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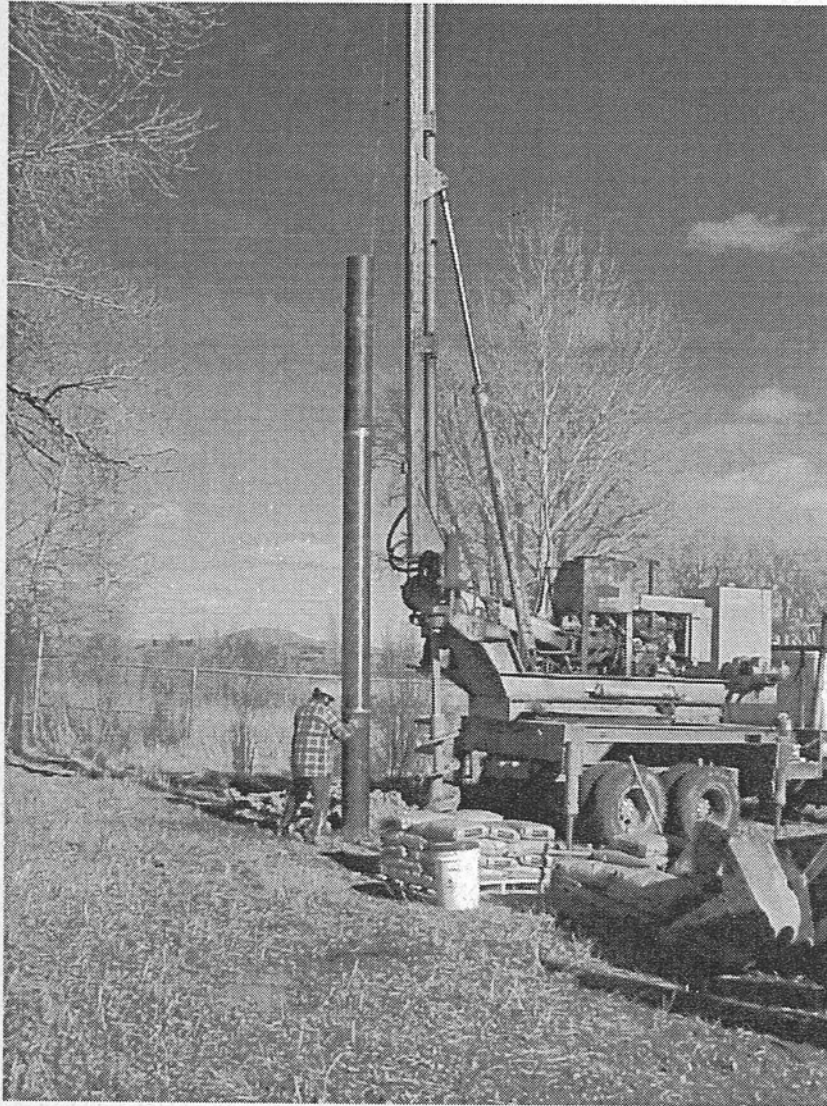
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# TOWN OF BAGGS, WYOMING ALLUVIAL WELL PROJECT

## EXECUTIVE SUMMARY



Baggs Exploration Well No. 99-1

**PREPARED BY**



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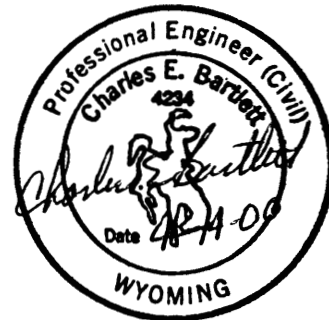
# TOWN OF BAGGS, WYOMING ALLUVIAL WELL PROJECT

## EXECUTIVE SUMMARY

Prepared for:

**WYOMING WATER DEVELOPMENT COMMISSION**  
Herschler Building, Cheyenne Wyoming 82002

Prepared by:



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## **INTRODUCTION**

### **Authorization**

The Town of Baggs, Wyoming (Baggs) entered into a contract with the Wyoming Water Development Commission (WWDC) to conduct a test well drilling program, with funds secured from the Groundwater Exploration Program. The Groundwater Exploration Program provided a grant for 75 percent of the project costs to the town. The remaining 25 percent of the project costs were provided by Baggs.

