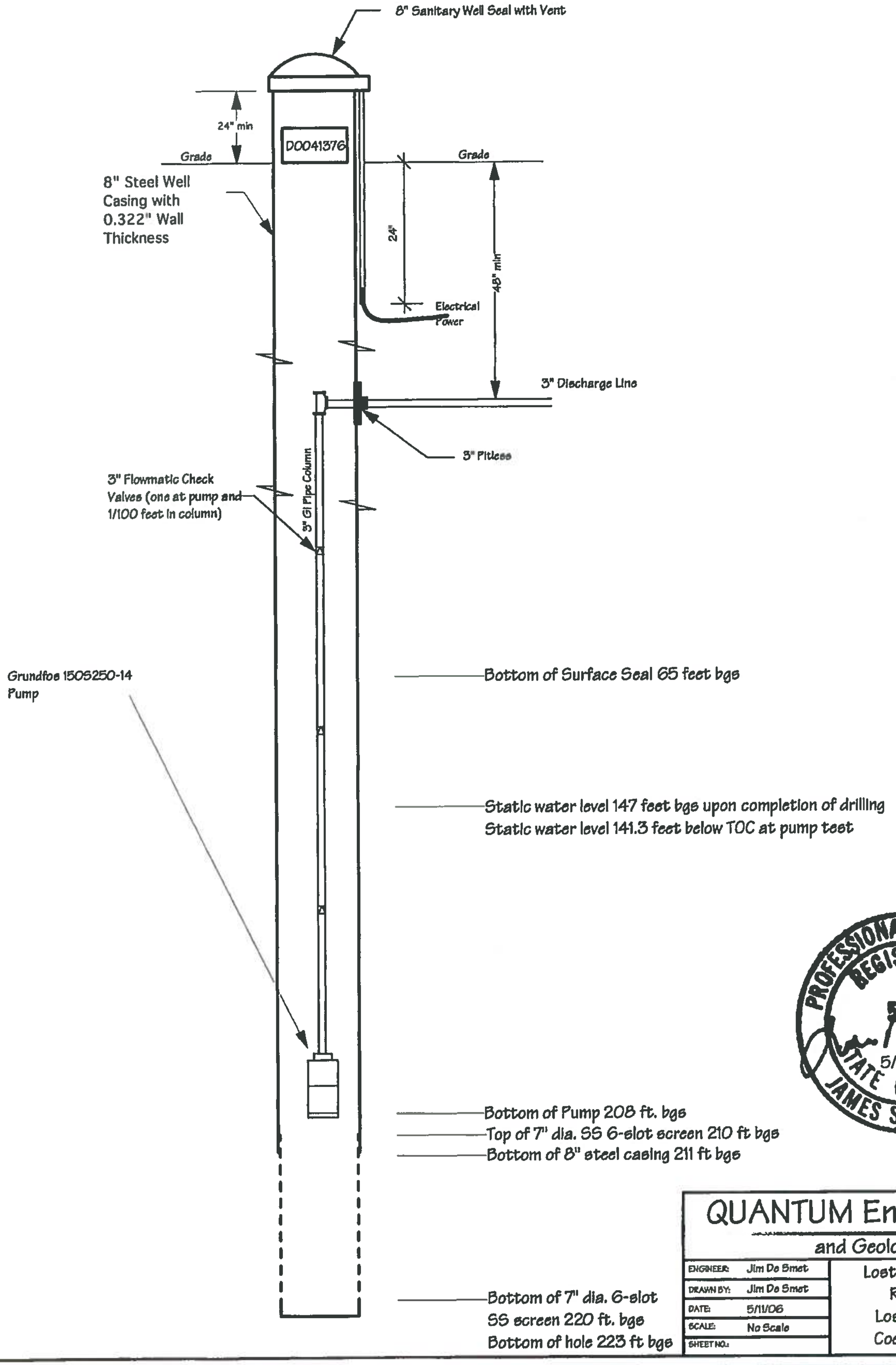
$\frac{195}{1.5} = 130$ gpm

1.5' drawdown

OK – #2 rated at 130 gpm

ATTACHMENT

ATTACHMENT


8" Sanitary Well Seal with Vent
24" min
D0041376
Grade
Grade
8" Steel Well Casing with 0.322" Wall Thickness
24"
48" min
Electrical Power
3" Discharge Line
3" Pitless
3" Flowmatic Check Valves (one at pump and 1/100 feet in column)
3" GI Pipe Column
Bottom of Surface Seal 65 feet bgs
Grundfos 150S250-14 Pump
Static water level 147 feet bgs upon completion of drilling
Static water level 141.3 feet below TOC at pump test
Bottom of Pump 208 ft. bgs
Top of 7" dia. SS 6-slot screen 210 ft bgs
Bottom of 8" steel casing 211 ft bgs
Bottom of 7" dia. 6-slot SS screen 220 ft. bgs
Bottom of hole 223 ft bgs

JAMES S. DeSMET
5503
5/11/06

QUANTUM Engineering
and Geologic Consulting

ENGINEER:	Jim De Smet	Lost Creek Estates #2 Record Drawing Lost Creek Estates Coeur d'Alene, Idaho
DRAWN BY:	Jim De Smet	
DATE:	5/11/06	
SCALE:	No Scale	
SHEET NO.:		