

STATE OF OREGON
 WATER WELL REPORT
 (as required by ORS 537.785)

 WATER RESOURCES DEPT. #1
 SALEM, OREGON

 SALEM, OREGON
 (START CARD) #

 T30s/R15w/11dc
 16053

 (1) OWNER: HARRY SPENCER Well Number: 39
 Name GROWTH UNLIMITED TREE FARM
 Address P.O. BOX 291
 City LANGLOIS State OR. Zip 97450

(2) TYPE OF WORK:

 New Well Deepen Recondition Abandon

(3) DRILL METHOD

 Rotary Air Rotary Mud Cable
 Other

(4) PROPOSED USE:

 Domestic Community Industrial Irrigation
 Thermal Injection Other

(5) BORE HOLE CONSTRUCTION:

 Special Construction approval Yes No Depth of Completed Well 57'2"

 Explosives used Yes No Type _____ Amount _____

HOLE			SEAL			Amount sacks or pounds
Diameter	From	To	Material	From	To	
10"	0	18	CEMENT	0	18	800#
6"	18	58				

 How was seal placed: Method A B C D E

 Other

Backfill placed from _____ ft. to _____ ft. Material _____

Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER:

Casing/Liner	Diameter	From	To	Gauge	Material			
					Steel	Plastic	Welded	Threaded
Casing	6"	+1	39'11/2"	.250	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Liner					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Final location of shoe(s) _____

(7) PERFORATIONS/SCREENS:

 Perforations Method TELESCOPE
 Screens Type JOHNSON Material STAINLESS STEEL

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
38'10"	44'9"	.015		6"	6"	<input type="checkbox"/>	<input type="checkbox"/>
44'9"	50'4"	.012		6"	6"	<input type="checkbox"/>	<input type="checkbox"/>
50'4"	55'3 1/2"	.010		6"	6"	<input type="checkbox"/>	<input type="checkbox"/>
55'3 1/2"	57'2"			5"	5"	<input checked="" type="checkbox"/>	<input type="checkbox"/>

(8) WELL TESTS: Minimum testing time is 1 hour

 Pump Bailer Air Flowing Artesian

 Yield gal/min 42 Drawdown 6'9" Drill stem at @ 5.3' Time 1 hr.

 Temperature of water 52° Depth Artesian Flow Found _____

 Was a water analysis done? Yes By whom _____

 Did any strata contain water not suitable for intended use? Too little

 Salty Muddy Odor Colored Other _____

Depth of strata _____

(9) LOCATION OF WELL by legal description:

 County COOS Latitude _____ Longitude _____
 Township 30S N or S, Range 15W E or W, WM.
 Section 11 SE 1/4 SE 1/4
 Tax Lot 1600 Lot _____ Block _____ Subdivision _____
 Street Address of Well (or nearest address) CROFT ROAD -
OFF OF 101 SOUTH.

(10) STATIC WATER LEVEL:

25'6" ft. below land surface. Date 3/13/90
 Artesian pressure _____ lb. per square inch. Date _____

(11) WATER BEARING ZONES:

Depth at which water was first found <u>25'</u>			
From	To	Estimated Flow Rate	SWL
<u>23'</u>	<u>55'</u>	<u>80</u>	<u>25'6"</u>

(12) WELL LOG:

 Ground elevation 7300'

Material	From	To	SWL
CLAY, BROWN	0	6	
SAND w/ GRAVEL, BROWN	6	18	
GRAVEL w/ SAND, MED., BROWN	18	20	
GRAVEL w/ SAND, MED., GRAY	20	23	
GRAVEL w/ SAND, MED., RED	23	24	25'6"
SAND w/ GRAVEL, FINE, BROWN	24	28	
CLAY w/ SAND, BROWN	28	30	
SAND w/ GRAVEL, FINE, BROWN	30	45	
GRAVEL w/ SAND, MED., BROWN	45	50	
SAND, MED., BROWN	50	55	
CLAY, GRAY	55	58	

 Date started 3/12/90 Completed 3/20/90

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to my best knowledge and belief.

WWC Number _____

Signed _____ Date _____

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.

 WWC Number 1493

 Signed Jim Mack Date 3/20/90

R. J. RALLS - GEOLOGIST

P.O. Box 389
Brookings, Oregon 97415

6-12685
RECEIVED
OCT 1991
WATER
Phone
(503) 469-6053

well # 1 in Application dated 9/27/91

USM-10: 26775
P.O. Box: 36743

September 10, 1991

TO: Mr. Harry Spencer
Growth Unlimited Nursery, Inc.
P. O. Box 291
Langlois, OR, 97450

Subject: Hydrogeologic evaluation of proposed well Spencer #1
located approximately W. 650' & N. 900' from the
SE corner Section 11, T. 30 S., R. 15 W., W.&M.
off Croft Road, Coos County, Oregon

Dear Mr. Spencer:

The following presents our findings of a Hydrogeologic evaluation of the aquifer in the above subject well.

The purpose of this report is to address the Geology and Hydrogeology of the water bearing aquifer, with respect to utilization proposal of the well. It is understood that you intend to pump water from the well at a pump rate suitable for the agricultural needs in the Nursery.

SCOPE OF WORK

The work performed for this report includes a test pump monitoring of two test wells, geologic evaluation of nearby Well Drillers logs, review of the available geologic and hydrogeologic literature and calculations based on the findings of this information.

TOPOGRAPHY

The well is located on top nearly flat and level ground. This ground is the upper surface of a gentle west facing Marine Terrace. South of the well about 652 feet and below about 35.58 feet is Conner Creek. The slope between the Well and the Creek is gentle and consistent.

GEOLOGY

Bedrock

Bedrock in the well was encountered at about 55 feet below the surface. The upper surface of the bedrock is weathered and results in a residual gray clay, which is relatively impermeable.

Assignment of the Bedrock to a Formation is not possible, given the available information. However, it is likely that the bedrock is one of the following formations; 1) Otter Point Formation, Jurassic Age; 2) Roseburg Formation, Early Eocene Age; 3) Late Cretaceous sediments; 4) Other Sedimentary formation.

Regardless of the age of the Bedrock Formation, the bedrock type is believed to be sedimentary of Marine origin and older than 40 million years.

Marine Terrace Formation

The exposed geologic unit at the Well Site, is the upper surface of a Pleistocene elevated Marine Terrace. This Marine Terrace upper surface is believed to be equivalent to the Late Pleistocene Whisky Run Terrace.

The Marine Terrace materials consist of basal layers of clayey sands and gravels, grading upwards to gravelly sands in the mid-layers and well sorted fine to medium grained sands near the surface. These Marine Terrace materials were deposited in a near shore or shoreline environment during the Late Pleistocene and atop an unconformable and disconformable peneplained surface of the bedrock.

The Marine Terrace materials are permeable and forms a major unconfined aquifer in the area.

HYDROGEOLOGY

The hydrogeology of the well site was determined by Pump Test, with monitoring of two monitor wells. The production well is 6 inches diameter, with depths of screens, casings and other information as provided by the Well Driller Report (Appendix A). The Test wells were drilled to 40 feet deep at about 15 feet and 25 feet distance from the production well towards Conner Creek. The monitoring wells were lined with PVC perforated pipe.

The pump consisted of a submersible with intake at about 54 feet deep in the well below the surface ground. Water pumped from the well during the test was carried over 500 feet from the well toward the southwest and discharged into an open pond.

The testing done consisted of two different Pump Tests. The first test was started on Monday, August 26, 1991 with a continual Pump Rate of about 50 gpm for about 2 days until the afternoon of Wednesday, August 28, 1991, for a total pumping time of about 48 hours.

During the interval time of the first test, a major Cold Front and Storm passed over Western Oregon. Because the Drawdown in the monitor wells reacted poorly and very inconsistently, and because the Pump Rate was relatively low, the data collected from the first test was considered nondependable and inaccurate in Hydrogeologic evaluations (see Pump Test #1, Appendix B B-1 C-1).

The second Pump Test was started on about 11:00 AM Thursday, August 29, with a continual Pump Rate of about 69 gpm for about 4 days until the evening of Wednesday, September 2, 1991 (Appendix B, B-2). The drawdown curve of pump test #2 was graphed (Appendix C-2) and showed a steady curve believed representative of the Hydrogeologic conditions in the aquifer.

Evaluations of Pump Test #2

Evaluation of Pump Test #2, was determined using an analysis formula derived

by C. V. Theis (1935) and based on heat-flow analogy of nonequilibrium hydraulics in aquifers.

Theis formula presents:

$$Z_r = \frac{q}{4 T \pi} \int_u^{\infty} \frac{e^{-u}}{u} du$$

Z_r = Drawdown in Observation well at distance r from pumped well

q = Pump Rate

T = Transmissibility of the Aquifer

u = function of S_c (storage constant for aquifer), with respect to pumping time and the S_c transmissibility.

$$u = \frac{r^2 S_c}{4 T t}$$

t = time of pumping from beginning.

The integral in the Theis formula of $\int_u^{\infty} \frac{e^{-u}}{u} du = W(u)$ or the function of u.

If q is constant, then Z_r = a constant of $W(u)$, where the type curve of r^2/t versus Z_r should be similar to the type curve of u versus $W(u)$.

$$\frac{r^2}{t} = \frac{4 T}{S_c} u$$

Table 6-3 (Appendix D) lists values of $W(u)$ for various values of u. From Table 6-3 a type curve was drawn on log log paper (Appendix E-1).

Using the data from drawdown and time monitored from well #1 in Test #2, a curve of Z_r versus r^2/t was drawn on log log paper (Appendix E-2).

By superimposing the graphed curve of $W(u)$ versus u (Appendix E-1) onto the graphed curve of Z_r versus r^2/t (Appendix E-2), with axes parallel, a common point taken from where the two curves coincide provided match points of:

Water Well & Conner Creek Parameters

Because Conner Creek is the closest flowing stream nearby to the Well Spencer #1, and analysis was made with respect to pump production from the well and Conner Creek.

Distance information between Spencer #1 well and Conner Creek was provided by John Prahar, Registered Liscence Surveyor in Oregon.

The following information is given as represented on drawing of Well and vicinity to Conner Creek (from page 5), from survey and well records.

- H_w - Depth of original water Well from surface to bedrock ---- 55 feet
- H_o - Thickness of original water level before pumping ----- 26.375 feet
- H_{creek} - Depth in well of elevation of Conner Creek ----- 35.58 feet
- r_1 - Distance between Spencer well and monitor well #1 ----- 15.00 feet
- r_2 - Distance between Spencer well and monitor well #2 ----- 25.00 feet

Evaluation

From the Pump Test #2 and the above given data it is possible to make evaluations of the aquifer and its associated Hydrogeology with respect to Conner Creek.

Recovery monitoring was not conducted in this evaluation after either Pump Test #1 and Pump Test #2. However prior to pump test number 2, the water level rebound in the Spencer #1 production well recovered to within 3½ inches of the original water level before Pump Test #1, within 22 ½ hours of recovery. This rebound recovery of the aquifer level between Pump Test #1 and Pump Test #2, is well within normal parameters and indicates a good flow and recharge within the aquifer.

From the Pump Test #2, using the Theis formula, the following:

Match Point coordinates (Appendix E-1 & E-2):

$$W(u) = 5.0; \quad u = .0039; \quad Z = 28 \text{ inches (2.33 ft)}; \quad r^2/t = 204 \text{ Ft}^2/\text{day}; \\ q = 69 \text{ gpm (13,314 ft}^3/\text{day)};$$

$$\text{Therefore:} \quad T = \frac{13,314 \times 5.0}{4 \times \pi \times 2.33 \text{ ft}} = \frac{q \times W(u)}{4 \times 3.14 \times Z} \\ = \frac{2,270 \text{ ft}^2/\text{day}}{\text{Transmissibility of aquifer}} \\ \text{and} \quad S_c = \frac{4 \times .0039 \times 2,270 \text{ ft}^2/\text{day}}{204} = \frac{4 \times u \times T}{r^2/t} \\ = \underline{0.174} \text{ Storage Constant of aquifer}$$

Transmissibility of Marine Terrace aquifer is --- 2,270 ft²/day

Storage constant of Marine Terrace aquifer is --- 0.174

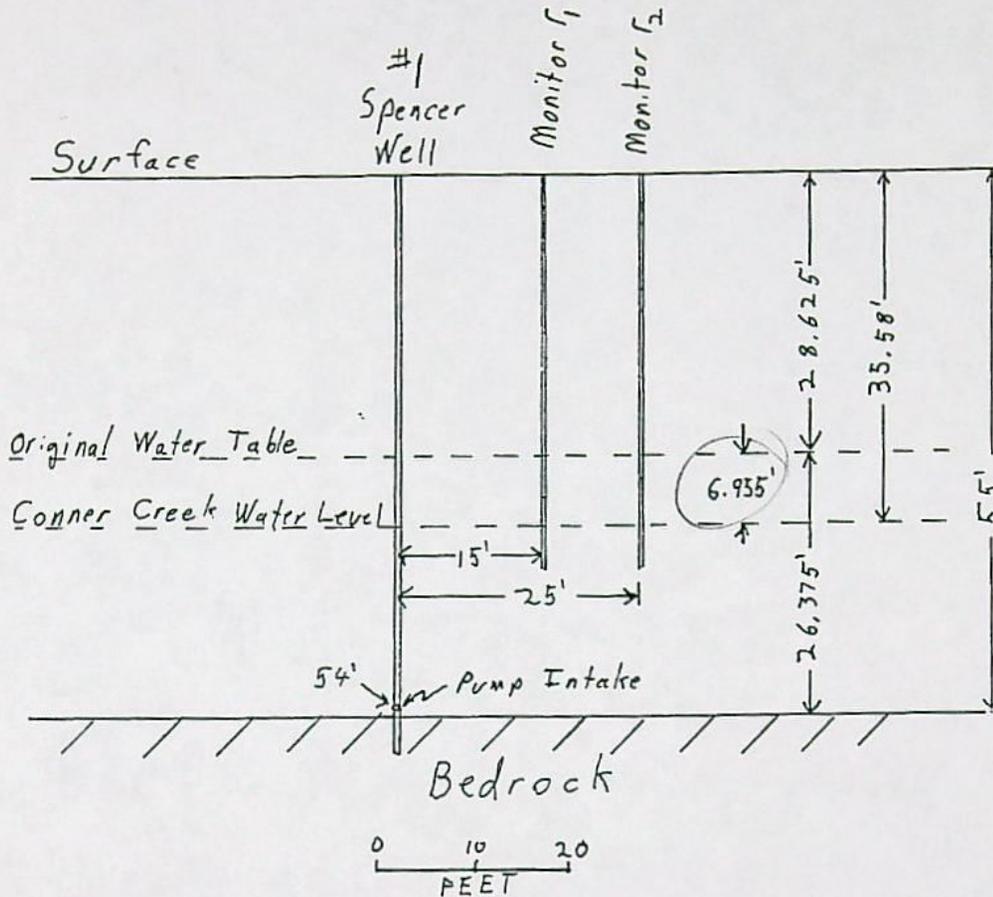
Marine Terrace Aquifer Character

From a study of the Well Drillers Log of Spencer Well #1 and of the other Logs of nearby wells (see location map page 7), it is concluded that the Marine Terrace is very consistent in thickness and grading of the layered materials. The upper surface of the Marine Terrace, where undissected by streams or creeks, slopes very gently towards the west. The Water Table from these logs, also indicates a nearly uniform surface with gentle slopes towards the west lying near parallel to the upper surface. In all the Drillers Logs in the vicinity to Spencer #1 Well, the water tables encountered were at least 5 feet above the level of the nearest stream and in many cases tens of feet above the level of the nearest stream.

The bedrock aquatard lying beneath the Marine Terrace, as evaluated from the Well Drillers Logs in the vicinity, is also consistently smooth surface with a predominate very gentle slope towards the west. The bedrock aquatard upper surface usually consists of tan to gray colored claystone.

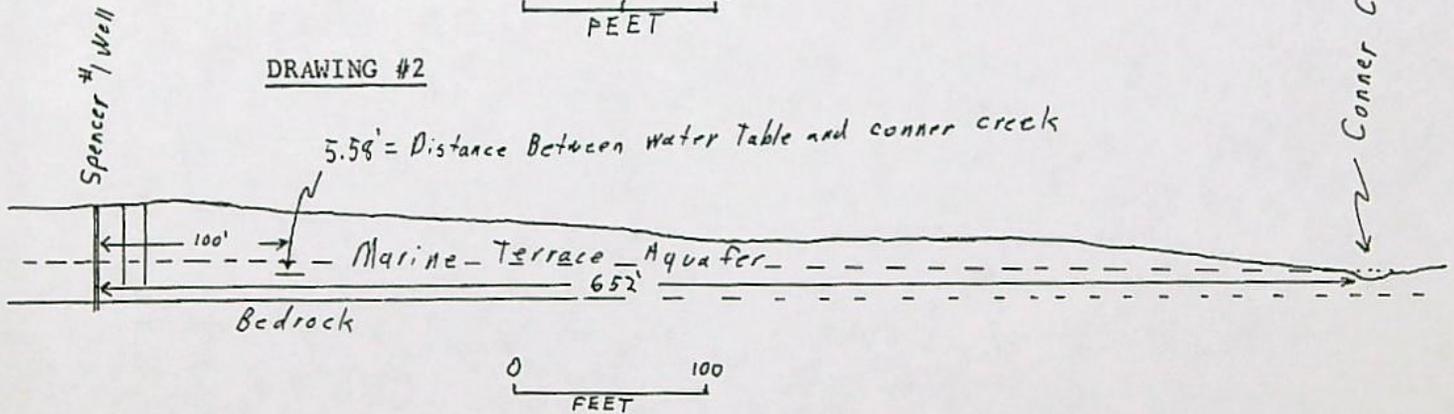
The following presents a schematic of the Spencer production well, Monitor wells r_1 and r_2 , distances and thicknesses of water tables and Conner Creek.

DRAWING #1



Where does
 5.58' come
 from?

DRAWING #2



From the above information and using the determined transmissibility of the aquifer, a calculation was made to find the expected Pump Rate needed in Spencer Well #1 to produce a drawdown of 5.58 feet in an imaginary monitor well at distance 100 feet from Spencer well at 100 pumping days. This drawdown of 5.58' would be in level with Conner Creek but would still not influence Conner Creek through hydrogeologic connection.

Given: $i = 100$ feet and $Z_r = 5.58$ feet $t = 100$ days

$$u = \frac{100^2 \times 0.174}{4 \times 2,270 \times 100} = 0.001916 \quad \text{Therefore from tabel 6-3}$$

$$W(u) = 5.698 \quad \text{and} \quad 5.58 = \frac{q \times 5.698}{4 \times \pi \times 2,270} \quad \text{so } q = 27934 \text{ ft}^3/\text{day} = 144 \text{ gpm}$$

Therefore to pull the water table down 5.58 feet at a distance of 100 feet from the well and pumping 100 days, it will be necessary to pump at 144 gallons per minute.

CONCLUSIONS

From the above we conclude that a proposed pump rate at the Spencer #1 well during the dry season, as the pump test was conducted, of at least 100 gallons per minute will not interfere or be interconnected with Conner Creek to the south.

Although we believe that a pump rate of about 100 gpm over a period of 100 days will not connect with Conner Creek, the limited permeability with respect to the aquifer thickness will limit the pump yield. In any case, the available pump yield can be increased when the water table is higher and decreased when the natural water table is lower.

The estimated permeability of .0597 ft/min., is consistent with general permeabilities of coarse sands as encountered in the well bore. It is further believed that unrecorded thin clay layers within the aquifer impede or slow down the vertical migration of water within the aquifer, which accounts for the very tight cone of depression formed during the pump tests.

LIMITATIONS

This hydrogeologic report is believed to represent the geology and hydrogeology of the project area. The evaluations and conclusions presented herein, are believed representative of the well and its aquifer, but are limited to within the scope of work performed.

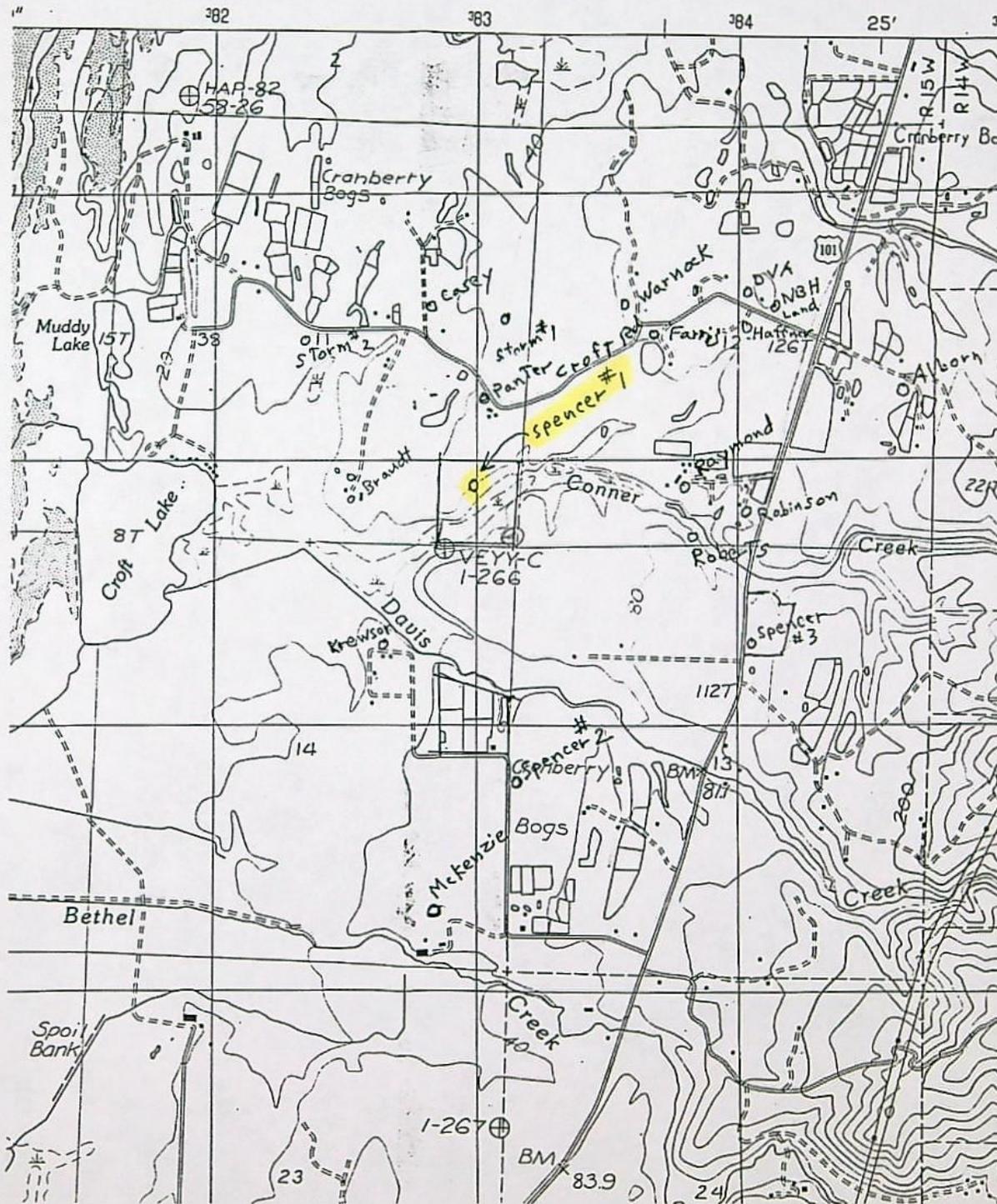
It has been a pleasure to be of service to you, and if there are questions concerning this report or its findings, please contact us.

Respectfully yours,



Russell J. Ralls

VICINITY MAP
U.S.G.S. 7½"



1 inch = 1000 feet



STATE OF OREGON
WATER WELL REPORT
(as required by ORS 537.765)

WATER RESOURCES DEPT. #1
SALEM, OREGON

WATER RESOURCES DEPT.
SALEM, OREGON
(START CARD) #

T30s/R15w/11de
16053

(1) OWNER: HARRY SPENCER Well Number: 39
Name GROWTH UNLIMITED TREE FARM
Address P.O. BOX 291
City LANGLOIS State OR. Zip 97450

(2) TYPE OF WORK:

New Well Deepen Recondition Abandon

(3) DRILL METHOD

Rotary Air Rotary Mud Cable
 Other

(4) PROPOSED USE:

Domestic Community Industrial Irrigation
 Thermal Injection Other

(5) BORE HOLE CONSTRUCTION:

Special Construction approval Yes No Depth of Completed Well 57'2"
Explosives used Yes No Type _____ Amount _____

HOLE			SEAL			Amount sacks or pounds
Diameter	From	To	Material	From	To	
10"	0	18	CEMENT	0	18	800#
6"	18	58				

How was seal placed: Method A B C D E
 Other

Backfill placed from _____ ft. to _____ ft. Material _____
Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER:

Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing: 6"	+1	37'11"	.250	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Liner:				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Final location of shoe(s) _____

(7) PERFORATIONS/SCREENS:

Perforations Method TELESCOPE
 Screens Type JOHNSON Material STAINLESS STEEL

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
38'10"	44'9"	.015		6"	6"	<input type="checkbox"/>	<input type="checkbox"/>
44'9"	50'1/4"	.012		6"	6"	<input type="checkbox"/>	<input type="checkbox"/>
50'1/4"	55'3/4"	.010		6"	6"	<input type="checkbox"/>	<input type="checkbox"/>
55'3/4"	57'2"			5"	5"	<input checked="" type="checkbox"/>	<input type="checkbox"/>

(8) WELL TESTS: Minimum testing time is 1 hour

Pump Bailer Air Flowing
 Artesian

Yield gal/min	Drawdown	Drill stem at	Time
42	6'9"	@ 5.3'	1 hr.

Temperature of water 52° Depth Artesian Flow Found _____

Was a water analysis done? Yes By whom _____

Did any strata contain water not suitable for intended use? Too little

Salty Muddy Odor Colored Other _____

Depth of strata: _____

(9) LOCATION OF WELL by legal description:

County COOS Latitude _____ Longitude _____
Township 30 S Nor S, Range 15 W E or W, WM.
Section 11 SE 1/4 SE 1/4
Tax Lot 1600 Lot _____ Block _____ Subdivision _____
Street Address of Well (or nearest address) CROFT ROAD -
OFF OF 101 SOUTH.

(10) STATIC WATER LEVEL:

25'6" ft. below land surface. Date 3/13/90
Artesian pressure _____ lb. per square inch. Date _____

(11) WATER BEARING ZONES:

Depth at which water was first found 25'

From	To	Estimated Flow Rate	SWL
23'	55'	80	25'6"

(12) WELL LOG:

Ground elevation ± 300'

Material	From	To	SWL
CLAY, BROWN	0	6	
SAND w/ GRAVEL, BROWN	6	18	
GRAVEL w/ SAND, MED., BROWN	18	20	
GRAVEL w/ SAND, MED., GRAY	20	23	
GRAVEL w/ SAND, MED., RED	23	24	25'6"
SAND w/ GRAVEL, FINE, BROWN	24	28	
CLAY w/ SAND, BROWN	28	30	
SAND w/ GRAVEL, FINE, BROWN	30	45	
GRAVEL w/ SAND, MED., BROWN	45	50	
SAND, MED., BROWN	50	55	
CLAY, GRAY	55	58	

Date started 3/12/90 Completed 3/20/90

(unbonded) Water Well Constructor Certification:

I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to my best knowledge and belief.

Signed _____ WWC Number _____
Date _____

(bonded) Water Well Constructor Certification:

I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. All work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.

