



## COLORADO

### Division of Water Resources

Department of Natural Resources

Board of Examiners of Water Well and  
Ground Heat Exchanger Contractors

November 5, 2025

### Bulletin 2025-1

## Construction of Wells in the Upper Laramie Aquifer in the Cheyenne Basin

### Purpose

The purpose of this bulletin is to:

- highlight the presence of the Upper Laramie aquifer within the extent of the Cheyenne Basin
- clarify that a well constructed into the Upper Laramie aquifer must comply with the appropriate construction rule, either Rule 10.4.6 (Type 2) where the Laramie Formation is present at the surface or Rule 10.4.5.1 (Type 1 single confining unit) where the High Plains aquifer (Ogallala Formation and White River Group) is present at the surface
- advise licensed water well contractors of the difference between the Laramie Formation and the Upper Laramie aquifer

### Discussion

Permit staff have recently started adding permit notes identifying the aquifer depths and construction requirements for wells anticipated to produce from the Upper Laramie aquifer (ULA) within the Cheyenne Basin, **even though the permit does not necessarily restrict the aquifer into which the well can be completed**. We would like to bring this to the attention of the contractors to prevent any violations of the Construction Rules.

The Upper Laramie aquifer is present in the Cheyenne Basin, in particular Townships 8 through 12N and Ranges 60 through 67W (see attached map for approximate ULA extent and potential Type 1 construction requirements). It was first identified in a 1986 Colorado Geological Survey publication SP-29, "[Water Resources of Upper Crow Creek, Colorado](#)", by Robert Kirkham and John Rold in 1986. Recent non-tributary cases in Water Court (11CW275, 20CW3113, 24CW3041-pending) have further established it as an administrative aquifer.



Stratigraphic Unit		Hydrogeologic Unit
Valley-fill alluvium		High Plains Aquifer
Eolian sand		
Loess		
Unconsolidated terrace alluvium		
Ogallala Formation		High Plains Aquifer
Arikaree Group		
White River Group	Brule Formation	
	Chadron Formation	Chadron confining unit
Laramie Formation		Upper Laramie Aquifer
		Laramie shale
Fox Hills Sandstone		Laramie-Fox Hills Aquifer
Pierre Shale	Upper member	Pierre confining unit
	Upper Pierre sand	Upper Pierre Aquifer
	Main body	Pierre confining unit

Figure 1. CGS Cheyenne Basin hydrostratigraphic column.

The Upper Laramie aquifer consists of the well-developed sandstone and siltstones of the Laramie Formation, extending from the top of the Laramie formation to a depth approximately 250-300 feet above the top of the Fox Hills Sandstone. Wells constructed into the Upper Laramie aquifer must comply with either Rule 10.4.6 for a Type 2 well where the Laramie Formation is present at the surface or Rule 10.4.5.1 for a Type 1 well penetrating through a single confining unit where the High Plains

aquifer & White River confining unit are present at the surface. Where alluvium is present at the surface, it must be fully isolated from the High Plains aquifer (Rule 10.4.6.3) or the Upper Laramie aquifer (Rule 10.4.6.3 or BOE Policy 2017-2).

It is the responsibility of the licensed well construction contractor (Rule 10.1.2) to familiarize themselves with all conditions that may exist at the well location; including the geology of potential aquifers, confining layers, and anticipated water quality problems. Regardless of whether the permit has been conditioned for construction into the Upper Laramie aquifer, if you are contracted to construct a well in a location that falls within the aquifer boundary (see attached map) you are required to comply with the applicable Construction Rules. If a well owner or licensed contractor plans to drill in this area and/or the Upper Laramie aquifer is anticipated to be the source of water for a proposed well, it is encouraged to request a hydrogeologic aquifer review with the well permit application or by submitting an AskDWR request if the well owner or licensed contractor is unsure of the aquifer depths or aquifer types.

Not all wells in this area will be completed in a Type 1 or the Upper Laramie aquifer. Contractors are responsible for knowing the aquifer types for all wells completed in bedrock and for constructing wells accordingly (see Colorado Groundwater Atlas [Table 11b-02-02-01](#)).

### **Bulletin**

Any well constructed into the Upper Laramie aquifer within the Cheyenne Basin must comply with the appropriate construction rule. There are several bedrock aquifers in the Cheyenne Basin (i.e., High Plains, Upper Laramie, Laramie-Fox Hills, and Upper Pierre aquifers) and it is the responsibility of the licensed contractor to familiarize themselves with these aquifers and comply with all applicable Well Construction Rules.

Dated November 5, 2025



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Christopher J. Sanchez, PG, Chair  
Board of Examiners of Water Well and  
Ground Heat Exchanger Contractors