Weston Engineering, Inc. (WESTON), was selected by Baggs to provide groundwater engineering services for the project. PMPC Consulting Engineers of Saratoga, Wyoming, was selected as a sub-consultant to provide a feasibility study, develop cost estimates for pipelines, and to investigate water rights issues.

### **Background**

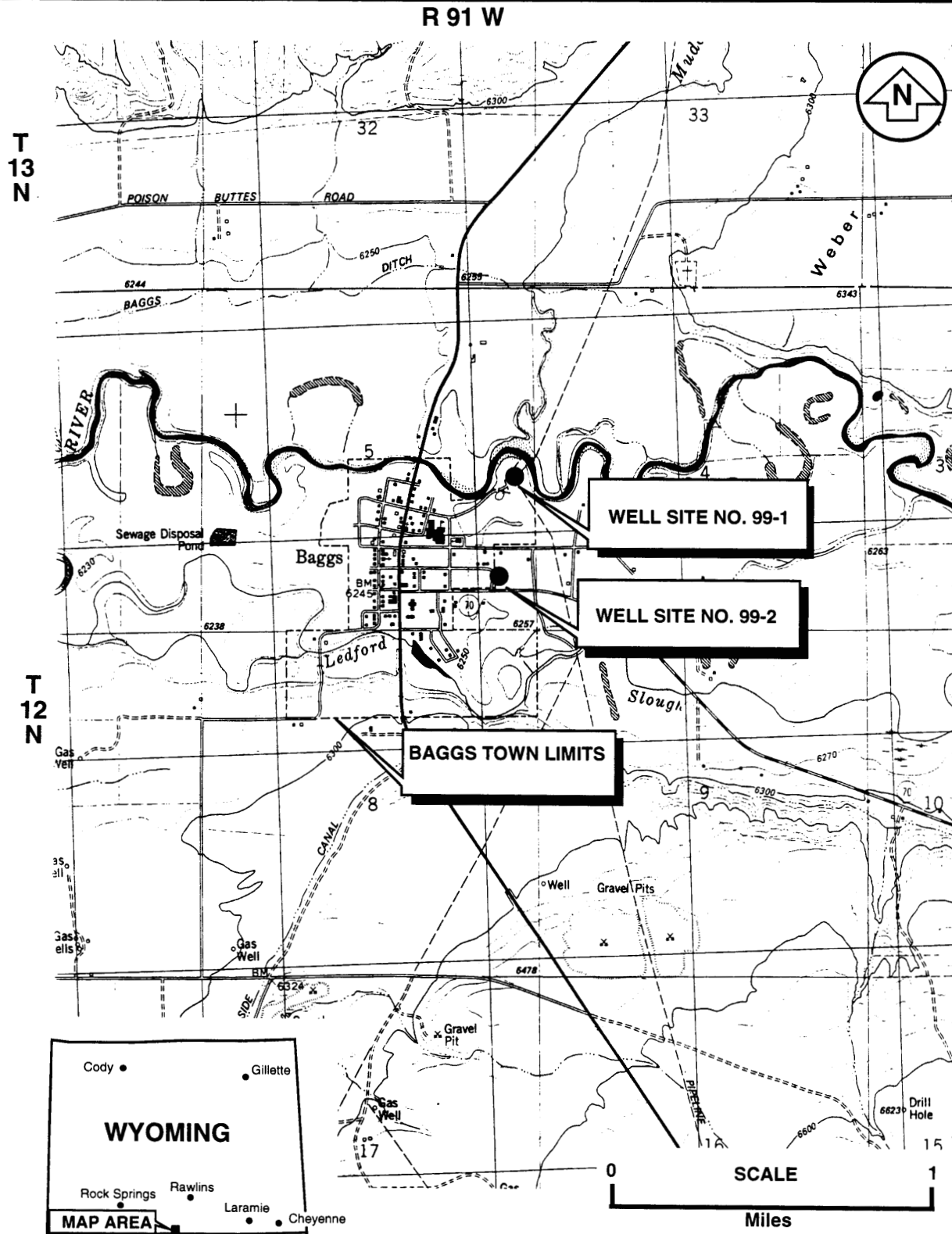
Baggs is a rural residential community with a population of approximately 254 people. Baggs is located in Carbon County in southeastern Wyoming, approximately three miles north of the Wyoming/Colorado border (see Inset, Figure 1). The Town is situated in the valley of the Little Snake River at an elevation of approximately 6,245 feet.