Signed Tom Mack WWC Number 1493
Date 3/20/90

Pump Test #1

Pump Rate ----- 48 to 52 Gallons per Minute
 50 GPM Average
 Time of Start ----- 12:25 PM 8/26/91 (August 26, 1991)
 Time of Stop ----- 12:25 PM 8/28/91 (August 28, 1991)
 Water Level Beginning of test-28 feet 4 inches below ground surface

Monitor #1 Well (radius = 15 feet)

	TIME			DRAWDOWN		R^2/t (ft ² X10 ⁵)
	Minutes	Hours		Feet	Inches	
Aug. 26	0	0	12:25 PM	0	0	
	4	0.066		0.8125	9.75	0.81
	6	0.1		1.00	12.0	0.54
	12	0.2		1.15625	13.87	.27
	22	0.37		1.1875	14.25	.15
	32	0.53		1.2708	15.25	.10
	42	0.70		1.28	15.36	.077
	52	0.87		1.29	15.48	.06
	67	1.12		1.31	15.72	.048
	99	1.65		1.34	16.08	.033
	122	2.03		1.343	16.12	.0265
	202	3.37		1.687	16.12	.016
	267	4.45		1.563	18.76	.0121
	382	6.37		1.667	20.00	.0085
	607	10.12		1.563	18.76	.0053
	1057	17.62	Aug. 27	1.8125	21.75	.0031
	1442	24.03		1.77	21.24	.0023
	1807	30.12		1.833	22.00	.0018
	2877	47.95	Aug. 28	1.948	23.38	.0011

Monitor #2 Well (radius = 25.13 feet)

Aug. 26	4	0.07	12:25 PM	0.775	9.3	2.16
	6	0.10		0.83	10.0	1.52
	16	0.27		1.00	12.0	0.56
	26	0.43		1.042	12.5	.35
	36	0.60		1.083	13.00	.252
	46	0.77		1.09375	13.125	.198
	61	1.02		1.11458	13.375	.149
	126	2.1		1.167	14.00	.072
	201	3.35		1.458	17.50	.045
	266	4.43		1.375	16.50	.034
	381	6.35		1.3125	15.75	.024
	606	10.10		1.3958	16.75	.015
	1056	17.60	Aug. 27	1.50	18.00	.0086
	1441	24.02		1.5625	18.75	.0063
	1806	30.10		1.625	19.50	.0050
	2876	47.93	Aug. 28	1.75	21.00	.0031

PUMP TEST #2

Greenhouse Well

Pump Rate average ----- 69 gpm (13,314 Ft³/day)

Time of Start ----- 11:00 AM 8/29/91 (August 29, 1991)

Time of Stop ----- 8:25 PM 9/ 2/91 (September 2, 1991)

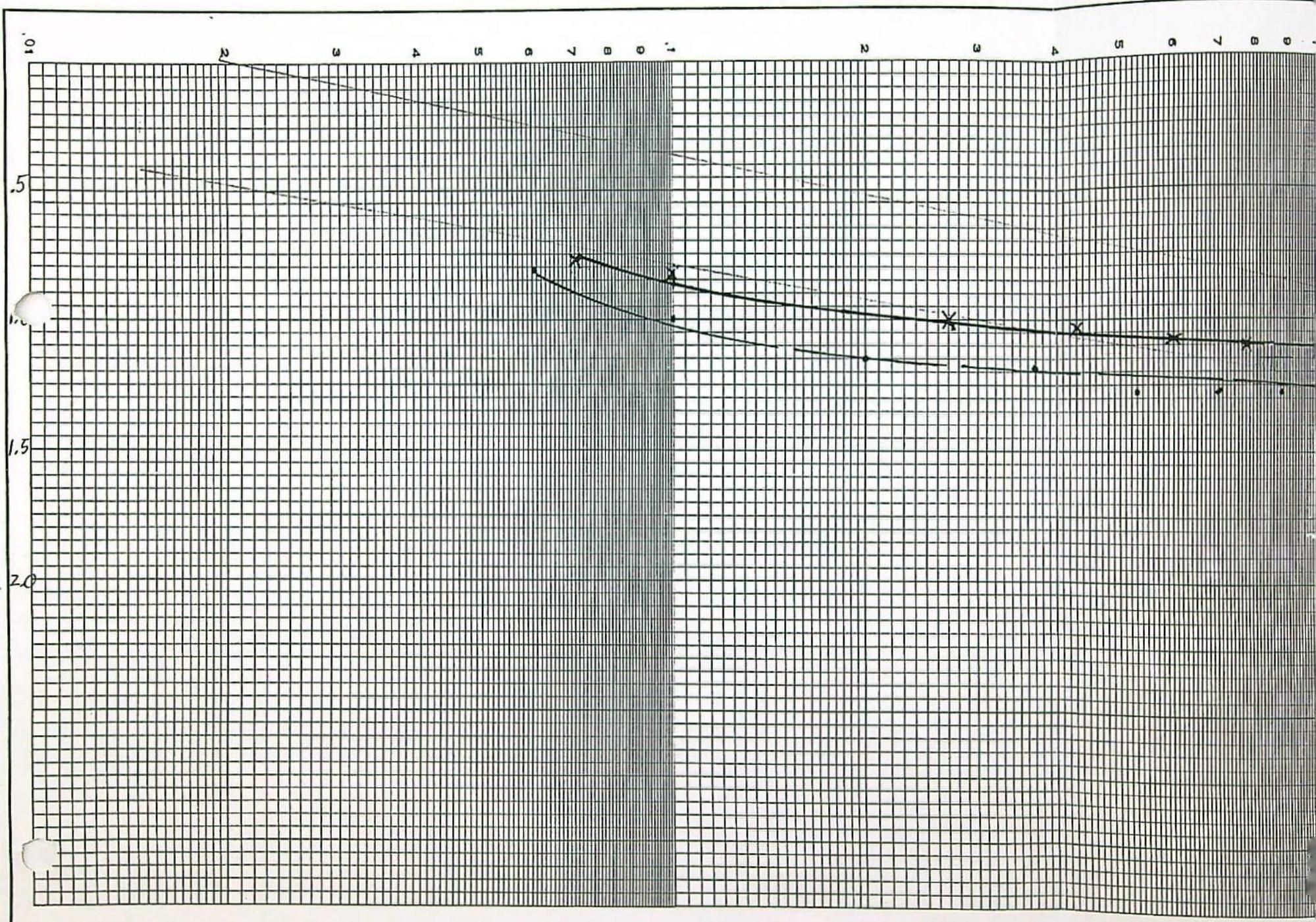
Water level beginning of test ---- 28 feet 7½ inches below ground surface ^{9.625'}

Monitor #1 Well (Radius = 15 feet)

TIME		DRAWDOWN		R ² /t (ft ² X10 ⁵)
Minutes	Hours	Feet	Inches	
14	.233	1.01	12.125	.232
29	.483	1.23	14.75	.112
44	.733	1.25	15.00	.0736
59	.983	1.27	15.25	.0549
74	1.233	1.29	15.50	.0438
89	1.48	1.33	16.00	.0364
104	1.733	1.34	16.125	.0312
119	1.983	1.364	16.375	.0272
239	3.98	1.54	18.50	.0136
359	5.98	1.68	20.125	.009
506	8.43	1.8125	21.75	.0064
599	9.98	1.875	22.50	.0054
1139	18.98	2.146	25.75	.0028
1679	27.98	2.33	28.00	.0019
2219	36.98	2.489	29.875	.0015
2759	45.98	2.594	31.125	.0012
3299	54.98	2.6875	32.25	.00098
4139	68.98	2.8125	33.75	.00078
5599	93.32	2.958	35.50	.00057
6324	107.43	3.021	36.252	.00051

Monitor #2 Well (Radius = 25.13 feet)

16	.27	1.00	12.00	.568
31	.52	1.04	12.5	.2933
46	.77	1.073	12.875	.1977
61	1.017	1.101	13.25	.1491
76	1.267	1.114	13.375	.1197
91	1.62	1.146	13.75	.0999
106	1.767	1.156	13.875	.0858
121	2.012	1.1875	14.25	.0751
241	4.012	1.354	16.25	.0377
361	6.017	1.469	17.625	.0252
508	8.47	1.58	19.00	.0179
601	10.02	1.646	19.75	.0151
1141	19.02	1.906	22.875	.0079
1681	28.02	2.0625	24.75	.0054
2221	37.02	2.1875	26.25	.0041
2761	46.02	2.292	27.50	.0033
3301	55.02	2.375	28.50	.00275
4141	69.02	2.489	29.875	.0022
5601	93.35	2.625	31.5	.0016
6326	105.43	2.677	32.124	



M k

Sw

T_{cor}

Rint

Rcor

M k

Sw

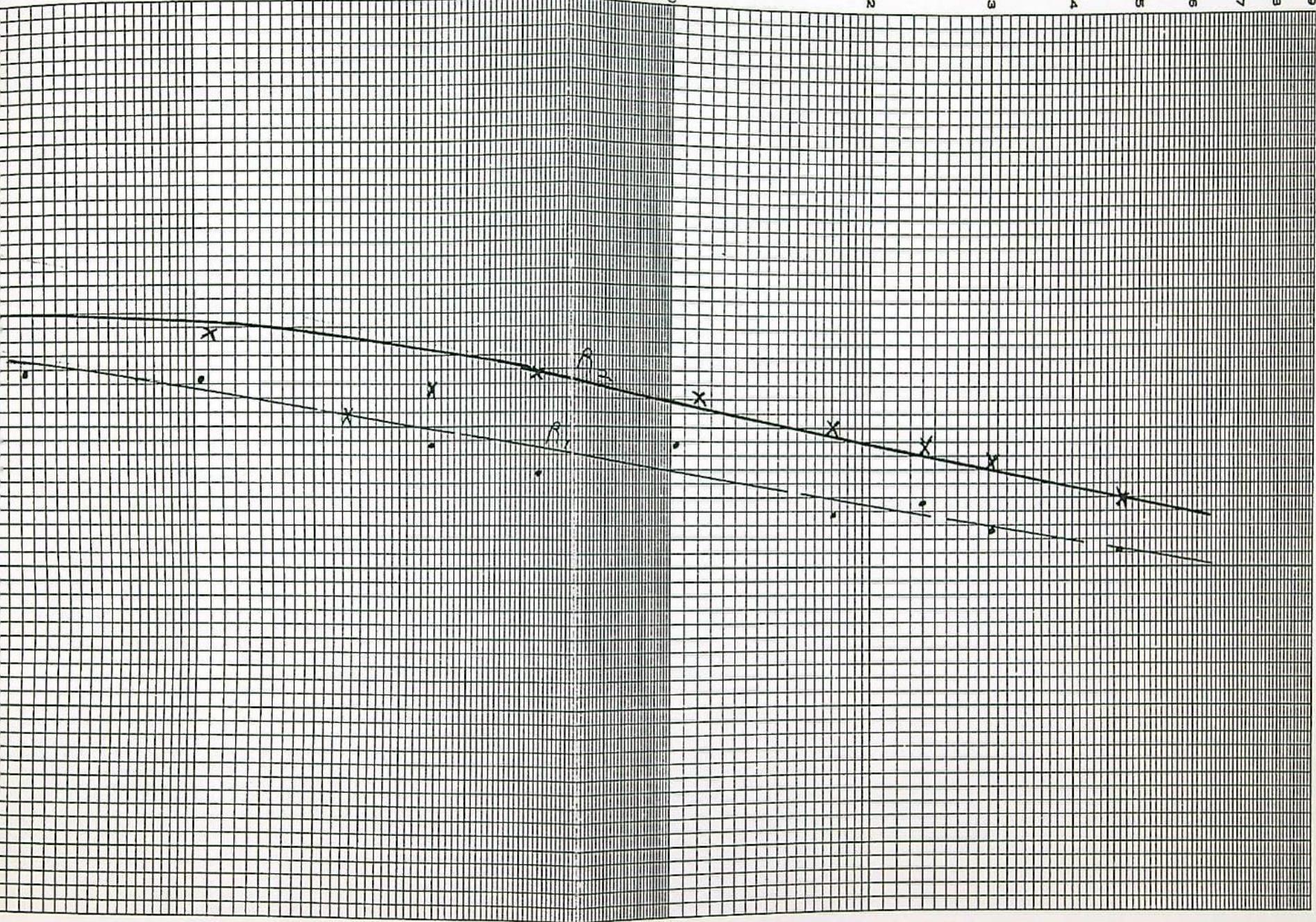
T_{cor}

Rint

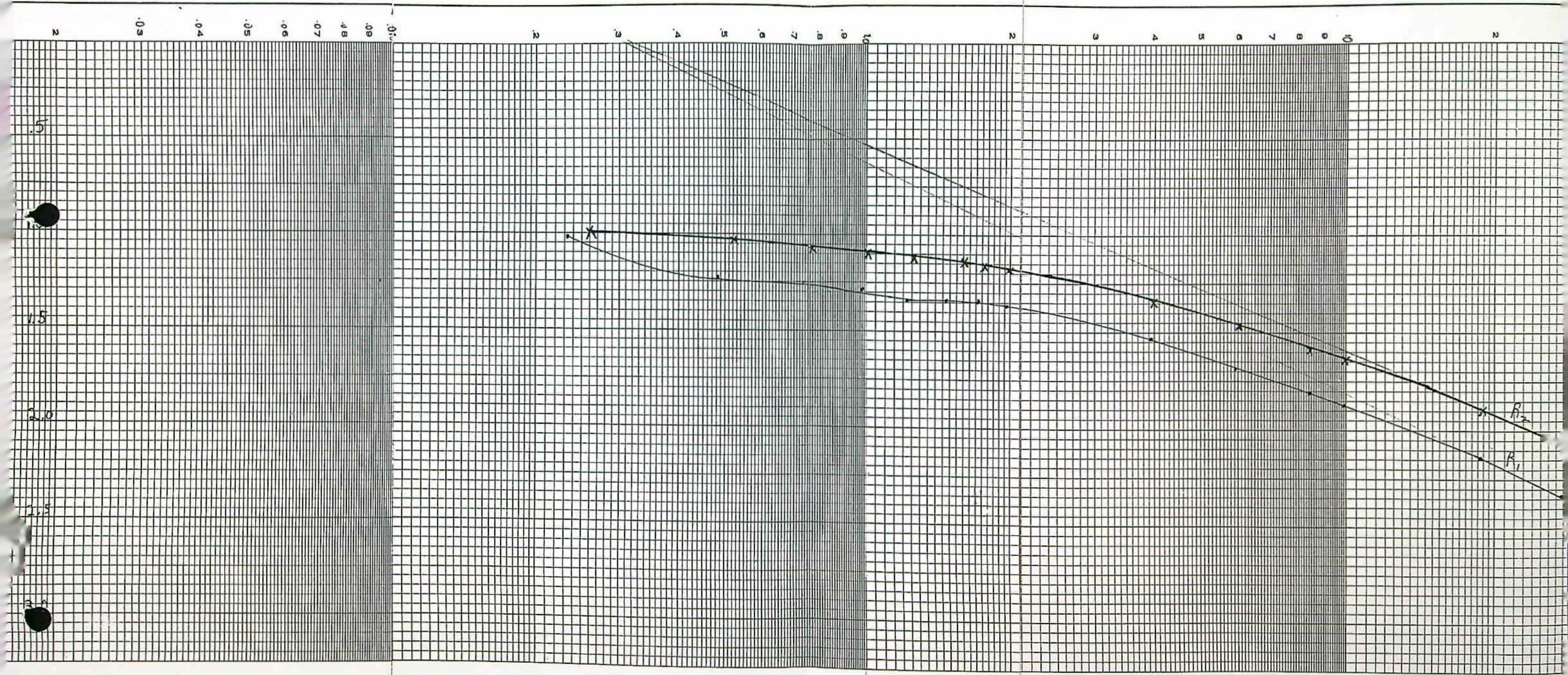
Rcor

Pump Test #1

2 3 4 5 6 7 8 9 10 2 3 4 5 6 7 8 9



M	k	Sw	T _{cor}	R _{int}	R _{cor}	R _{xo}	CP	Por	SP	Gen
---	---	----	------------------	------------------	------------------	-----------------	----	-----	----	-----



k	Sw	T _{cor}	Rint	Rcor	M	k	Sw	T _{cor}	Rint	Rcor	M	k	Sw	T _{cor}	Rint	Rcor	Rxo	CP
---	----	------------------	------	------	---	---	----	------------------	------	------	---	---	----	------------------	------	------	-----	----

Pump Test #2

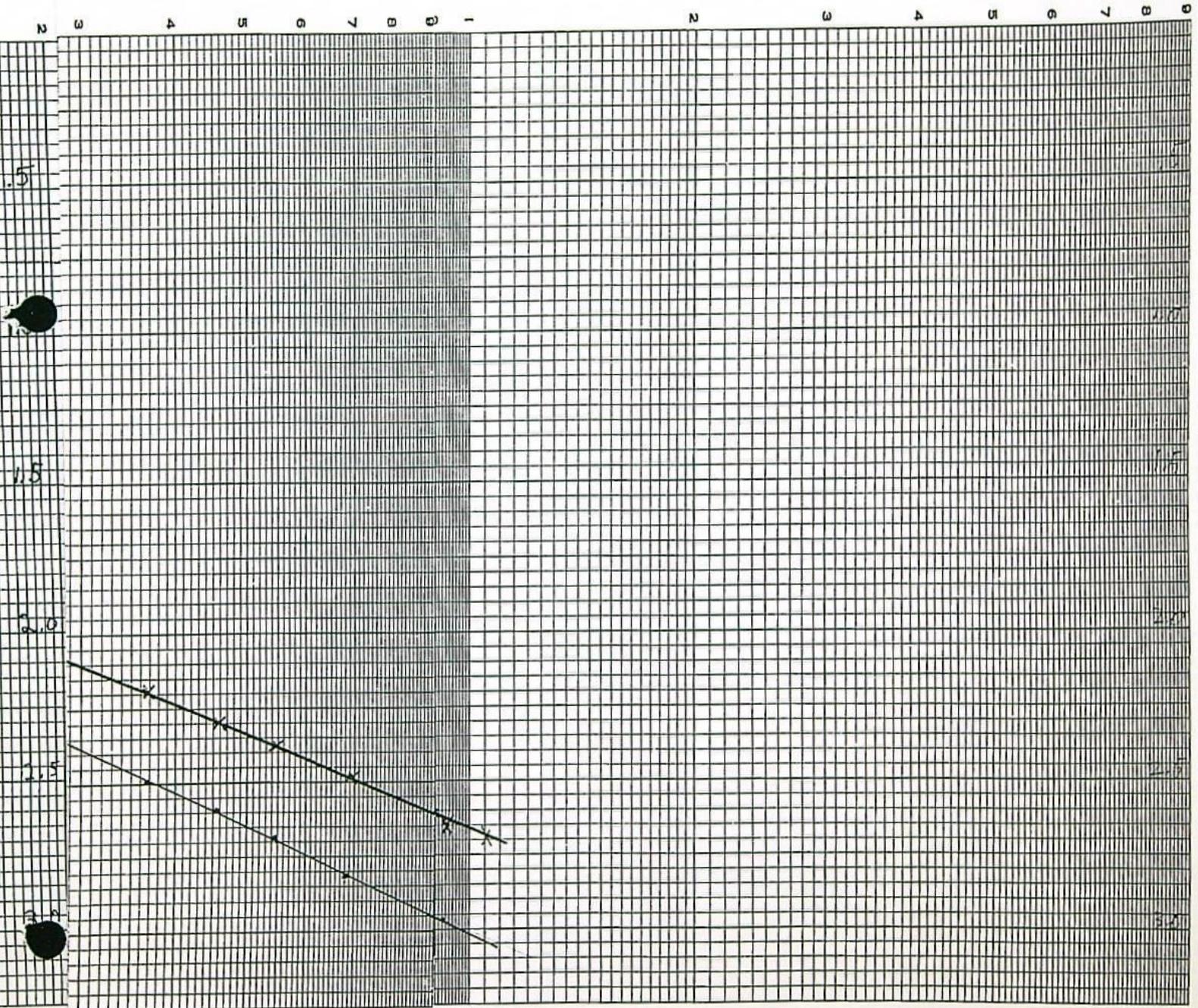
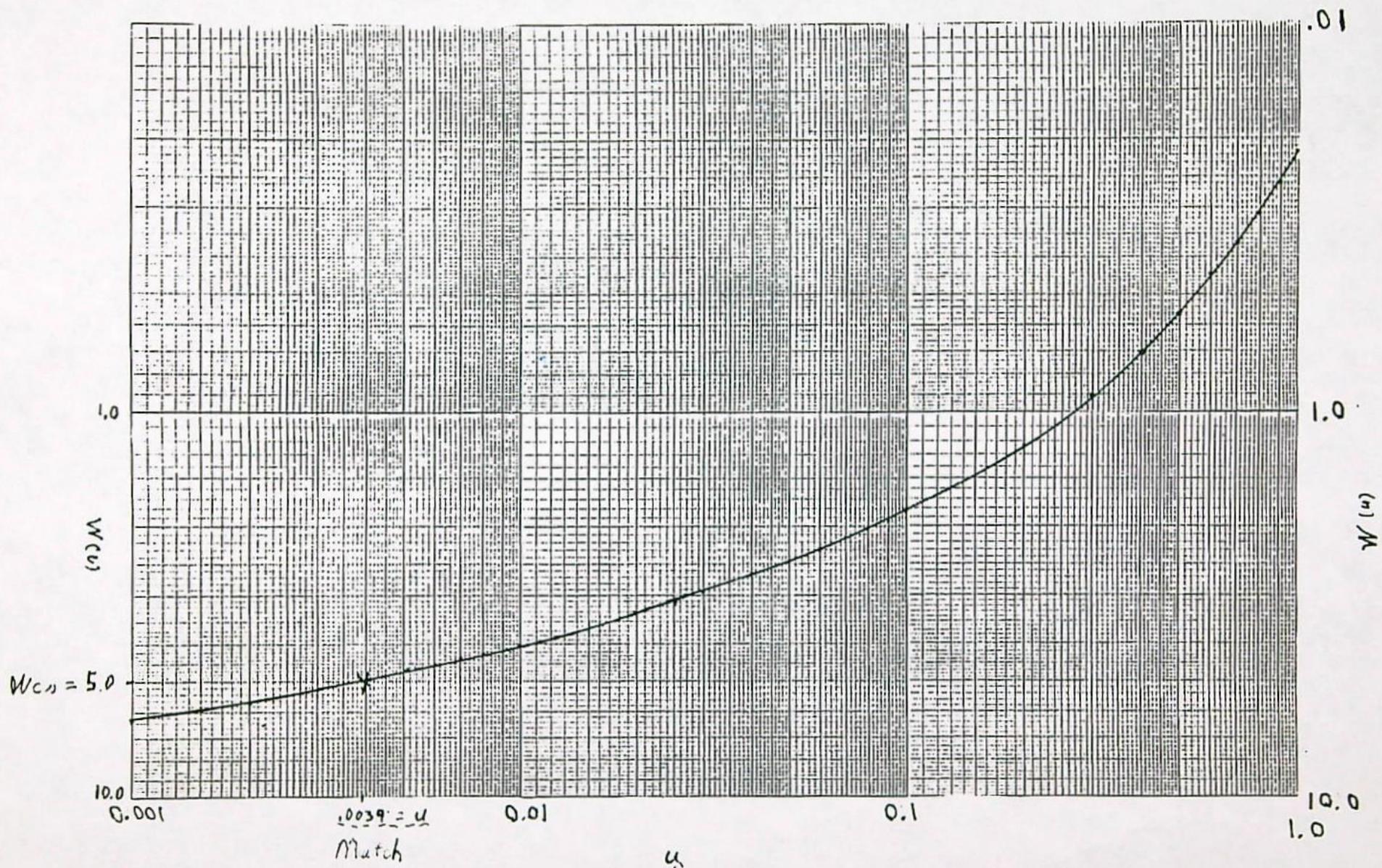
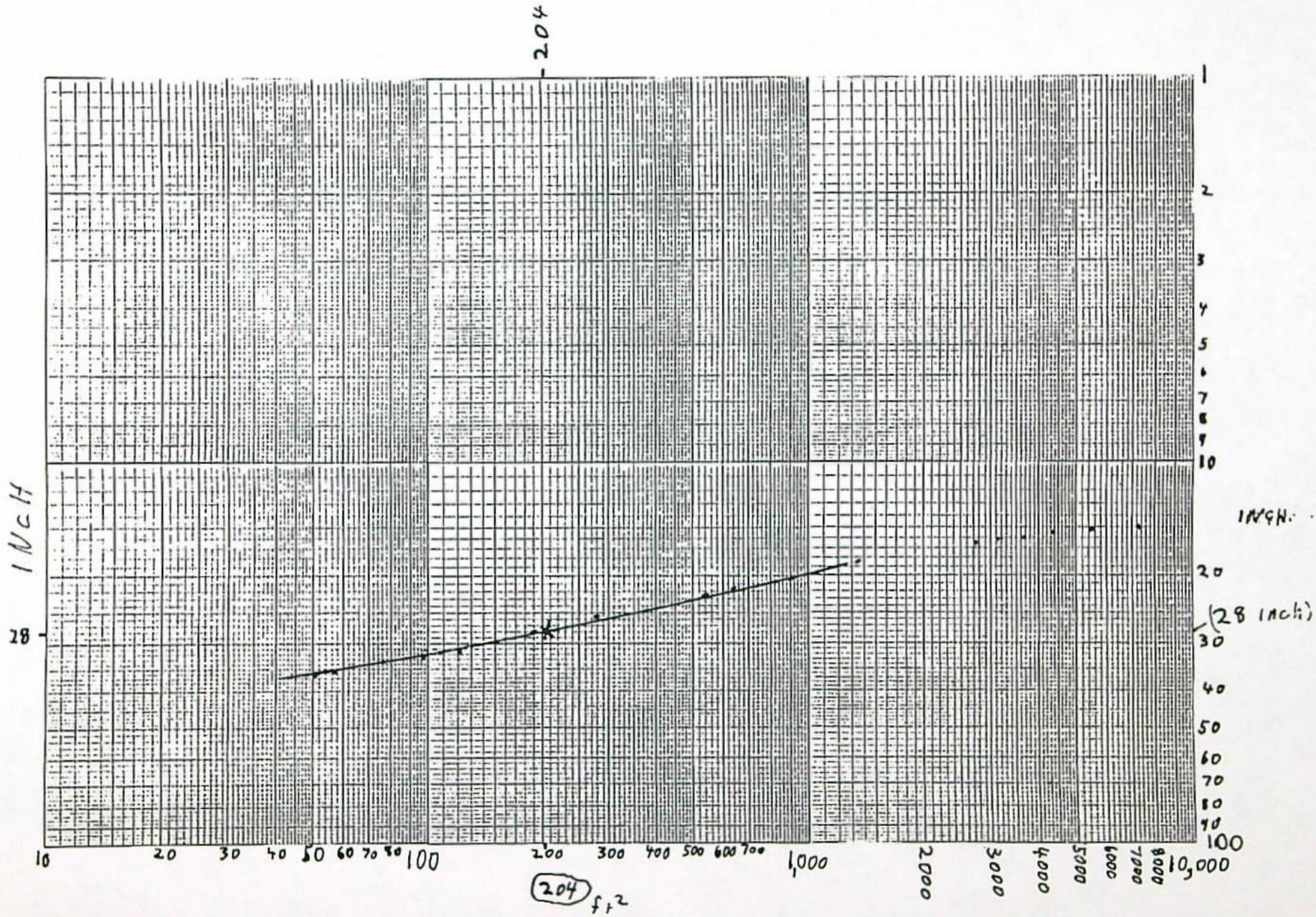


Table 6-3 Values of $W(u)$ for various values of u

u	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0
$\times 1$	0.219	0.049	0.013	0.0038	0.00114	0.00036	0.00012	0.000038	0.000012
$\times 10^{-1}$	1.82	1.22	0.91	0.70	0.56	0.45	0.37	0.31	0.26
$\times 10^{-2}$	4.04	3.35	2.96	2.68	2.48	2.30	2.15	2.03	1.94
$\times 10^{-3}$	6.33	5.64	5.23	4.95	4.73	4.54	4.39	4.26	4.14
$\times 10^{-4}$	8.63	7.94	7.53	7.25	7.02	6.84	6.69	6.55	6.44
$\times 10^{-5}$	10.95	10.24	9.84	9.55	9.33	9.14	8.99	8.86	8.74
$\times 10^{-6}$	13.24	12.55	12.14	11.85	11.63	11.45	11.29	11.16	11.04
$\times 10^{-7}$	15.54	14.85	14.44	14.15	13.93	13.75	13.60	13.46	13.34
$\times 10^{-8}$	17.84	17.15	16.74	16.46	16.23	16.05	15.90	15.76	15.65
$\times 10^{-9}$	20.15	19.45	19.05	18.76	18.54	18.35	18.20	18.07	17.95
$\times 10^{-10}$	22.45	21.76	21.35	21.06	20.84	20.66	20.50	20.37	20.25
$\times 10^{-11}$	24.75	24.06	23.65	23.36	23.14	22.95	22.81	22.67	22.55
$\times 10^{-12}$	27.05	26.36	25.95	25.66	25.44	25.26	25.11	24.97	24.86
$\times 10^{-13}$	29.36	28.66	28.26	27.97	27.75	27.56	27.41	27.28	27.16
$\times 10^{-14}$	31.66	30.97	30.56	30.27	30.05	29.87	29.71	29.58	29.46
$\times 10^{-15}$	33.96	33.27	32.86	32.58	32.35	32.17	32.02	31.88	31.76

Source: Adapted from [21].





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GLOSSARY

Alteration	-Changes brought about by physical or chemical means in the minerals of a rock; i.e. from one mineral to another or one fabric to another.
Alteration Thermal	-Change brought about by raising or lowering of temperatures.
Alteration Dynamic	-Change brought about by force and or movements.
Broken Formation	-A term used in formations which have undergone a process of break up, twisting, rotation and other forces.
Deformation	-To deform; Rearrange rock under earth forces.
Deformation Shear Zones	-A fault or fracture which displays crushed or broken material generally in a wide area of parallel faults.
Deformation Fracture	-The dislocation or splitting of a rock or mineral.
Faults	-A large fracture cutting through beds or formations generally in a sheet fashion.
Fabrics Rock	-The consistency or makeup of a rock including character in respect to it's physical features.
Fabrics Sedimentary	-Those rock fabrics in a sediment which were formed during the process of deposition or sedimentation and also those processes shortly thereafter; i.e. Bedding, Cut & Fill Structures, layering, ect. ect.
Fabrics Metamorphic	-Rock Fabrics associated with metamorphism; (which is closely brought about by Alteration).
Fabrics Volcanic	-Fabrics associated with volcanic rocks; Lava, Basalt, Tuffs, Pumice ect. ect..
Jurassic	-Second period of the Mesozoic era, in 3 the time between 190 and 135 million years ago.
Lithologies	-A word pertaining to rocks and their compositions in respect to origin.
Oligocene	-An early epoch of the Tertiary, beginning about 40 million years ago and ending about 25 million years ago.
Otter Point Fm.	-An assymblage of Jurassic Deep Sea sedimentary and volcanic rocks.
Pleistocene	-An epoch of the latest age, beginning about 2 million years ago and ending about 10,000 years ago.
Quaternary	-A period of time including the Pleistocene up to today.
Tectonic	-A term used to describe the forces and motions in the earths crust.

R. J. RALLS - GEOLOGIST

RECEIVED

P.O. Box 389 — 15693 Ocean View Dr.
Brookings, Oregon 97415

Reference File G-12685

OCT 21 1991

Phone
WATER RES (503) 469-6053
SALEM, OREGON

October 5, 1991

Well # 2 on application Map

177702:00-000
-52602:01-7457

TO: Mr. Harry Spencer
Growth Unlimited Nursery, Inc.
P. O. Box 291
Langlois, OR, 97450

SUBJECT: Hydrogeologic evaluation of Well located near the
Southeast corner of Section 11, T. 30 S., R. 15 W., W.&M.
Coos County, Oregon

Dear Mr. Spencer:

The following present our results of a hydrogeologic evaluation of the aquafer in the above subject well.

The purpose of this report is to address the Geology and Hydrogeology of the water bearing aquafer, with respect to utilization of the water in the aquafer by pumping from the well. It is understood that you intend to pump from the well a volume of water needed with respect to agricultural irrigation.

SCOPE OF WORK

The work performed for this report includes a test pumping of the well with respect to monitoring of the well and an adjacent monitor well. The work also includes measurements of the recovery of the well and monitor well after the pump test was finished.

The work also included site visits, general geologic reconnaissance of the area, review and evaluation of nearby Well driller logs of other wells in in the area, review of available geologic and hydrogeologic literature published by Government sources and calculations using Theis (1935) and Theim formulas for Hydrogeologic evaluations of the Transmissibilities and Storage Constants of the Aquafer.

NEARBY TOPOGRAPHY

At the well site and to the east and south, the topography is nearly flat with a gentle 5° western grade. From the well to the north and northwest, the ground surface slopes gently, about 8° towards Conner Creek.

