

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 96-9299

Exam Date: 5/23/2013

1. Current Owner: SOURDOUGH POINT OWNERS ASSN INC
PO BOX 29
SANDPOINT ID 83864
(208)263-3877
2. Accompanied by: Bob Chambers
Phone No: Same as Above
Address: Same as Above
Relationship to Permit Holder: Board Member of Home Owner's Association
3. SOURCE TRIBUTARY
PEND OREILLE LAKE PEND OREILLE RIVER

B. OVERLAP REVIEW

1. Other water rights with the same place of use: 96-8618, 96-8619, and 96-8838
2. Other water rights with the same point of diversion: None

C. DIVERSION AND DELIVERY SYSTEM**1. LOCATION OF POINT(S) OF DIVERSION:**

PEND OREILLE LAKE L2 NE1/4SW1/4 Sec. 29, Twp 57N, Rge 01W, B.M. BONNER County

Method of Determination: GPS and Visual Inspection.

2.

PLACE OF USE: MUNICIPAL

Tw	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
57N	01W	29							X		X	X	X	X		X	X		
									L 1							L 2	L 3		
57N	01W	32		X			X	X											
				L 1															

Method of Determination: GIS and Visual Inspection

3. YES Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable.
YES Aerial Photo Attached (required for irrigation of 10+ acres).
YES Photo of Diversion and System Attached

4.

Well or Diversion Identification No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
Lake Pump#1	Piranha	5	Model # PP-500-HH	Piranha	110 gpm @ 100 TDH
Lake Pump #2	Piranha		Model # PP-500-HH	Piranha	110 gpm @ 100 TDH
Re-lift pump #1	Baldor	20	84.Z03374	Grundfoz	Z0810211144
Re-Lift Pump #2	Baldor	20			Z0010211151

*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
Owner's Siemens MagFlow Meter	Magnetic In-line meter	Siemens	Sitrans F M MagFlow Mag 500	7ME652 157802U249	DN 50	

2. Measurements: The system was operating, and the mag meter appeared to be operating correctly. The owner stated that they try to maintain approximately 60 gpm through the system per the design specs of the system. They have set the variable speed pump to 60 gpm. The meter read between a low of 60 gpm to a high of 69 gpm. Therefore, the 69 gpm mark should be the maximum diverted. 69 gpm / 448.8 = 0.15 cfs.

E. FLOW CALCULATIONS X Additional Computation Sheets Attached

Measured Method:

Owner's Meter Measurement = 0.15 cfs

Permit allowed = 0.20 cfs

I recommended 0.15 cfs for this permit. The system has been set up to operate at 0.13 cfs to 0.15 cfs. I recommend the highest flow rate for the system to ensure that the peak flow rate is covered.

F. VOLUME CALCULATIONS**1. Volume Calculations for Irrigation:**

$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) =$ _____

$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 =$ _____

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

2. Volume Calculations for Other Uses:

See the attached sheet for the flow calculations for the municipal use. I recommend that the volume for this system be limited to 109 af. The system runs virtually non-stop, since there are multiple storage tanks.

Permit No:
96-9489
Page 3

G. NARRATIVE/REMARKS/COMMENTS

This permit is for the use of Pend Oreille Lake water for municipal purposes. There are 4 wells that can also be used for this purpose, however, all 4 wells do not provide adequate quality water to supply the subdivision. Therefore, the wells are only used for back up purposes as required by DEQ. The water from the lake is diverted from the lake through a long pipeline that goes out into the lake and ends at wet well just northeast of the water treatment facility. At the water treatment facility the water is run through a series of filters and purifiers and then diverted into a 7,500 gallon storage tank under the building. The water in the storage tank is then diverted out by 2-20 Hp pumps to the distribution system. The distribution system supplies water to 105 lots, 22 acres of irrigation, and it is also used fill a 16,000 and 50,000 gallon storage tanks on southern end of the system. At a diversion rate of 60 gpm (0.13 cfs) all of the storage tanks can be filled within a 20.4 hour period.

Please see my attached memo discussing the volume amounts and the combined condition limitations. Currently, the lake system supplies the entire system, so the flows and rates should be limited accordingly.

Have conditions of permit approval been met? X Yes No

H. RECOMMENDATIONS**1. Recommended Amounts**

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
MUNICIPAL	01/01 to 12/31	0.150 CFS	109.00 AF
<u>Totals:</u>		0.150 CFS	109.00 AF

2. Recommended Amendments

Change P.D. as reflected above Add P.D. as reflected above None
 Change P.U. as reflected above Add P.U. as reflected above Other

I. AUTHENTICATION Daniel A. Nelson – Staff Hydrologist

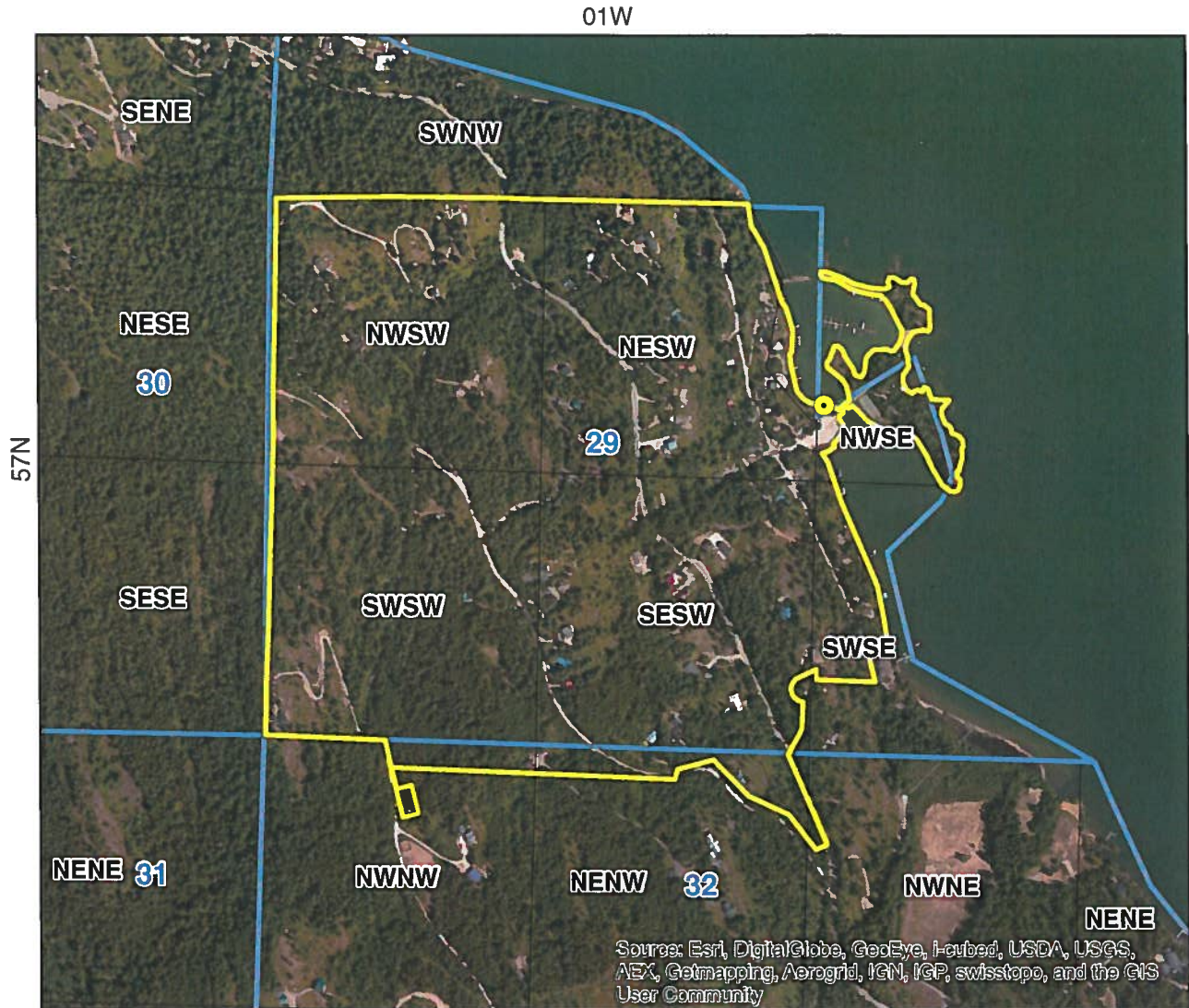
Field Examiner's Name Daniel A. Nelson Date 1-13-14