Baggs currently receives 100 percent of its drinking water supply from the Little Snake River. Water diverted from the Little Snake River is treated prior to distribution for consumption; however, as is the case for many Wyoming communities that rely on surface water, the Baggs water treatment plant cannot meet U.S. Environmental Protection Agency (EPA) drinking water standards for turbidity during high flow in the river.

### **Purpose and Scope**

The objectives of the Baggs Alluvial Well Project were: (1) to investigate the groundwater productivity of the alluvium of the Little Snake River in the vicinity of the town, and (2) to determine whether the alluvium can serve as an effective filter for reducing the turbidity of the water prior to treatment in the water treatment plant.

The scope of work for the project to meet the objectives listed above included drilling two slender test wells to determine the thickness and lithology of the alluvium within the town limits or in the immediate vicinity of the town and to drill, construct, and pump test one exploration well at the most favorable site. Additional work included conducting a pipeline feasibility study and analyzing existing water rights held by Baggs.



**BAGGS ALLUVIAL WELL PROJECT**  
**LOCATION MAP**  
**FIGURE 1**



## EXPLORATION WELL RESULTS

Two test wells were drilled to determine the lithology and thickness of the alluvium in the vicinity of Baggs. The locations of the test wells are presented in Figure 1. The alluvium at Test Well No. 99-1 is 14 feet thick and at Test Well No. 99-2 it is 16.5 feet thick. Although the thickness of alluvium was relatively thin at the test well locations, the unconsolidated, coarse-grained nature of the deposits indicated the alluvium would be likely to yield water to a well. The two test wells were plugged and abandoned and one exploration well was drilled and completed at each site.

