

Attachment 2

Draft Wetlands Assessment for Construction of 881 Hillside Interim Remedial Action

Wetlands Assessment for Construction of 881 Hillside Interim Remedial Action

Project Description

The Department of Energy (DOE) proposes to construct a remedial action involving construction of a system to collect, pump and treat groundwater at the 881 Hillside (Operable Unit 1) at the Rocky Flats Plant north of Golden, CO. Construction of the groundwater collection system will temporarily destroy up to approximately 1500 feet of the South Interceptor Ditch (SID), a man-made feature itself part of remedial action. The SID is located on the 881 Hillside above Woman Creek and was built to collect potentially-contaminated surface water and transport it to Pond C-2 for subsequent treatment and release to local drainages. Wetland vegetation has become established at intermittent locations in the SID where pools of standing water remain for sufficient periods of time. Wetland area in the length of the SID from a point south of 881 Building to C-2 Pond is approximately 0.15 acres (*Environmental Assessment for 881 Hillside [High Priority Sites] Interim Remedial Action*, page 4-6, USDOE, January, 1990); approximately half that amount will be affected by the proposed action.

The proposed action is construction of a French Drain upslope of the SID and approximately 2500 feet in length, installation of pumps and water transmission lines, and construction of a treatment plant and storage tanks. A trench will be dug down to bedrock across the 881 Hillside roughly parallel to the SID. The French Drain piping will be laid in the trench and an impermeable liner will be installed on the down-gradient side of the pipe prior to backfilling of the trench. The sides of the trench will be sloped to prevent caving during construction. For a distance of up to approximately 1500 feet, the trench and SID are close enough that the sloped excavation of the trench will overlap the SID, requiring the temporary destruction of that portion of the SID and the attendant wetlands.

The water collected by the French Drain, most of which does not now enter the SID, will be pumped through a buried pipe directly up the 881 Hillside approximately 900 feet to a collection tank. From the tank, it will flow to an adjacent treatment facility and, after treatment, into a post-treatment holding tank. A second buried pipe will return the water to the SID at a point south of the 881 Building.

Wetlands Effects

The project will temporarily destroy up to approximately 1500 linear feet of wetlands in the SID. The natural and beneficial values of the small area of wetlands destroyed will be lost during construction of the French Drain (summer, 1991, through spring, 1992). Upon completion of construction, the SID will be rebuilt in the same location as it presently exists. DOE proposes to allow the wetlands to re-establish themselves. This is expected to occur by the same mechanism by which the wetlands originally established themselves in the SID after it was first constructed. Upon re-establishment, all the natural and beneficial values of the wetlands are expected to return to the same extent, or greater, than they presently exist with wetlands of similar quality and survival potential. No permanent loss of wetlands is expected to occur as a result of the project. Operation of the project may, in fact, enhance future wetlands by virtue of increasing average flows and reducing the seasonality of such flows in the SID.

During construction of the French Drain, a bypass will be built to conduct SID flows around the project area, protecting the normal supply of water to SID wetlands downstream of the construction site. Thus, the downstream wetlands should not be affected by the project.

Alternatives

No Action Alternative

The remedial action of which the French Drain is a part is an interim remedial action being undertaken under provisions of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and pursuant to an agreement between the DOE, the Environmental Protection Agency and the Colorado Department of Health. Both the statute and the agreement require clean-up of contaminated sites at the RFP. In addition, contamination at the 881 Hillside may present a threat to public drinking water supplies, making its remediation imperative. The No Action Alternative is dismissed as not reasonable.

The following alternatives were considered in designing the interim remediation action alternatives for 881 Hillside:

Extraction Wells

In addition to installation of a French Drain to collect ground water for treatment, use of extraction wells was considered. This system involves construction of wells that are numerous enough and sufficiently close together that, when pumped, they remove all ground water in and around their location. This alternative would avoid construction impacts to the SID. Because of the low permeability of the soils at 881 Hillside, such wells would have to be closely spaced. Use of extraction wells was not selected because of the large number of wells that would be required with the resultant damage to the Hillside, their close spacing, and their construction and operating costs.

Alternative Locations for the French Drain

Location of the French Drain is dictated by the need to be down-gradient of the plume of contaminated groundwater and above Woman Creek. There is a very confined strip within which these two necessary conditions can be met, and there is nowhere within the strip where impacts to the SID can be avoided. Moving the French Drain sufficiently up-gradient from its proposed location to avoid impacts to the SID would place it above the leading edge of the plume of contaminated groundwater. Moving it down-gradient would result in construction impacts to Woman Creek. The proposed location is the only one that will allow both conditions to be met.

Construction Techniques

It may be possible to reduce the length of the SID affected by construction of the French Drain by shoring the sides of the excavation. The bottom of the excavation will be from 14 to 35 feet deep and the soils at the site require support for excavations of such depth to prevent caving and for the protection of workers in the excavation. Three means of shoring were investigated. The first was use of sheet piling. This technique requires driving piles into bedrock and would result in fractures in the bedrock around the piles. This potential solution was rejected because the bedrock fractures would provide an avenue for contaminated groundwater to migrate into strata not otherwise accessible to it.

The second shoring method considered was sheeting and shoring. This technique involves installation of a system of cross-braces to hold the soil back. The cross bracing would make installation of the geo-textile and French Drain piping virtually impossible.

The third possible means of preventing caving considered was use of a trench box. This device, consisting of parallel walls held apart by braces, would be moved along the bottom of the trench as construction progressed. Because trench boxes come in relatively short lengths, only very short lengths of the drain could be constructed at one time, making the French Drain infeasible. In addition, like sheeting and shoring, the bracing of the trench box would substantially interfere with construction activities, making installation of the geo-textile and French Drain piping virtually impossible. The trench box alternative was dismissed on these accounts.