Conner Creek is located at closest approach to the well at about 500 feet to the Northwest and about 39.36 feet below the ground surface at the well. These measurements were taken in September, 1991.

GEOLOGY

Bedrock

Bedrock is not exposed in the vicinity to the well, but was encountered at the bottom of the well at about 55 feet below ground surface. Bedrock in the well consisted of claystone, gray and hard, which makes up the aquatard upon which the wells aquafer rests.

From nearby well logs, it is interpreted that this bedrock represents an old marine sedimentary formation belonging to perhaps one of the following formations: Otter Point Formation - Late Jurassic; Myrtle Group formations - Late or Early Cretaceous; Various Tertiary Formations. In any case, the bedrock formation at the well and in the nearby area is nearly flat in its interface with the overlying Marine Terrace formation.

Marine Terrace Formation

From the bedrock aquatard to the surface and exposed in the nearby area to the well, there exists the aquafer of the well starting at the bottom with clayey gravels grading up to sandy gravels and grading up to clayey gravels and within 20 feet of the surface fine well sorted sands.

These materials represent a Pleistocene deposited Marine Terrace formation believed to belong to the Whiskey Run Terrace as observed in exposures at Whiskey Run north of Bandon, Oregon. These Marine sands, gravels and interbeds were deposits both unconformably and disconformably onto the peneplained upper surface of the bedrock during the latest interglacial warm spell when the earth's sea levels were 60 to 100 feet higher than today.

This Marine Terrace formation was water laid and represents the aquafer in the well unconfined in character.

HYDROGEOLOGY

The hydrogeology of the aquafer in the well was determined by Pump Test, first by monitoring drawdown under a constant pump rate in an adjacent monitor well to the pumping well and second, by measuring recovery in the pumping well after the pump was turned off.

The pump test data for the monitor well is shown in Appendix B and the pump data for the pumping well is shown in Appendix C.

Evaluations

The Transmissibility and Storage Constant for the aquafer was determined in two ways; 1) using a heat-flow analogy developed by C. V. Theis in 1935 as:

$$Z_r = \frac{q}{4\pi T} \int_u^{\infty} \frac{e^{-u}}{u} du \quad \text{and} \quad S_c = \frac{4uT}{r^2/t}$$

where $\int_u^{\infty} \frac{e^{-u}}{u} du = W(u)$ or a well function of u ;

and 2) using modified Theis equation where u is small as:

$$T = \frac{2.3 q}{4 \pi \Delta Z} \log \frac{t_2}{t_1} \quad \text{and} \quad S_c = \frac{2.25 T t_0}{r^2}$$

1)

Therefore using the Theis heat-analog and graphing on log-log the parameters of r^2/t (distance r from the monitor well to the pumping well) over t time since pumping began, versus Z drawdown of the water level in the monitor well since pumping began, a graph of Z versus r^2/t can be drawn as shown on Appendix D.

Because u is a hydrogeologic constant with respect to each aquifer unconfined, and can be represented as a function (W of u) or well function of u , then;

$$W(u) = -0.5772 - \ln u + u - \frac{u^2}{2 \cdot 2!} + \frac{u^3}{2 \cdot 2!} \dots \text{ so on}$$

values of $W(u)$ can be calculated such as shown on Table 1 Appendix E.

A curve of $W(u)$ versus u is shown on log-log graph Appendix F.

Because the type curve of $W(u)$ versus u should be constant with the type curve Z versus r^2/t , match points can be found where the two curves coincide to provide constants for the Theis heat-flow analogy equation.

2)

Where the u is small a modified equation can be used based on Z (drawdown) Versas t (time) since began pumping. The data from Appendix B is drawn on log-linear, Appendix F.

Evaluations

1) Using Theis heat-analog and the parameters of the pump test we have:

Pumping rate ----- $q = 33\text{gpm} = 6368 \text{ ft}^3/\text{day}$
 Distance of monitor well from pumping well - $r = 12.41$ feet

Superimposing graphs Appendix D over Appendix F we have match points:

u ----- 0.0001
 $W(u)$ ----- 8.7
 r^2/t ----- 40.00
 Z ----- 64 inches = 5.33 feet

Therefore:

$$T \text{ (transmissibility)} = \frac{q}{4\pi Z} W(u) = \frac{6,368}{4 \cdot 5.33} (8.7)$$

$$T = \frac{827 \text{ ft}^2/\text{day}}{4}$$

$$S_c \text{ (Storage Constant)} = \frac{4 u T}{r^2/t} = \frac{4 \times .0001 \times 827}{40.00}$$

$$S_c = .0083$$

2) Using modified Theis equation we have:

From Graph Appendix G t_0 ----- .012 hours = .0005 days
 ΔZ ----- (5.3-3.92) = 1.38
 $\log \frac{100}{10}$ ----- 1.0

$$T \text{ (transmissibility)} = \frac{2.3 q}{4\pi \Delta Z} \log \frac{100}{10} = \frac{2.3 \times 6,368}{4 \pi \cdot 1.38}$$

$$T = 846 \text{ ft}^2/\text{day}$$

$$S_c \text{ (Storage Constant)} = \frac{2.25 T t_o}{r^2} = \frac{2.25 \times 846 \times .012}{154 \times 24}$$

$$S_c = .0062$$

From the analog equation $T = 827 \text{ ft}^2/\text{day}$ compared to $T = 847 \text{ ft}^2/\text{day}$ using the modified equation. Because u is small these two calculations are very close.

Total thickness of the unconfined aquifer is, from well drillers log Appendix A, about 23 feet thick. Based on an average across the verticle in the aquifer the permeability is therefore:

$$K = \frac{\text{Transmissibility}}{\text{Thickness of Aquifer}} = \frac{827}{23} = .025 \text{ ft/min}$$

A permeability of .025 ft/min is well within normal range for a pebbly sand with intermixes of clay. It is further beleived that the water contained aquafer is tighter at the top than near the bottom.

Hydrogeologic Connections

Based on the above information and that within the Appendix's and the calculations of Transmissibility, hydrogeologic evaluations can be made with respect to maximum pumping yield using existing cased well over a given period of pumping time. From this maximum yield, determinations can be likewise made with respect to any hydrogeologic connections to nearby Creeks, such as Conner Creek, if possible.

1) Maximum Yield

Assume a drawdown at closest approach to the well of about $\frac{1}{2}$ foot, and assume a maximum drawdown of not more than 20.5 feet, over a period of not more than $\frac{1}{2}$ day pumping. The following yield is:

Given: $r = .5 \text{ feet}$ $Z_r = 20.5 \text{ feet}$ $t = .5 \text{ days}$

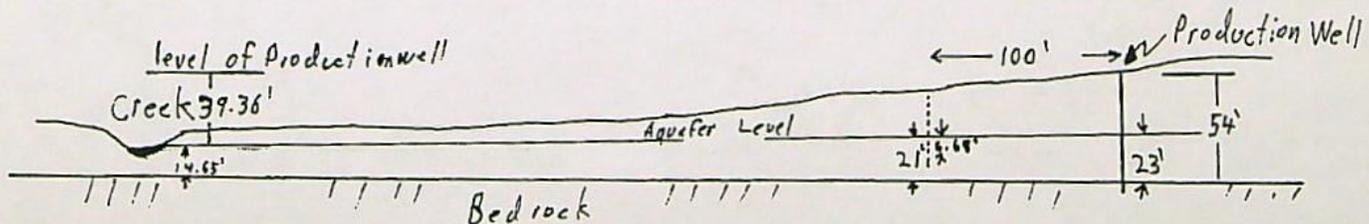
$$u = \frac{.5^2 \times .0083}{4 \times 827 \times .5} = .0000012 \text{ of } 1.2 \times 10^{-6} \text{ from Appendix F}$$

$W(u) = 13.102$ and from Theis equation analog

$$Z = \frac{q W(u)}{4 r T} \text{ where } 20.5 = \frac{q \times 13.102}{4 \times 827 \times T} \text{ Therefore } q = 16260 \text{ ft}^3/\text{day} = 84 \text{ gpm}$$

2) Hydrogeologic Connection to Conner Creek

Assume a monitor well of not more than 100 feet northwest of the pumping well using the above maximum pumping of 84 gpm in the production well, the drawdown in a monitor well at such distance would be as follows:



DRAWING #1

From the above drawing, we can obtain the following parameters for evaluating expected drawdown in a well monitor 100 feet from the production well towards the creek.

$$\begin{aligned} \text{Given: } & T = 827 \quad S_c = .0083 \\ & r = 100 \text{ feet} \quad q_c = 16,260 \text{ ft}^2/\text{day} \quad t = .5 \text{ days} \\ u = & \frac{r^2 S_c}{4Tt} = \frac{10000 \times .0083}{4 \times 827 \times .5} = .05 \quad \text{or } 5 \times 10^{-2} \quad \text{From Appendix F} \\ W(u) = & 2.48 \quad \text{and so} \\ Z (\text{drawdown}) = & \frac{q W(u)}{4\pi T} = \frac{16260 \times 2.48}{4 \times \pi \times 827} = 3.9 \text{ feet drawdown} \end{aligned}$$

From figure Drawing #1, the distance verticle from the level of the creek to expected aquafer from a point 100 feet away from the pumping well towards the creek is 6.68 feet separation. The expected drawdown of 3.9 feet with a pump rate of 84 gpm will not in any way connect or interfere with Conner Creek.

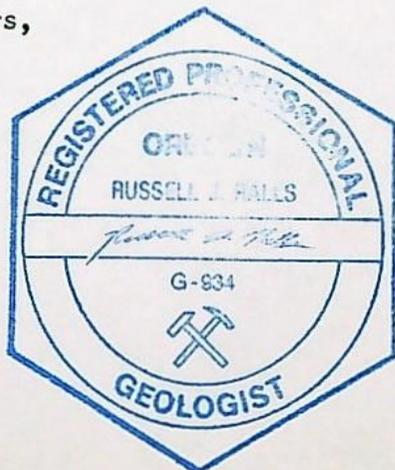
CONCLUSIONS

Production of well water from the well subject in this report will not connect or interfere with water in Conner Creek or any other nearby creek. Because the transmissibility and thin zone of water aquafer is limited, only a limited pump rate can be obtained. In this way any pump rate attempted will not damage or interfere with water flow in the nearby creek of Conner Creek, as during pump rates exceeding 84 gpm over $\frac{1}{2}$ day will likely go dry.

Recharge of the Aquafer is nearly immediate, see Appendix C, after pumping has been turned off.

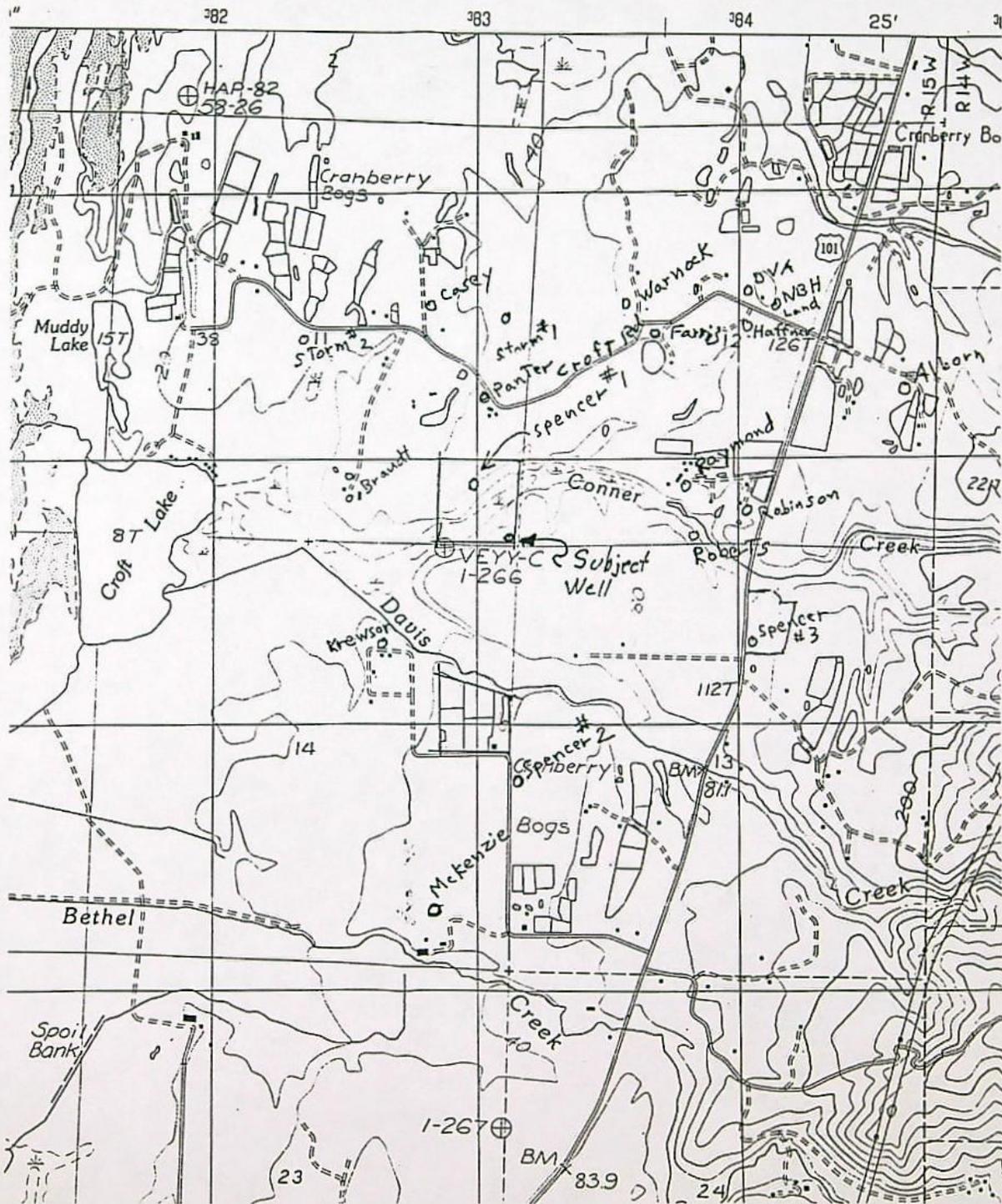
Because this is a new well, it can be expected that the permeabilities of the well bore materials will increase with likewise increase in Transmissibility. However, it is not likely that the increase will be significant or underscore the above conclusions.

Respectively yours,



Russell J. Ralls

VICINITY MAP
U.S.G.S. 7 1/2"



1 inch = 1000 feet

R. J. RALLS - GEOLOGIST

New Well @ SE Cor. Sec. 11
Croft Piece

Appendix A

T30S/R15W/11

STATE OF OREGON
WATER WELL REPORT
(as required by ORS 537.765)

COUNTY

(START CARD) # 26375

(1) OWNER: Well Number: 112
Name: Harry Spurr 1600th 11th Unit of Trce
Address _____
City _____ State _____ Zip _____

(2) TYPE OF WORK:
 New Well Deepen Recondition Abandon

(3) DRILL METHOD
 Rotary Air Rotary Mud Cable
 Other _____

(4) PROPOSED USE:
 Domestic Community Industrial Irrigation
 Thermal Injection Other _____

(5) BORE HOLE CONSTRUCTION:
Special Construction approval Yes No Depth of Completed Well 58' - 1/2"
Explosives used Yes No Type _____ Amount _____

HOLE			SEAL		Amount sacks or pounds	
Diameter	From	To	Material	To		
10"	0'	25'	Expentite	0'	25'	1300 #

How was seal placed: Method A B C D E
 Other Introduced from surface
Backfill placed from _____ ft. to _____ ft. Material _____
Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER:

Casing/Liner	Diameter	From	To	Gauge	Steel		Plastic		Welded		Threaded	
					Yes	No	Yes	No	Yes	No	Yes	No
Casing	6"	+18"	36'	.250"	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Liner					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Final location of sheets: _____

(7) PERFORATIONS/SCREENS:
 Perforations Method Telescopic
 Screens Type Johnson Material Stainless Steel

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
37' 8"	43' 7 1/2"	.016		6"	Tele	<input type="checkbox"/>	<input type="checkbox"/>
43' 7 1/2"	48' 8 1/2"	.012		6"	Tele	<input type="checkbox"/>	<input type="checkbox"/>
48' 10 1/2"	54' 7 1/2"	.014		6"	Tele	<input type="checkbox"/>	<input type="checkbox"/>
54' 1 1/2"	58' 1 1/2"			5"	Full pipe	<input checked="" type="checkbox"/>	<input type="checkbox"/>

(8) WELL TESTS: Minimum testing time is 1 hour
 Pump Bailor Air Flowing Artesian
Yield gal/min 40 Drawdown 11' 4 inches Drill stem at 55' Time 1 hr.

(9) LOCATION OF WELL by legal description:
County Coos Latitude _____ Longitude _____
Township 30S Nor S. Range 15W E or W. WM.
Section 11 SE 1/4 SE 1/4
Tax Lot 1600 Lot _____ Block _____ Subdivision _____
Street Address of Well (or nearest address) CROFT ROAD
OFF OF HWY 101 S. - WELLS

(10) STATIC WATER LEVEL: 31' ft. below land surface Date 8/30/91
Artesian pressure _____ lb. per square inch. Date _____

(11) WATER BEARING ZONES:
Depth at which water was first found 31'

From	To	Estimated Flow Rate	SW
31'	54'	40 GPM	2'

(12) WELL LOG: Ground elevation 41' 300'

Material	From	To	SW
Sample Clay Brown	0	15	
Clay w/ sand Brown	15	16	
Clay w/ sand Gray	16	22	
Sand Brown Fine	22	26	
Sand/Clay + Gravel Fine Brown	26	30	
Sand Gray Medium	30	36	2'
Sand w/ Gravel Brown Coarse	36	54	1'
Clay w/ Gravel Gray	54	55	
Claystone Gray hard	55	58	

Date started 8/29/91 Completed 9/10/91

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, alteration, abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to my knowledge and belief.

Signed John S. Eaton II WWC Number 65 Date 26 APR 91

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above work performed during this time is in compliance with Oregon construction standards. This report is true to the best of my knowledge and belief.

Signed Jim Mack WWC Number 1119 Date 9/26/91

PUMP TEST #1
DRAWDOWN MONITOR WELL

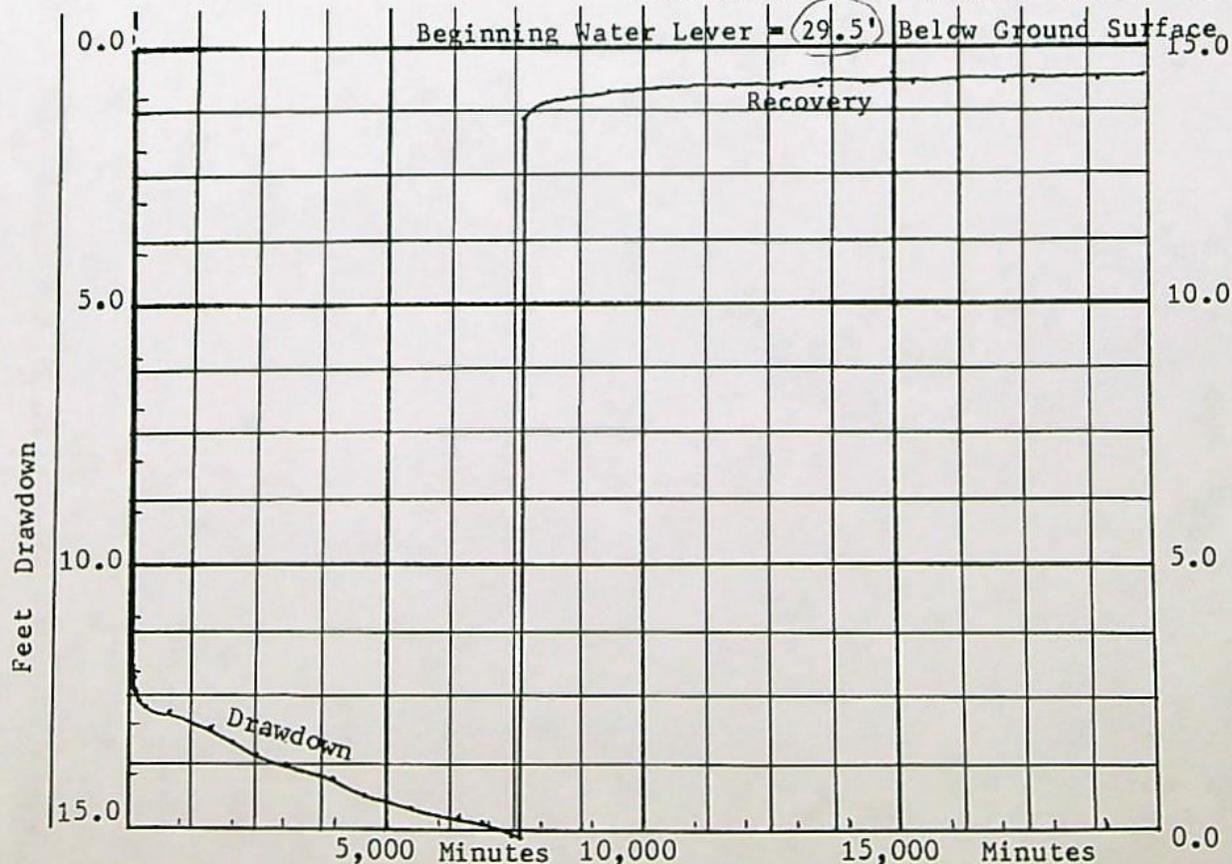
Southeast Corner Well

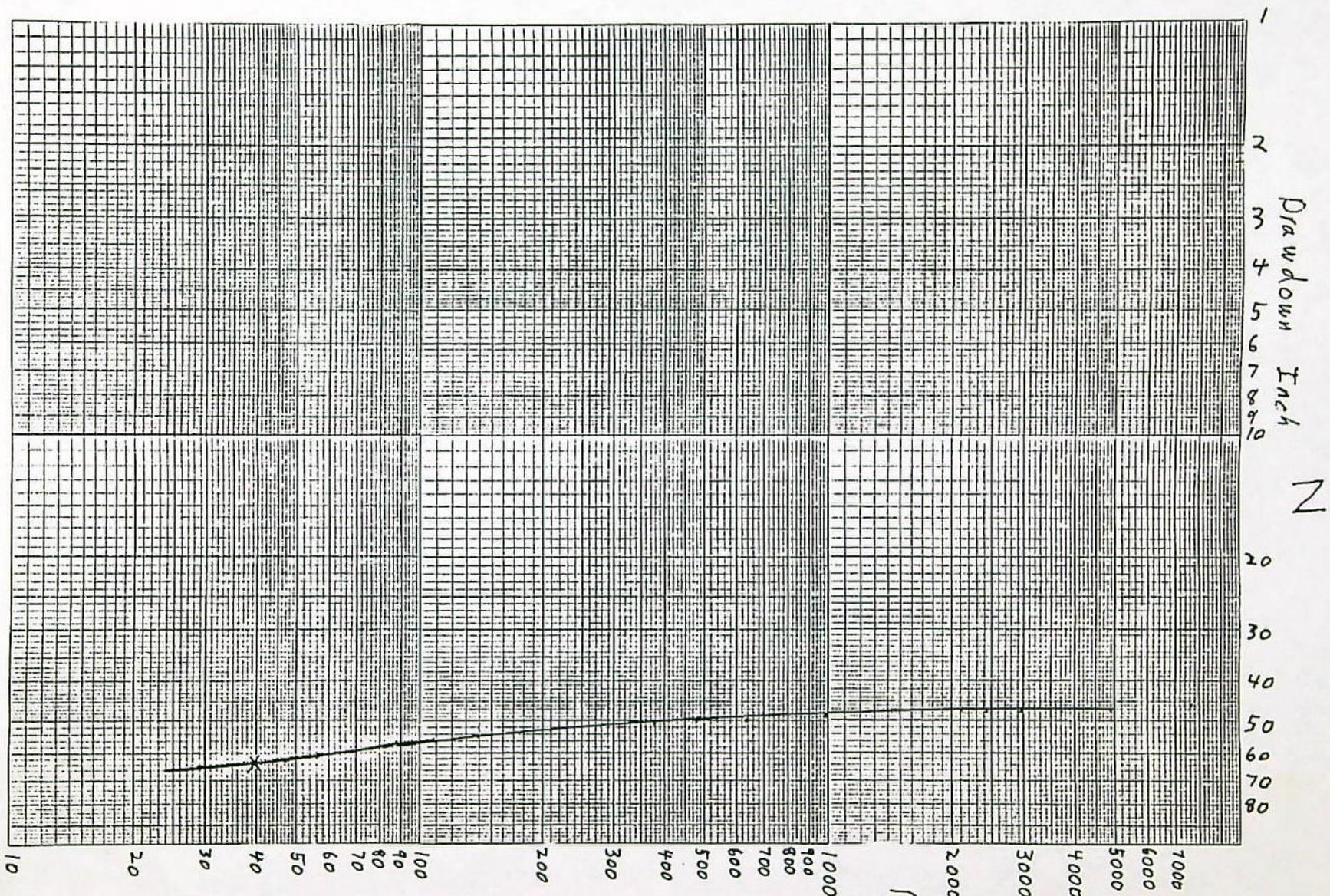
Pump Rate ----- 33 GPM (6,368 Ft³/day)
 Time of Start Pumping ----- 2:30 PM Sept. 14, 1991
 Time of Stop Pumping ----- 8:00 PM Sept. 19, 1991
 Water Level beggining of test ----- Monitor Well 29.5 feet below ground surface
 Radius distance of Monitor well from pump well -- 12.41 feet

	TIME		DRAWDOWN		R ² /t (ft ² X 10 ⁴)
	Minutes	Hours	Feet	Inches	
9/14/91	0 (2:30PM)	0	<u>Start</u>	0	0
	30	0.5	3.83	46.00	.739
	45	0.75	3.92	47.00	.493
	60	1.0	3.94	47.25	.370
	75	1.25	3.99	47.75	.296
	90	1.50	4.02	48.25	.246
	105	1.75	3.94	47.25	.211
	225	3.75	4.06	48.75	.098
	345	5.75	4.17	50.00	.064
	465	7.75	4.19	50.25	.048
	585	9.75	4.25	51.00	.038
9/15/91	1065	17.75	4.45	53.38	.021
	1545	25.75	4.57	54.88	.014
	2040	34.00	4.70	56.38	.011
9/16/91	2520	42.00	4.81	57.75	.0088
	3225	53.75	4.91	58.88	.0069
9/17/91	3960	66.00	5.03	60.38	.0056
	4680	78.00	5.10	61.25	.0047
9/18/91	5400	90.00	5.21	62.50	.0041
	6120	102.00	5.36	64.38	.0036
9/19/91	6840	114.00	5.42	65.00	.0032
	7545 (8:00PM)	125.75	<u>Finish</u>	65.50	.0029

PUMP TEST #1
DRAWDOWN & RECOVERY PUMPING WELL

	Drawdown			Recovery			Residual drawdown 5'	
	Minutes	Inches	Feet	Minutes	Inches	Feet		
9/14/91	0 (2:30PM) Start	0	0	Pump Off 8:15PM	0	0	9/19/91	—
	30	143.25	11.93	9/15/91 2.5	3025 173.5	13.46		1.67
	45	144.25	12.01	5.0	1513 164.5	13.71		1.42
	60	145.00	12.08	-7.5	1009 165.25	13.77		1.36
	75	145.5	12.125	10.0	757 165.5	13.79		1.34
	90	146.0	12.17	15.0	505 166.00	13.83		1.30
	105	146.5	12.21	20.0	379 166.50	13.87		1.26
	225	149.00	12.42	25.0	303.4 166.50	13.87		1.26
	345	150.25	12.52	35.0	217 166.75	13.89		1.24
	465	151.00	12.58	45.0	169 167.00	13.92		1.21
	585	152.00	12.67	60.0	127 167.75	13.99		1.14
9/15/91	1065	153.75	12.81	90.0	85 168.375	14.03		1.10
	1545	158.00	13.17	150.0	51.4 168.625	14.05		1.06
	2040	161.00	13.42	9/20/91 552.0	14.7 170.375	14.20		0.93
9/16/91	2520	163.75	13.65	960.0	8.88 171.50	14.29		0.84
	3223	166.5	13.87	1260.0	7 172.0	14.33		0.80
9/17/91	3960	169.50	14.13	9/21/91 1960.0	4.86 173.625	14.47		0.66
	4680	172.00	14.33	2700.0	3.8 173.75	14.49		0.64
9/18/91	5400	174.50	14.54	9/22/91 3465.0	3.18 174.00	14.50		0.63
	6120	177.00	14.75	4195.0	2.80 174.25	14.52		0.61
9/19/91	6840	179.50	14.96	9/23/91 4900.0	2.54 174.50	14.54		0.59
	7545	181.50	15.13	5670.0	2.33 175.00	14.58		0.55
8:15PM	7560 Stop	181.50	15.13	9/24/91 6320.0	2.2 175.25	14.60		0.53
				7095.0	2.07 175.375	14.61		0.52
				9/25/91 7770.0	1.97 175.375	14.61		0.52