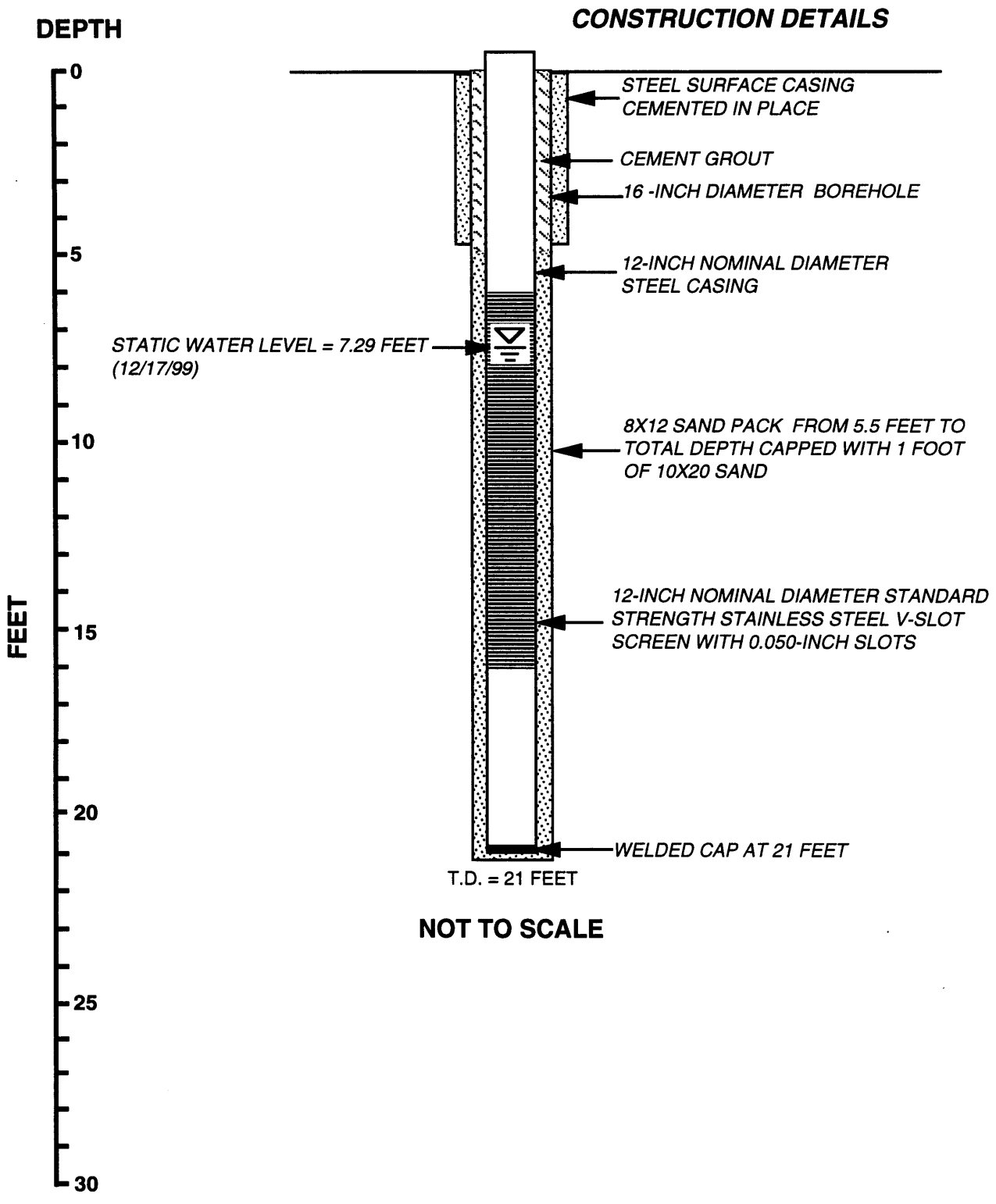
Exploration Well No. 99-1 was drilled to a depth of 21 feet and was completed as shown on Figure 2. Following well construction and development, the well was pump tested. The pump testing indicated that the transmissivity of the alluvial aquifer in the vicinity of Exploration Well No. 99-1 is approximately 2,315 gallons per day per foot (gpd/ft) and that the well was capable of yielding approximately five gallons per minute (gpm). Water quality samples collected during pump testing were analyzed for general anions and cations. The analyses indicate that the water meets the U.S. Environmental Protection Agency (EPA) standards set for the constituents analyzed.

Exploration Well No. 99-2 was drilled to a depth of 21.5 feet and was completed as shown on Figure 3. Following well construction and development, the well was pump tested. Although a step-test was attempted, the water level dropped to the pump intake after pumping the well for 20 minutes at five gpm. No further pump testing was conducted on Exploration Well No. 99-2. Water quality samples collected from Exploration Well No. 99-2 were analyzed for selected constituents. The limited suite of analyses indicates that the water meets the U.S. Environmental Protection Agency (EPA) standards set for the constituents analyzed, with the exception of sulfate. The concentration of sulfate was 345 mg/L, which is greater than the EPA maximum contaminant level (MCL) of 250 mg/L.