Reviewer _____ Date _____

Field Exam

96-9299

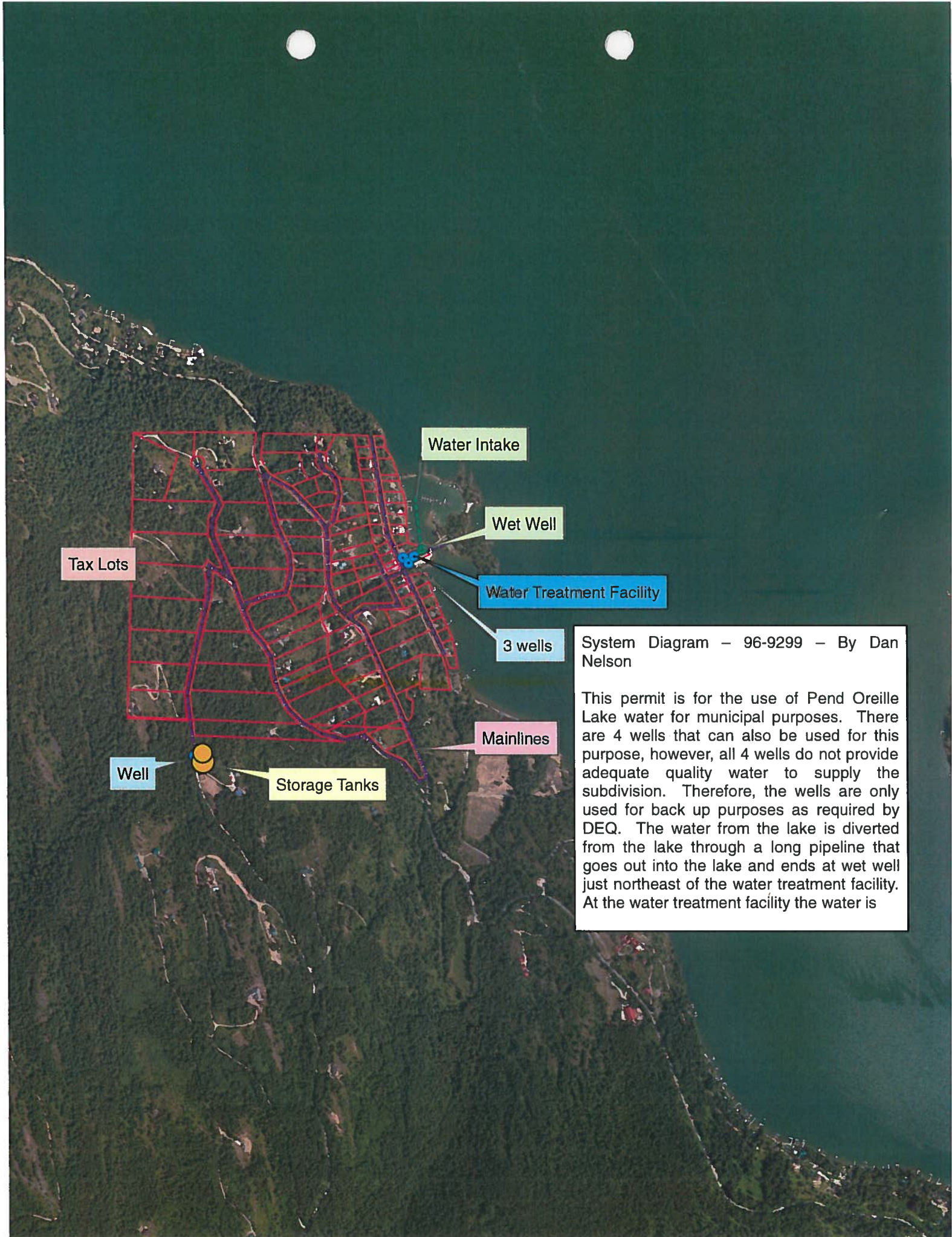
This map depicts the MUNICIPAL place of use boundary for this water right at the time of this approval and is attached to the approval document solely for illustrative purposes.



-  Point of Diversion
-  Water Service Area Boundary
-  Townships
-  PLS Sections
-  Quarter Quarters

0 0.1 0.2 0.4 Miles





System Diagram – 96-9299 – By Dan Nelson

This permit is for the use of Pend Oreille Lake water for municipal purposes. There are 4 wells that can also be used for this purpose, however, all 4 wells do not provide adequate quality water to supply the subdivision. Therefore, the wells are only used for back up purposes as required by DEQ. The water from the lake is diverted from the lake through a long pipeline that goes out into the lake and ends at wet well just northeast of the water treatment facility. At the water treatment facility the water is



Water Intake

Wet Well

Water Treatment Facility

3 wells

Mainlines

Tax Lots

System Diagram – 96-9299 – By
Dan Nelson

This permit is for the use of Pend Oreille Lake water for municipal purposes. There are 4 wells that can also be used for this purpose, however, all 4 wells do not provide adequate quality water to supply the subdivision. Therefore, the wells are only used for back up purposes as required by DEQ. The water from the lake is diverted from the lake through a long pipeline that goes out into the lake and ends at wet well just northeast of the water treatment facility. At the

Supplemental Info. for Licensing 96-8838
-pulled from www.tate-engineering.com 11-10-11

NOV 11 11 AM
RECEIVED

Sourdough Point Homeowners Association Water Treatment Facility

TWP 57 N, R 01 W, SECTIONS 29 & 32
Bonner County, Idaho

These are
schematics
for the
water treatment
facility

DAN
1-9-14

OWNER

Sourdough Point Owners Association
P.O. Box 29
Sandpoint, ID 83864

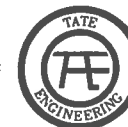
ENGINEER

TATE
ENGINEERING INC.

1103 N. 4th Street Coeur d'Alene
Idaho, 83814 (208)676-8708

Fax: (208)667-2129

E-mail: rtate@tate-eng.com



NOTE

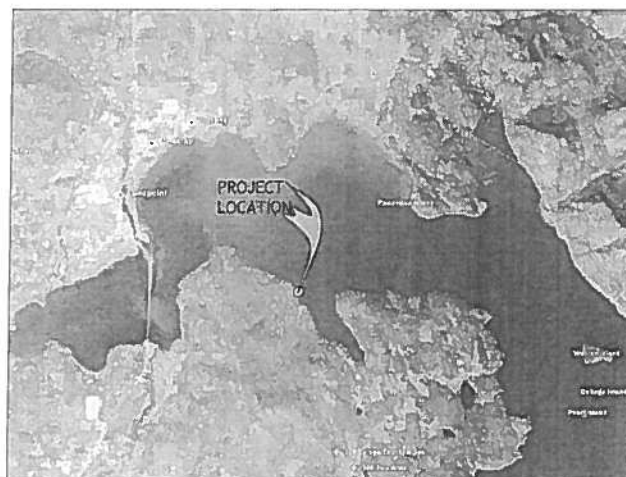
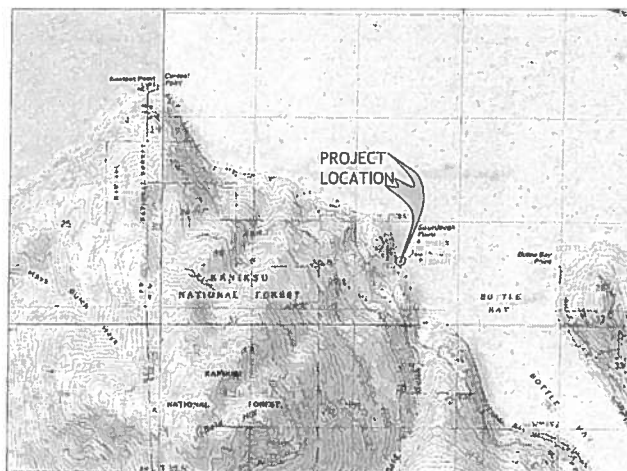


THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES IS SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. HE AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY HIS FAILURE TO EXACTLY LOCATE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

CALL 48 HOURS BEFORE YOU DIG
1-800-626-4950

INDEX OF SHEETS

1. Title
2. Notes
3. Existing System Overview
4. Existing Site Overview
5. Proposed Site Overview
6. Filter Building Layout
7. Filter Building Cross Sections
8. Water Line Cross Sections
9. Raw Water Lake Intake
- 9A. Raw Water Lake Intake Profiles
10. Details
11. Details
12. Details

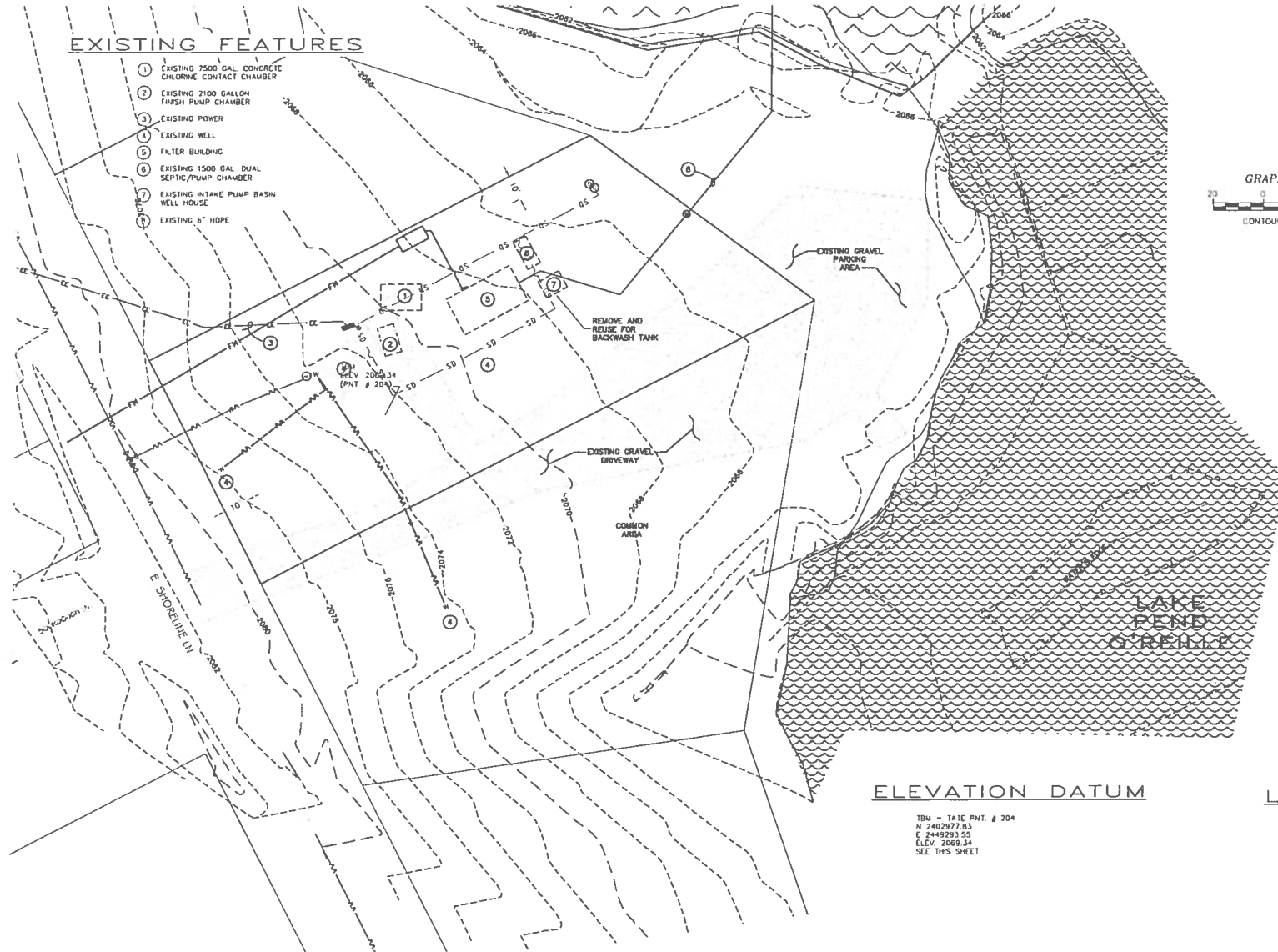


13

8/4/2008 7:33 AM

T:\PROJECTS\08.005 Sourdough Point\dwg\0805.dwg

Tate Engineering



SCANNED
8/13/2008
Sourdough Point Owners Association
Bonner County
Existing Site Overview

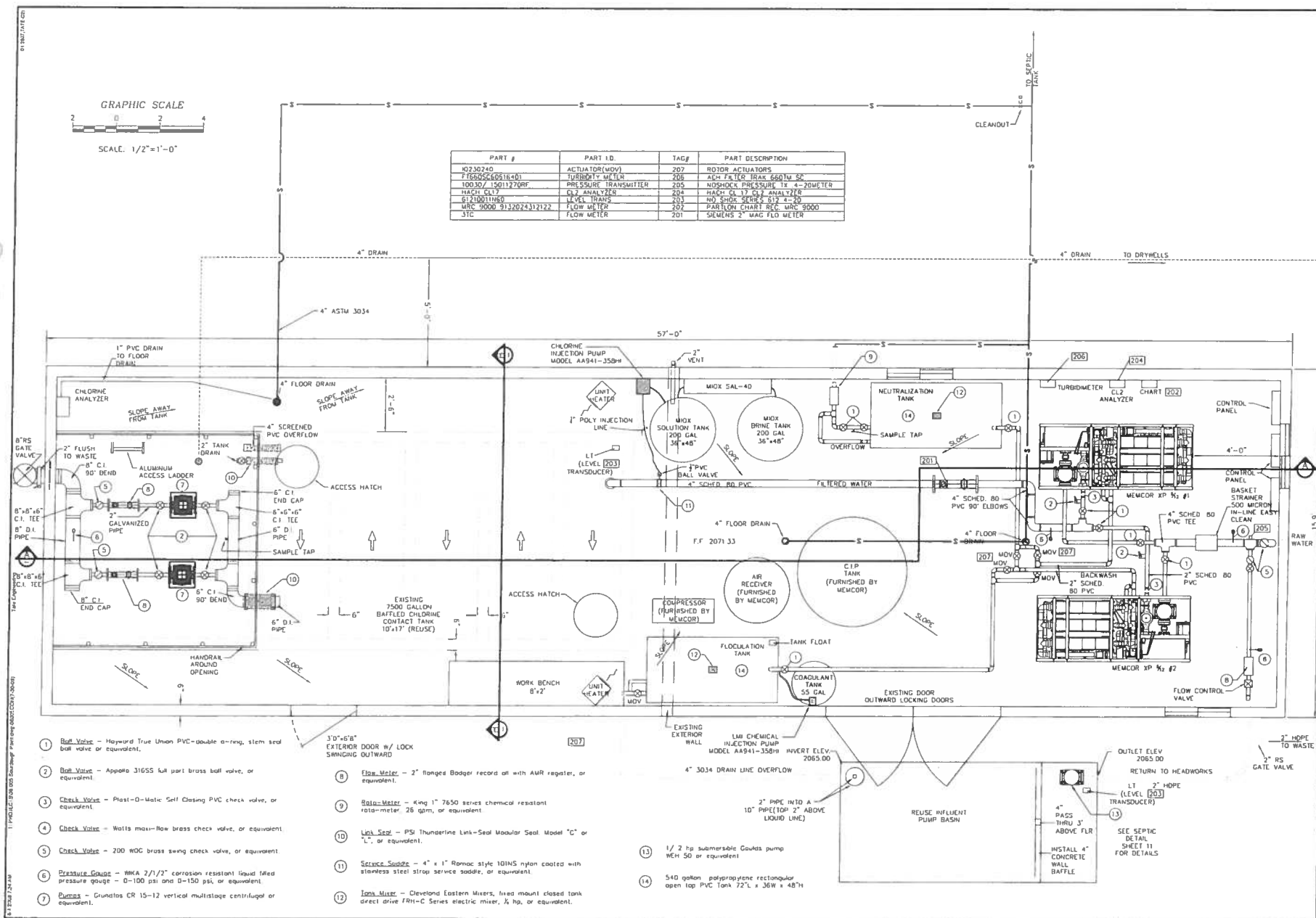
PROJECT 08.005
DRAWN BY: WENDY L. WILSON
CHECKED BY: J. L. WILSON
DRAWN BY: J. L. WILSON
CHECKED BY: J. L. WILSON
LAST EDIT DATE: 7/20/08