Appendix D

Match Points

$$r^2/t = 40.0$$

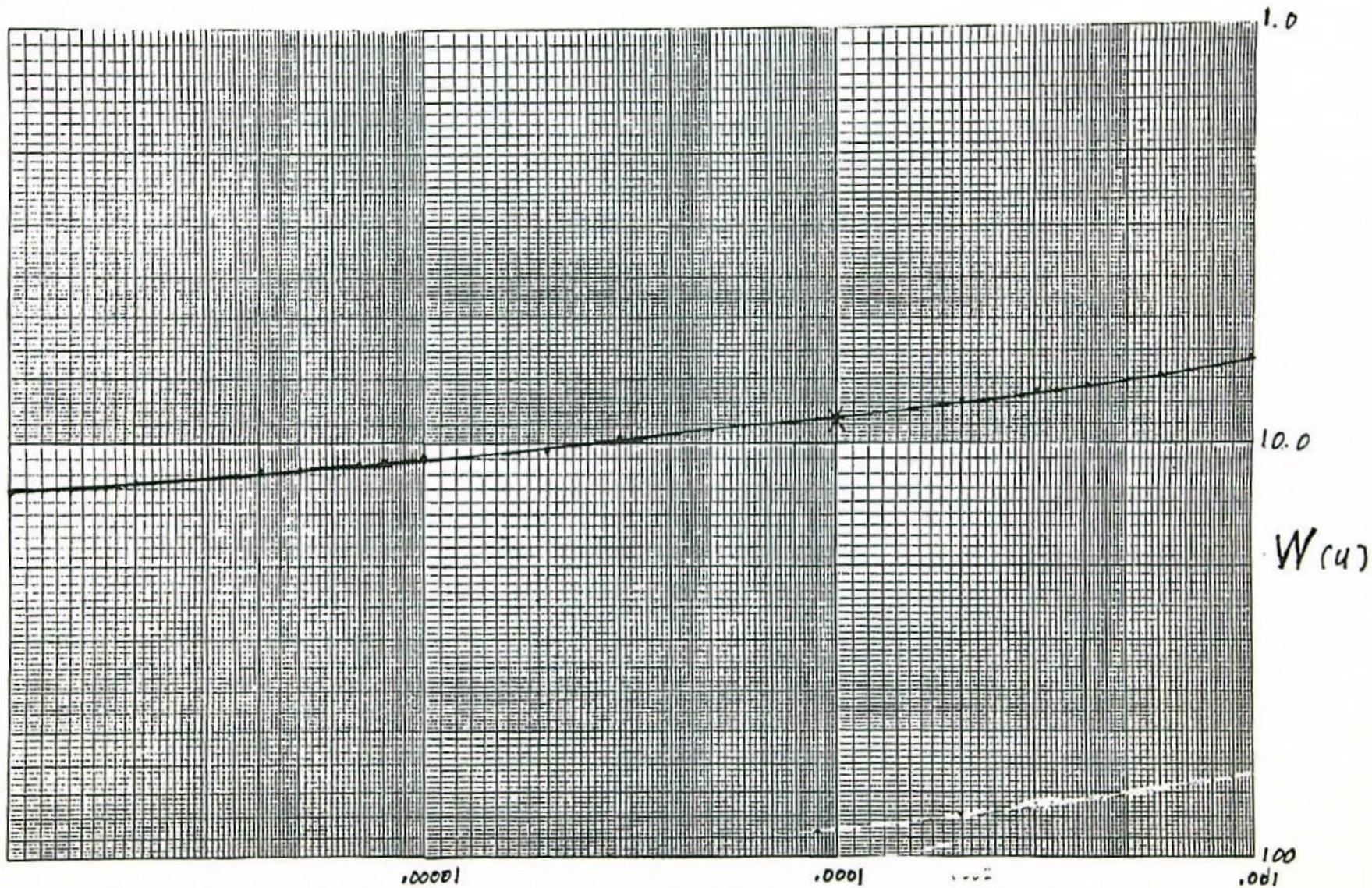
$$Z = 64'' = 5.33 \text{ feet}$$

r^2/t

Table 6-3 Values of $W(u)$ for various values of u

u	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0
$\times 1$	0.219	0.049	0.013	0.0038	0.00114	0.00036	0.00012	0.000038	0.000012
$\times 10^{-1}$	1.82	1.22	0.91	0.70	0.56	0.45	0.37	0.31	0.26
$\times 10^{-2}$	4.04	3.35	2.96	2.68	2.48	2.30	2.15	2.03	1.94
$\times 10^{-3}$	6.33	5.64	5.23	4.95	4.73	4.54	4.39	4.26	4.14
$\times 10^{-4}$	8.63	7.94	7.53	7.25	7.02	6.84	6.69	6.55	6.44
$\times 10^{-5}$	10.95	10.24	9.84	9.55	9.33	9.14	8.99	8.86	8.74
$\times 10^{-6}$	13.24	12.55	12.14	11.85	11.63	11.45	11.29	11.16	11.04
$\times 10^{-7}$	15.54	14.85	14.44	14.15	13.93	13.75	13.60	13.46	13.34
$\times 10^{-8}$	17.84	17.15	16.74	16.46	16.23	16.05	15.90	15.76	15.65
$\times 10^{-9}$	20.15	19.45	19.05	18.76	18.54	18.35	18.20	18.07	17.95
$\times 10^{-10}$	22.45	21.76	21.35	21.06	20.84	20.66	20.50	20.37	20.25
$\times 10^{-11}$	24.75	24.06	23.65	23.36	23.14	22.95	22.81	22.67	22.55
$\times 10^{-12}$	27.05	26.36	25.95	25.66	25.44	25.26	25.11	24.97	24.86
$\times 10^{-13}$	29.36	28.66	28.26	27.97	27.75	27.56	27.41	27.28	27.16
$\times 10^{-14}$	31.66	30.97	30.56	30.27	30.05	29.87	29.71	29.58	29.46
$\times 10^{-15}$	33.96	33.27	32.86	32.58	32.35	32.17	32.02	31.88	31.76

Source: Adapted from [21].



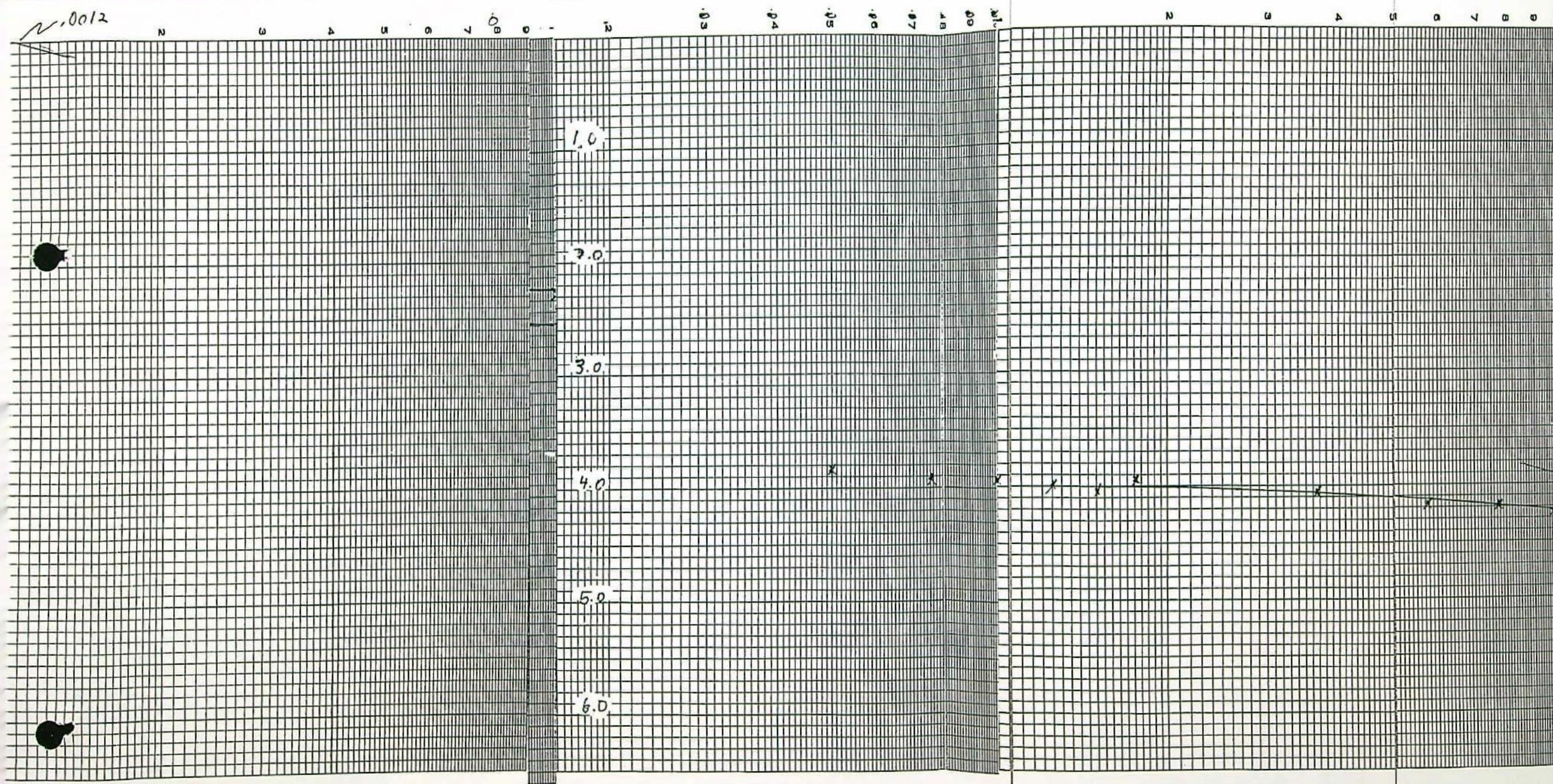
u

Match Points

$$u = .0001$$

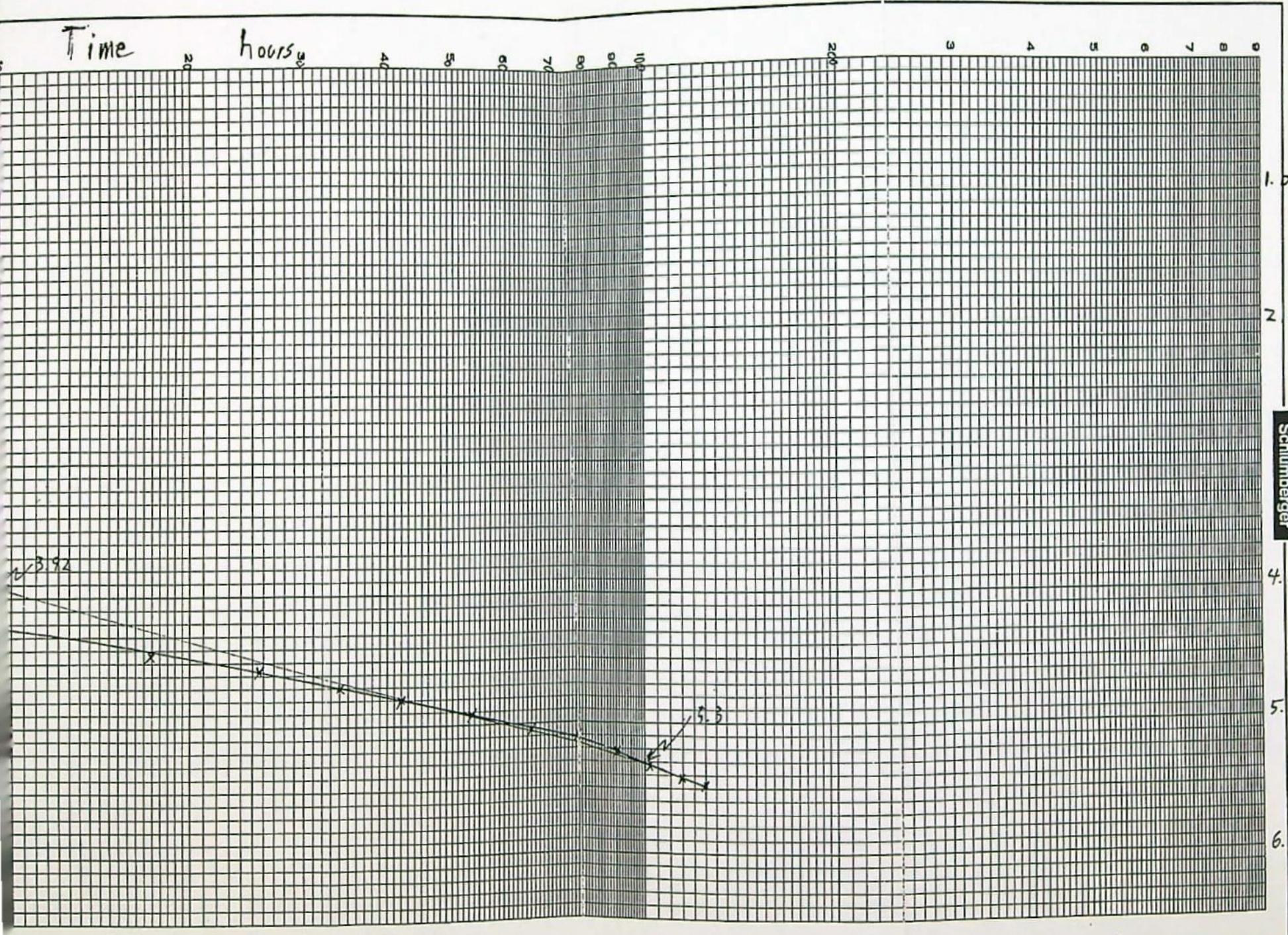
$$W(u) = 8.7$$

V.0012



x0	CP	Por	SP	Gen	k	Sw	T _{cor}	Rint	Rcor	M	k	Sw	T _{cor}	Rint	Rcor
----	----	-----	----	-----	---	----	------------------	------	------	---	---	----	------------------	------	------

Time hours



Schlumberger

Drawdown

M k Sw T_{cor} R_{int} R_{cor} R_{xo} CP Por SP Gen

Fraser Deed Description
Tax lot 100 S. 13 T. 30 S R. 15 W

RECEIVED

89 06 0320 - 3 1991

MEMORANDUM OF CONTRACT

WATER RESOURCES DEPT
SALEM, OREGON

SELLER : Donald E. Brooks
BUYERS : Russell S. Fraser and Patti R. Fraser, husband and wife
ADDRESS OF BUYERS : Route 1, Box 1519
Bandon, OR 97411

DATE OF CONTRACT: JUNE 7, 1989

DESCRIPTION OF PROPERTY: Refer to EXHIBIT A attached hereto and hereby by reference incorporated herein and made a part hereof.

The above named Seller did, by contract bearing date set forth above, enter into an agreement to sell to the above named Buyers the above described property.

This memorandum does not contain the entire agreement, but is made solely for the purpose of recording the existence of said agreement. The true and actual consideration for the property was \$100,000.00.

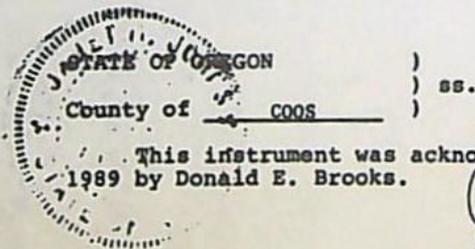
The final installment payment on this contract, unless sooner paid, will be due and payable on April 1, 2004.

THIS INSTRUMENT WILL NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY APPROVED USES.

Until a change is requested, all tax statements shall be sent to the Buyers at the address set forth above.

Dated this 7th day of JUNE, 1989.

Donald E. Brooks
Seller



This instrument was acknowledged before me on June 7, 1989 by Donald E. Brooks.

[Signature]
Notary Public for Oregon
My Commission Expires 10-16-1990

MEMORANDUM OF CONTRACT

Application No. 6-12685
Permit No.

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To Whom it May Concern:

OCT - 3 1991

We are aware that Harry G. Spencer is filing for water rights on 2 acres of future cranberry bogs on our property in Tax Lot 100 of Sec. 13 T. 30S, R. 15W, W.M. in Coos County, Oregon, and we have no objections to that filing.

WATER RESOURCES DEPT.
SALEM, OREGON

Signed

Russell Fraser
Lattie Fraser

Date

9/27/91
9-27-91

Application No. G-12685
Permit No. _____
RIGHT OF WAY EASEMENT

Roberts-Raymond

State Copy

RECEIVED

OCT - 3 1991

KNOW ALL MEN BY THESE PRESENTS, that we the undersigned, for a good and valuable consideration, receipt thereof acknowledged, do hereby grant unto Growth Unlimited Nursery, Inc., an Oregon Corporation whose Post Office address is p.o. Box 291, Langlois, Oregon, 97450, and to its successors or assigns, the right to enter upon the land of the undersigned, situated in the County of Coos, State of Oregon, described as follows:

portions of Tax lots 1501 and 1500 in the N $\frac{1}{2}$ of the NW $\frac{1}{4}$ of Section 12 T. 30S R. 15W, W.M., as illustrated in attached Exhibit "A".

and to construct, reconstruct, operate and maintain on the above described land and/or upon all roads abutting said lands, an underground 4 inch water transmission line.

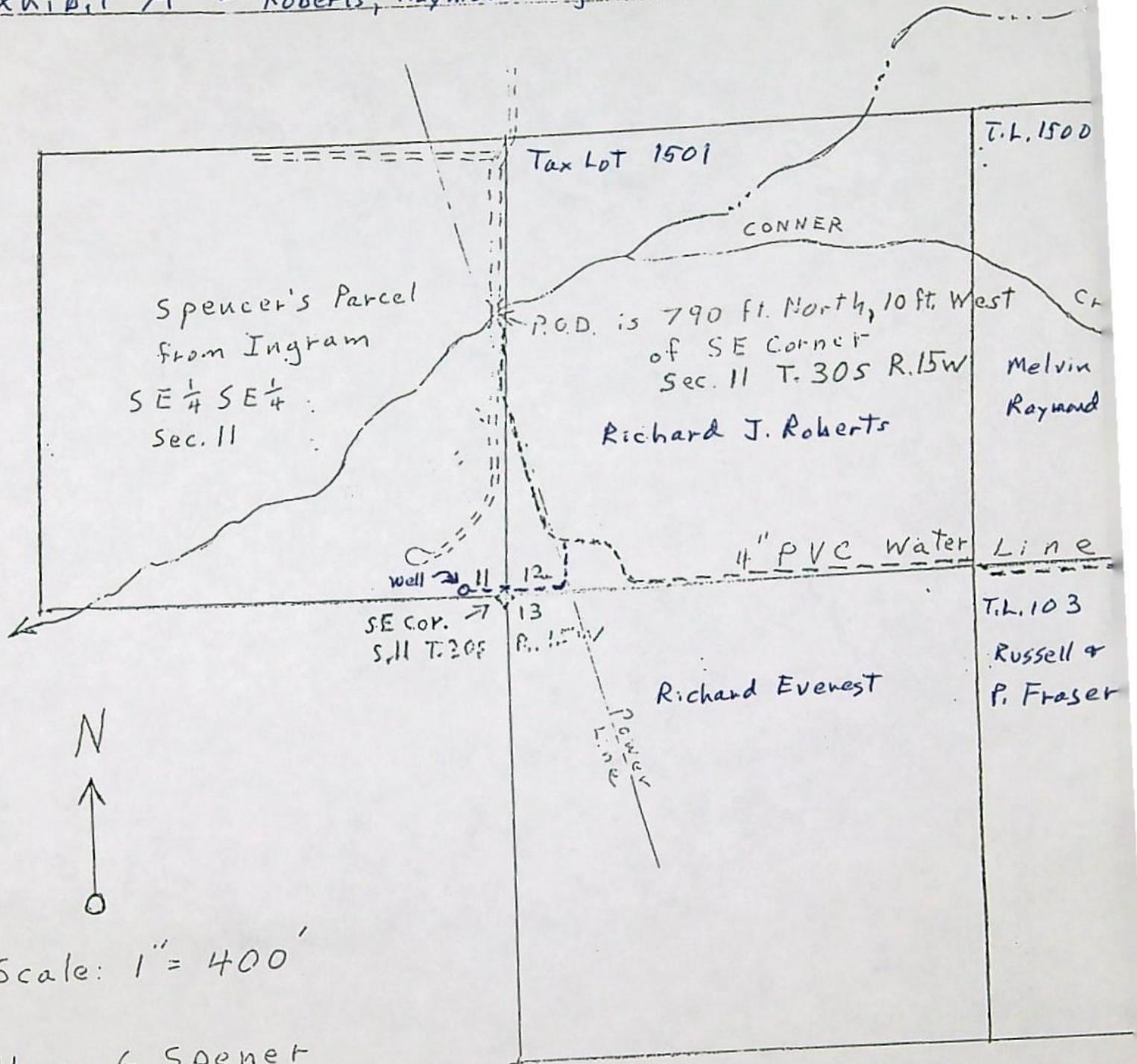
The undersigned covenant that they are the owners of the above described lands, and that said lands are free and clear of all encumbrances and liens whatsoever, except those held by the following persons:

IN WITNESS THEREOF, the undersigned have set their hand and seal this 10th day of September, 1991.

OWNERS' SIGNATURE:

Richard J. Roberts 9-10-91
Malcolm Raymond

Exhibit "A" - Roberts, Raymond Agreement



Scale: 1" = 400'

Harry G. Spener
Water Right Application
from $SE \frac{1}{4} SE \frac{1}{4}$ Sec. 11
T. 30S R. 15W

Date: May 17, 1985

Application No. G-12685
Permit No.

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OCT - 3 1991

APPLICATION FOR A PERMIT TO APPROPRIATE GROUNDWATER
IN THE NAME OF HARRY G. SPENCER

WATER RESOURCES DEPT.
SALEM, OREGON

SUPPLEMENTAL SHEET

NAMES AND ADDRESSES OF OTHER PROPERTY OWNERS INVOLVED

Oregon Highway Division
District Engineer
1155 South 5th Street
Coos Bay, Oregon 97420
(Pipeline crossing, Pacific Coast Highway #101)

Russell Fraser
Route 1 Box 1519
Bandon, Oregon 97411
(Pipeline crossing and place of use)

Richard J. Roberts
310 Railroad Street
Brookings, Oregon 97415

Melvin Raymond
Rt. 1 Box 1515
Bandon, OR 97411

~~N/A
or Richard Everest
P.O. Box 295
Langlois, OR 97450~~

APPLICATION AND PERMIT TO OCCUPY OR
PERFORM OPERATIONS UPON A STATE HIGHWAY
See Oregon Administrative Rule, Chapter 734, Division 55

OSWRD
copy

PERMIT NUMBER

07M36015

GENERAL LOCATION			PURPOSE OF APPLICATION (TO CONSTRUCT/OPERATE/MAINTAIN)		
HIGHWAY NAME AND ROUTE NUMBER OREGON COAST HIGHWAY			<input type="checkbox"/> POLE LINE	TYPE	
HIGHWAY NUMBER 9	COUNTY CURRY		<input type="checkbox"/> BURIED CABLE	TYPE OCT 21 1991	
BETWEEN OR NEAR LANDMARKS LANGLOIS AND BANDON			<input type="checkbox"/> PIPE LINE	TYPE WATER RESOURCES DEPT SALEM, OREGON	
HWY. REFERENCE MAP NUMBER 2B-9-5	DESIGNATED FREEWAY <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	IN U.S. FOREST <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	<input type="checkbox"/> NON-COMMERCIAL SIGN		
APPLICANT NAME AND ADDRESS Harry Spencer P.O. Box 291 Langlois, OR 97450 Phone: 347-4114			<input checked="" type="checkbox"/> MISCELLANEOUS OPERATIONS AND/OR FACILITIES AS DESCRIBED BELOW.		
BOND REQUIRED <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		REFERENCE: OAR 734-55-035 (2)	AMOUNT OF BOND \$		
INSURANCE REQUIRED <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		REFERENCE: OAR 734-55-035 (1)	SPECIFIED COMP. DATE EXISTING		

DETAIL LOCATION OF FACILITY

(For more space use back of application or attach additional sheets)

MILE POINT	MILE TO POINT	ENGINEERS STATION	ENGINEERS TO STATION	SIDE OF HIGHWAY OR ANGLE OF CROSSING	DISTANCE FROM		BURIED CABLE OR PIPE		OPEN CUT	SPAN LENGTH
					CENTER LINE	R/W LINE	DEPTH	SIZE AND KIND		
284.12	---	502+90	---	90°	30-0-30	0-30-0				

SPECIAL PROVISIONS (For more space use back of application or attach additional sheets)

- * 1—OPEN CUTTING OF PAVED OR SURFACED AREAS ALLOWED?
 YES [OAR 734-55-040 (10)] NO [OAR 734-55-040 (9)]
- 2—TRAFFIC CONTROL REQUIRED?
 YES [OAR 734-55-025 (6)] NO
- 3—WITHIN 48 HOURS BEFORE BEGINNING WORK AND AFTER COMPLETING THE PERMIT WORK, THE APPLICANT OR HIS CONTRACTOR SHALL NOTIFY THE DISTRICT REPRESENTATIVE AT TELEPHONE NUMBER (503) 269-9121. A COPY OF THIS PERMIT AND ALL ATTACHMENTS SHALL BE AVAILABLE AT THE WORK AREA. ORS 757.541 REQUIRES EXCAVATORS TO LOCATE AND PROTECT ALL EXISTING UNDERGROUND UTILITIES. AVOID INJURY AND ADDED EXPENSE — CALL BEFORE YOU DIG.
- 4- Applicant to maintain an existing 4 inch water line through State Highway right-of-way via 6' culvert.
- 5- This water line has been in existence for 20 plus years.
- 6- Water line is attached to the top portion of the culvert and is not an obstruction problem.
- 7- Repairs and regular maintenance by applicant is allowable. In the event the existing line needs replaced or a change in size, all rights through the culvert will be revoked. The applicant will be required to cross the right-of-way by use of a boring or some other suitable method.

IF THE PROPOSED APPLICATION WILL AFFECT THE LOCAL GOVERNMENT, THE APPLICANT SHALL ACQUIRE THE LOCAL GOVERNMENT OFFICIAL'S SIGNATURE BEFORE ACQUIRING THE DISTRICT MAINTENANCE SUPERVISOR'S SIGNATURE.

LOCAL GOVERNMENT OFFICIAL SIGNATURE X	TITLE	DATE
When this application is approved by the Department, the applicant is subject to, accepts and approves the terms and provisions contained and attached; and the terms of Oregon Administrative Rule, Chapter 734, Division 55, which is by this reference made a part of this permit.	DISTRICT MAINTENANCE SUPERVISOR OR REPRESENTATIVE X <i>[Signature]</i>	DATE COMPLETE APPLICATION RECEIVED 10-15-91
APPLICANT <i>dba Growth Unlimited Nursery, Inc</i>	APPLICATION DATE 10/10/91	DATE
X <i>Harry D. Spencer</i>	REGIONAL ENGINEER OR REPRESENTATIVE X <i>[Signature]</i>	
TITLE <i>Owner of waterline & adjacent property</i>	TELEPHONE NUMBER (503) 347-4114	UTILITY PERMIT SUPERVISOR
		APPROVAL DATE

Application No. 6-12685
Permit No. _____

Fraser

state copy

RECEIVED

RIGHT OF WAY EASEMENT

OCT - 3 1991

KNOW ALL MEN BY THESE PRESENTS, that we the undersigned, for a good and valuable consideration, receipt thereof acknowledged, do hereby grant unto Growth Unlimited Nursery, Inc., an Oregon Corporation whose Post Office address is p.o. Box 291, Langlois, Oregon, 97450, and to its successors or assigns, the right to enter upon the land of the undersigned, situated in the County of Coos, State of Oregon, described as follows:

Portions of Tax Lots 100 and 103 in the NW $\frac{1}{4}$, NE $\frac{1}{4}$ and the NE $\frac{1}{4}$ NW $\frac{1}{4}$ of Sec. 13 Twp, 30S Rge. 15W, W.M. Coos County, Or. as illustrated in attached Map Exhibit "A"

and to construct, reconstruct, operate and maintain on the above described land and/or upon all roads abutting said lands, an underground 4 inch water transmission line.

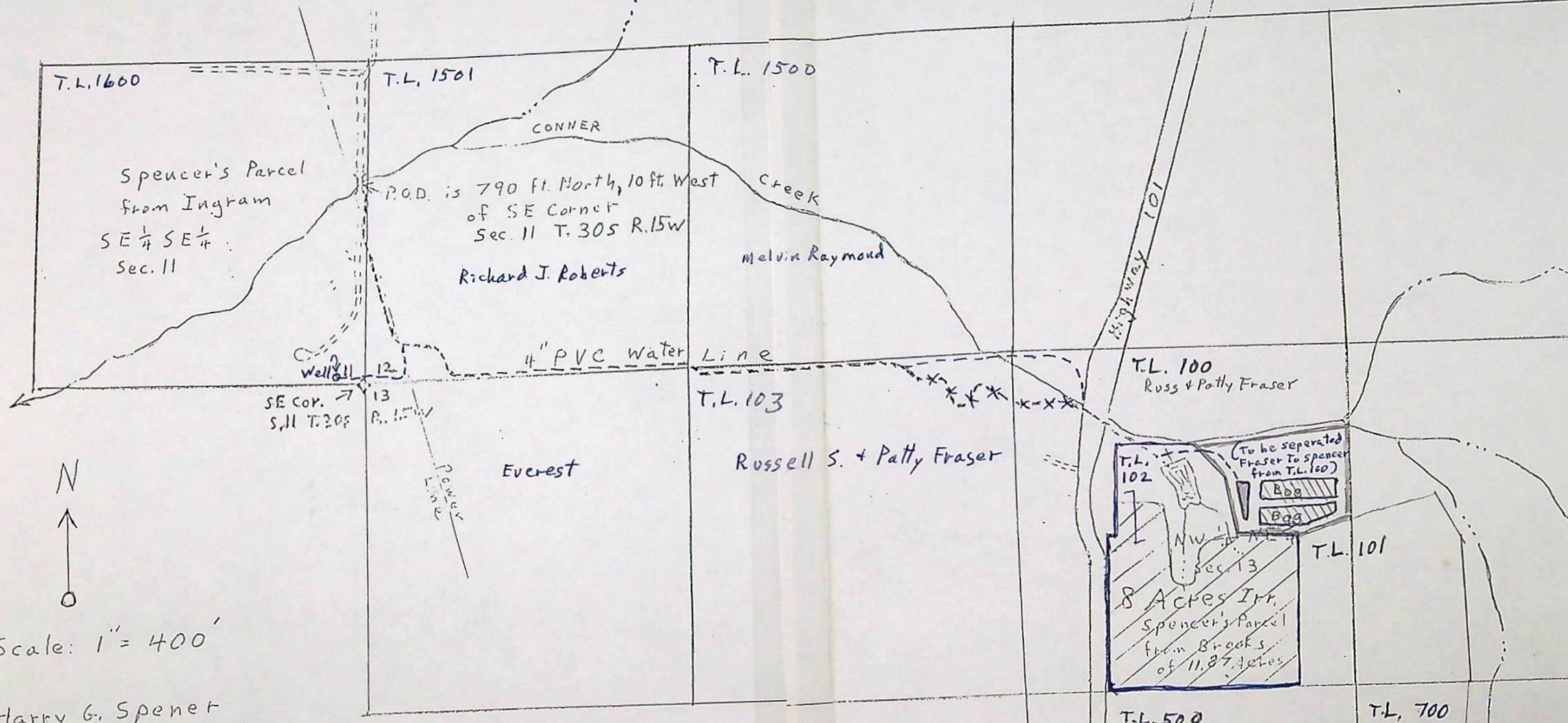
The undersigned covenant that they are the owners of the above described lands, and that said lands are free and clear of all encumbrances and liens whatsoever, except those held by the following persons:

IN WITNESS WHEREOF, the undersigned have set their hand and seal this 10 day of SEPT, 1991.