## CONCLUSIONS AND RECOMMENDATIONS

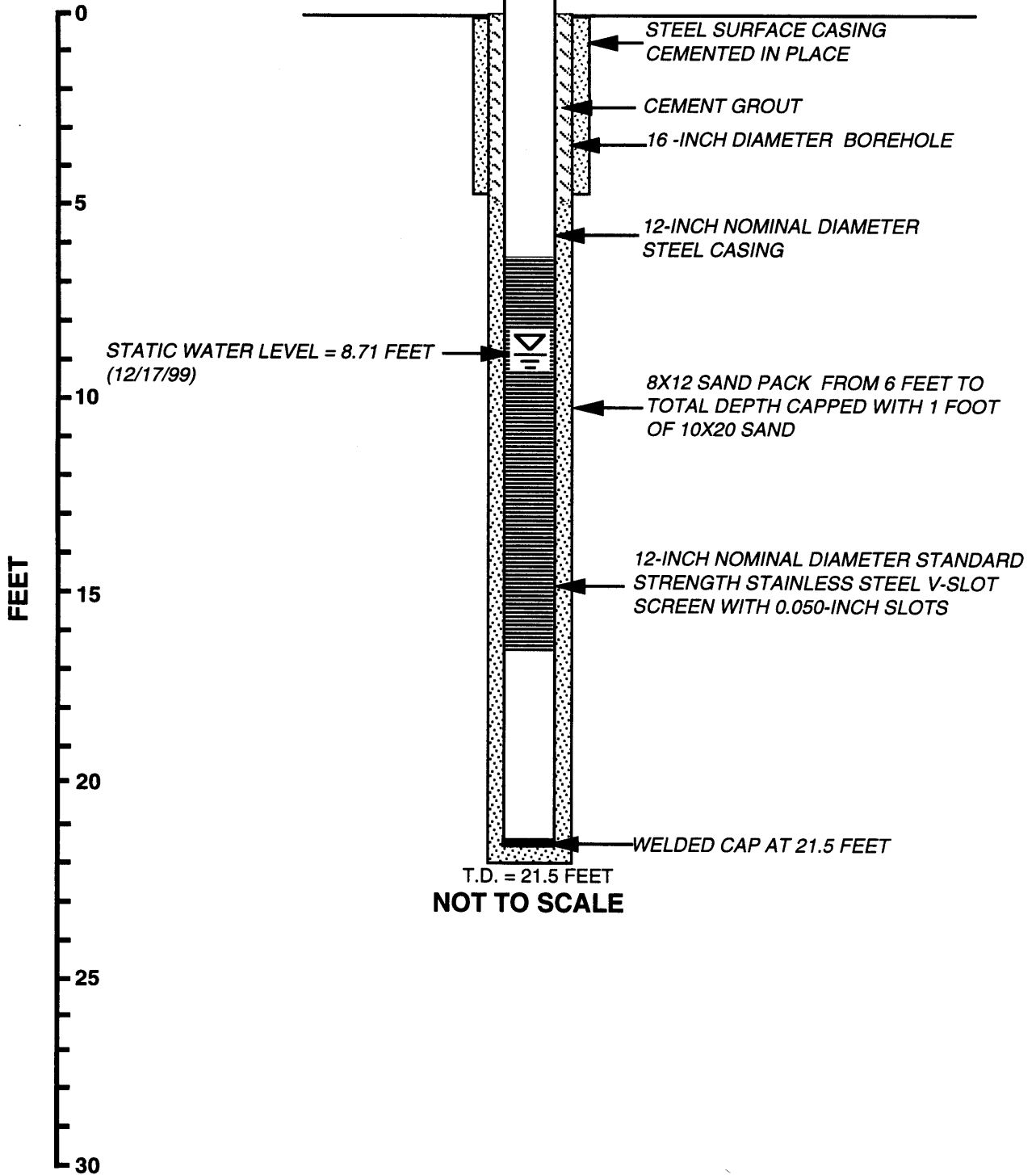
Baggs Test Well Nos. 99-1 and 99-2 were drilled in December 1999. Although the test wells indicated that the alluvium in the Baggs area is less than 20 feet thick, the cuttings were coarse-grained sand, gravel, and boulders and appeared to have sufficient permeability to yield significant quantities of water to wells. Two exploration wells were drilled and constructed in the immediate vicinity of the respective test wells to evaluate the productivity of the alluvial aquifer at the well sites. Subsequent pump testing of the exploration wells indicated that the alluvial aquifer in the vicinity of the test wells is not capable of yielding sufficient groundwater to meet the needs of the Town of Baggs. The exploration wells were plugged and abandoned on April 13, 2000.

Given the low yield of the alluvium in the Town of Baggs, WESTON recommends that future groundwater development efforts be concentrated on other aquifers.



DEPTH

**CONSTRUCTION DETAILS**





**Acknowledgements**

WESTON and PMPC wish to acknowledge the individuals who contributed to this study. John Jackson and Kevin Boyce, with the WWDC, both provided valuable input for this project.

Mayor Don Bain, the Baggs Town Council, Brent Mosier (Water System Operator), Janet Harold (Town Clerk/Treasurer), and Kathi Terkla (Assistant Clerk/Treasurer) provided insight into the needs of the Town and guidance and assistance throughout the project.