

Collector Well Projects - Two Page Questionnaire

Thank you for taking the time to help us in this effort to educate interested parties about collector well projects throughout the United States. A copy of this report will be provided to you within a couple months time. Please include references to reports or other documents regarding your project in Question C.2.

A. General Project Information

1. Name of project?
CITY OF BOARDMAN, OREGON

2. _____

3. _____

4. Project location?
City/State: BOARDMAN, OREGON

5. Project start date?
mm/dd/yy: APRIL 25, 2000 (SEE ATTACHED LETTER)

6. When did wells begin operating (or anticipated start)?
mm/dd/yy: MARCH 19, 2003

7. Project objective(s)?
 Municipal water supply
 Agricultural water supply
 Conjunctive groundwater/surface water use
 Others (please list)

8. Status of project?
 Planning
 Small-Scale Testing
 Large-Scale Testing
 Full-scale operation
 Other (please explain)

9. Project funding source(s)?
 Agency/owner out of pocket expense
 Grant funds
 Partnerships
 Other (please list)
OREGON ECONOMIC & COMMUNITY DEVELOPMENT DEPARTMENT LOAN AREA WITH VOTER APPROVED GENERAL OBLIGATION BONDS AND AVAILABLE RESERVE FUNDS.

10. What was the primary reason for using collector well technology at this site?
 Environmental concerns
 Water demand too great for ordinary production well
 Water rights for a surface supply not available
 Research
Other: PERMITTING EASE

11. Number of collector wells and periods of use (seasonal, year-round)? Check boxes that apply. (SEE ATTACHED LETTER)

| Well Name | Well Status | | Use | | Average Flow Production (gpm) |
|-----------|-------------|----------|----------|------------|-------------------------------|
| | Active | Proposed | Seasonal | Year-Round | |
| #1 | X | | | X | |
| #2 | X | | | X | |
| | | | | | |
| | | | | | |

12. Describe the characteristics of your collector wells.

| Well Name | Depth of Caisson | Diameter of Caisson | Depth of Laterals | Number of Laterals | Diameter of Laterals |
|-----------|------------------|---------------------|-------------------|--------------------|----------------------|
| #1 | 45' | 16" | 40' | 6 | 10" |
| #2 | 48' | 16" | 41' | 6 | 12" |
| | | | | | |
| | | | | | |

13. Have you observed decreased flow from your collector wells over time? If so, what do you think is the cause?
 River migration away from well (please report approximate distance river has migrated: _____ ft)
 Laterals clogging
 Increased pumping from wells nearby (lowered groundwater elevation)
Other: NO DECREASE IN FLOW OBSERVED

14. What measures have you taken, if any, to increase yield of your wells?
 Well re-development
 Lateral replacement
 Added new laterals to existing system
Other: CONSIDERING FUTURE ADDITION OF LATERAL FOOTAGE IN COLLECTOR 1

15. Do you have records indicating well yield with time?

- No records available
- Yes (please fill in the following table)

| | Date | Event | Yield (indicate units) |
|---|------------------|-------------------|------------------------|
| 0 | Before operation | Designed capacity | 6030 gpm |
| 1 | #1 | Well start-up | 6030 gpm |
| 2 | #1 | MOST RECENT | 6000 gpm |
| 3 | #2 | DESIGN CAP. | 10000 gpm |
| 4 | #2 | START UP | 10,000 gpm |
| 5 | # | Most recent data | 10,000 gpm |

16. What is the cost of your raw water (how much does it cost per unit volume for you to produce untreated water)?

22¢ PER 1,000 GALLONS

- Number provided includes treatment costs
- No records available

B. Aquifer Characterization

1. Describe regional aquifer characteristics.

- Unconfined
- Semi-confined
- Confined
- Unknown
- Other (please list)

2. Describe aquifer geology.

- Cobble
- Gravel
- Sand
- Silt/Clay
- Unknown
- Other (please list)

SEE ATTACHED FIGURE OF COLLECTOR #2

3. What is the closest distance to the nearest surface water body?

Feet or miles: #1-15', #2-30'

- Unknown

4. What is the number of monitoring wells if any?

_____ wells

- None
- Other
- Unknown

5. What is the frequency of groundwater level monitoring?

minutes/days/months: EVERY 5 MINUTES THROUGH SCADA SYSTEM (SINCE 2003)

- Unknown

C. Additional Questions

1. Do you have records indicating changes in yield upon re-development? How often do you re-develop your wells?

2. Are any reports, technical memos, or other documentation available from your project activities? If so, who do we contact for copies?

REPORTS ARE AVAILABLE ON BOTH COLLECTORS. CONTACT AMY BEYLER AT CITY OF BOARDMAN. (541) 481-9252 FOR SPECIFIC INFORMATION.