OWNERS SIGNATURE:

Russell S Fraser
Lois Fraser

Exhibit "A" - Fraser Agreement



Scale: 1" = 400'

Harry G. Spener
 Water Right Application
 from SE 1/4 SE 1/4 Sec. 11
 T. 30 S R. 15 W

Date: May 17, 1985

Map Key

- = Existing 4" PVC Water Line of Growth Unlimited
- X-X-X = discarded section of Growth Unlimited 4" PVC Water Line.

APPLICATION MAP

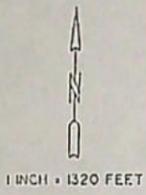
RECEIVED

IN THE NAME OF HARRY G SPENCER

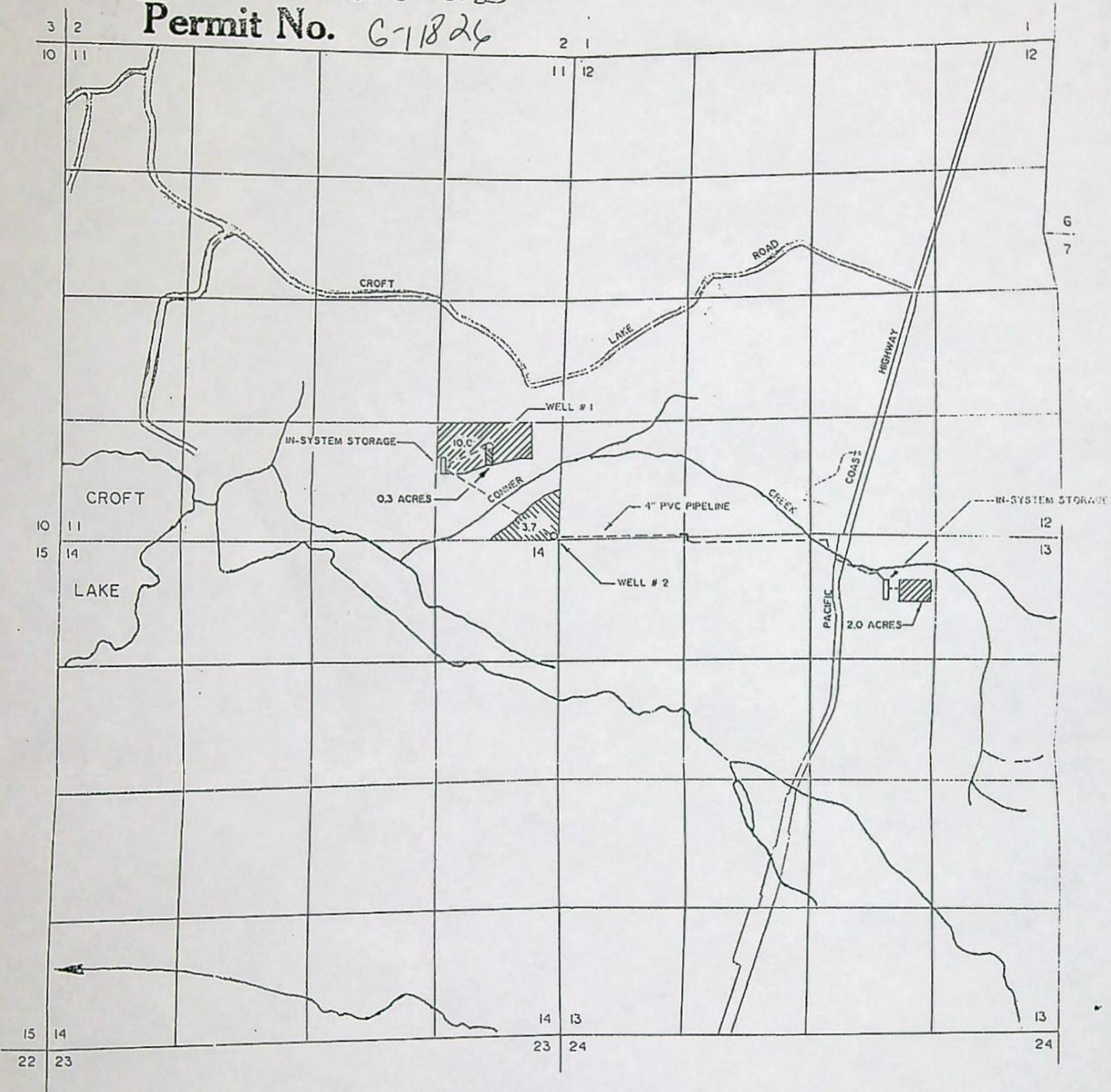
OCT - 3 1987

SECTIONS 11, 12, AND 13, T30S, R15W, W.M.

WATER RESOURCES DEPT.
STATE OF OREGON



Application No. G-12685
Permit No. G-11826

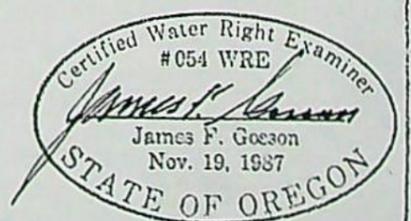


-  CRANBERRY USE
-  NURSERY OPERATIONS

WELL # 1 IS LOCATED 1030 FEET NORTH AND 750 FEET WEST FROM THE SOUTHEAST CORNER OF SECTION 11.

WELL # 2 IS LOCATED 5 FEET NORTH AND 20 FEET WEST FROM THE SOUTHEAST CORNER OF SECTION 11, BOTH WELLS BEING WITHIN THE SOUTHEAST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 11, TOWNSHIP 30 SOUTH, RANGE 15 WEST, W.M., COOS COUNTY.

THE PURPOSE OF THIS MAP IS TO IDENTIFY THE LOCATION OF THE WATER RIGHT. IT IS NOT INTENDED TO PROVIDE INFORMATION RELATIVE TO THE LOCATION OF PROPERTY OWNERSHIP BOUNDARY LINES.





KNOW ALL MEN BY THESE PRESENTS, That Floyd Ingram and Billie Ingram, Husband and Wife, and Kenneth Ingram and Beverly Ingram, Husband and Wife, hereinafter called the grantor, for the consideration hereinafter stated, to grantor paid by Harry G. Spencer and Patricia M. Spencer, Husband and Wife, hereinafter called the grantee, does hereby grant, bargain, sell and convey unto the said grantee and grantee's heirs, successors and assigns, that certain real property, with the tenements, hereditaments and appurtenances thereunto belonging or appertaining, situated in the County of COOS and State of Oregon, described as follows, to-wit: The SE 1/4 of the SE 1/4 of Section 11, Township 30 South, Range 15 West of the Willamette Meridian, Coos County, Oregon.

Tenant in common an undivided 4/5 interest to Harry S. Spencer and an undivided 1/5 interest to Patricia M. Spencer

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OCT - 3 1991

WATER RESOURCES DEPT.
SALEM, OREGON

Application No. 6-12685
Permit No.

(IF SPACE INSUFFICIENT, CONTINUE DESCRIPTION ON REVERSE SIDE)

To Have and to Hold the same unto the said grantee and grantee's heirs, successors and assigns forever. And said grantor hereby covenants to and with said grantee and grantee's heirs, successors and assigns, that grantor is lawfully seized in fee simple of the above granted premises, free from all encumbrances

and that grantor will warrant and forever defend the said premises and every part and parcel thereof against the lawful claims and demands of all persons whomsoever, except those claiming under the above described encumbrances.

The true and actual consideration paid for this transfer, stated in terms of dollars, is \$ 40,000.00

However, the actual consideration consists of or includes other property or value given or promised which is the whole part of the consideration (indicate which). (The sentence between the symbols ©, if not applicable, should be deleted. See ORS 93.030.)

In construing this deed and where the context so requires, the singular includes the plural and all grammatical changes shall be implied to make the provisions hereof apply equally to corporations and to individuals.

In Witness Whereof, the grantor has executed this instrument this _____ day of _____, 19____; if a corporate grantor, it has caused its name to be signed and seal affixed by its officers, duly authorized thereto by order of its board of directors.

THIS INSTRUMENT WILL NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY APPROVED USES.

Floyd Ingram
Billie Ingram
Kenneth Ingram
Beverly Ingram

STATE OF OREGON, }
County of COOS } ss.
August 19 1988

STATE OF OREGON, County of _____) ss.
_____, 19_____

Personally appeared the above named Floyd Ingram, Billie Ingram, Kenneth Ingram and Beverly Ingram

Personally appeared _____ and _____ who, being duly sworn, each for himself and not one for the other, did say that the former is the _____ president and that the latter is the _____ secretary of _____

and acknowledged the foregoing instrument to be their voluntary act and deed.

_____ a corporation, and that the seal affixed to the foregoing instrument is the corporate seal of said corporation and that said instrument was signed and sealed in behalf of said corporation by authority of its board of directors; and each of them acknowledged said instrument to be its voluntary act and deed.
Before me:

Before me: [Signature]
(OFFICIAL SEAL)
Notary Public for Oregon
My commission expires: 6-22-89

Before me: _____
(OFFICIAL SEAL)
Notary Public for Oregon
My commission expires: _____
(If executed by a corporation, affix corporate seal)

Floyd and Billie Ingram, and Kenneth and Beverly Ingram
Highway 42, Norway, Oregon 97460
GRANTOR'S NAME AND ADDRESS

STATE OF OREGON, }
County of _____ } ss.
I certify that the within instru-

OK

WARRANTY DEED



KNOW ALL MEN BY THESE PRESENTS, That... Floyd Ingram and Billie Ingram, Husband and Wife, and Kenneth Ingram and Beverly Ingram, Husband and Wife, hereinafter called the grantor, for the consideration hereinafter stated, to grantor paid by Harry G. Spencer and Patricia M. Spencer, Husband and Wife, hereinafter called the grantee, does hereby grant, bargain, sell and convey unto the said grantee and grantee's heirs, successors and assigns, that certain real property, with the tenements, hereditaments and appurtenances thereunto belonging or appertaining, situated in the County of Coos and State of Oregon, described as follows, to-wit: The SE 1/4 of the SE 1/4 of Section 11, Township 30 South, Range 15 West of the Willamette Meridian, Coos County, Oregon.

Tenant in common an undivided 4/5 interest to Harry S. Spencer and an undivided 1/5 interest to Patricia M. Spencer

RECEIVED

OCT - 3 1991

WATER RESOURCES DEPT. SALEM, OREGON

Application No. 6-12685
Permit No.

(IF SPACE INSUFFICIENT, CONTINUE DESCRIPTION ON REVERSE SIDE)

To Have and to Hold the same unto the said grantee and grantee's heirs, successors and assigns forever. And said grantor hereby covenants to and with said grantee and grantee's heirs, successors and assigns, that grantor is lawfully seized in fee simple of the above granted premises, free from all encumbrances

and that grantor will warrant and forever defend the said premises and every part and parcel thereof against the lawful claims and demands of all persons whomsoever, except those claiming under the above described encumbrances.

The true and actual consideration paid for this transfer, stated in terms of dollars, is \$40,000.00.
However, the actual consideration consists of or includes other property or value given or promised which is the whole part of the consideration (indicate which). (The sentence between the symbols ©, if not applicable, should be deleted. See ORS 93.030.)

In construing this deed and where the context so requires, the singular includes the plural and all grammatical changes shall be implied to make the provisions hereof apply equally to corporations and to individuals.

In Witness Whereof, the grantor has executed this instrument this _____ day of _____, 19____; if a corporate grantor, it has caused its name to be signed and seal affixed by its officers, duly authorized thereto by order of its board of directors.

THIS INSTRUMENT WILL NOT ALLOW USE OF THE PROPERTY DESCRIBED IN THIS INSTRUMENT IN VIOLATION OF APPLICABLE LAND USE LAWS AND REGULATIONS. BEFORE SIGNING OR ACCEPTING THIS INSTRUMENT, THE PERSON ACQUIRING FEE TITLE TO THE PROPERTY SHOULD CHECK WITH THE APPROPRIATE CITY OR COUNTY PLANNING DEPARTMENT TO VERIFY APPROVED USES.

Floyd Ingram
Billie Ingram
Kenneth Ingram
Beverly Ingram

STATE OF OREGON, }
County of Coos } ss.
August 19 1988

STATE OF OREGON, County of _____) ss.
_____, 19_____

Personally appeared the above named Floyd Ingram, Billie Ingram, Kenneth Ingram and Beverly Ingram

Personally appeared _____ and _____ who, being duly sworn, each for himself and not one for the other, did say that the former is the _____ president and that the latter is the _____ secretary of _____

and acknowledged the foregoing instrument to be their voluntary act and deed.

_____, a corporation, and that the seal affixed to the foregoing instrument is the corporate seal of said corporation and that said instrument was signed and sealed in behalf of said corporation by authority of its board of directors; and each of them acknowledged said instrument to be its voluntary act and deed.

Before me: [Signature]
(OFFICIAL SEAL)
Notary Public for Oregon
My commission expires: 6-22-89

Before me: _____
(OFFICIAL SEAL)
Notary Public for Oregon
My commission expires: _____
(If executed by a corporation, affix corporate seal)

Floyd and Billie Ingram, and Kenneth and Beverly Ingram
Highway 42, Marway Oregon 97460
GRANTOR'S NAME AND ADDRESS
Harry and Patricia Spencer
P.O. Box 291
Langlais, OR 97450
GRANTEE'S NAME AND ADDRESS

STATE OF OREGON, }
County of _____ } ss.
I certify that the within instrument was received for record on the _____ day of _____, 19____, at _____ o'clock _____ M., and recorded in book/reel/volume No. _____ on _____

After recording return to:

SPACE RESERVED FOR

STATE OF OREGON
WATER WELL REPORT
 (as required by ORS 537.765)

Well # 2
 SE Cor S. 11

RECEIVED

T305/RISW/11

OCT - 3 (START CARD) # 26375

(1) OWNER: _____ Well Number: 112
 Name Kerry Ann Co. & Unbranded Tire
 Address _____
 City _____ State _____ Zip _____

(2) TYPE OF WORK:
 New Well Deepen Recondition Abandon

(3) DRILL METHOD
 Rotary Air Rotary Mud Cable
 Other _____

(4) PROPOSED USE:
 Domestic Community Industrial Irrigation
 Thermal Injection Other _____

(5) BORE HOLE CONSTRUCTION:
 Special Construction approval Yes No Depth of Completed Well 27 1/2 ft.
 Explosives used Yes No Type _____ Amount _____

HOLE		SEAL		Amount sacks or pounds
Diameter	From To	Material	From To	
10"	0 25	Epoxy/Concrete	0 25	1300 #

How was seal placed: Method A B C D E
 Other introduced from surface
 Backfill placed from _____ ft. to _____ ft. Material _____
 Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER:

Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing: 6"	+18"	36 1/2"	.25	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Liner:				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(7) PERFORATIONS/SCREENS:
 Perforations Method Telescope
 Screens Type Johnson Material stainless steel

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
37 1/2"	43 7/8"	.016		6"	Tele	<input type="checkbox"/>	<input type="checkbox"/>
43 7/8"	48 1/2"	.012		6"	Tele	<input type="checkbox"/>	<input type="checkbox"/>
48 1/2"	54 1/2"	.014		6"	Tele	<input type="checkbox"/>	<input type="checkbox"/>
54 1/2"	58 1/2"			5"	Full pipe	<input checked="" type="checkbox"/>	<input type="checkbox"/>

(8) WELL TESTS: Minimum testing time is 1 hour
 Pump Bailer Air Flowing Artesian
 Yield gal/min 45 Drawdown 11' for 4 hrs Drill stem at 55' Time 1 hr.

Temperature of water 50' Depth Artesian Flow Found _____
 Was a water analysis done? Yes By whom _____
 Did any strata contain water not suitable for intended use? Too little
 Salty Muddy Odor Colored Other _____
 Depth of strata: _____

(9) LOCATION OF WELL by legal description:
 County SALEM OREGON Latitude _____ Longitude _____
 Township 30S N or S, Range 15W E or W, WM.
 Section 11 SE 1/4 SE 1/4
 Tax Lot 1100 Lot _____ Block _____ Subdivision _____
 Street Address of Well (or nearest address) OFF OF HWY 101 S. - Well #112

(10) STATIC WATER LEVEL:
31' ft. below land surface. Date 8/30/91
 Artesian pressure _____ lb. per square inch. Date _____

(11) WATER BEARING ZONES:
 Depth at which water was first found 31'

From	To	Estimated Flow Rate	SWL
31	54	40 GPM	21

(12) WELL LOG: Ground elevation +1200'

Material	From	To	SWL
Sandy Clay Fine	0	15	
Clay w/ sand Brown	15	18	
Clay w/ sand Gray	18	27	
Sand Brown Fine	27	26	
Sand/clay + gravel Fine Brown	26	30	
Sand Clay medium	30	26	21
Sand w/ gravel Brown coarse	26	26	21
Clay w/ gravel Gray			
Claystone Gray hard			

G-12685

Date started 8/29/91 Completed 9/10/91

(unbonded) Water Well Constructor Certification:
 I certify that the work I performed on the construction, alteration, or abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to my best knowledge and belief.
 Signed John S. Est. II WWC Number 65
 Date 10/1/91

(bonded) Water Well Constructor Certification:
 I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above, all work performed during this time is in compliance with Oregon well construction standards. This report is true to the best of my knowledge and belief.
 Signed John Mack WWC Number 111
 Date 9/26/91

STATE OF OREGON
WATER WELL REPORT
 (as required by ORS 537.765)

Well No: 130s/R15w/11
 Greenhouse well

OCT (START CARD) # 16053

(1) OWNER: HARRY SPENCER Well Number: 39
 Name GROWTH UNLIMITED TREE FARM
 Address P.O. BOX 291
 City LANGLOIS State OR. Zip 97450

(2) TYPE OF WORK:
 New Well Deepen Recondition Abandon

(3) DRILL METHOD
 Rotary Air Rotary Mud Cable
 Other

(4) PROPOSED USE:
 Domestic Community Industrial Irrigation
 Thermal Injection Other

(5) BORE HOLE CONSTRUCTION:
 Special Construction approval Yes No Depth of Completed Well 57'2" ft.
 Explosives used Yes No Type _____ Amount _____

HOLE			SEAL			Amount sacks or pounds
Diameter	From	To	Material	From	To	
10"	0	18	CEMENT	0	18	800#
6"	18	58				

How was seal placed: Method A B C D E
 Other _____
 Backfill placed from _____ ft. to _____ ft. Material _____
 Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER:

Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing: 6"	+1	37'11 1/2"	.25	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Liner:				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Final location of shoe(s) _____

(7) PERFORATIONS/SCREENS:

Perforations Method TELESCOPE
 Screens Type JOHNSON Material STAINLESS STEEL

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
38'10"	44'7"	.015			6"	<input type="checkbox"/>	<input type="checkbox"/>
44'9"	50'1/4"	.012			6"	<input type="checkbox"/>	<input type="checkbox"/>
50'1/4"	55'3/4"	.010			6"	<input type="checkbox"/>	<input type="checkbox"/>
55'3/4"	57'2"				5"	<input checked="" type="checkbox"/>	<input type="checkbox"/>

(8) WELL TESTS: Minimum testing time is 1 hour
 Pump Bailer Air Flowing Artesian
 Yield gal/min 42 Drawdown 6'9" Drill stem at @ 53' Time 1 hr.

Temperature of water 52° Depth Artesian Flow Found _____
 Was a water analysis done? Yes By whom _____
 Did any strata contain water not suitable for intended use? Too little
 Salty Muddy Odor Colored Other _____
 Depth of strata: _____

(9) LOCATION OF WELL by legal description:
 County COOS Latitude _____ Longitude _____
 Township 30 S Nor S, Range 15 W E or W, WM
 Section 11 SE 1/4 SE 1/4
 Tax Lot 1600 Lot _____ Block _____ Subdivision _____
 Street Address of Well (or nearest address) CROFT ROAD - OFF OF 101 SOUTH.

(10) STATIC WATER LEVEL:
25'6" ft. below land surface. Date 3/13/90
 Artesian pressure _____ lb. per square inch. Date _____

(11) WATER BEARING ZONES:

Depth at which water was first found 25'

From	To	Estimated Flow Rate	SW
23'	55'	80	25

(12) WELL LOG: Ground elevation 300'

Material	From	To	SW
CLAY, BROWN	0	6	
SAND w/ GRAVEL, BROWN	6	18	
GRAVEL w/ SAND, MED., BROWN	18	20	
GRAVEL w/ SAND, MED., GRAY	20	23	
GRAVEL w/ SAND, MED., RED	23	24	25
SAND w/ GRAVEL, FINE, BROWN	24	28	
CLAY w/ SAND, BROWN	28	30	
SAND w/ GRAVEL, FINE, BROWN	30	45	
GRAVEL w/ SAND, MED., BROWN	45	50	
SAND, MED., BROWN	50	55	
CLAY, GRAY	55	58	

Application No. 6-12685
 Permit No. _____

Date started 3/12/90 Completed 3/20/90

(unbonded) Water Well Constructor Certification:
 I certify that the work I performed on the construction, alteration abandonment of this well is in compliance with Oregon well construct standards. Materials used and information reported above are true to my knowledge and belief.
 WWC Number _____
 Signed _____ Date _____

(bonded) Water Well Constructor Certification:
 I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. work performed during this time is in compliance with Oregon construction standards. This report is true to the best of my knowledge and belief.
 WWC Number 149
 Signed Frank Mack Date 3/20/90

612685

AUTOMATIC COVER SHEET

SECURITY BANK

P.O. BOX 89

BANDON, OR 97411

Telephone (503) 347-2401

FAX Number (503) 347-3531

DATE: December 9, 91

TO: Don Miller

FAX #: 1-378-8130

FROM: Harry Spencer

5 PAGES SENT

INCLUDING COVER PAGE

SE 1/4 OF THE SE 1/4 OF SECTION 11, TWP 30S., R.15W., WM

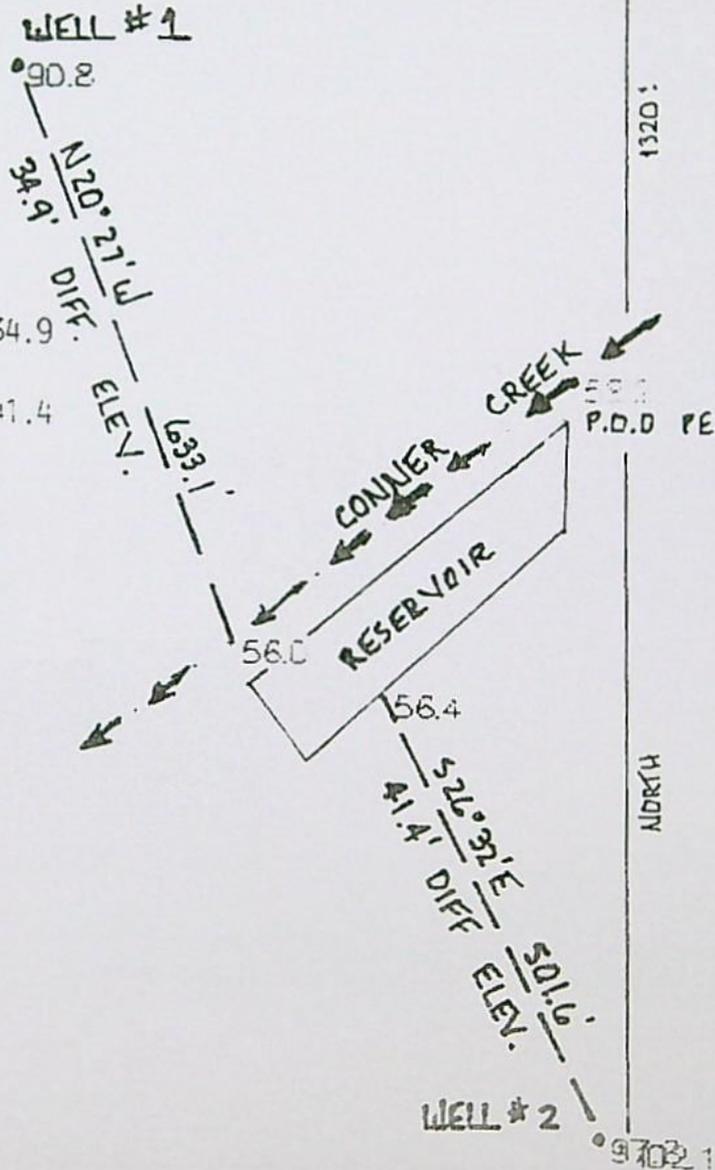
LOCATIONAL SURVEY/STUDY

PREPARED FOR: HARRY SPENCER
P.O. BOX 291
LANGLOIS, OR 97450

PREPARED BY: PRAHAR SURVEYING
1045 BALTIMORE #1
BANDON, OR 97411
(503) 347-9517

DATE: DEC. 9, 1991

FINDINGS: WELL #1 to creek, HD=633.1
ELEV DIFF=34.9
WELL #2 to reserv. HD=501.0'
ELEV DIFF=41.4



P.D.D PER APP. # 69884

REGISTERED
PROFESSIONAL
LAND SURVEYOR

[Signature]
OREGON
JULY 10, 1982
JOHN P. PRAHAR
2009

HARRY SPENCER/SE 1/4 SE 1/4

SCALE: 200 ft/in 26.40in/mi

"Complete Service of Water Systems"

BANDON WELL & PUMP COMPANY

Licensed Bonded & Insured

JIM MACK - Owner

Route 1, Box 1115
McTimmons Road
Bandon, OR 97411
(503) 347-3178

Quality Wells & Pumps

Water Filter Systems

December 5, 1991

To Whom It May Concern:

The flow tests for Mr. Harry Spencer, Growth Unlimited Trees, were performed using the following equipment:

Flow Meter:

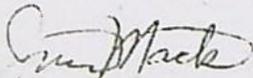
2" Bronze Badger Recordall II, Type M-II, Class II, Turbo Water Meter (Serial Number: 90059763), with full port, 2" Bronze Gate Valve, for restricting water flow.

Depth Meter:

300' ACTAT Well Sounder & 300' Powers 65L.

If you have any questions, please call me.

Sincerely,



Jim Mack

JAM/lcm

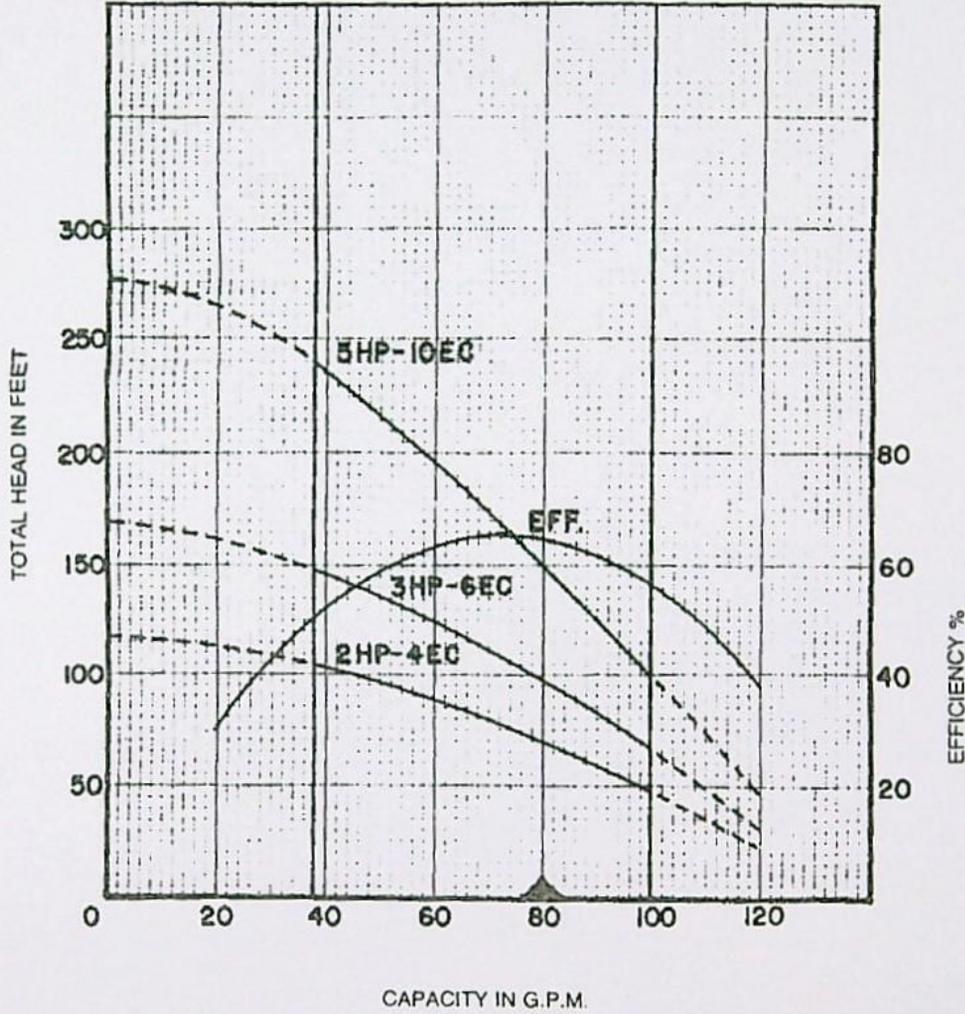
Used on Well # | by Greenhouse

RED JACKET®
80 GPM SERIES "EC" PUMPS

BIG-FLO®

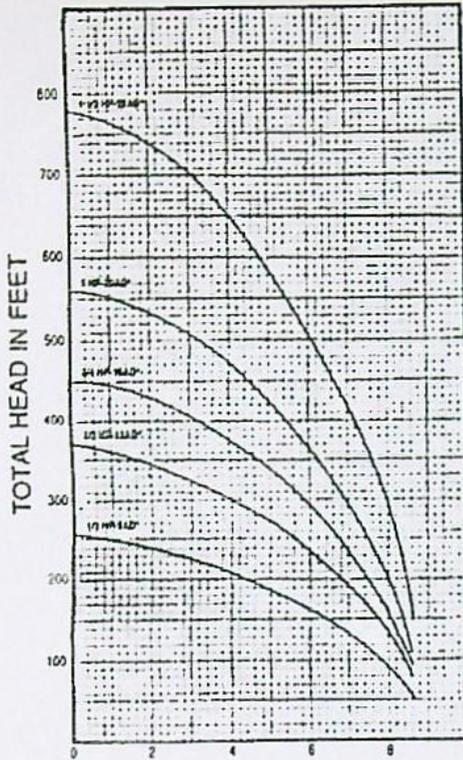
5 HP Red Jacket Pump
 Model 500 CNI-10EC

PERFORMANCE CURVES



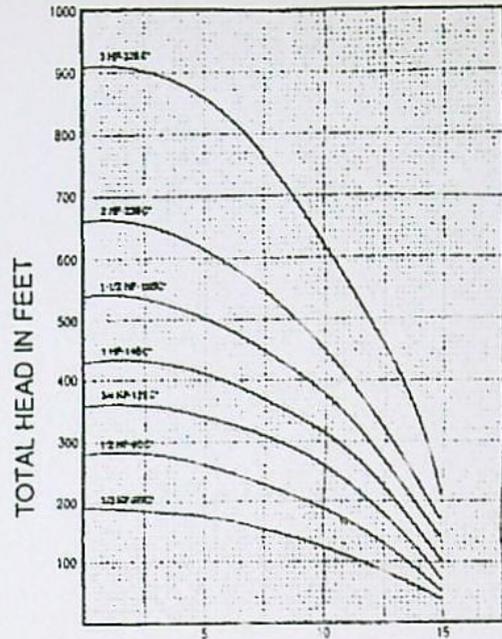
CAPACITY IN GALLONS PER MINUTE AGAINST DISCHARGE PRESSURES SHOWN												
PUMP NO.	0 LBS.			20 LBS.			40 LBS.			60 LBS.		
	4EC	6EC	10EC	4EC	6EC	10EC	4EC	6EC	10EC	4EC	6EC	10EC
H.P.	2	3	5	2	3	5	2	3	5	2	3	5
40	105	120		55	65	110		50	90			70
60	85	105		25	75	100		30	85			60
80	60	90	110		60	95			75			50
100	35	75	105		40	85			65			40
140		45	85			70			45			
180			70			50						
220			50			20						
260			25									

PERFORMANCE CURVES FOR 5 GPM SUBMERSIBLE SERIES "AD"



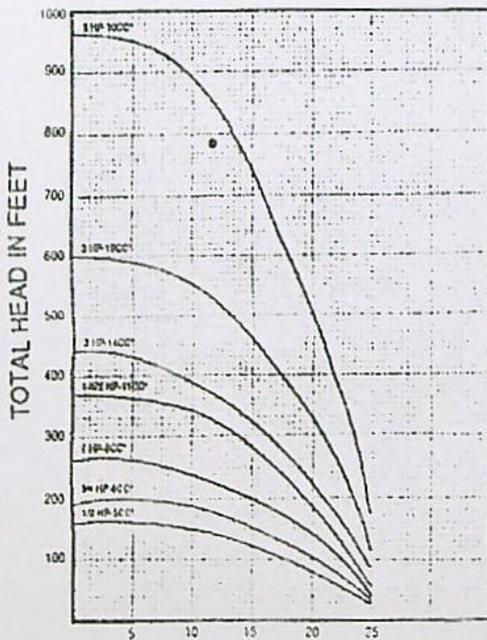
CAPACITY IN GPM
‡"U" Available in 1/2 thru 1 HP Only.