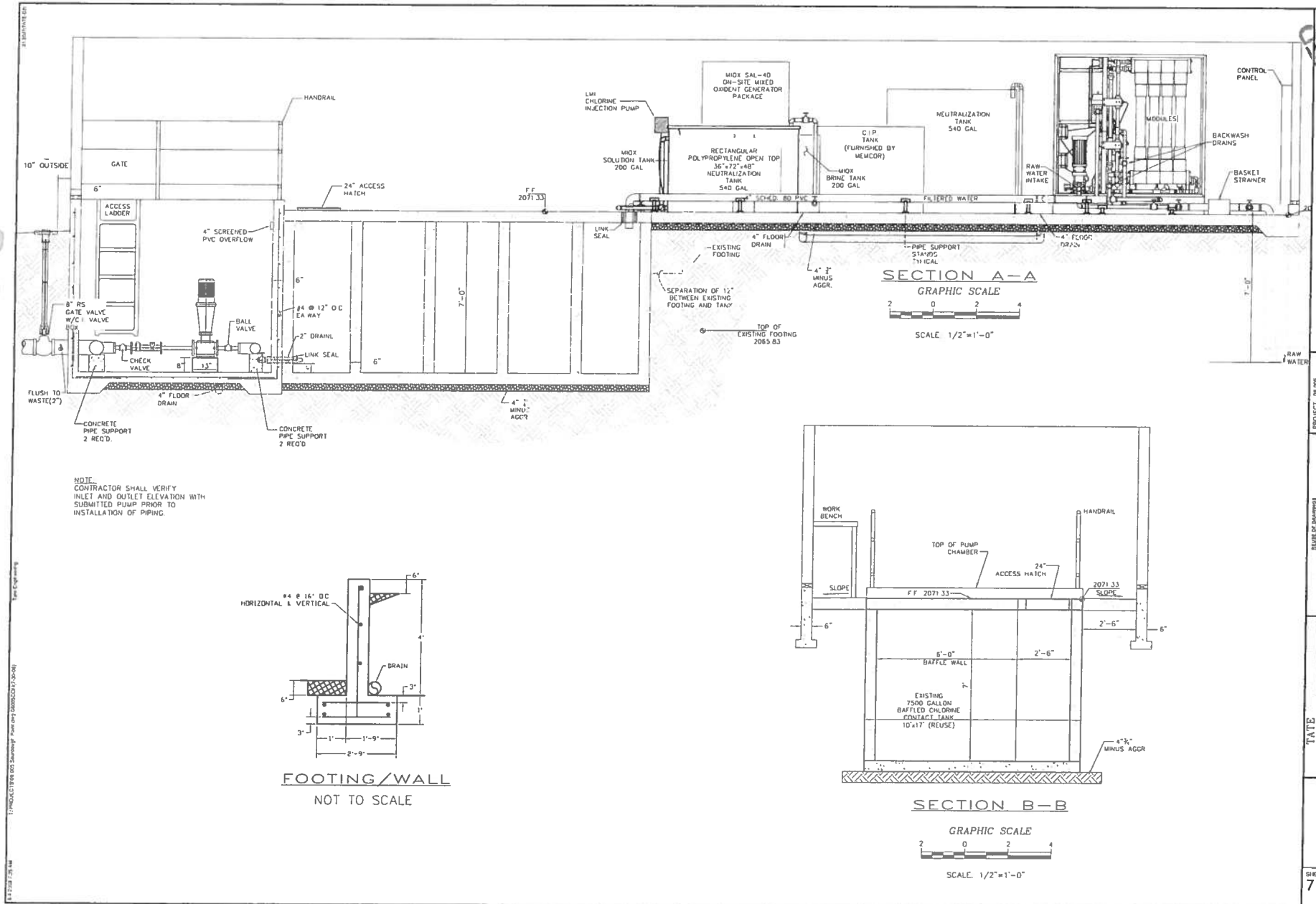
THIS DOCUMENT AND ITS CONTENTS ARE THE PROPERTY OF TATE ENGINEERING, INC. AND ARE NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF TATE ENGINEERING, INC.



TATE ENGINEERING
COURTNEY L. TATE
1103 N. 4th Street
PO BOX 8108
JOLIET, IL 61781-0108
FAX: (815) 726-2129
EMAIL: c.tate@tate-eng.com

