

To: WDOE, for a Public Meeting discussion on the DTG I Anderson facilities
From: charles chesney, Prime Monitor, Exper Mentor (RG #2503)
Topic: Comment, Site #11537, Public Meeting, March 15, 2023
Date: March 15, 2023

From evidence-based practice, please describe the WWWWH (who, what, when, where, how-loosely listing Rudyard Kipling's elements of fine journalism) of the statement "the Vantage interbed has been penetrated, breached... associated with DTG I Anderson facility operations". (An answer to "when" may clarify DTG I Anderson ownership of facility operations.) The point-what valid, high quality datasets clearly indicate Vantage interbed (i.e., Vantage hydrologic unit) puncture, perturbation, change?

The hydrogeologic framework of Washington includes the Vantage interbed. This hydrologic unit is described as "consisting of clay, shale, sandstone, tuff with claystone, and clay with basalt, but also may contain small amounts of sand and sand-and-gravel. No surficial outcrops of this unit within the study area are present and its extent is assumed to be within the extent of the Wanapum unit. The Vantage unit might extend beyond the boundary of the Wanapum unit, but it is difficult to delineate between the basin-fill deposits and the Vantage deposits at depth by only using well-record information" (Jones Vaccaro 2008). See learning resources for more information.

For site visits to the area of interest (AOI) under consideration for remedial action (open to the public or not), what exposures of the Vantage interbed are clearly exposed and accessible for close up inspection (not buried by tons of 'garbage'? Do m/any of these exposed soil horizons and soil parent material profiles (below the C horizon-lithified layer(s)) show evidence of basalt flows and the interbed (aquitard)? What imagery (stills, movies) exist, past or recent that document soil horizons and stratigraphic units (basalt flow, interbed)? If these data exist, what actions have been taken and will be taken under chains of custody for data quality assurance and curation of evidence?

Is there any evidence of Wanapum basalt outcrops at the surface of the AOI? This might be useful in determining the thickness and status (i.e., intact, or not) of the Vantage hydrologic unit.

"Soil mapping units are not soil taxonomic units" (pers. comm., Dr. Herb Huddleston, Prof. Emeritus, Soil Science, Oregon State University). This maxim applies to stratigraphic units commonly used in geology (e.g., Grande Ronde basalt, Wanapum basalt, Vantage interbed). Given this, what datasets (field mapping, subsurface well logs and samples) from short and long term (1 to 100 years) bore holes | "monitoring and water wells" exist in the AOI that can be useful for dispute resolution? Within a 1000 foot

radius? 1 mile radius? Other dimensions? Are relevant AOI data gleaned from modeling or monitoring efforts?

Is the groundwater hydraulic gradient trending northward, towards waterways Lateral L or Cowiche Creek? Is this gradient query a hypothetical condition? Extraordinary assumption? Are any data for decision support and evidence-based practice gleaned from regional or AOI-specific modeling or monitoring efforts?

What data sharing statements exist? MOUs? Are m/any AOI datasets FAIR-compliant (i.e., Findable, Accessible, Interoperable, Reusable digital assets)?

What are next steps in dispute resolution? Data sharing? Citizen science? What are expectations of all parties involved? What is the current gap between a real and ideal land use solution?

Thank you for your consideration. I look forward to discoveries providing solutions.

Learning Resources

Burns, E.R., Morgan, D.S., Peavler, R.S., and Kahle, S.C. 2011. Three-dimensional model of the geologic framework for the Columbia Plateau Regional Aquifer System, Idaho, Oregon, and Washington: U.S. Geological Survey.

Calkins, Frank C. 1905. Geology and Water Resources of a Portion of East-Central Washington. Water Supply and Irrigation Paper No. 118. Government Printing Office. Washington, D.C. 97 p.

Drost, B.W., and Whiteman, K.J. 1986. Surficial geology, structure, and thickness of selected geohydrologic units in the Columbia Plateau, Washington: U.S. Geological Survey Water-Resources Investigations Report 84-4326, 11 sheets.

Foxworthy, Bruce L. 1962. Geology and ground-water resources of the Ahtanum Valley, Yakima County, Washington. Government Printing Office. Washington, D.C. 108 p.

Jones, M.A., Vaccaro, J.J., and Watkins, A.M. 2006. Hydrogeologic framework of sedimentary deposits in six structural basins, Yakima River Basin, Washington: U.S. Geological Survey Scientific Investigations Report 2006-5116, 24 p.

Jones, M.A., and Vaccaro, J.J. 2008. Extent and depth to top of basalt and interbed hydrogeologic units, Yakima River Basin aquifer system, Washington: U.S. Geological Survey Scientific Investigations Report 2008-5045, 22 p., 5 pls.

Reidel, S.P., Johnson, V.G., and Spane, F.A. 2002. Natural gas storage in basalt aquifers of the Columbia Basin, Pacific Northwest USA--A guide to site characterization: Richland, Washington, Pacific Northwest National Laboratory.

Smith, George O. 1901. Geology and Water Resources of a Portion of Yakima County Wash. Water Supply and Irrigation Paper No. 55. Government Printing Office. Washington, D.C. 75 p.

Swanson, D.A., Wright, T.L., Hooper, P.R., and Bentley, R.D. 1979. Revision in the stratigraphic nomenclature of the Columbia River Basalt Group: U.S. Geological Survey Bulletin 1457-G, 59 p.

Waring, Gerald R. 1908. Geology and Water Resources of a Portion of South-Central Oregon. Water-Supply Paper 220. Government Printing Office. Washington, D.C. 105 p.

Waring, Gerald R. 1913. Geology and Water Resources of a Portion of South-Central Washington. Water-Supply Paper 316. Government Printing Office. Washington, D.C. 48 p.