PERFORMANCE CURVES FOR 10 GPM SUBMERSIBLE SERIES "BC"



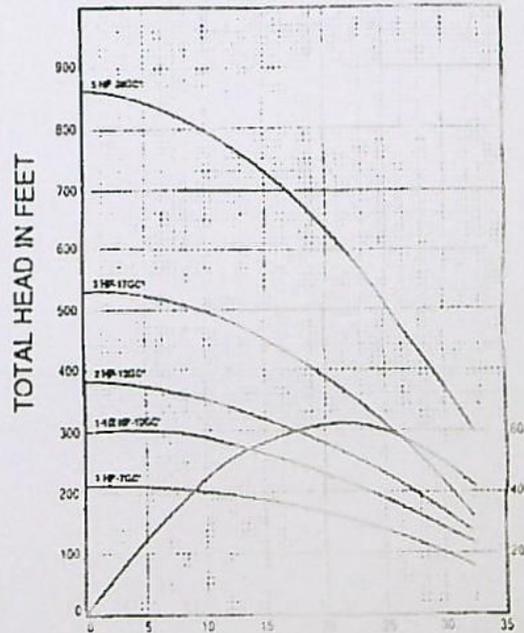
CAPACITY IN GPM
*3-Wire Standard Construction Only.
‡"U" Available in 1/2 thru 1 HP Only.

PERFORMANCE CURVES FOR 18 GPM SUBMERSIBLE SERIES "CC"



CAPACITY IN GPM
*3-Wire Standard Construction Only.
‡"U" Available in 1/2 thru 1 HP Only.

PERFORMANCE CURVES FOR 22 GPM SUBMERSIBLE SERIES "GC"



CAPACITY IN GPM
*3-Wire Standard Construction Only.
‡"U" Available in 1 HP Only.

*2 HP Red Jacket Pump
Model 200 CNI-N12GC*

MOST EFFICIENT AREAS

1. Locate your pumping level (the distance from the level of the water in your well to ground level) along the left margin.
2. Decide how much water you need (gallons per minute) and find it along the bottom of the chart.
3. Read across from your pumping level and up from your water needs. Where the lines intersect, you will find the model that best suits you needs.

EXHIBIT A

89 06 0321

The N 1/2 of the NE 1/4 and SE 1/4 of the NE 1/4 of Section 13, Township 30 South, Range 15, West of the Willamette Meridian, Coos County, Oregon; lying East of Highway 101.

EXCEPT: A Parcel of land in the NW 1/4 of the NE 1/4 of Section 13, Township 30 South, Range 15 West of the Willamette Meridian, Coos County, Oregon, more particularly described as follows: Beginning at a pipe on the south line of said NW 1/4 of the NE 1/4, on the east E/W edge of State Highway 101, said point being located North 89° 38' 37", East 305.98 feet from the C-H- 1/16-C corner; thence North 89° 38' 37" East, 801.44 feet to a pipe; thence North 08° 23' 31" East, 511.58 feet to a pipe; thence South 88° 19' 36" West, 207.09 feet to a rod; thence North 30° 31' 59" West, 179.31 feet to a rod; thence North 53° 44' 35" West, 260.91 feet to a rod; thence South 87° 20' 55" West, 289.91 feet to the East Right of Way of said Highway 101; thence Southerly along said East Right of Way of Highway 101, 800 feet, more or less, to the point of beginning.

ALSO EXCEPT: A parcel of land located in the NW 1/4 of the NE 1/4 and the NE 1/4 of the NE 1/4 of Section 13, Township 30 South, Range 15 West of the Willamette Meridian, Coos County, Oregon, the following description is a compass and tape survey of a parcel of land in the above subsection, the bearings and distances should be considered approximate only and the iron pipes are the actual corners: Beginning at the NE 1/16th corner of Section 13, Township 30 South, Range 15 West of the Willamette Meridian, Coos County, Oregon; thence North 89° 38' East 273 feet to a 2 inch iron pipe; thence North 78° 30' East 43.0 feet to a 2 inch iron pipe; thence North 13° 30' East 480 feet to a 2 inch iron pipe; thence North 19° 00' West 172 feet to a 2 inch iron pipe; thence South 73° 00' West 424 feet to a 2 inch iron pipe; thence South 14° 30' West 520 feet to a 2 inch iron pipe; thence North 89° 38' East to a 5/8 inch rod which is the NE 1/16 corner to the point of beginning.

ALSO EXCEPT: A parcel of land in the SE 1/4 of the NE 1/4 of Section 13, Township 30 South Range 15, West of the Willamette Meridian, in Coos County, Oregon described as follows: Beginning at the Northwest corner of said SE 1/4 of the NE 1/4 running thence East 273 feet along the North line of said SE 1/4 of the NE 1/4 to a point; thence in a straight line to the Southwest corner of said SE 1/4 of the NE 1/4; thence along the west line of said SE 1/4 of the NE 1/4 to the point of beginning.-----

SUBJECT TO AND EXCEPTING:

1. As disclosed by the tax roll the premises herein described are classified as Forest Lands. In the event of declassification, said premises will be subject to additional taxes and interest pursuant to the provisions of ORS Chapter 321.

2. Rights of the public in streets, roads and highways.

Exhibit A-1

FAX TRANSMISSION COVER SHEET
COOS COUNTY ANNEX

DATE: 12-10-91 TIME: 0856

TO: Donn Miller
Name

OWRD
Organization

378-8130
FAX Number

FROM: J. P. Drolet
Name

Watermaster
Department

Coos County Annex 503-396-2690
Coquille, Ore. 97423 FAX Number

Number of pages 2 (including this cover sheet)

Description of Transmittal: Attached Harry Spencer Asked that I FAX the

Please call (503) 396-3121 ext. 254 if transmittal is incomplete or unreadable.

MISCELLANEOUS MEASUREMENTS

P. 02

	Stream	Location	1/4 1/4	G.H.	W	A	Q	A.T.	W.T.	Remarks.
05-27-89	South Outlet of Croft Lake Trib. to New River	75' south of Source Lake	NE 1/4 Sec 10 T30S R15W	—	2.25	0.89	0.37	—	—	Taken after rain storm
08-23-89	South Outlet of Croft Lake Trib to New River	" "	NE 1/4 Sec 10 T30S R15W	—	1.00	0.18	0.04	59°	70°	Intermittent Rain for 2 days
05-25-89	N. Outlet of Croft Lake Trib. to New River	20' below the dam	NE 1/4 Sec 10 T30S R15W	—	7.50	3.91	5.72	—	—	Taken after heavy RAIN STORM
05-27-89	N. Outlet of Croft Lake Trib to New River	" " "	NE 1/4 Sec 10 T30S R15W	—	7.50	4.13	5.50	—	—	
07-17-89	" " "	" " "	" " "	—	7.00	2.47	1.63	65°	65°	
08-23-89	" " "	" " "	" " "	—	6.50	2.41	1.57	59°	69°	Had 2 days inter- mittent RAIN
09-29-89	" " "	" " "	" " "	—	6.00	1.72	0.36	61°	65°	
05-25-89	Conner Cr. Trib. to Davis Cr.	110' above its confluence w/ Davis Cr.	NE 1/4 Sec 14 T30S R15W	—	2.00	1.37	3.03	—	—	Taken after heavy RAIN STORM
07-17-89	" " "	" " "	NW 1/4 NW 1/4 NE 1/4 Sec 14 T30S R15W	—	2.25	1.65	0.91	71°	64°	
08-23-89	" " "	" " "	" " "	—	3.00	2.34	0.66	64°	62°	Had 2 days of intermittent rain
09-29-89	" " "	" " "	" " "	—	3.00	2.41	0.49	61°	63°	
05-25-89	Davis Cr. Trib. to Croft Lake	Above the confluence of Croft Lake	NW 1/4 R 15W NE 1/4 Sec 14 T30S R15W	—	7.00	1.78	1.70	—	—	Taken after heavy rain storm
07-17-89	DAVIS Cr	" " "	NW 1/4 NW 1/4 NE 1/4 Sec 14 T30S R15W	—	7.00	1.66	0.76	71°	62°	
08-23-89	" " "	" " "	" " "	—	4.00	1.26	0.73	64°	62°	Had 2 days of intermittent rain
09-29-89	" " "	" " "	" " "	—	5.50	1.03	0.30	61°	63°	
05-27-89	Unnamed stream, trib to Croft Lake	at stream the confluence of Croft Lake	NE 1/4 Sec 10 T30S R15W	—	1.50	0.50	0.28	—	—	Taken after heavy rain storm
07-17-89	UNIND Stream, trib to " " "	" " "	NE 1/4 Sec 10 SE 1/4 Sec 10 T30S R15W	—	1.55	0.32	0.09	65°	61°	
08-23-89	" " "	" " "	" " "	—	1.25	0.24	0.06	59°	61°	
07-17-89	Conner Cr. Trib. to Davis Cr.	4' below Spencer River outlet	NW 1/4 Sec 14 SE 1/4 Sec 14 T30S R15W	—	3.75	4.40	1.00	60°	64°	Measure taken by above normal meas. station Conner Cr.

DEC-10-91 TUE 8:58

Summary of quantities for the CROFT L (tributary of NEW R) and its tributaries.

5/ 5/1992

- / Non-Canceled rights only
- / Supplemental diversions only
- / Groundwater rights included
- / Surface water rights included
- / Reservoir rights not included

Application Permit	DLC/LOT	Location	Use	Priority	Source	Quantity	Status
CONNER CR > DAVIS CR							
S 71842	0	SENE 13 305 15W	CR	9/16/1991	RESERVOIR	9.200 APT ----- 9.200 APT	V
UNN STR > CONNER CR							
S 71816	0	SENE 13 305 15W	CR	10/31/1991	UNN STR	0.350 CFS ----- 0.350 CFS	V
Totals							

Total CFS:		0.35					
Total APT:		9.20					

02
92
72
52
32
12
02
P

5/ 5/1992

Summary of quantities for the CROFT L (tributary of NEW R) and its tributaries.

- / Non-Canceled rights only /
- / Primary diversions only /
- / Groundwater rights included /
- / Surface water rights included /
- / Reservoir rights not included /

Application Permit OLC/LOT Location Use Priority Source Quantity Status

SPENCER

CROFT L > NEW R

G 12685	0	SESE 11 305 15W	CR	10/ 3/1991	WELL 1	0.178 CFS	V
G 12685	0	SESE 11 305 15W	CR	10/ 3/1991	WELL 2	0.178 CFS	V

						0.355 CFS	

DAVIS CR > CROFT L

G 71045	0	SENE 14 305 15W	TC	12/13/1990	UNW STR/SPENCE	1.350 CFS	V
G 12693	0	SAWE 14 305 15W	CR	10/15/1991	SUMP 1	0.320 CFS	V
G 12693	0	SEW 14 305 15W	CR	10/15/1991	SUMP 2	0.370 CFS	V
G 12693	0	SEW 14 305 15W	CR	10/15/1991	SUMP 3	0.480 CFS	V
G 12705	0	SAWE 14 305 15W	CR	11/12/1991	SUMP 1	0.400 CFS	V
G 12705	0	SAWE 14 305 15W	CR	11/12/1991	SUMP 2	0.100 CFS	V
G 12705	0	SEVE 14 305 15W	CR	11/12/1991	A WELL	0.400 CFS	V

						3.350 CFS	

CONNER CR > DAVIS CR

G 12341	0	SEVE 14 305 15W	TC	12/13/1990	SPENCER SUMP	0.030 CFS	V
G 12655	0	SAWE 12 305 15E	CR	9/16/1991	SUMP	0.780 CFS	V
G 12692	0	SAW 12 305 15W	CR	10/14/1991	WELL 1	1.487 CFS	V
G 12158	0	SAWE 12 305 15W	CR	1/28/1992	UNW STR	0.900 CFS	V
G 12158	0	SESW 12 305 15W	CR	1/28/1992	UNW STR	0.900 CFS	V
G 12809	0	SENE 13 305 15W	CR	3/ 5/1992	SUMP 1	0.440 CFS	V

						4.517 CFS	

NEED SUPPLEMENTAL NO SENIOR DATES TO G-12685

1.35

*0.03
0.78

2.16 CFS*

0 12701 0 NENE 13 30S 15W CR 10/31/1991 SUMP WELL 0.050 CFS V
0.050 CFS

Totals

Total CFS: 0.61

Total AFT: 0.00

SEP 1994

BEFORE THE WATER RESOURCES COMMISSION
OF THE STATE OF OREGON

DATE: 9/15/94

In the Matter Of) PETITION FOR RECONSIDERATION
Groundwater Permit)
G-11826, Application)
G12685)

Pursuant to OAR 690-01-005, 137-04-080 and ORS 183.484(2), 536.075, WaterWatch files this petition for reconsideration of the water right permit G-11826 issued by the Director October 5, 1994. Given the omission of pertinent supporting data, conflicting Department analysis, misinterpretation of one of the governing rules, utilization of the wrong standard of review, prejudice to other applicants, endangered species concerns, and basic public interest concerns, WaterWatch requests that the Commission reconsider and rescind the permit, group it with the other pending applications for the New River Basin, and wait to process it, along with the others, until adequate data on the surface water and ground water resource is collected and analyzed.

The Permit

On October 5, 1994 the Oregon Water Resources Department (hereinafter the Department) issued water right G-11826 to Harry G. Spencer for cranberry and nursery operations. The Water Resources Commission (hereinafter Commission) had found, on September 9, 1994, that the proposed use of water would not impair or be detrimental to the public interest.

The groundwater appropriation granted by this permit lies within the Croft Lake area of the New River Basin. This basin is a unique and fragile ecosystem that is home to a number of rare plant and animal species, many of them listed or petitioned for listing under state and federal Endangered Species Acts. Stocks of coho and fall chinook are currently listed by ODFW as state sensitive, and coho are currently being considered for listing under the federal ESA.

This fragile ecosystem is coming under increasing pressure from development interests, especially the cranberry industry. There are currently over 70 applications (groundwater, surface, and reservoir) pending within this basin, with a majority of those being within the Croft Lake area. Most of these applications will impact already low flows in the basin. Staff itself has acknowledged that "[m]ost of these applications request appropriation of surface water, or groundwater found to have the potential for interference with surface water flows." See staff report for Agenda Item H.2, September 9, 1994. While federal and state agencies recognize that

the resource is overappropriated, they do not have adequate data to quantify their observations (i.e. dry streambeds). Without such data, water availability cannot be adequately determined. Testimony of Dan Carpenter, BLM, and Stephanie Birchfield, ODFW, WRC Meeting October 28, 1994.

Amidst this uncertainty surrounding the capacity of the resource to support new uses, the Commission, at its September 9, 1994 meeting, approved this application for groundwater withdrawal. They determined that issuance would not be detrimental to the public interest because there was no potential for substantial interference.

The Commission erred in its determination for six reasons. First, the Commission's determination was based, in large part, on the staff report laid before it. This staff report was devoid of some pertinent information from the files which might have led the Commission to make a determination other than they did, including some contradictory staff determinations regarding the potential for substantial interference. Second, the governing Division 9 rules were not properly applied. Third, the Commission applied the wrong standard of review. Rather than analyze the proposed use to see if it would harm public welfare, health and safety, the Commission looked to see if it would harm existing rights. Existing rights are not at issue here. Fourth, this permit was granted out of order and thus unfairly prejudiced other applicants. Fifth, there was no discussion about the effect the potential listing of coho would have on this use. And sixth, the permit as approved did not contain adequate conditions to protect the public interest in the resource.

1. Omission of pertinent supporting data

The Oregon Administrative Rules mandate that in determining whether the proposed water use may impair or be detrimental to the public interest, the Commission shall consider the facts set forth in the application and supporting data. OAR 690-11-185(4)(a).

With regards to this application, the Department provided the Commission a staff report which included the Department's most recent groundwater/hydrology report that determined that there was no potential for substantial interference. However, the staff report did not include an earlier groundwater/hydrology report and supporting memoranda that found just the opposite. potential for substantial interference existed. Nor did it include any information that explained the Department's change in position regarding the potential for substantial interference.

As noted above, the Division 11 rules require that the Commission review supporting data. These past reports are arguably pertinent to the Commission's undertaking of a public interest review because they show that there is, at the very least uncertainty surrounding the potential for substantial interference. Arguably, it could be determined that there is the potential for substantial interference based upon the Department's analysis as a whole.

WaterWatch has attached the pertinent reports and memos that the Commission should have been provided with before the Commission so that they could have adequately whether the potential for substantial interference existed. As we explained in our protest, there are two different staff determinations in the application file which are apparently based on the same data. The first determination concluded there was potential for substantial interference. See Memo to File G-12685 from Sarah Meyer, 12/5/91. The subsequent determination back tracked slightly, although not completely, and "tentatively" concluded that the proposed use "may have low potential for substantial interference." Memo to File from Mike Zwart, 10/6/92. Staff acknowledged that this conclusion was "a tentative conclusion, and strong permit conditions were suggested." Memo to Carol Spence from Mike Zwart, 1/16/93. However, the permit conditions do nothing to eliminate interference or protect the public uses of the surface water resource. In addition, Department staff acknowledged the data used to make this tentative determination failed to contain "pre-test water level data," had "minimal water level recovery rate," and required "assumptions to be made regarding test conditions." Memo to File from Mike Zwart, 10/6/92. And finally, in a more recent memo, staff once again stated that "it was tentatively concluded that the wells may have low potential for substantial interference with Conner Creek." Memo to File from Mike Zwart, 8/22/94.

2. Misapplication of the Division 9 Rules

Despite the uncertainty the Department has exhibited regarding the potential for substantial interference, there seems to be no question that the aquifer is both unconfined and hydraulically connected to Conner Creek. See Memo from Mike Zwart to File, 2/16/93.

The Department's Division 9 rules require the Department to determine whether the proposed wells produce water from a confined or unconfined aquifer. OAR 690-09-040(1). The rules also require the Department to determine the distance of the proposed wells to surface water sources and whether the aquifer is hydraulically connected to surface waters. OAR 690-09-040. The rules then allow certain assumptions to be made depending upon the outcome of these determinations and require further analysis of the applications if the proposed uses do not fit within these assumptions. Id.

A review of the application file reveals that the aquifer is both unconfined and hydraulically connected to Conner Creek and that the proposed point of appropriation is within 1/4 mile of Conner Creek. See Memo from Mike Zwart to File, 2/16/93. Thus, under the Division 9 rules these facts mandate an assumption that there is potential for substantial interference. OAR 690-09-040(4)(a).

The rules do provide the applicant leverage to refute these assumptions. The applicant did submit data collected by their own hydrologist that asserted that the amount of withdrawal would not be seen in Conner Creek. See Memo to file from Sarah Meyer, 12-5-91. Department staff analyzed this data and concluded that "Ralls' hydrogeological report was very informative

and it presented a lot of valid data, yet, there was nothing in the report to suggest that no hydraulic connection was occurring and that there was not a potential for substantial interference." *Id.* Based on this, Department staff concluded that "[d]ue to the proximity of the wells to the creek and the aquifer characteristics gained from the Ralls geological report, I think it is accurate to assume both hydraulic connection to Conner Creek and that the potential for substantial interference exists. *Id.*

Despite this, at the Commission meeting of September 9 Mike Zwart testified that although this proposed use would tap an unconfined aquifer and that the surface and groundwater were hydraulically connected, he believed the potential for substantial interference was low. Audio Tapes of WRC Meeting, 9/9/94. His determination seemed to be based on the fact that there are low permeability soils at the proposed site of the well. Thus, he argued, the assumption made pursuant to OAR 690-09-040(4)(a) was rebutted.

WaterWatch disagrees that the assumption was properly rebutted. However, even if it was, what seems to have been unclear at the Commission meeting is that the Commission could still have found that the potential for substantial interference existed. Under OAR 690-09-040(5) a groundwater appropriation that is hydraulically connected to surface waters (and isn't covered by subsection 4, which this use no longer is per the rebutted assumption) could be found to have the potential for substantial interference. In making this determination, the Department should have considered at least a) the potential for a reduction in streamflow or surface water supply, b) the potential to impair or detrimentally affect the public interest as expressed by an applicable closure on surface water appropriation, minimum perennial streamflow, or instream water right with a senior priority date, c) the percentage of the ground water appropriations that was, or would have become, surface water, d) whether the potential for interference would be immediate or delayed, or e) the potential for cumulative adverse impact on streamflow or surface water supply.¹

Applying these standards (at a minimum) the Department should have found the potential for substantial interference. Given the large number of groundwater and surface water applications in the area--that the staff has acknowledged will impact surface resources--it is likely that these proposed appropriations will reduce surface water supply and add to the cumulative effects of withdrawals on the resource.

¹ Note--these are the minimum parameters the Department should have looked at. They could also have looked at other factors such as the ACEC designation, the presence of potentially listed species under the federal Endangered Species Act.

3. Standard of Review

The Ground Water Act of 1955 (GWA)(ORS 537.505 et seq) governs the use of ground water in Oregon. Applications for new uses of ground water filed pursuant to ORS 537.615 are subject to review under ORS 537.620 and may be rejected or approved subject to ORS 537.620 through 537.625. The GWA sets forth two standards by which to gauge the effect of the proposed use: 1) whether the proposed new use will "impair or substantially interfere with existing rights to appropriate surface water by others" (ORS 537.620.3), and 2) to ensure the "protection of the public welfare, safety and health" when making groundwater permitting decisions (ORS 537.620(5)).

As noted, the over 70 pending applications in the New River Basin are posing a threat to the water resources of the area, and upon the many unique species that depend upon them. Given that the biggest threat is to the actual resource, rather than to existing water right holders, the Commission was in error in limiting the applicable standard of review to whether the proposed new use would "impair or substantially interfere with existing rights". It is not existing rights which are at issue. It is the health of the ecosystem as a whole. An ecosystem that is not protected by any quantifiable right. Thus, the Commission should have analyzed this application in light of their duty to protect the public welfare, safety, and health. In doing such, it would be apparent that protection of the waters that fed one of the last remaining wild places in Oregon was in the paramount interest of the "public welfare." For this and other reasons, the Commission should rescind this permit.

4. Prejudice to other applicants

As noted, there are over 70 applications pending in the New River Basin. Of these 70, at least 13 are senior in priority date to this permit. The Commission has directed the Department to process applications in the order received. In this case, not only did the Department violate the Commission's directive by bringing this application forward out of order, but the Commission itself violated its own order. This was in error and unfairly prejudiced those applicants with senior priority dates.

The approval of this application also prejudiced those applicants with junior rights. Because of concern over the water resource of the New River Basin, the Director has stated that she will group many of the pending applications together. By excluding this application from that grouping, and processing in advance of resource determinations that will bind the other applicants, the Department and the Commission have unfairly prejudiced all the other applicants who hope to procure some of this scarce resource.

5. Endangered Species Concerns

Coastal Coho, which utilize the New River System for various stages of their life cycle, have been petitioned for listing under the state and federal Endangered Species Act. These Acts place a burden on the Commission. Under the state Act, the Commission is required to consult with the Oregon Department of Fish and Wildlife to ensure that any action taken by the Commission is consistent with ODFW programs to conserve the species or, if no plan is in place, that the act will not "reduce the likelihood of the survival or recovery of the threatened species of endangered species." ORS 496.182(2). The federal Act prohibits the "taking" of endangered species. 16 USCA § 1538(a)(1)(B). Taking is defined in Section (3)(18) includes "harm" as well as killing and capturing. 16 USCA § 1532 (19). The regulatory definition of "harm" includes "significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering." 50 CFR § 17.3. Thus it is clear that actions by the Commission can rise to the level of an unpermitted taking of a species if habitat destruction or modification harms a listed species. See Palilia v. Hawaii Department of Land and Natural Resources, 649 F.Supp. 1070 (D. Hawaii 1986), aff'd, 852 F.2d 1106 (9th Cir. 1988). Significantly, the above referenced Palilia case, the oft-cited case on habitat alteration rising to the level of take, involved a state agency that allowed goats to destroy the food source of an endangered bird. Taking water from fish is at least as clear a causal connection.

The issuance of this permit in the face of probable coastal coho listing was not in the public interest. Given the precarious state of the resource, the Commission erred in giving away water which may in fact be needed by a listed species. Moreover, by doing such, they may, in the long run, be relinquishing the state's control over this water resource by basically setting up a situation whereby the only way to get the proper flows for fish is to have the federal government come in and set up an area of critical habitat under the Act. 16 USCA § 1533(b)(2). It has been a goal of the state not to allow resource conflicts to reach the level where federal intervention removes the state control. The proposed approval of this application will inevitably lead to these issues being resolved in Washington D.C. not in Oregon.

6. Public Interest in the resource is not protected by conditions as proposed

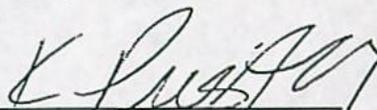
The permit fails to contain conditions that would protect the public interest in the resource. The permit does allow for regulation of water use, but only if it interferes with any prior surface or ground water rights. It does not allow for regulation if public instream needs are interfered with. As noted, it is the health of the water resource and the ecosystem it supports which is of great concern to federal and state agencies, various environmental groups, and the public at large. The Commission, in granting this permit without proper conditioning violated its duty to protect the public interest. For this and the aforementioned reasons the permit should be rescinded.

Moreover, given the combination of low stream flows and lack of data, the measuring and reporting conditions on this permit are inadequate. The permit does require measurement and reporting of the total duty of water used, however it still does not require measurement and reporting of both rate and duty and does not require reporting of the place and nature of use. These requirements are necessary in order to control the proposed sue and to ensure protection of the resource. For these and the aforementioned reasons the permit should be rescinded.

Conclusion

For the above reasons, WaterWatch respectfully requests that the Commission reconsider and rescind the permit, group it with the other pending applications for the New River Basin, and wait to process it, along with the others, until adequate data is collected and analyzed.

Respectfully submitted this 15 day of December, 1994.



Kimberley Priestley
Legal/Policy Analyst
WaterWatch

TO: Water Rights Section

Spencer

Received to
WRC
9/19/94

FROM: Groundwater/Hydrology Section

Meuser

Reviewer's Name: _____

SUBJECT: Application G-12685

1. ✓ PER THE S. Coast Basin rules, one or more of the proposed POA's is/is not within 4 feet/mile of a surface water source (Conner Creek) and taps a groundwater source hydraulically connected to the surface water.

1 630 } Conner Creek
2 500 }

2. BASED UPON OAR 690-09 currently in effect, I have determined that the proposed groundwater use
a. will, or } have the potential for substantial interference with the nearest surface water
b. will not } source, namely Conner Creek; or
c. will, if properly conditioned, adequately protect the surface water from interference:

- i. The permit should contain condition #(s) _____;
- ii. The permit should contain special condition(s) as indicated in "Remarks" below;
- iii. The permit should be conditioned as indicated in item 4 below;
- d. will, with well reconstruction, adequately protect the surface water from substantial interference.

