

Water Supply Issues at John Day Fossil Beds National Monument

This report contains a summary of information available from NPS-WRD files for the construction of new water supply wells at Foree, Painted Hills, and Blue Basin. I am familiar with the Foree and Painted Hills sites, having visited them in 1991 to assess the same issues that are currently of concern; poor water quality from the well at Painted Hills and low-yield from the spring at Foree.

Foree

Water for the Foree area is supplied from a spring about $\frac{3}{4}$ of a mile east of the John Day River. The spring does not produce enough water to meet demand. Additional spring collection boxes could be constructed in the same general area as the existing spring box, at locations where seeps or vegetation indicate the availability of groundwater.

However, I recommend constructing a shallow well in the alluvium near the river to provide a more reliable, safer source of water. The well should be located near the entrance to the park to place it near the middle of the valley where it is likely to encounter the maximum thickness of saturated alluvium. Water chemistry of the alluvial groundwater could be evaluated prior to construction of a well by obtaining a water sample from one of the adjacent property owners along the river.

If a well is constructed, the maximum depth would be 100 feet and it is very probable that a 50-foot well would provide plenty of water. The well should be constructed using slotted well screen, NOT perforated casing. Perforated casing would allow sand, silt, and sediment to enter the well, eventually filling the well and causing excessive wear on the pump and valves throughout the distribution system.

Painted Hills

Water for the Painted Hills area is obtained from a shallow well at the picnic area along Bridge Creek. The bedrock geologic formation in this area is the John Day Formation, a series of volcanic deposits of ash, tuff, and other low permeability materials. The formation is unlikely to produce water and if it did, it would probably be very poor quality. There are no springs in the area that could be developed for water supplies. The USGS (Frank and Oster, 1979) recommended potential test well sites in the western part of the Painted Hills Unit, but there is no reason to believe that a well at either of these locations would produce water or that the water would have good quality. A well at either of these sites would probably need to be 300 feet deep and the location would be more than a mile from the picnic ground and residence.

The only reliable source of water at Painted Hills is a well constructed in the alluvium along Bridge Creek, similar to the existing well. Water chemistry of any well in the alluvium will be the same as the existing well because the groundwater will be obtained from the same geologic source.

The existing well was constructed in 1981 and was originally drilled to 52 feet, but the hole partially collapsed before casing could be installed and the finished well was 30 feet deep. If this well still produces enough water, continue using it. If there are problems with the production

rate, it may be necessary to rehab the well by jetting to clear fine-grained sediments from the screened area (25-30 feet).

Alternatively, it may be necessary to construct a new well in the same general area. If a new well is constructed, it should be drilled to the bottom of the alluvium, to the contact with the underlying bedrock (probably less than 100 feet) and the well screen should be located in the most permeable zone encountered.

Blue Basin

Bedrock in the upland areas at Blue Basin is John Day Formation, a series of volcanic deposits of ash, tuff, and other low permeability materials. It is very unlikely a successful well could be constructed in these rocks. The only potential source of groundwater in the area is the alluvium along the John Day River. The preferred location for a well is the long, slender strip of land between the highway and the river. This area is almost certainly underlain by several tens of feet of alluvial sediments that should yield good quantities of groundwater to a well. Water quality could be assessed by collecting a water sample from the farmhouse on the southeast side of the highway (assuming that they have a well).

If construction of a well on the northwest side of the highway is not feasible, then an alternative location is as far north as possible on the east side of the highway. There should also be alluvial sediments underlying this location, although probably not as thick as the location on the northwest side of the highway.

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Information Sources

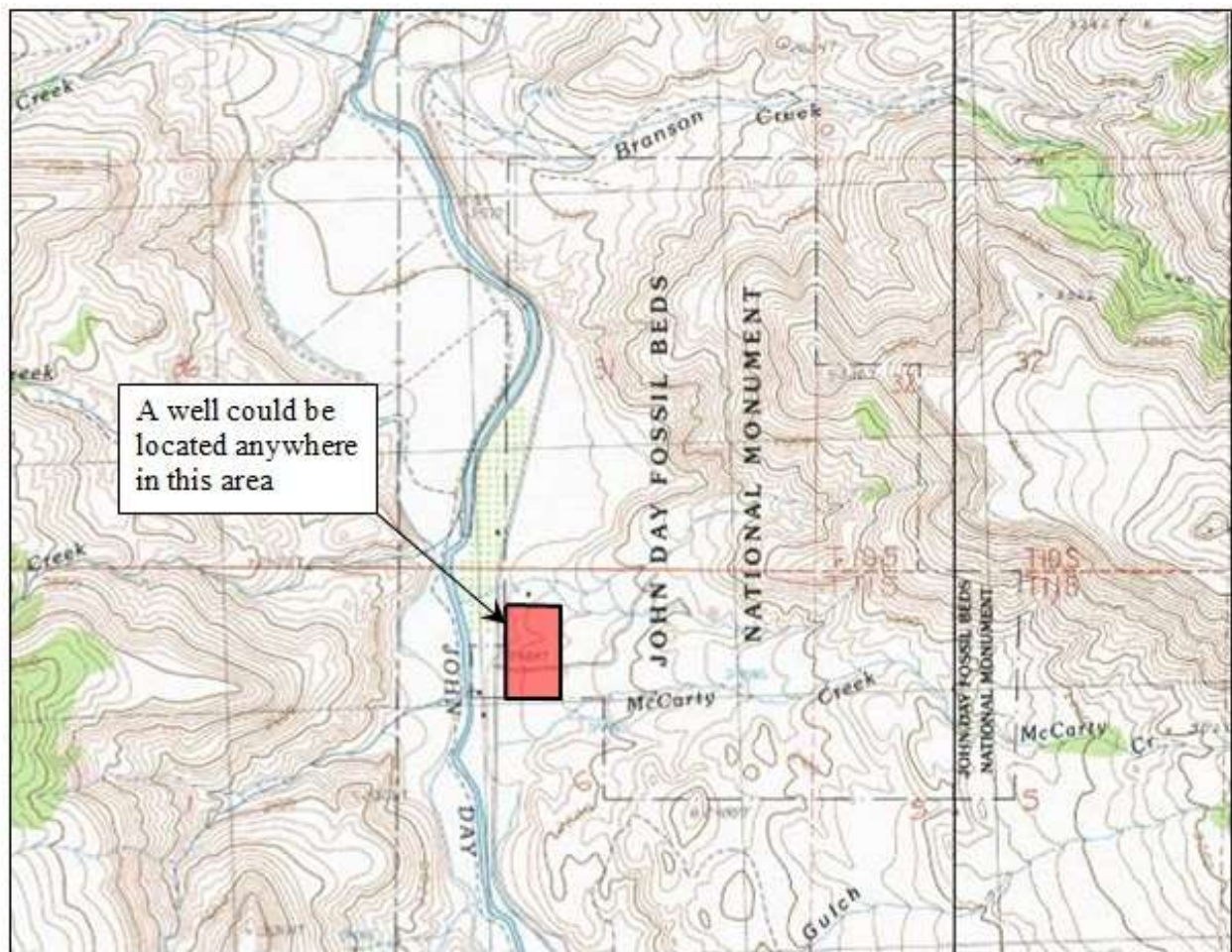
---, June 16, 1978, Memo from USGS District Chief (Oregon) to Donald Barrett, NPS, *John Day Fossil Beds National Monument drilling site*, 3 pp.