SHEET
4
of 13





SEAL
NOV 3 2008

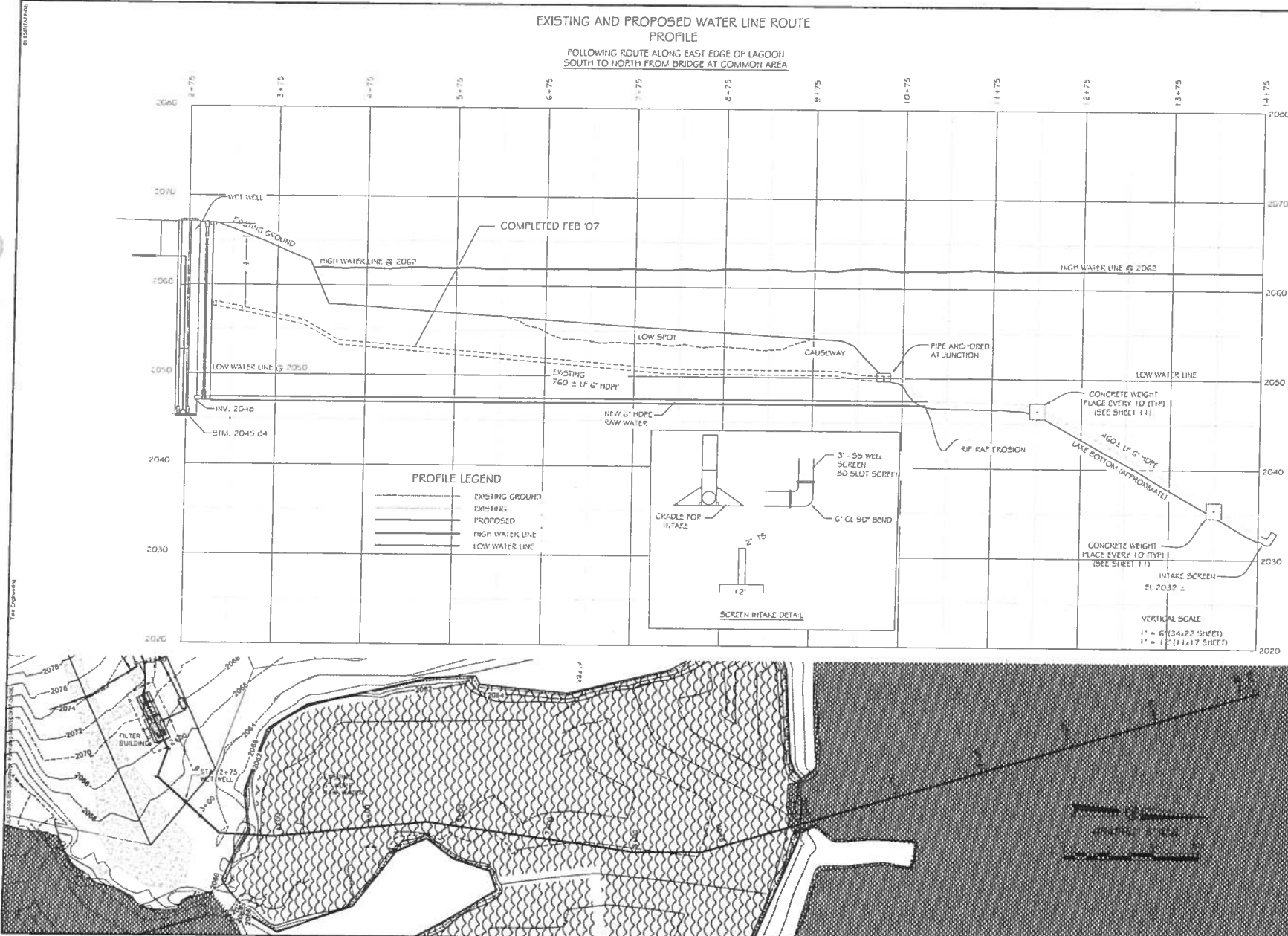
Sourdough Point Owners Association
Bonner County
Filter Building Cross Sections

PROJECT: 08 005	DATE: 8/4/2008
DRAWN BY: SDC	CHECK BY: SDC
DESIGNED BY: SDC	LAST EDIT DATE: 1/20/08
THIS DOCUMENT AND ALL INFORMATION CONTAINED HEREIN ARE THE PROPERTY OF SDC ENGINEERING, INC. AND ARE NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF SDC ENGINEERING, INC.	

SDC ENGINEERING
1103 N. 4th Street
Coos Bay, OR 97331
(503) 867-8708
FAX: (503) 867-2129
E-MAIL: info@sdce-eng.com

DATE
ENGINEERING

SHEET
7
OF
13



SCANNED
 NOV 10 2008

Sourdough Point Owners Association
Bonner County
Water Line Cross Section

PROJECT 08.005
DRAWING 08.005-01
DESIGNED BY DBC
DRAWN BY DBC
CHECK BY AUT
LAST EDIT DATE 10/08/08

THE DOCUMENT AND THE DATA HEREON ARE THE PROPERTY OF TATE ENGINEERING, INC. AND ARE NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF TATE ENGINEERING, INC.

TATE ENGINEERING, INC.
 1011 S. 1st Ave.
 Idaho, 83414
 (208) 788-8708
 FAX (208) 787-2129
 E-MAIL: tate@tate-eng.com

SHEET
8
 of **13**



9
OF
13

**TATE
ENGINEERING**
1103 N. 4th Street
Coeur d'Alene
Idaho, 83814
(208)876-8708
FAX: (208)867-2129
E-MAIL: tate@tate-eng.com



THIS DOCUMENT AND THE SEALS AND DESIGNS INCORPORATED HEREIN AS AN INSTRUMENT OF PROFESSIONAL SERVICE, IS THE PROPERTY OF TATE ENGINEERING, INC. AND IS NOT TO BE USED, IN WHOLE OR PART, FOR ANY OTHER PROJECT WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF TATE ENGINEERING, INC.

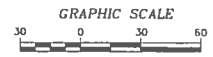
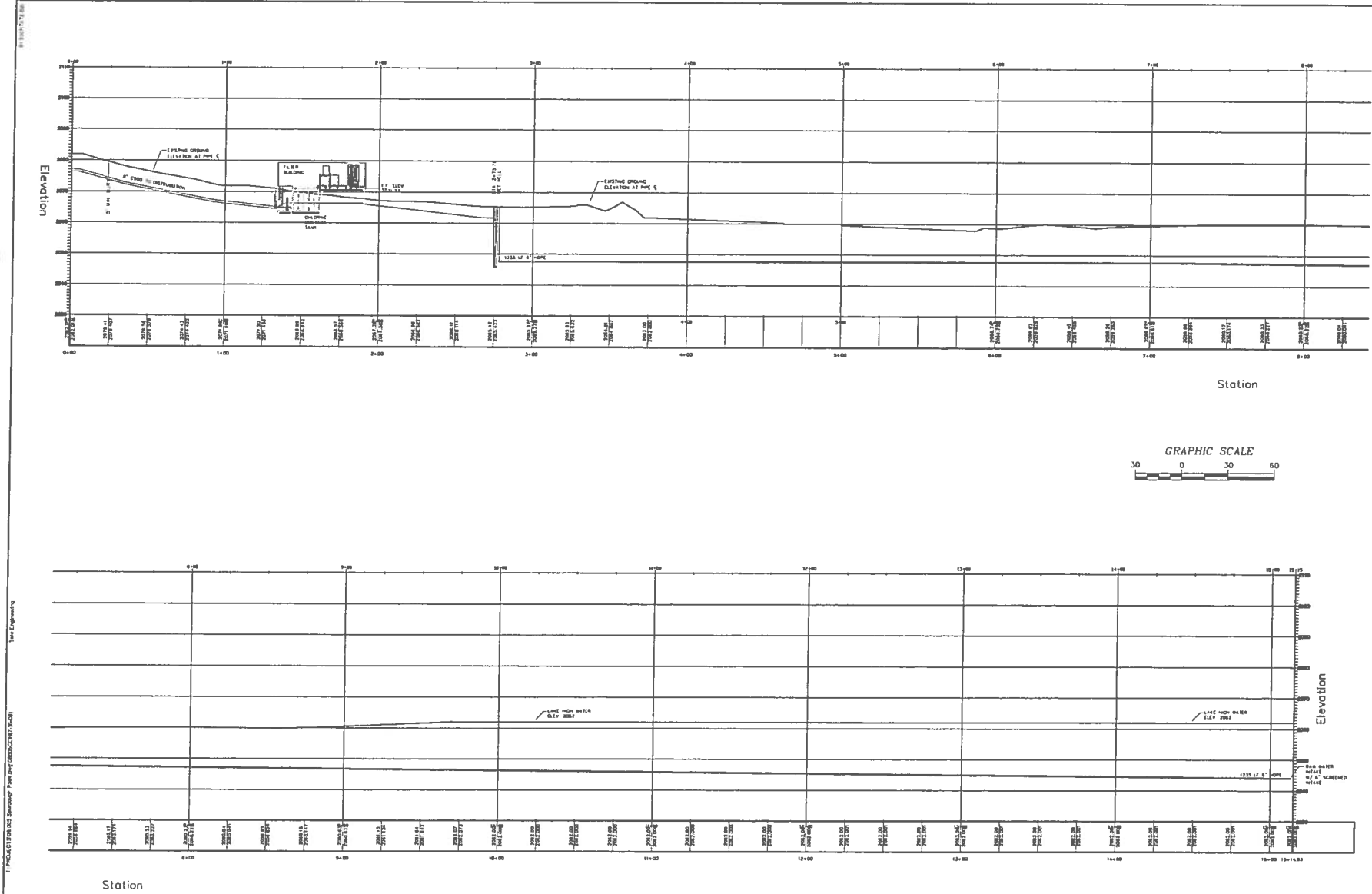
REVISION

NO.	DESCRIPTION	BY	DATE

PROJECT: 08.005
DRAWING: 08005CON(7)-09
DESIGN BY: JLC
DRAWN BY: DPS
CHEK. BY: RMT
LAST EDIT DATE: 7/30/08

Sourdough Point Owners Association
Bonner County
Water Lake Intake

SCANNED
NOV 30 2011



THIS DOCUMENT AND ALL INFORMATION CONTAINED HEREIN ARE THE PROPERTY OF TATE ENGINEERING, INC. AND ARE NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF TATE ENGINEERING, INC.