Treat as surface water

3. BASED UPON available data, I have determined that groundwater for the proposed use
a. will, or } likely be available in the amounts requested without injury to prior rights and/or
b. will not } within the capacity of the resource; or
c. can, if properly conditioned, avoid injury to existing rights or to the groundwater resource;

- i. The permit should contain condition #(s) _____;
- ii. The permit should contain special condition(s) as indicated in "Remarks" below;
- iii. The permit should be conditioned as indicated in item 4 below.

4. a. THE PERMIT should allow groundwater production from no deeper than 100 feet below land surface;

b. The permit should allow groundwater production from no shallower than 100 feet below land surface;

c. The permit should allow groundwater production only from the _____ groundwater reservoir between approximately _____ ft. and _____ ft. below land surface;

d. Well reconstruction is necessary to accomplish one or more of the above conditions.

e. One or more POA's commingle 2 or more sources of water. The applicant must select one source of water per POA and specify the proportion of water to be produced from each source.

REMARKS: _____

WELL CONSTRUCTION (if more than one well doesn't meet standards, attach an additional sheet)

5. THE WELL which is the point of appropriation for this application does not meet current well construction standards based upon:
- a. review of the well log;
 - b. field inspection by _____;
 - c. report of CWRE _____;
 - d. other: (specify) _____

6. THE WELL construction deficiency:
- a. constitutes a health threat under Division 200 rules;
 - b. commingles water from more than one groundwater reservoir;
 - c. permits the loss of artesian head;
 - d. permits the de-watering of one or more groundwater reservoirs;
 - e. other: (specify) _____

7. THE WELL construction deficiency is described as follows: _____

8. THE WELL was, or was constructed according to the standards in effect at the time of original construction or most recent modification. I don't know if it met standards at the time of construction.

RECOMMENDATION:

- A. I recommend including the following condition in the permit:
 "No water may be appropriated under terms of this permit until the well(s) has been repaired to conform to current well construction standards and proof of such repair is filed with the Enforcement Section of the Water Resources Department."
- B. I recommend withholding issuance of the permit until evidence of well reconstruction is filed with the Enforcement Section of the Water Resources Department.
- C. REFER this review to Enforcement Section for concurrence.

THIS SECTION TO BE COMPLETED BY ENFORCEMENT PERSONNEL

I concur in G/H's recommendation A or B above relating to conditioning or withholding the permit.

_____, 1991.
 (Signature)

I do not concur in G/H's recommendation A or B above relating to conditioning or withholding the permit for the following reasons: _____

_____, 1991.
 (Signature)

STATE OF OREGON
WATER RESOURCES DEPARTMENT

INT. OFFICE MEMO

DATE: 12-5-91

TO: File G12685

FROM: Sarah Meyer *SM*

SUBJECT: Hydraulic Connection and Potential for Substantial Interference

As a result of Harry Spencer's inquiry on the status of his water right application, a repeat investigation was done on the hydraulic connection and potential for substantial interference from his two proposed pumping wells. Mr. Spencer had hired a geologist, R.J. Ralls, to investigate the situation and Mr. Ralls concluded that there was no hydraulic connection or potential for substantial interference. However, the initial evaluation from the groundwater section showed hydraulic connection and the potential for substantial interference in accordance with the WRD Administrative Rules 690-09-040. Because the two wells are unconfined and within one-fourth mile from Conner Creek, they are defined in the rules as being both hydraulically connected and having the potential for substantial interference. The existence of a hydraulic gradient between the creek and the wells is irrelevant in this kind of analysis because the wells are still intercepting groundwater that would have eventually added to the creek flow. There is flexibility in the rules that provide the applicant leverage to refute this method of evaluation. Since the applicant provided additional hydrogeological information from a licensed geologist, the Department felt a second, more in depth, review was justified.

The second review involved an analysis of Mr. Ralls hydrogeological reports of the two wells. According to Mr. Ralls, the two wells were tapping into an unconfined aquifer but the amount of withdrawal would not be seen in Conner Creek. Using parameters calculated from the results of two four day pump tests, Mr. Ralls based this conclusion on the amount of drawdown seen one hundred feet from each pumping well. At one hundred feet, well #1, pumping at 144 gpm for 100 days, would cause 5.58 feet of drawdown and well #2, pumping at 84 gpm for half a day, would cause 3.9 feet of drawdown. By extending this drawdown the distance to the creek, he concluded no effects would be seen.

As a double check, the data obtained from the pump tests was redrawn into graphs and hydraulic parameters were recalculated. The range of recalculated transmissivities included those calculated by Mr. Ralls as did the values of storativity for well # 2. However, Mr. Ralls storativity value for well #1 fell outside of our recalculated range of storativities.

	TRANSMISSIVITY	STORATIVITY
R.J. Ralls		
	well #1 16,982 gpd/ft	.174
	well #2 6,187-6,329 gpd/ft	.0062-.0083
WRD		
	well #1 8,280-22,770 gpd/ft	.107-.023
	well #2 2,708-34,065 gpd/ft	.0066

Plugging these values into Jenkins' Model gives the following results for the time at 25% stream depletion:

R.J. Ralls	
	well #1 7.24 days
	well #2 1.18-1.61 days
WRD	
	well #1 0.71-9.13 days
	well #2 0.23-2.93 days

All these values are well within the guidelines outlined in the rules which refer to the 25% depletion within 30 days of pumping (with respect to substantial interference). Ralls' hydrogeological report was very informative and it presented a lot of valid data, yet, there was nothing in the report to suggest that no hydraulic connection was occurring and that there was not a potential for substantial interference. Due to the proximity of the wells to the creek and the aquifer characteristics gained from the Ralls geological report, I think it is accurate to assume both hydraulic connection to Conner Creek and that the potential for substantial interference exists.

	Stream	Location		G.H.	W	A	Q	A.T.	W.T.	Remarks
05-27-89	South Outlet of Croft Lake Trib. to New River	75' south of source line	NE 1/4 Sec 10 T303 R15W	—	2.25	0.89	0.37	—	—	Taken after rain storm
08-23-89	South Outlet of Croft Lake trib to New River	" "	NE 1/4 Sec 10 T303 R15W	—	1.00	0.18	2.04	59°	70°	Intermittent for 2 days
05-25-89	N. Outlet of Croft Lake Trib. to New River	20' below the dam	NE 1/4 Sec 10 T303 R15W	—	7.50	3.91	5.72	—	—	Taken after RAIN STORM
05-27-89	N. Outlet of Croft Lake trib to New River	" "	NE 1/4 Sec 10 T303 R15W	—	7.50	4.13	5.50	—	—	
07-17-89	" " " "	" " " "	" " " "	—	7.00	2.47	1.63	65°	66°	
08-23-89	" " " "	" " " "	" " " "	—	6.50	2.91	1.57	59°	69°	Had 2 days intermittent R.
09-29-89	" " " "	" " " "	" " " "	—	6.00	1.72	0.36	61°	65°	
05-25-89	Conner Cr. Trib. to Davis Cr.	1/4 mile above source line	NE 1/4 Sec 11 T303 R15W	—	2.00	1.37	3.23	—	—	Taken after RAIN STORM
07-17-89	" " " "	" " " "	NE 1/4 Sec 11 T303 R15W	—	2.25	1.65	0.71	71°	64°	
08-23-89	" " " "	" " " "	" " " "	—	3.00	2.34	0.66	64°	62°	Had 2 days with no rain
09-29-89	" " " "	" " " "	" " " "	—	3.00	2.41	0.49	61°	63°	
05-25-89	Davis Cr. Trib. to Croft Lake	1/4 mile above source line	NE 1/4 Sec 11 T303 R15W	—	7.00	1.78	1.70	—	—	Taken after rain storm
07-17-89	" " " "	" " " "	NE 1/4 Sec 11 T303 R15W	—	7.00	1.66	0.76	71°	62°	
08-23-89	" " " "	" " " "	" " " "	—	7.00	1.56	0.73	64°	63°	Had 2 days intermittent
09-29-89	" " " "	" " " "	" " " "	—	5.50	1.03	0.30	61°	63°	
05-27-89	Unnamed stream, trib to Croft Lake	1/4 mile above source line	NE 1/4 Sec 10 T303 R15W	—	1.50	5.50	0.28	—	—	Taken after rain storm
07-17-89	Unnamed stream, trib to " "	" " " "	NE 1/4 Sec 10 T303 R15W	—	1.55	0.32	0.67	65°	61°	
08-23-89	" " " "	" " " "	" " " "	—	1.25	0.51	0.06	59°	67°	
09-29-89	" " " "	" " " "	" " " "	—	"	"	"	"	"	
07-17-89	Conner Cr. Trib. to Davis Cr.	1/4 mile above source line	NE 1/4 Sec 11 T303 R15W	—	3.75	4.70	1.00	62°	64°	Measure taken above normal season conditions

FAX TRANSMISSION COVER SHEET
COOS COUNTY ANNEX

DATE: 12-10-91

TIME: 0856

TO:

Donn Miller

Name

OWRD

Organization

378-8130

FAX Number

FROM:

A. P. Drolet

Name

Watermaster

Department

Coos County Annex
Coquille, Ore. 97423

503-396-2690
FAX Number

Number of pages 2 (including this cover sheet)

Description of
Transmittal:
Attached

Harry Spencer asked that I FAX the

Please call (503) 396-3121 ext. 254 if transmittal is incomplete or unreadable.

December 12, 1991

INTER-OFFICE MEMO

TO: Tom Shook

FROM: E. George Robison

Subject: Flows for Davis Cr. basin

Here are the flows for the Davis Cr. basin. I gave you flows derived from both the model and from basin ratios with nearby Ferry Cr. near Bandon. I recommend that you use the model flows because the Ferry Cr. data was based on data taken during the 1976-77 season and then extended out. While the extension gets rid of the drought effect in general, I think the distribution of flows generated from it was flattened somewhat by the drought.

Flow evaluation for Davis and Conner Cr. South Coast Basin Streamflows in 50% Exceedence Mean monthly flows CFS

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Davis Mod.	23.9	20.3	17.2	11.2	5.6	5.3	3.3	2.4	2.5	3.9	10.3	28.2
Davis Rat.	15.2	14.1	12.8	10.2	6.9	4.0	2.5	2.0	2.3	3.8	10.4	17.1
Conn. Mod.	8.2	6.8	5.8	3.9	1.9	1.6	1.0	0.7	0.7	1.3	3.6	10.0
Conn. Rat.	5.4	5.0	4.6	3.6	2.4	1.4	0.9	0.7	0.8	1.4	3.7	6.1

cc Fred Lissner
Barry Norris
Steve Applegate

STATE OF OREGON
WATER RESOURCES DEPARTMENT

INTEROFFICE MEMO

To: FILE

Date: October 6, 1992

From: MICHAEL ZWART ^{MJZ}

Subject: APPLICATION G-12685, HARRY SPENCER

Geologist Russell Ralls prepared a report, dated August 18, 1992, in support of this application. A copy was hand delivered to me by Kip Lombard at the August 28th Commission meeting. The principal conclusion of the report is that Conner Creek and its associated marsh are part of a perched water table which is separated from the marine terrace deposits developed by the applicant's wells. A review of the report prompted Donn Miller and me to review the file and earlier reports by Mr. Ralls, giving particular emphasis to the aquifer tests conducted at the two wells.

Mr. Ralls concludes in this latest report that Conner Creek and its marsh are perched on a layer of "ball clay." He believes that the clay acts as a confining bed for underlying confined aquifers that are actually in better hydraulic connection with the marine terrace deposits developed by the subject wells. He bases this conclusion on the prevalence of the clay encountered in many of the test borings and the deeper test well, and on one water level measurement in the deeper test well which indicated a lower head than Conner Creek for those confined aquifers.

I disagree with those conclusions. The aquifer developed by the subject wells is a water-table (unconfined) aquifer. This is supported by the aquifer tests covered in the earlier reports. The water levels in the wells has a higher head than Conner Creek, indicating a groundwater gradient toward the creek. Therefore, Conner Creek is likely in hydraulic connection with, and is a discharge area for, this water-table aquifer. The local presence of a clay layer, which appears to vary in thickness, may result in local steepening of the gradient and in a generally poor hydraulic connection with the creek. If the deeper confined aquifers encountered in the test well were actually hydraulically isolated from the creek, I would have expected the confined water level to have a higher head than the creek, resulting in a much lower groundwater gradient between the test well and the subject wells than is indicated in the cross-section in the report. I believe that the final water level reported for the test well may be depressed due to insufficient time (30 minutes) for the water level to equilibrate prior to measurement.

The aquifer test data were analysed to attempt to confirm or deny the presence of a recharge response. The data were not ideal for this purpose. In particular, the lack of any pre-test water level data and minimal water level recovery data required certain assumptions to be made regarding the test conditions. However, analysis of the drawdown data does not indicate that the wells are subject to a recharge response, at least during the first four days of pumping. Therefore, on this basis, it is tentatively concluded that the proposed use of groundwater may

Michael Zwart
October 6, 1992
Page 2

have low potential for substantial interference with Conner Creek, despite the fact that the wells develop a water-table aquifer that is hydraulically connected to it. A superseding review form is included with this memo. Permit condition 4I is recommended.

The three reports prepared by Mr. Ralls were based on work performed by him in support of his client's application. In the case of the earlier two reports, no communication with the Groundwater/Hydrology Section took place prior to his work. Had this occurred, it would likely have resulted in additional data being collected, allowing additional analyses to better verify the lack of a recharge response at the wells. Prior to undertaking such work on their own, it is recommended that applicants confer with staff hydrogeologists regarding the types of additional information that could be provided to attempt to rebut the presumption of hydraulic connection and/or the potential for substantial interference.

STATE OF OREGON
WATER RESOURCES DEPARTMENT

INTEROFFICE MEMO

To: CAROL SPENCE

Date: February 16, 1993

From: MIKE ZWART *MJZ*

Subject: APPLICATIONS G-12701, G-12705, G-12655 and G-12685

As you indicated, these applications are in the same general area, yet they received different reviews pursuant to the Division 9 rules. The Harry Spencer application (G-12685) received the only "favorable" review. This review was changed from an earlier unfavorable review on the basis of aquifer test data that indicated that the proposed use may have low potential for interference with Conner Creek. This was, however, a tentative conclusion, and strong permit conditions were suggested. It is likely that the aquifer developed is both unconfined and hydraulically connected to Conner Creek here, and elsewhere in the vicinity.

All determinations regarding the potential for substantial interference with surface water are rebuttable, and Mr. Spencer provided sufficient evidence to rebut the earlier determination. These data (Mr. Spencer's) do not bear on the other applications, however. Such data, if provided by the other applicants, may or may not rebut the determinations made. The other applicants in this case have not provided any additional data to support their applications. Fred Lissner has, since the time of these reviews, made an effort to have the same hydrogeologist review applications in the same area as a way of ensuring consistency.

To: STEVE BROWN

Date: August 22, 1994

From: MIKE ZWART *MZ*

Subject: HARRY SPENCER STAFF REPORT INSERT

Fred has asked that I write a paragraph or so about the reason the Division 9 review which I did reversed an earlier one done by Sarah Gates.

The applicant retained the services of Russell J. Ralls, a Registered Professional Geologist (G-934) to assist in his efforts to obtain a permit. Mr. Ralls prepared three separate reports for the applicant. The first two, dated September and October 1991, detail the results of aquifer tests at each of the applicant's wells. A third report, dated August 1992, made the conclusion that the nearby surface water source, Conner Creek, is perched on a layer of clay, and therefore not hydraulically connected with the aquifer penetrated by the applicant's wells. Groundwater/Hydrology Section staff did not agree with that conclusion. However, staff analysed the data provided in the earlier reports to determine whether those data indicated the presence of a recharge boundary. The data were not ideal for such an analysis, but did not indicate a clear recharge response after four to five days of continuous pumping. On this basis, it was tentatively concluded that the wells may have low potential for substantial interference with Conner Creek. Since this conclusion was tentative, resource protection permit condition 4I was recommended on the review form and cover memo.

DETAILED REPORT ON WATER AVAILABILITY

Basin: South Coast

Stream: DAVIS CR

> CROFT L

Water Availability Subbasin: 5008000000000000

Exceedance Level: 50

Time: 11:22

Date: 05/02/1994

Month	Natural Stream Flow	CU + Stor Prior to 1/1/93	Water Available 1/1/93	CU + Stor After 1/1/93	Net Minimum Flow	Instream Water Rights	Net Water Available
1	28.10	5.40	22.70	.08	22.60	.00	22.60
2	31.10	5.50	25.60	.09	25.50	.00	25.50
3	26.70	5.10	21.60	.07	21.50	.00	21.50
4	13.10	5.17	7.93	.03	7.90	.00	7.90
5	5.41	5.32	.09	.00	.09	.00	.09
6	6.14	5.67	.47	.00	.47	.00	.47
7	4.71	5.97	-1.26	.00	-1.26	.00	-1.26
8	3.15	5.81	-2.66	.00	-2.66	.00	-2.66
9	2.26	5.42	-3.16	.00	-3.16	.00	-3.16
10	2.89	5.17	-2.28	.00	-2.28	.00	-2.28
11	14.70	5.28	9.42	.03	9.39	.00	9.39
12	30.70	5.40	25.30	.08	25.20	.00	25.20
Stor	10100	2570	6770	23	6750	0	6750

STATE OF OREGON
WATER WELL REPORT
(as required by ORS 537.765)

Well No. 39
Leachhouse Well

30 S / R 15 W / 11
16053
(START CARD)

(1) OWNER: HARRY SPENCER Well Number 39
Name GROWTH UNLIMITED TREE FARM
Address PO BOX 291
City LANGLORS State OR Zip 97450

(2) TYPE OF WORK:
 New Well Deepen Recondition Abandon

(3) DRILL METHOD
 Rotary Air Rotary Mud Cable
 Other

(4) PROPOSED USE:
 Domestic Community Industrial Irrigation
 Thermal Injection Other

(5) BORE HOLE CONSTRUCTION:
Special Construction approval Yes No Depth of Completed Well 57'2"
Explosives used Yes No Type _____ Amount _____

HOLE		SEAL		Amount	
Diameter	From To	Material	From To	sacks or pounds	
10"	0' - 1.8'	CEMENT	0' - 1.8'	800#	
6"	1.8' - 5.8'				

How was seal placed: Method A B C D E
 Other _____
Backfill placed from _____ ft. to _____ ft. Material _____
Gravel placed from _____ ft. to _____ ft. Size of gravel _____

(6) CASING/LINER

Diameter	From	To	Gauge	Steel	Plastic	Welded	Threaded
Casing 6"	4'	37'11"	25	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Liner				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

(7) PERFORATIONS/SCREENS:

Perforations Method TELESCOPE
 Screens Type JOHNSON Material STAINLESS STEEL

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
38'10"	44'9"	.015			6"	<input type="checkbox"/>	<input type="checkbox"/>
44'9"	50'4"	.012			6"	<input type="checkbox"/>	<input type="checkbox"/>
50'4"	55'3 1/2"	.010			6"	<input type="checkbox"/>	<input type="checkbox"/>
55'3 1/2"	57'2"				5"	<input checked="" type="checkbox"/>	<input type="checkbox"/>

(8) WELL TESTS: Minimum testing time is 1 hour
 Pump Bailor Air Flowing Artesian
Yield gal/min 42 Drawdown 6'9" Drill stem at @ 53' Time 1 hr.

Temperature of water 52° Depth Artesian Flow Found _____
Was a water analysis done? Yes By whom _____
Did any strata contain water not suitable for intended use? Too little
 Salty Muddy Odor Colored Other _____
Depth of strata: _____

(9) LOCATION OF WELL by legal description:
County COAST Township 30 S Nor S. Range 15 W E. of W.W.M. Section 11 SE SE
Tax Lot 11200 Lot _____ Block _____ Subdivision _____
Street Address of Well (or nearest address) GROFT ROAD
OFF SOUTH SIDE

(10) STATIC WATER LEVEL:
25'12" ft. below land surface Date 3/13/90
Artesian pressure _____ lb. per square inch Date _____

(11) WATER BEARING ZONES:
Depth at which water was first found 25'

From	To	Estimated Flow Rate	SW
23'	55'	80	25

(12) WELL LOG: Ground elevation 300'

Material	From	To	SW
CLAY BROWN	0	6	
SAND & GRAVEL BROWN	6	18	
GRAVEL & SAND MED. BROWN	18	20	
GRAVEL & SAND MED. GRAY	20	23	
GRAVEL & SAND MED. RED	23	24	25
SAND & GRAVEL FINE BROWN	24	28	
CLAY & SAND BROWN	28	30	
SAND & GRAVEL FINE BROWN	30	36	
GRAVEL & SAND MED. BROWN	36	50	
SAND MED. BROWN	50	56	
CLAY GRAY	56	57	

Application No. 6-12685
Permit No. _____
Date started 3/12/90 Completed 3/20/90

(unbonded) Water Well Constructor Certification:
I certify that the work I performed on the construction, alteration abandonment of this well is in compliance with Oregon well construct standards. Materials used and information reported above are true to my knowledge and belief.
Signed _____ WWC Number _____ Date _____

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above. work performed during this time is in compliance with Oregon construction standards. This report is true to the best of my knowledge and belief.
Signed Jim Mack WWC Number 149 Date 3/20/90

STATE OF OREGON
WATER WELL REPORT
(as required by ORS 537.765)

Well No. 112 NELE 'EU' T30S/R15W/11
OCT-3 (SMART CARD) 26375

(1) OWNER: Name Herry Sporer Well Number 112
Address 1600 S. 11th St. Salem, OR 97302
City Salem State OR Zip 97302

WATER COURSE OF DEPTH by legal description:
SALEM, OREGON
Township 30S North Range 15W East or West
Section 11 SE 1/4 SE 1/4
Tax Lot 1600 Lot 1600 Block 1600 Subdivision
Address of well (or nearest address) 1600 S. 11th St.

(2) TYPE OF WORK:
 New Well Deepen Recondition Abandon

(3) DRILL METHOD:
 Rotary Air Rotary Mud Cable Other

(4) PROPOSED USE:
 Domestic Community Industrial Irrigation Other
 Thermal Injection Other

(5) BORE HOLE CONSTRUCTION:
Special Construction approvals: Yes No
Depth of Completed Well 52-1/2
Explosives used: Amount None

HOLE SEAL

Diameter From	To	Material	From	To	Amount
10"	6"	Bentonite	0"	25"	1300#

How was seal placed? Method: Air Case Eject Other Introduced from surface
Backfill placed from 0 ft. to 25 ft. Material Bentonite
Gravel placed from 0 ft. to 0 ft. Size of gravel None

(6) CASING/LINER:

Diameter	From	To	Gauge	Steel	Plastic	Welded	Unthreaded
Casing	6"	+18"	36E	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Liner				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Final location of sheets: None

(7) PERFORATIONS/SCREENS:

Method Telescope Type Johnson Material Steel

From	To	Slot size	Number	Diameter	Tele/pipe size	Casing	Liner
37' 6"	43' 3"	.016		6"	Tele	<input type="checkbox"/>	<input type="checkbox"/>
43' 7 1/2"	48' 2 1/2"	.012		6"	Tele	<input type="checkbox"/>	<input type="checkbox"/>
48' 10 1/2"	54' 1 1/2"	.014		6"	Tele	<input type="checkbox"/>	<input type="checkbox"/>
54' 1 1/2"	58' 1 1/2"			5"	E.I.P.P.C.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

(8) WELL TESTS: Minimum testing time is 1 hour
 Pump Bailer Air Flowing Artesian
Yield gal/min 40 Drawdown 11' for 4 hrs Drill stem at 55' Time 1 hr.
Temperature of water 50' Depth Artesian Flow Found None
Was a water analysis done? Yes By whom None
Did any strata contain water not suitable for intended use? Too little
 Salty Muddy Odor Colored Other None
Depth of strata: None

(10) STATIC WATER LEVEL:
Date 8/30
Artesian pressure: None Date None

(11) WATER BEARING ZONES:
Depth at which water was first found: 31'

From	To	Estimated Flow Rate
31'	37'	40 gpm

(12) WELL LOG:

From	To	SS
0'	15'	CLAY
15'	18'	CLAY
18'	22'	SAND
22'	26'	SAND
26'	30'	SAND
30'	34'	SAND
34'	38'	SAND
38'	42'	SAND
42'	46'	SAND
46'	50'	SAND
50'	54'	SAND
54'	58'	SAND
58'	62'	SAND
62'	66'	SAND
66'	70'	SAND
70'	74'	SAND
74'	78'	SAND
78'	82'	SAND
82'	86'	SAND
86'	90'	SAND
90'	94'	SAND
94'	98'	SAND
98'	102'	SAND
102'	106'	SAND
106'	110'	SAND
110'	114'	SAND
114'	118'	SAND
118'	122'	SAND
122'	126'	SAND
126'	130'	SAND
130'	134'	SAND
134'	138'	SAND
138'	142'	SAND
142'	146'	SAND
146'	150'	SAND
150'	154'	SAND
154'	158'	SAND
158'	162'	SAND
162'	166'	SAND
166'	170'	SAND
170'	174'	SAND
174'	178'	SAND
178'	182'	SAND
182'	186'	SAND
186'	190'	SAND
190'	194'	SAND
194'	198'	SAND
198'	202'	SAND
202'	206'	SAND
206'	210'	SAND
210'	214'	SAND
214'	218'	SAND
218'	222'	SAND
222'	226'	SAND
226'	230'	SAND
230'	234'	SAND
234'	238'	SAND
238'	242'	SAND
242'	246'	SAND
246'	250'	SAND

(unbonded) Water Well Constructor Certification:
I certify that the work performed on the construction/alteration/abandonment of this well is in compliance with Oregon well construction standards. Materials used and information reported above are true to my knowledge and belief.
WWC Number 67
Signed J. S. S. T. I. Date 10/21/91

(bonded) Water Well Constructor Certification:
I accept responsibility for the construction, alteration, or abandonment work performed on this well during the construction dates reported above work performed during this time is in compliance with Oregon construction standards. This report is true to the best of my knowledge and belief.
WWC Number 149
Signed J. W. Mack Date 9/26/91

Certificate of Service

I certify that on this 1st day of December, 1994, a copy of WaterWatch's Petition for Reconsideration for Permit G-11826 (Application G-12685) was served on each of the following by first class mail, postage paid, in the United States Mail from Portland, Oregon, enclosed in a sealed envelope and addressed as follows:

Kip Lombard
Attorney for Harry G. Spencer
P.O. Box 1090
Ashland, OR 97520

Martha Pagel, Director
Water Resources Department
158 12th Street NE
Salem, OR 97310

Cliff S. Bentz, Vice Chair
Water Resources Commission
Yturri, Rose, Burnham, Ebert & Bentz
P.O. Box S
Ontario, OR 97914

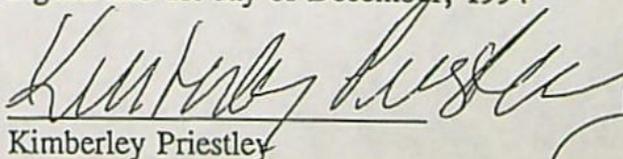
John L. Frewing
Water Resources Commission
Portland General Electric
121 SW Salmon
Portland, OR 97204

Anita Johnson
Water Resources Commission
2288 Birch Lane
Eugene, OR 97403

Nancy E. Leonard
Water Resources Commission
225 W. Olive Room 110
Newport, OR 97365

Michael Jewett
Water Resources Commission
353 Ridge Road
Ashland, OR 97520

Signed this 1st day of December, 1994


Kimberley Priestley

APPLICATION MAP

IN THE NAME OF HARRY G SPENCER

SECTIONS 11, 12, AND 13, T30S, R15W, W.M.

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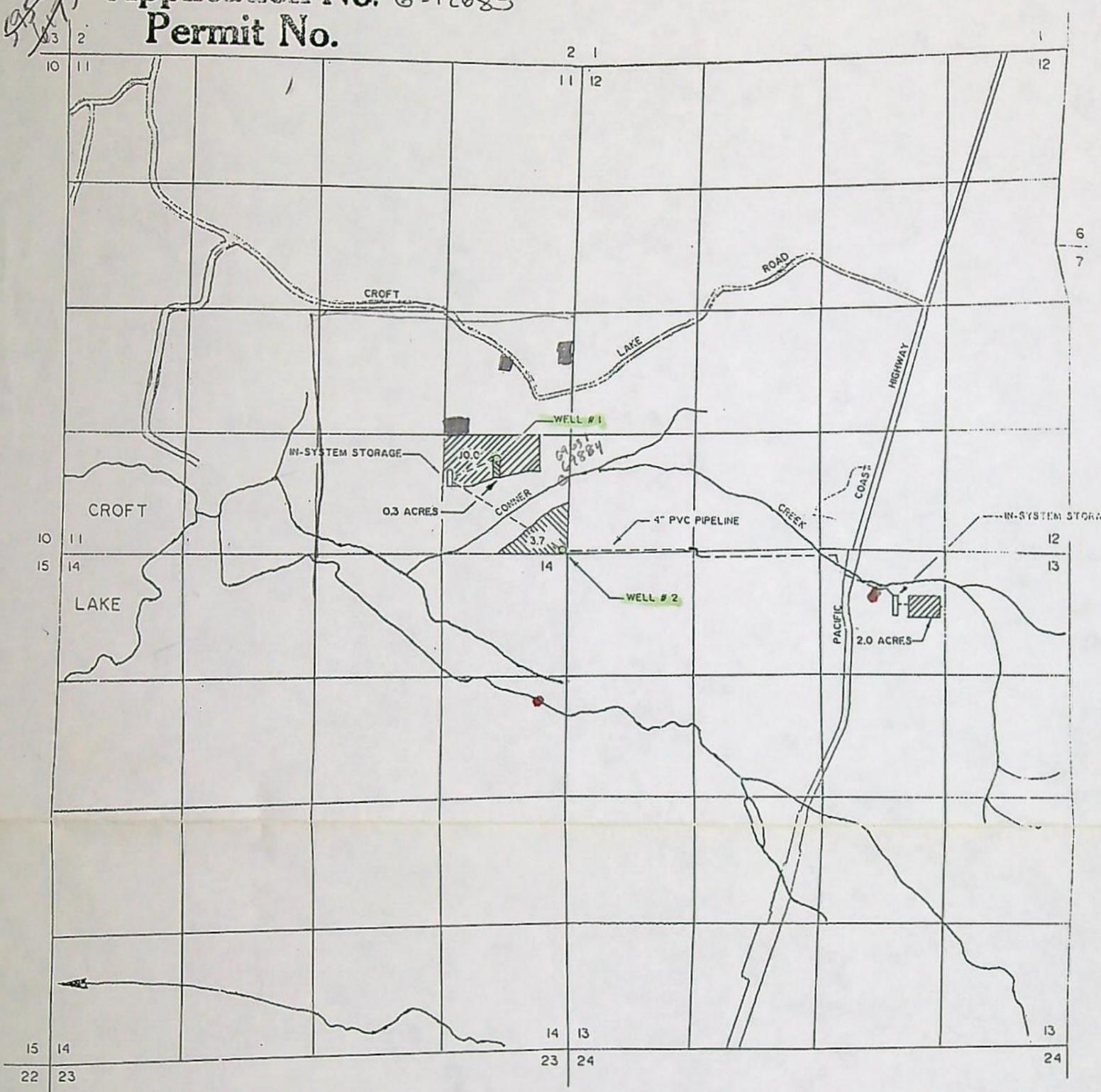
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WATER RESOURCES DIV.
DEPT. OF AGRICULTURE

Application No. G-12685
Permit No.