City of Boardman

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 P.O. Box 229
 Boardman, OR 97818
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 www.cityofboardman.com

February 21, 2006

Ms. Laura J Wilcox
 MWH
 3321 Power Inn Road, Suite 300
 Sacramento, California 95826

Ms. Wilcox,

This letter is attached to the Collector Wells Project Questionnaire to provide information not called for within the questionnaire and to clarify some of the answers given.

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#5: The Collector caisson and laterals were part of one contract and the pump house, controls, piping and pumping system part of a second phase contracted separately. The contract for the first phase of construction was let in April of 2000 and completed in March of 2001. The second phase was completed in August of 2003, with the Collector being operational on March 19, 2003.

#11: The following table are the flow totals for each month of 2004 and 2005.

| Collector | 20 04 | | 20 05 | |
|---------------|--------------------|--------------------|--------------------|--------------------|
| | #1 | #2 | #1 | #2 |
| January | 98,000,000 | 87,646,000 | 45,629,000 | 3,415,000 |
| February | 0 | 64,177,000 | 0 | 51,721,000 |
| March | 0 | 74,450,000 | 84,169,000 | 3,648,000 |
| April | 3,902,000 | 91,949,000 | 17,453,000 | 82,341,000 |
| May | 1,443,000 | 125,441,000 | 84,827,000 | 8,228,000 |
| June | 29,236,000 | 100,102,000 | 22,384,000 | 91,813,000 |
| July | 77,126,000 | 94,518,000 | 35,459,000 | 124,670,000 |
| August | 82,659,000 | 71,207,000 | 119,504,000 | 56,243,000 |
| September | 2,385,000 | 123,366,000 | 48,481,000 | 91,581,000 |
| October | 84,830,000 | 22,000 | 26,000 | 126,026,000 |
| November | 67,056,000 | 0 | 19,346,000 | 71,161,000 |
| December | 38,995,000 | 0 | 17,907,000 | 34,962,000 |
| Totals | 485,632,000 | 832,878,000 | 495,185,000 | 745,809,000 |

All volumes in Gallons

The City of Boardman is an equal opportunity provider

PAGE 1 (cont.) #10: The reference to permitting ease concerns the processes of US Army Corps of Engineers permits for in-river work. The Collector does not require "in-river" work and dewatering was performed back landward and allowed to percolate into the ground never moving sediments to the river. The fact there are identified threatened and endangered species listings for salmonids in the Columbia and Snake Rivers would have created lengthy delays and possibly derailed the project to obtain the permitting necessary.

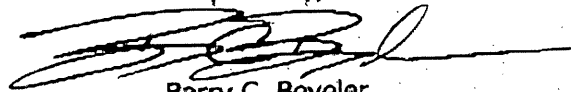
PAGE 2:

#15: I have put the capacities for each collector in the table at design, start-up and most recent. Neither of these wells are being taxed near capacity. The two collectors were completed to allow for redundancy and for future supply needs for municipal and industrial use. The collectors are operated individually and in tandem to maintain adequate hydraulic connection and mechanical operation.

#16: The cost of \$0.22 per 1,000 gallons includes required chlorination but no other treatment costs. Chlorination is done through on-site sodium hypochlorite generation.