PROJECT: 08 005
DESIGNED BY: RLC
CHECKED BY: RLC
DATE: 8/4/2008

Sourdough Point Owners Association
Bonner County
Water Lake Intake
Profiles

SCANNED
8/17/2014

01 INTAKE

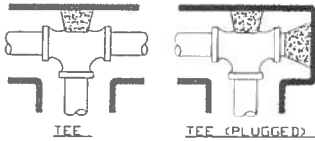
Tate Engineering

T:\PROJECTS\08 005 Sourdough Point\dwg\08005CON17.dwg

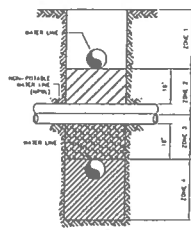
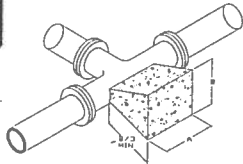
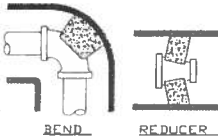
8/4/2008 7:37 AM

DIMENSION FOR THRUST BLOCKING									
FITTING SIZES	TEES & PLUGS		90 BEND		45 BEND & WYES		REDUCERS & 1/2 BEND		
4"	1'-3"	1'-8"	1'-9"	1'-5"	1'-8"	8'-10"	1'-3"	8'-10"	
6"	2'-0"	2'-5"	2'-5"	2'-0"	2'-10"	1'-7"	1'-9"	1'-6"	
8"	2'-8"	2'-6"	2'-6"	2'-6"	2'-5"	2'-11"	1'-9"	1'-6"	
10"	3'-4"	2'-3"	4'-0"	3'-10"	3'-10"	2'-10"	2'-2"	1'-10"	
12"	4'-0"	3'-10"	4'-0"	4'-0"	3'-5"	3'-5"	2'-2"	2'-2"	
14"	5'-3"	3'-10"	6'-6"	4'-11"	4'-11"	3'-5"	3'-5"	2'-5"	

THIS TABLE BASED ON 100 PSI MAIN PRESSURE 2000 PSF SOIL BEARING PRESSURE.

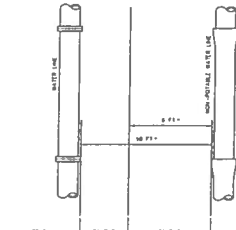


THRUST BLOCK DETAIL
N.T.S.



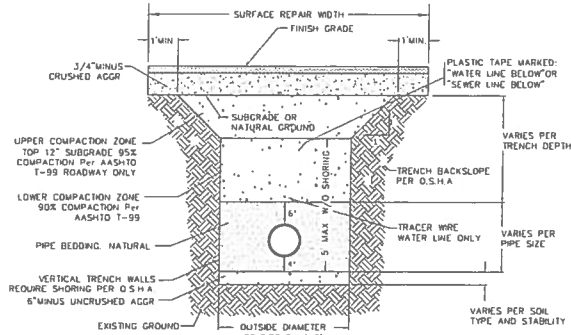
VERTICAL SEPARATION
REQUIREMENTS

- ZONE 1: A) WATER AND SEWER MUST BE SEPARATED BY AT LEAST 18" AND
- B) ONE FULL UNSTAYED LENGTH OF WATER PIPE MUST BE COVERED OVER AND COVERED SO THAT THE JOINTS ARE 18" OR MORE FROM THE WATER PIPE.
- ZONE 2: A) ONE FULL UNSTAYED LENGTH OF WATER PIPE MUST BE COVERED OVER AND COVERED SO THAT THE JOINTS ARE 18" OR MORE FROM THE WATER PIPE.
- AND OTHER B) WATER AND SEWER MUST BE SEPARATED BY AT LEAST 18" AND COVERED OVER AND COVERED SO THAT THE JOINTS ARE 18" OR MORE FROM THE WATER PIPE.
- OR C) EITHER THE WATER OR SEWER PIPE ON BOTH MUST BE COVERED WITH A 18" MINIMUM THICKNESS OF CONCRETE OR 10 FEET ON BOTH SIDES OF THE WATER PIPE.
- ZONE 3: LAND REQUIREMENTS AS ZONE 2 EXCEPT THE WATER MUST ALSO BE SUPPORTED ABOVE THE EXISTING TO PREVENT SETTLING.
- ZONE 4: LAND REQUIREMENTS AS ZONE 1 EXCEPT THE WATER MUST ALSO BE SUPPORTED ABOVE THE EXISTING TO PREVENT SETTLING.

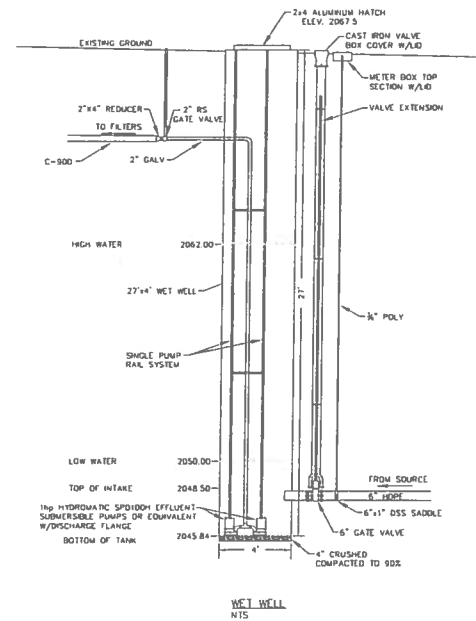


HORIZONTAL SEPARATION
REQUIREMENTS

- ZONE 1: A) NO SPECIAL REQUIREMENTS
- ZONE 2: A) WATER AND SEWER SEPARATED BY AT LEAST 6 FEET AT OUTSIDE WALLS.
- AND B) WATER AT LEAST 18 INCHES HIGHER IN ELEVATION THAN THE SEWER.
- AND OTHER C) WATER COVERED TO WATER MAIN TRENCHES AND PRESSURE TRENCHES FOR A MINIMUM OF 10 FEET ON BOTH SIDES OF THE WATER PIPE.
- OR D) WATER ENCASED IN AT LEAST 4 INCHES OF CONCRETE OR 10 FEET ON BOTH SIDES OF THE WATER PIPE.
- OR E) USE SPECIFIC REQUIREMENTS APPROVED BY A.E.D.
- ZONE 3: NOT ALLOWED
- NOTE: MINIMUM SEWER FORCE MAIN MUST HAVE ONE 18" HORIZONTAL SEPARATION AND 18" VERTICAL SEPARATION ZONE 2 AND ZONE 3 PLACEMENTS ARE NOT ALLOWED.



PIPE BEDDING DETAIL
N.T.S.



WET WELL
N.T.S.