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1320 FEET



-  CRANBERRY USE
-  NURSERY OPERATIONS

WELL # 1 IS LOCATED 1030 FEET NORTH AND 750 FEET WEST FROM THE SOUTHEAST CORNER OF SECTION 11.

WELL # 2 IS LOCATED 5 FEET NORTH AND 20 FEET WEST FROM THE SOUTHEAST CORNER OF SECTION 11, BOTH WELLS BEING WITHIN THE SOUTHEAST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 11, TOWNSHIP 30 SOUTH, RANGE 15 WEST, W.M., COOS COUNTY.

THE PURPOSE OF THIS MAP IS TO IDENTIFY THE LOCATION OF THE WATER RIGHT. IT IS NOT INTENDED TO PROVIDE INFORMATION RELATIVE TO THE LOCATION OF PROPERTY OWNERSHIP BOUNDARY LINES.

Certified Water Right Examiner
#054 WRE
James F. Gozon
James F. Gozon
Nov. 19, 1987
STATE OF OREGON

HAR-82
58-26

River

Muddy Lake

Croft Lake

Bethel

Spoil Bank

low lake

Butte

Bethel

Creek

South

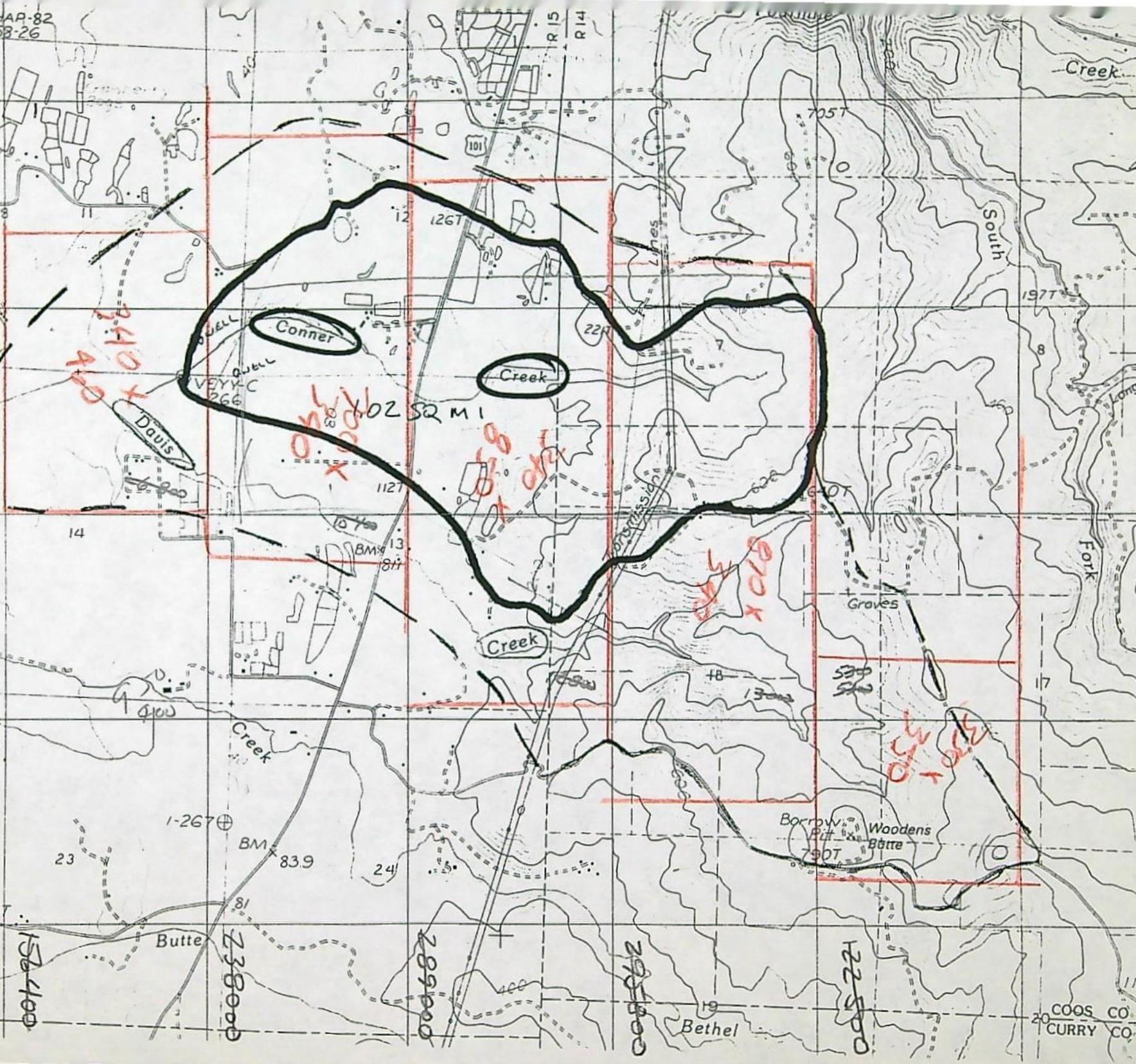
Fork

Graves

Borrow Pit

Woodens Butte

COOS CO
CURRY CO



Conner

Creek

Davis

102 SQ MI

Creek

340 x 100

340 x 100

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238000

289000

295000

122500

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BM 83.9

287

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1127

1070

BM 81

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APPLICATION MAP

JAN - 3 1992

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IN THE NAME OF HARRY G SPENCER

WATER RESOURCES DEPT.
SALEM, OREGON

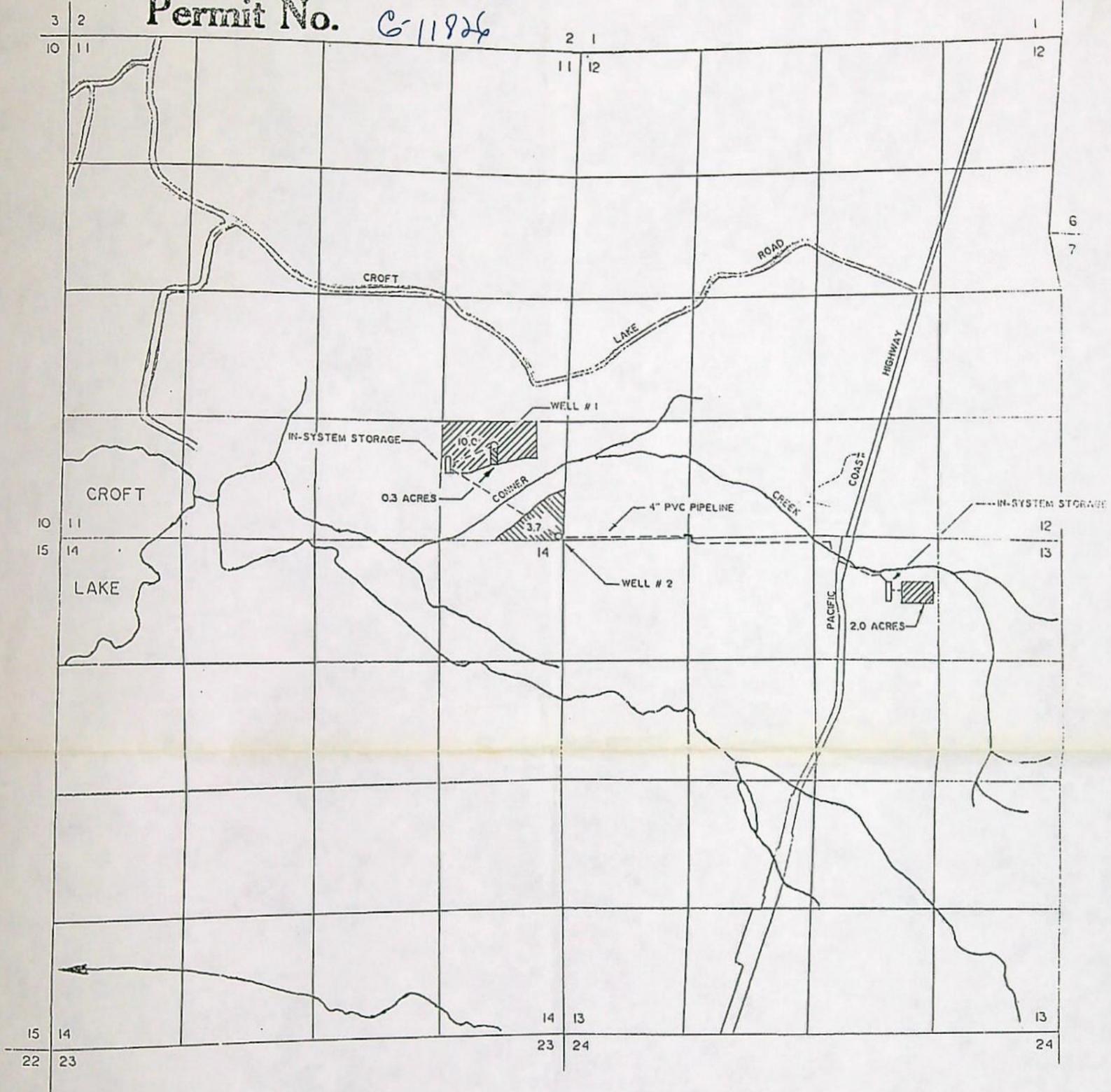
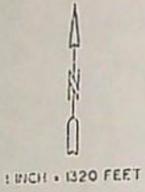
OCT - 3 1991

WATER RESOURCES DEPT.
SALEM, OREGON

SECTIONS 11, 12, AND 13, T30S, R15W, W.M.

Application No. G-12685

Permit No. G-11926

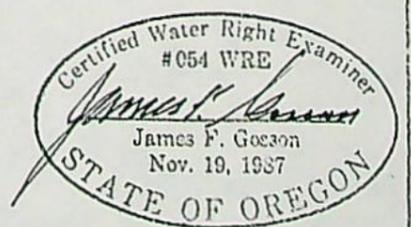


-  CRANBERRY USE
-  NURSERY OPERATIONS

WELL # 1 IS LOCATED 1030 FEET NORTH AND 750 FEET WEST FROM THE SOUTHEAST CORNER OF SECTION 11.

WELL # 2 IS LOCATED 5 FEET NORTH AND 20 FEET WEST FROM THE SOUTHEAST CORNER OF SECTION 11, BOTH WELLS BEING WITHIN THE SOUTHEAST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 11, TOWNSHIP 30 SOUTH, RANGE 15 WEST, W.M., COOS COUNTY.

THE PURPOSE OF THIS MAP IS TO IDENTIFY THE LOCATION OF THE WATER RIGHT. IT IS NOT INTENDED TO PROVIDE INFORMATION RELATIVE TO THE LOCATION OF PROPERTY OWNERSHIP BOUNDARY LINES.



APPLICATION MAP

RECEIVED

IN THE NAME OF HARRY G SPENCER

OCT - 3 1991

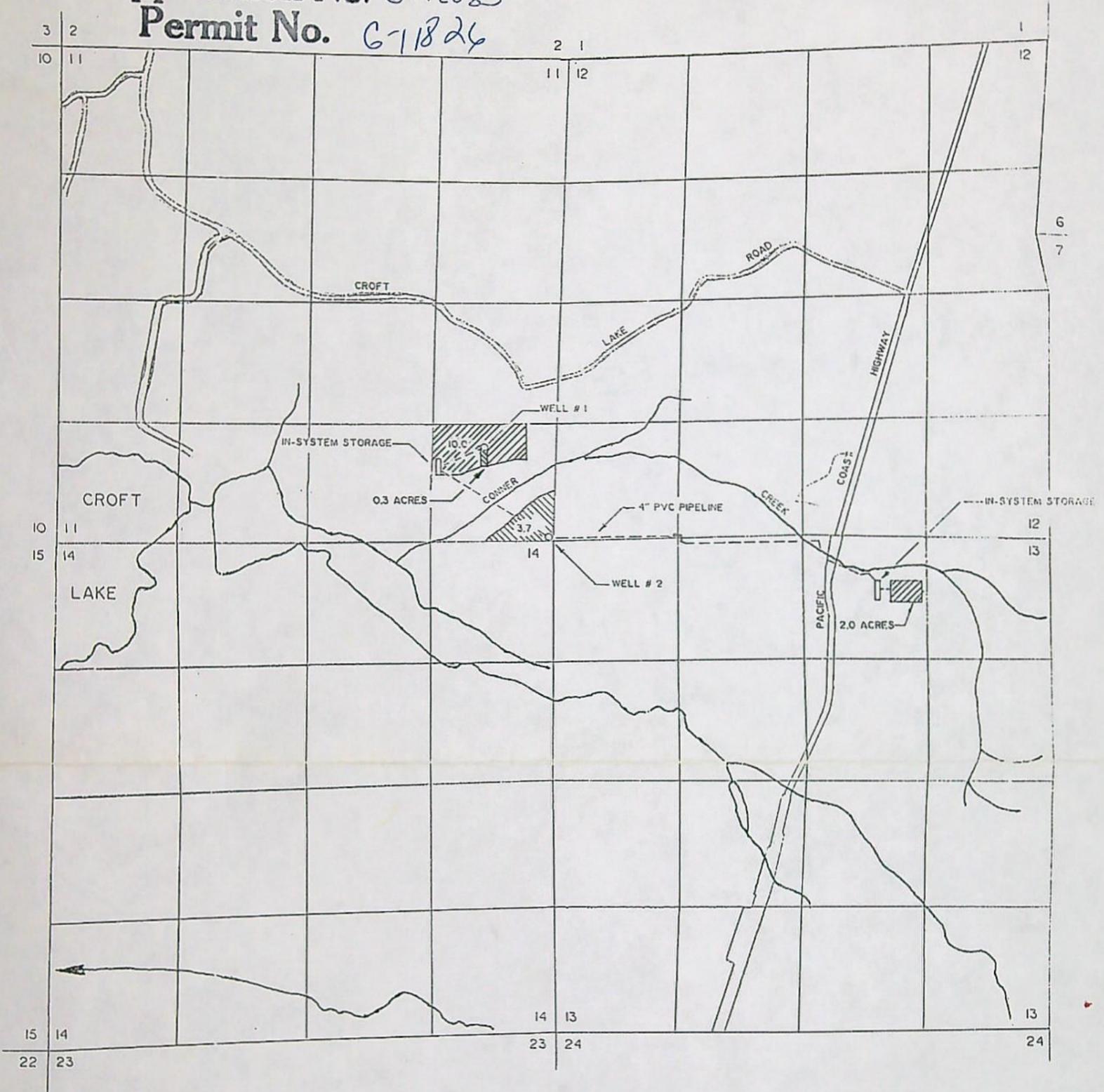
WATER RESOURCES DEPT.
SALEM, OREGON

SECTIONS 11, 12, AND 13, T30S, R15W, W.M.

Application No. G-12625

Permit No. G-11826

1 INCH = 1320 FEET



-  CRANBERRY USE
-  NURSERY OPERATIONS

WELL # 1 IS LOCATED 1030 FEET NORTH AND 750 FEET WEST FROM THE SOUTHEAST CORNER OF SECTION 11.

WELL # 2 IS LOCATED 5 FEET NORTH AND 20 FEET WEST FROM THE SOUTHEAST CORNER OF SECTION 11, BOTH WELLS BEING WITHIN THE SOUTHEAST 1/4 OF THE SOUTHEAST 1/4 OF SECTION 11, TOWNSHIP 30 SOUTH, RANGE 15 WEST, W.M., COOS COUNTY.

THE PURPOSE OF THIS MAP IS TO IDENTIFY THE LOCATION OF THE WATER RIGHT. IT IS NOT INTENDED TO PROVIDE INFORMATION RELATIVE TO THE LOCATION OF PROPERTY OWNERSHIP BOUNDARY LINES.

Certified Water Right Examiner
#054 WRE
James F. Goeson
James F. Goeson
Nov. 19, 1987
STATE OF OREGON

Water Watch OF OREGON

By FAX 378-8130 and Regular Mail

RECEIVED

APR 29 1993

WATER RESOURCES DEPT
SALEM, OREGON

April 28, 1993

Oregon Water Resources Department
Water Rights Section
3850 Portland Road NE
Salem, Oregon 97310

Re: Objection to Technical Report for:
G-12685, Spencer, Coos Co., Cranberry Use

This application is the second application this month to be proposed for issuance in this area. This application, like application G-12692 requests ground water for cranberry operations in the Croft Lake Basin. We understand that numerous other applications for cranberry use are pending for this area. The cumulative impacts of these proposed uses are of great concern to WaterWatch. We have been in contact with residents in the area that have a concern about the capacity of the resource to accommodate all of these proposed uses.

Croft Lake and its surrounding tributaries and wetlands support a variety wildlife and fish life. Residents in the area have reported searun cutthroat trout in the lake and its tributaries. It is suspected that the trout spawn in the lakes tributaries. Croft lake is a is also a source of recreation in the area and area residents are concerned about maintaining the lakes existing water quality. The surrounding wetlands provide wildlife and other habitat and we understand that the Nature Conservancy has been involved in wetland protection efforts in the area.

We suggest that a meeting be held with the Department, WaterWatch and concerned citizens in the area to discuss the resource and the growing concerns about the capacity of the resource to accommodate further expansion of the cranberry industry. From the information contained in the technical report is it clear that little information is known about the hydrology of the water system in this area. We have been in contact with some researchers at an Oregon university who are embarking on a study of the area. This study should help the state better determine the impacts of these proposed uses on the ecosystem and wetlands in the Croft Lake Basin.

In addition, we submit the following objections pursuant to OAR 690-11-170:

◆ **The Technical Report is Defective**

The technical report fails to contain many of the elements and evaluations required in OAR 690-11-160(1). The following are specific areas of deficiency:

- The report fails to assess whether the proposed use is restricted by statute. OAR 690-11-160(1)(b).
- The report fails to assess the proposed use with respect to conditions on other permits from the same source or the same type of use. OAR 690-11-160(1)(c).
- The report fails to assess the use with respect to all applicable administrative rules. OAR 690-11-160. While the report does appear to include an assessment of the use pursuant to Division 9 rules, it did not assess the use with respect to the applicable basin plan.
- The report fails to evaluate potential conflicts with existing rights. OAR 690-11-160(1)(e).
- The report provides conclusions rather than evaluations of water availability. OAR 690-11-160(1)(f).
- The report does not provide an evaluation of whether the amount requested is necessary to meet the proposed use. OAR 690-11-160(1)(g).
- Finally, there is no evaluation of land use compatibility. OAR 690-11-160(1)(h).

◆ **The Use As Proposed is Not in the Public Interest**

The proposed use fails to pass the public interest considerations in ORS 537.620 and the policies of the Groundwater Act ORS 537.525(3), (6), (9), and (10). *See also*, OAR 690-11-195(3)(d), (4)(a), (4)(c)(A), (4)(d)(A), (4)(d)(B), (4)(e), and (4)(f). The proposed use may not be supported by existing groundwater supplies and is likely to deplete flows needed to for Croft Lake and other surface waters in the area. The South Coast Basin plan states:

Ground water is a significant factor in the maintenance of natural lakes in the dunes area. Extensive ground water development may affect lake water levels. Finding 5.

The total extent of the ground water supply in the basin has not been determined. Existing data suggest ground water supplies are limited and would not support irrigation in most areas. Finding 19.

Marine terrace deposits and sediments of the Coquille formation are potential ground water sources for irrigation of cranberries in the Bandon area. Finding 20.

Marine terrace deposits in the Harbor area are capable of producing large quantities of water, but some areas are approaching levels of sustained yield. Finding 21.

Income from water-related recreation is a major contributor to the economy of the South Coast Basin. Finding 39.

The natural lakes, storage reservoirs and free-flowing streams support part of the water-based recreation use. Finding 40.

The water resources, wetlands and associated habitat are critical to the subsistence and propagation of wildlife in the Basin. Finding 42.

The basin plan admits that little is known about groundwater in the basin. However, the presence of wetlands indicates that a hydraulic connection exists between groundwater and surface waters in the area and that groundwater levels are very close to the surface of the ground. Reduction in groundwater contribution to wetlands and surface waters will decrease contributions to existing wetlands and decrease inflows into the lake. Thus, groundwater in this area is vital to the maintenance of lake levels, surface water flows, and the protection of public uses of water including wildlife, recreation and fish.

- 1. The failure to require water use measurement and reporting violate Oregon's policies and goals which call for the control of Oregon's waters. Thus the proposed use will impair and be detrimental to the public's interest.**

When determining whether a proposed use is in the public interest the Commission is required to consider the "control of the waters of this state for all beneficial purposes" and the water resources policies in the statute. ORS 537.170(5)(c) and 537.170(5)(g). The Oregon Legislature has recognized that in order to maintain and increase the economic and general welfare of the people of Oregon the State must ensure "the proper utilization and control of the water resources of this state, and such use and control is therefore a matter of greatest concern and highest priority." ORS 536.220(1). The Legislature has also found that it is "in the interest of the public welfare" that activities be "designed to encourage, promote and secure the . . . control of" Oregon's water resources. ORS 536.220(2)(a).

The Groundwater Act of 1955 declares and finds that the right to control of Oregon's water "from all sources of water supply belongs to the public . . ." ORS 537.525. The Act

sets forth policies to ensure the "preservation of the public welfare, safety and health." *Id.* These policies call for the control of the groundwater resource in order to prevent depletion, to determine and maintain reasonably stable water levels, and to determine the characteristics of groundwater statewide. ORS 537.525. These statutory policies are reflected in the Commission's Groundwater Management Policy. OAR 690-410-010. When approving groundwater applications the State can impose conditions or limitations as needed to protect the "public welfare, safety and health." ORS 537.620(5).

Water use measurement and reporting requirements are essential if the State is to achieve these statutory policies and goals. These requirements generate critical information on actual water use and what is happening to the water resource. It also gives the Department information vital to management and enforcement efforts, it provides information necessary to "clean up" the Department's water right records and helps with future water use planning. *See* Testimony of Martha O. Pagel, Before the Senate Joint Committee on Water Policy, 2/2/93, pgs. 1-5.

Information about groundwater use and groundwater characteristics is especially crucial for management of the groundwater resource and surface water resources in the Croft Lake Basin. Those who benefit from using the resource should be called upon to provide information needed information about the resource. The permittee should be required to measure and report any use under this permit. In addition, the permittee should be required to measure and report water level elevations. This information is critical for resource protection and management. As a policy matter, WaterWatch believes that water use measurement and reporting should be required of every new permit issued in Oregon.

2. The use is likely to impair the public interest because it the use will interfere with surface waters in the Basin.

The groundwater resource in this area is likely connected to surface waters. However, the extent of the connection and the short and long term impacts of the connection on surface waters in the basin has not been determined. Oregon's ground water statute and the implementing rules require the Department to look at both short and long term impacts of groundwater use and to insure that the use will not interfere with surface waters. ORS 537.620(3), OAR 690-9, OAR 690-11-195(4)(a). This determination is particularly critical given the existing connection with surface waters, the relatively unpolluted condition of the surface waters, the public uses of the surface waters and the increasing pressure in this area to develop groundwater and surface water resources for irrigation of cranberry bogs.

There are at least four other pending applications pending for irrigation in this area. The Commission, in its basin plan has expressed concern over the ability of the resource to meet new demands. Until the required level of scientific certainty needed for decision making is determined and the information developed, this permit and other pending permits should probably not be issued. At the very least, this permit must be reviewed in conjunction with the other pending applications for irrigation in the area to determine the cumulative impacts on the resource of these proposed and any existing uses. It is not in the public interest to turn a blind eye to the cumulative effects of this industry on the resource in the basin.

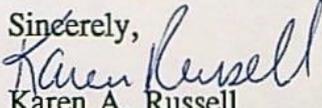
3. The use as proposed violates Oregon's statewide policies.

Oregon's Groundwater Management Policy requires that "(i)nterference between groundwater uses and competing groundwater and surface water uses . . . be prevented and/or controlled to protect the water resource and existing rights." OAR 690-410-010(1). The Policy also requires the State to manage groundwater and surface water conjunctively in order to protect the public's interest in the water resource and existing rights. OAR 690-410-010(2)(a). In addition, Oregon's Statewide Water Allocation Policy requires that groundwater use occur within the capacity of the resource and requires the State to protect Oregon's waters from overallocation by new uses of groundwater. OAR 690-410-070(1).

Allowing this use as proposed to go forward violates all these policies. The Department's failure to manage the ground and surface waters conjunctively in the Croft Lake basin will only exacerbate existing overallocation problems, degrade water quality, and will, particularly in the long run, impair existing surface water rights and public uses in the basin. It is bad public policy to continue issuing groundwater rights in the face of increasing doubts as to whether increased groundwater use is sustainable.

◆ **Conclusion**

We are open to discussion with the Department and the applicant on all of the issues raised in this objection letter. We are committed to working with the Department to cure the problems with the contents of this and other technical reports.

Sincerely,

Karen A. Russell
Legal Affairs Coordinator

Ron Yockim

673-5528

Fax 672-0977

Cegavske, Johnston & Associates

PO Box 218

Roseburg OR 97470

Harry G. Spence
Coos

G-

JP
C

G-12085

12/14/94

Please

keep this file
in the order
you have found
it - Darlene C.

Y
Kip

48

Call on

Thursday

Harry G. Spence
Coos County -
G - 12685

JB
call
back
Mon
11/16
P 10AM

CB
1:30pm
Nov 30

Kip Lombard -
482-8491 ✓

Call on
Thursday

12-9-98

I talked with Harry Spencer's son who will fill him in on status of app: he's in line, about how many apps ahead, can't say if will pass tech rev or not (apparently earlier he was told no probs with his tech rev - looked like green light - ~~no~~ but ^{now} may be no water available there); I explained process: tech rev, submit rev, today etc etc -

He can't understand why they can't just have permit if had draft permit.

I'll also talk to
Kip Lombard
again Mon (Dec. 14)
re Mr Spencers
app.

JL

IMPORTANT MESSAGEFOR Reed DarleneDATE 8-29 TIME _____ A.M.
P.M.M Harvey Spencer

OF _____

PHONE 347-3060
AREA CODE NUMBER EXTENSION FAX MOBILE _____
AREA CODE NUMBER TIME TO CALL

TELEPHONED		PLEASE CALL	<input checked="" type="checkbox"/>
CAME TO SEE YOU		WILL CALL AGAIN	
WANTS TO SEE YOU		RUSH	
RETURNED YOUR CALL		WILL FAX TO YOU	

MESSAGE _____

G 12685SIGNED Da

NOTES

Mease

~~_____~~
Cabizen

+

Idia

McLendon
G. H. H.

COUNTER

STATE OF OREGON
WATER RESOURCES DEPARTMENT

RECEIPT # 107042

3850 PORTLAND ROAD NE
SALEM, OR 97310
378-8455/378-8130 (FAX)

RECEIVED FROM: Karen A. Russell
BY: _____

APPLICATION	<u>672685</u>
PERMIT	
TRANSFER	

CASH: CHECK: # 24-201 OTHER: (IDENTIFY)

TOTAL REC'D \$ 25,00

01-00-0 WRD MISC CASH ACCT

842.010	ADJUDICATIONS	\$
831.087	PUBLICATIONS/MAPS	\$
830.650	PARKING FEES Name/month	\$
_____	OTHER: (IDENTIFY)	\$

REDUCTION OF EXPENSE

CASH ACCT.	\$
VOUCHER #	

03-00-0 WRD OPERATING ACCT

MISCELLANEOUS:

840.001	COPY FEES	\$
850.200	RESEARCH FEES	\$
880.109	MISC REVENUE: (IDENTIFY)	\$
520.000	OTHER (P-6) (IDENTIFY)	\$

WATER RIGHTS:

842.001	SURFACE WATER	EXAM FEE	\$	842.002	RECORD FEE	\$
842.003	GROUND WATER	\$		842.004	\$	
842.005	TRANSFER	\$		842.006	\$	

WELL CONSTRUCTION

842.022	WELL DRILL CONSTRUCTOR	EXAM FEE	\$	842.023	LICENSE FEE	\$
<u>842.031</u>	LANDOWNER'S PERMIT	\$		842.024	\$	
_____	OTHER (IDENTIFY)					

425506230001
Protest

25.00

06-00-0 WELL CONST START FEE

842.013	WELL CONST START FEE	\$	CARD #	
_____	MONITORING WELLS	\$	CARD #	

45-00-0 LOTTERY PROCEEDS

864.000	LOTTERY PROCEEDS	\$
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07-00-0 HYDRO ACTIVITY

842.011	POWER LICENSE FEE(FW/WRD)	LIC NUMBER	\$
842.115	HYDRO LICENSE FEE(FW/WRD)		\$
_____	HYDRO APPLICATION		\$

RECEIPT # 107042

DATED: 11-15-93

BY: Kristie Jones

MIKE

10-14-92

G-12685

PLEASE PREPARE
PRE TR,

Tom

on your headline

at G- ~~12~~ 12685.TR

MM 10/14/92

NUMBER 88454

Check 100⁰⁰ NO _____ Cash _____

____ Surface Application

____ Reservoir Application

____ Ground Water Application

____ Transfer Application

____ Power Claim

____ Hydroelectric Examination

____ Hydroelectric License

____ Copying To: Tom Shook

____ Assignment

Extension of Time

____ Other

____ P-6

____ Quadrangle

____ Basin

____ Protest

____ Constructors Examination

____ Constructors License

____ Adjudication