

CASE STUDY

PVC WELL CASING DELIVERS RESULTS FOR MOUNTAIN RESORT'S GROUNDWATER SUPPLY

Nestled in Idaho's scenic Payette River Mountains, Tamarack Resort is served by a groundwater supply comparable to rain or mountain spring water. While considered excellent for drinking quality, its highly dilute characteristics are corrosive to steel casing, thereby decreasing a well's operating life.

CHALLENGE

In addition to the widespread occurrence of iron bacteria and corrosive-causing staining and taste problems in Idaho's steel-cased wells, drilling contractors report a sharp decline in the quality of steel casing, imported predominantly from Korea and China, used in these applications. In some cases, thick-wall 0.375-inch steel-cased wells have shown signs of corrosive break through in as few as nine years.

APPLICATION

Hydro Logic, Inc., a hydrogeological advisor to Tamarack Resort, recommended Certa-Lok® SDR 17 PVC Well Casing from Westlake Pipe & Fittings, a product known to resist scaling and buildup of encrustation on the inside casing wall and galvanic corrosion from the juxtaposition of dissimilar metals and telescoped pump columns. PVC casing also eliminates the need for welded joints, long considered a corrosive accelerant in low-carbon steel casing.

SOLUTION

Hydro Logic engaged drilling contractors Treasure Valley Drilling and McLeran Well Drilling to complete Tamarack's ten exploratory and water supply wells. The 12 to 16-inch nominal production wells supply drinking water for the resort's 2,000 guestrooms, snowmaking in the winter and golf course irrigation in the summer.

Well #10, Tamarack's most challenging installation, is an 846-foot deep well utilizing 580 feet of 17.4-inch O.D. Certa-Lock casing and 330 feet of ten-inch diameter Johnson brand stainless steel well screen.

Per the resort's water well requirements, Well #10 was constructed with full-depth surface seals using approved grouts from the top of the aquifer to the land surface. Consistent with the resort's previous well projects, Treasure Valley Drilling & Pump used the direct mud-rotary drilling method, a cost-effective process which creates well bore depth flexibility while providing superior seals to prevent surface waters and shallow contaminated groundwater from entering new wells. The open-hole drilling method also allows PVC casing to be lowered into place within the open bore and grouted.



Project Type:
Water Well

Application:
Domestic Well

Owner:
Tamarack Resort

Product Used:
Certa-Lok® PVC Well Casing

Contractors:
Treasure Valley Drilling
McLeran Well Drilling

Engineer:
Hydro Logic, Inc.

No low-carbon steel was used in the well construction except in the wellhead, a short-length, 18-inch steel casing to protect the PVC from ultraviolet rays and provide a standard flanged casing for wellhead plumbing.

Well #10's PVC casing was grouted over 580 feet from the top of the aquifer to land surface using a combination of cement grout and high-solids bentonite grout with the PVC casing centralized in the bore for a uniform seal.

Upon completion, the well passed a 30-hour pumping test at 2,500 gpm pumping to a maximum 3,200 gpm.

The rapid installation of the PVC casing was a major plus considering the subsurface borehole conditions. Deeply buried swelling clay strata within the geologic section of the Tamarack Resort area provided only a short time to install the well casing before the borehole diameter diminished. PVC also allowed for quick withdrawal from the well, a key benefit in the event a down-hole problem developed during construction.

Since it used PVC casing, Treasure Valley Drilling avoided welding and downtime associated with waiting for welded joints to cool prior to submersion. By eliminating the welding process, crews also were able to work in a safer environment given the well site was located within a dense forest during one of the worst fire seasons in Idaho history.

"Tamarack is a prime example of how PVC can expedite even the most challenging projects for Idaho's well-drilling professionals," says Ed Squires, president of Hydro Logic, Inc.