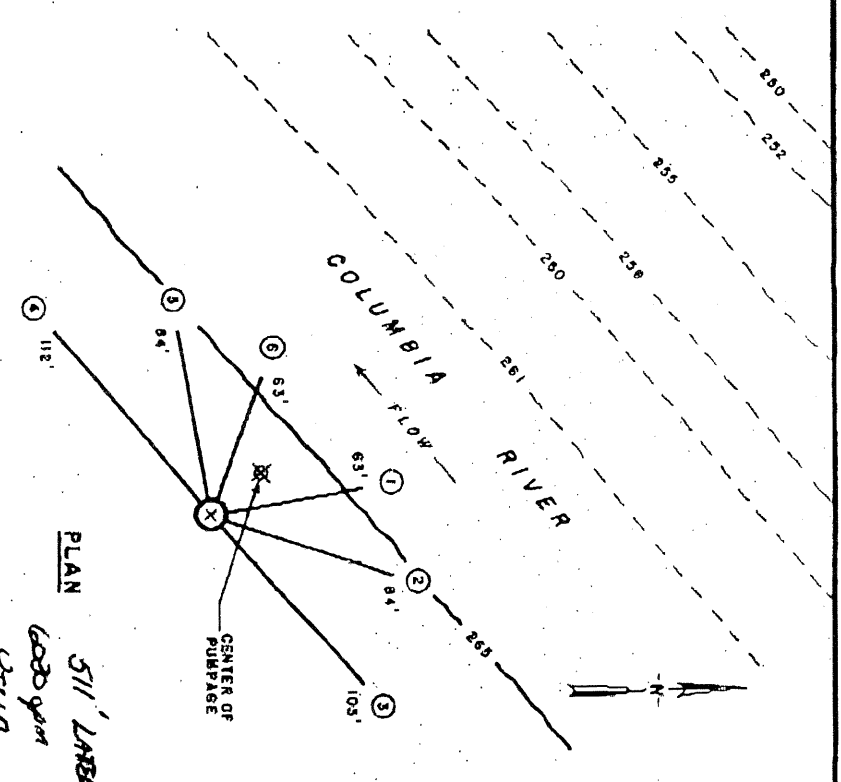
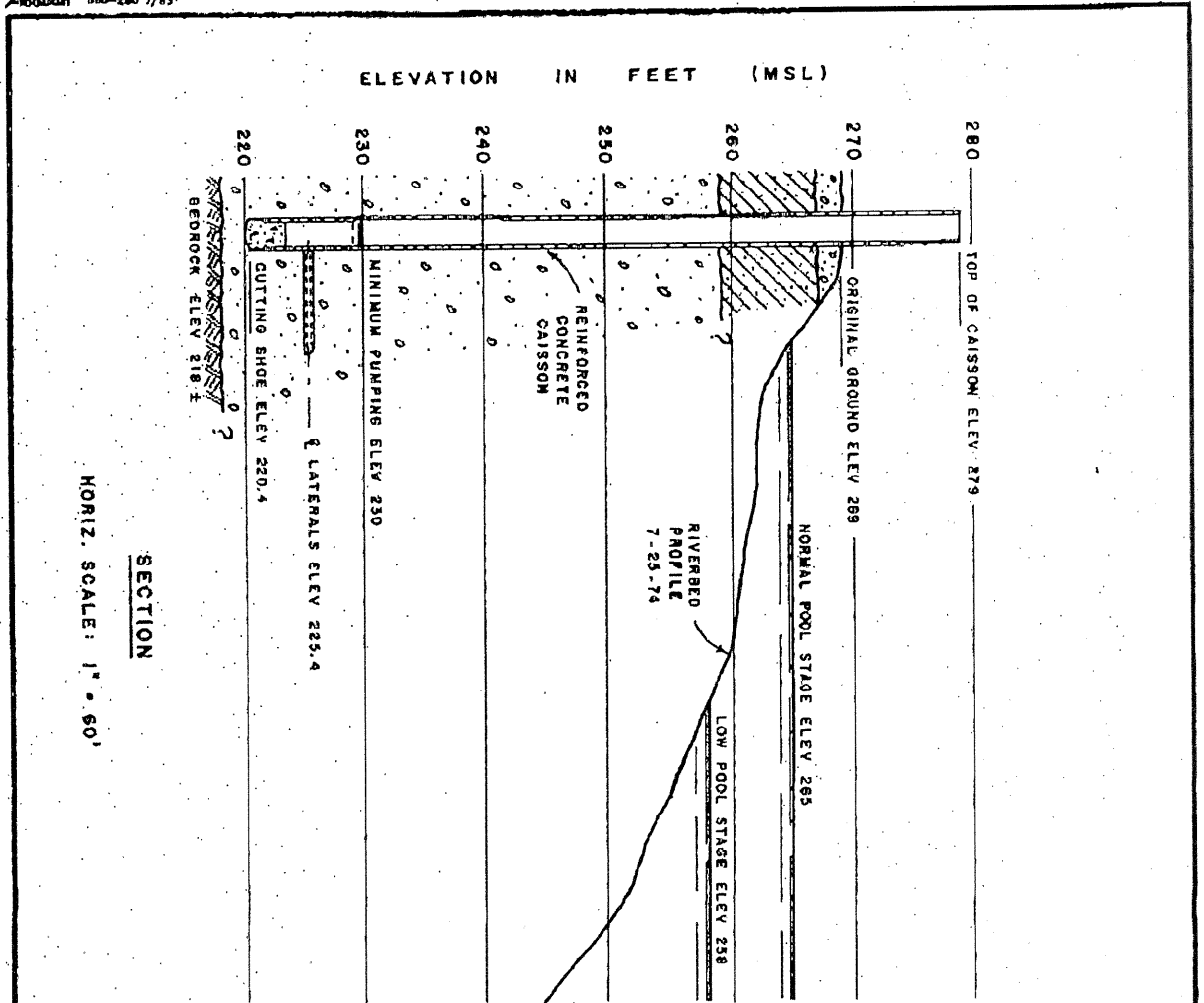
I hope these comments provide the level of clarification to the answers given. If you should have any questions, concerns or comments please do not hesitate to contact me so we can discuss them in greater detail. Good luck on your project.

Respectfully,



Barry C. Beyeler
Community Development Director

Boardman 000-200 7/83



| | |
|---|---------------------------------|
| RANNEY METHOD WESTERN CORPORATION KENNEWICK, WASHINGTON | |
| CHAM HILL CITY OF BOARDMAN, OR WELLHEAD PROTECTION PROJECT | |
| RANNEY COLLECTOR NO. 1 | |
| DRAWN: MSM DATE: 5-1-82 | APPROVED: FCM REG. SW-119-02 |

PLAN
 511' LATERALS
 6000 ypm
 43110