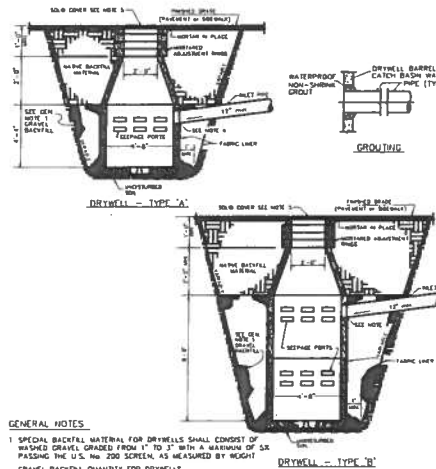
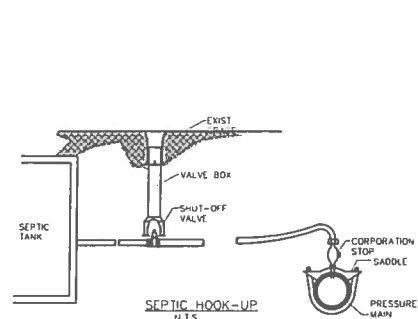
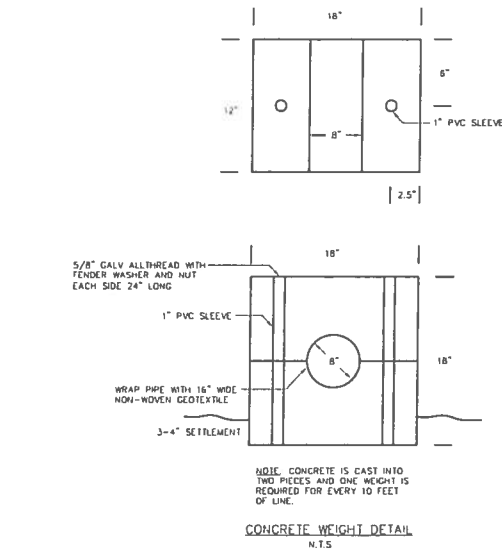
Sourdough Point Owners Association
Bonner County
Details

PROJECT: 08 005
DRAWING: 08005CON17
DESIGN BY: JLC
CHECKED BY: JLC
DATE: 8/4/08

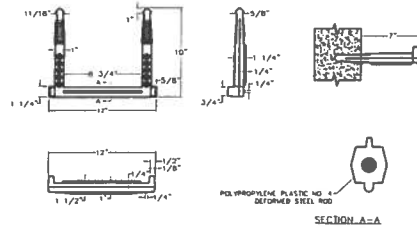
THIS DOCUMENT AND THE INFORMATION CONTAINED HEREIN ARE THE PROPERTY OF TATE ENGINEERING, INC. AND ARE NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF TATE ENGINEERING, INC.

TATE
ENGINEERING
1102 N. 4th Street
Coeur d'Alene
Idaho 83814
(208) 765-1100
FAX: (208) 765-1101
E-MAIL: tate@tate-eng.com

SHEET
10
OF 13



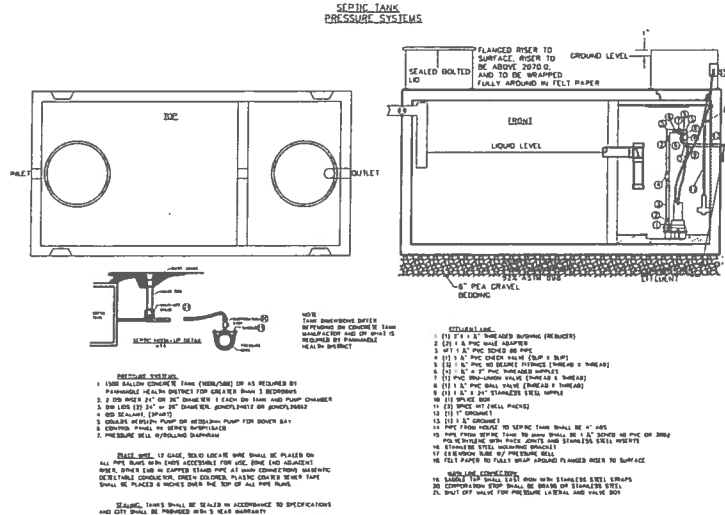
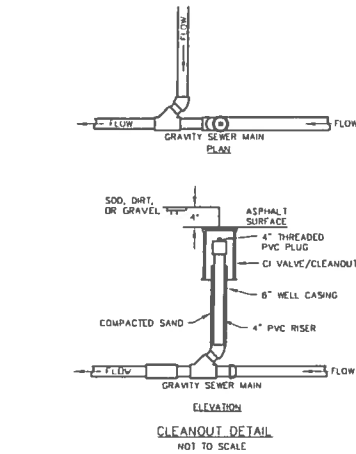
1. SPECIAL BACKFILL MATERIAL FOR DRYWELLS SHALL CONSIST OF WASHED GRAVEL GRADED FROM 1" TO 3" WITH A MAXIMUM OF PASSING THE U.S. No. 200 SCREEN, AS MEASURED BY WEIGHT. GRAVEL BACKFILL QUANTITY FOR DRYWELLS:
Type "A" - 30 CUBIC YARDS MINIMUM / 47 TONS
Type "B" - 40 CUBIC YARDS MINIMUM / 58 TONS
OR AS SPECIFIED ON ROAD PLANS.
2. ADJUSTMENT BLOCKS SHALL BE CEMENT CONCRETE.
3. WHEN PVC PIPE IS USED A PVC ADAPTER SHALL BE INSTALLED.
4. PAPERS SHALL BE DRAINED UP TO DRYWELLS.
5. SEE STANDARD DRAWING SS-2 FOR FRAME AND COVER DETAILS.



1 STEPS SHALL BE PLACED INTO WET CONCRETE WALL DURING MANUFACTURE OR MORTARED INTO HOLES AFTER CONCRETE HAS SET

2 PLASTIC COATED STEPS SHALL BE AS PER THIS STANDARD DRAWING OR AS APPROVED BY THE ENGINEER

MANHOLE STEPS DETAIL
NOT TO SCALE



Sourdough Point Owners Association
Bonner County
Details

PROJECT: 08 005
DRAWING: 88880A17-30-09
DESIGN BY: JLC
DRAWN BY: DPS
CHECK BY: RUT
LAST ENT DATE: 7/30/08

THIS DOCUMENT AND THE REASONS THEREFOR INCORPORATED
HEREIN AS AN INSTRUMENT OF PROFESSIONAL SERVICE IS THE
PROPERTY OF THE ENGINEER OR ARCHITECT AND IS NOT TO BE
WHOLE OR PART FOR ANY OTHER PROJECT WITHOUT THE EXPRESS
WRITTEN AUTHORIZATION OF THAT ENGINEER, ARCHITECT, OR
FIRM.

**TATE
ENGINEERING**

1103 N. 4th Street
Coeur d'Alene
Idaho, 83814
(208) 676-8708

FAX (208) 687-2129
MAIL: tate@tate-eng.com

SHEET
11
OF 13

MEMORANDUM

TO: File 96-9299
FROM: Daniel Nelson – Staff Hydrologist
DATE: December 19, 2013
SUBJECT: Volume Calculations, and Combined Condition Limitations.

The volume for this system was calculated in a memorandum by Cheri Palmer dated November 10, 2011. This volume amount was calculated for the ground water rights 96-8618, 96-8619, 96-8838. The memo states that there are 105 homes and between the 3 ground water rights mentioned above, the water use is limited to 0.6 acre feet per home or 63 acre feet for the in-house uses. The calculations were as follows:

96-8618 = 34 homes X 0.6 af/home = 20.4 acre feet
96-8619 = 34 homes X 0.6 af/home = 20.4 acre feet
96-8838 = 37 homes X 0.6 af/home = 22.2 acre feet
Total = 105 homes X 0.6 af/home = 63 acre feet

Cherie Palmer's memo also adds an additional 22 acres for irrigation under water right 96-9838. The volume for the irrigation use was calculated as follows:

0.15 cfs X 2145 days X 1.9835 = 63.7 acre feet
22 acres X 3 af/acre standard = 66 acre feet
Used the smaller of 63.7 acre feet (rounded to 64 acre feet).