Frank, F.J. and Eugene A. Oster, 1979, *Water Availability and Flood Hazards in the John Day Fossil Beds National Monument, Oregon*, USGS Water Resources Investigations Open-File Report 79-1487, 28 pp.

---, November 18, 1983, Memo from Hydrologist (Barrett) to Acting Chief of the Water Resources Section WASO, *Trip Report Oct. 27-29, 1983 to John Day Fossil Beds National Monument*, 2 pp.

---May 10, 1991, Memo from Acting Chief Water Resources Division to Regional Director Pacific Northwest Region, *Trip Report for travel by Larry Martin to John Day Fossil Beds National Monument, April 5, 1991*, 3 pp.

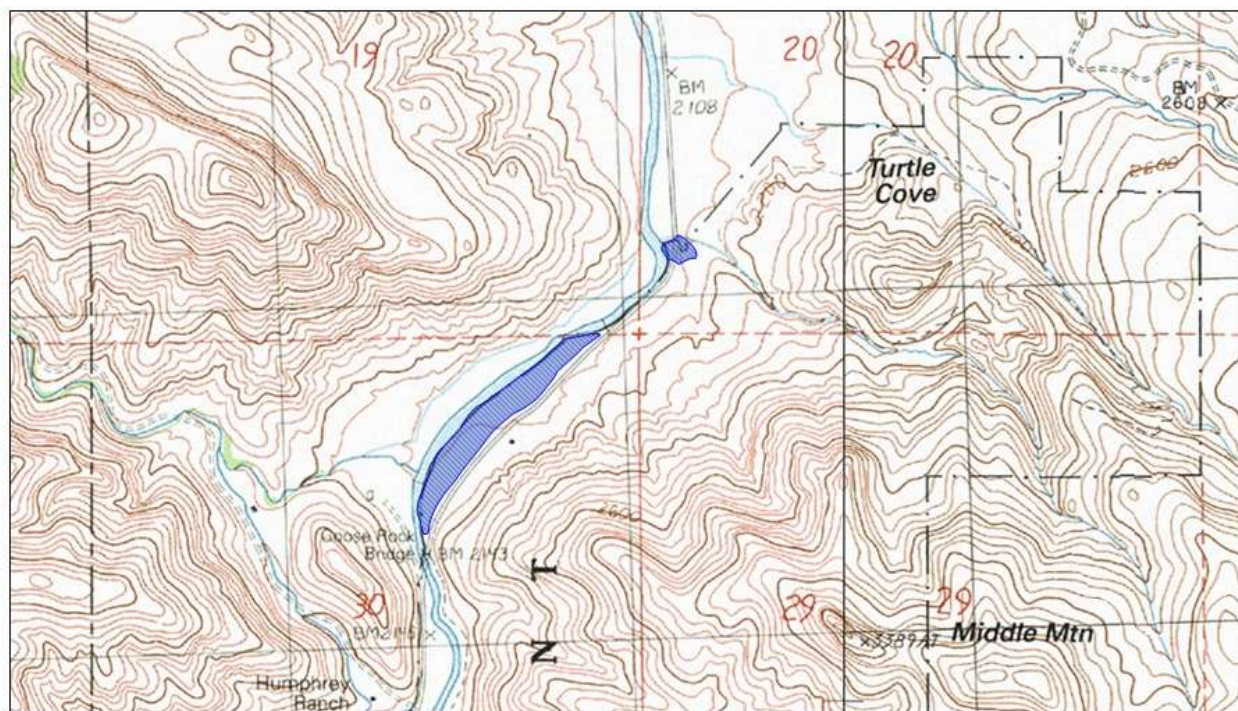
Well construction reports from the Oregon Water Resources Department



Topographic map of the Foree area showing the preferred location for a water supply well.



Topographic map of the Painted Hills area showing the location of the existing well. If a new well is needed, it could be located anywhere in the general area shown by the green circle.



Topographic map of the Blue Basin area. Water supply wells should be located in one of the shaded areas. The long, slender area between the highway and the river is the preferred location.