The total amount of water that could be allowed from ground water was 63 acre feet of in-house use and 64 acre feet for irrigation for a total of 127 acre feet. The ground water system, goes through the same system that was designed for this surface water right permit 96-9299. I measured the system at the surface water treatment facility on the owner's meter and found that it was diverting a maximum of 69 gpm or 0.15 cfs. The diversion rate would limit the total volume of water delivered through the system. Please see the calculations below:

0.15 cfs X 1.9835 X 365 = 108.6 rounded to 109 af.

Using the calculations above, this permit should be limited to diversion rate measured of 0.15 cfs, and 109 af. The ground water wells are only used for back-up purposes, so the surface water is the only source being used on a consistent basis. Whereas this system was designed to deliver 0.15 cfs and 109 af, the water right license should also contain a condition that limits the water rights 96-8618, 96-8619, 96-8838, and 96-9299 when combined to a total diversion rate of 0.15 cfs and 109 af. However, water rights 96-9618 and 96-8619 have a combined volume limitation that allows up to 0.24 cfs, but water right 96-8838 doesn't have a combined volume limitation. In order to ensure that the combined water rights are accurately described, I am recommending a combined limitation condition on this water right of 0.24 cfs to match water rights 96-8618 and 96-9619, and a combined annual volume of 109 acre feet.

MEMORANDUM

Date: November 10, 2011
To: Water Right File 96-8838
From: cpalmer
Re: Licensing Memo

This right was permitted with three point of diversion. The permit was to cover the following wells:
Well #1-aka as the lower well and is covered by 96-8618
Well #2-aka as the upper well and is covered by 96-8619
Well #3-(D0013648) a well that was drilled in 1994

It seems that the wells have been largely unreliable so new wells were drilled as follows:

Well #4-(D0028082) this well is not currently associated with a water right, this well was completed after proof was filed for 96-8838
Well #5-(D0028084)

The field examiner found that Wells #3 and #5 are associated with 96-8838 and recommended that right 96-8838 include those two wells with a diversion rate of 0.11 cfs. He took the measurement from flow meters but I think that the diversion rate should be licensed for the full permitted rate of 0.15 cfs based on hp equation calculations:

Hp equation: $8.8 \times \text{hp} \times 0.7/\text{depth to water} + \text{pressure}$

~Depth to water is collected from well drillers report

~Pressure = elev. from well to bottom of water tank $\times 0.433$ or $500 \times 0.433 = 216.5$

Well #3: $8.8 \times 5 \times 0.7/50 + (216.5) = 0.11 \text{ cfs}$

Well #5: $8.8 \times 5 \times 0.7/10 + (216.5) = 0.14 \text{ cfs}$

(this assumes that the storage tank is empty resulting in the water not being pumped against further head)

Basing my recommendation on the hp equation is somewhat problematic because of the large gap in diversion rates. The field examiner determined that both wells are only pumping 0.11 cfs altogether. Even if there is always water in the storage tank and there is another 20ft of head, the theoretical diversion rate does not change much from the total estimate of 0.25 cfs. I don't think the discrepancy warrants a new field exam since the permitted rate of 0.15 cfs is close to the field examiners recommendation and I feel confident that the two wells can at least produce 0.15 cfs.

Overlapping rights at Sourdough Point:

96-8618-0.11 cfs, 20.40 af, and 34 homes

96-8619-0.13 cfs, 20.40 af, and 34 homes

96-9299-permit, proof has not filed on the permit yet, not relevant to this license

Currently 68 homes are covered by 0.24 cfs and 40.8 af. According to the attached engineering report there are 105 lots total at Sourdough Point. While this right was permitted for 88 lots, there is obviously an overlap between all rights. All rights when combined shall be limited to 105 lots total.

Domestic volume calculation: $105 \text{ lots total} \times 0.6 \text{ af} - 68 \text{ already licensed} @ 0.6 \text{ af} = 22.2 \text{ af}$

Irrigation: it appears that the field examiner is in favor of granting the full 22 acres of irrigation under this right. The exact location of the 22 acres is unknown and I agree with the field examiner that this right should be changed to municipal use so an exact location is not necessary. The volume under irrigation will be:

$0.15 \text{ cfs} \times 214 \text{ days} \times 1.9835 = 63.7 \text{ af}$

$22 \text{ acres} \times 3 = 66 \text{ af}$

$22.2 \text{ af under domestic use} + 63.7 \text{ for irrigation} = 86 \text{ af total}$

PHOTOGRAPHER AND DATE OF PHOTOS DANIEL A NELSON 5/23/2013

FILE NUMBER 96-9299

Filter Building
or water
treatment
building

This is the Raw
Water Wet Well.
All water
delivered here.



This top photo shows the Filter Building or the water treatment facility and the Raw Water Wet Well. The water from the lake and/or the wells is diverted into the Raw Water Wet Well to be delivered into the Filter Building.

Lake intake line
is here.



This photo shows the Raw Water Wet Well and the intake from the lake. The Intake is located by the power pole in the center of the photo.

This is the Raw
Water Wet Well.
All water
delivered here.

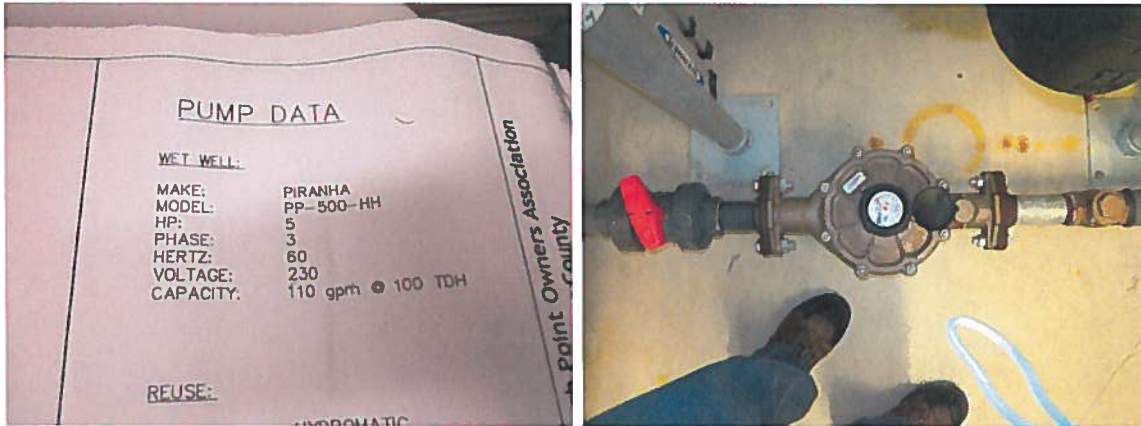
This photo shows
the lake intake
line going out into
the lake.



This photo shows the location of the intake line going out into the lake.

PHOTOGRAPHER AND DATE OF PHOTOS DANIEL A NELSON 5/23/2013

FILE NUMBER 96-9299



The photo above left shows the pump data for the raw water pump from the lake. The flow met in the picture above left is the meter used to monitor the volume of water taken directly from the lake.



The pressure gauge shown in the picture to the right shows the pressure the system operates under.



The three pictures above are of the flow meter showing the water use at the end of the water purification system. This meter determines the flow rate of the lake pump and the annual volume of water used by the subdivision. The meter read a maximum of 69 gpm at the time I visited the site. The owner's told me that they try operate the system at around 60 gpm.

PHOTOGRAPHER AND DATE OF PHOTOS DANIEL A NELSON 5/23/2013

FILE NUMBER 96-9299



The photos above show the filtration system used to purify the lake water for the subdivision. The water from the filtration system goes into a large tank under the floor.

The photos below show the re-lift pumps that divert the water in the large storage tank under the floor to the subdivisions distribution system.

