Robins AFB
Groundwater Treatment
Plant

Fact Sheet

OU3 Groundwater Treatment Plant

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Robins AFB has constructed a facility for the removal of organic contaminants in the groundwater at the NPL site's Operable Unit No. 3 (OU3) and the Greater Base Industrial Area (GBIA). The main contaminant of concern (COC) in the groundwater for both the NPL Site and GBIA is trichloroethylene (TCE). Construction of the facility to treat these contaminated groundwaters began on August 22, 1996. The plant will be operational on October 24, 1997.

Treatment Plant Background

In 1982, Robins AFB conducted a base-wide survey to identify and assess past practices of hazardous waste disposal. The disposal areas identified during the survey were grouped into eight zones, based on location and type of disposal activity. The survey identified Zone 1 as having a high potential for contaminant migration. Consequently, in 1987, the U.S. Environmental Protection Agency placed the site on the National Priority List (NPL). OU3 is located in the central part of Robins AFB next to a bluff that forms the western boundary of the Ocmulgee River floodplain. It consists of Landfill No. 4 and an adjacent 1.5 acre sludge lagoon.

The clean-up strategy for the NPL Site was divided into three phases called "operable units". Operable Units (OUs) are defined as discrete actions composed of incremental steps toward the final overall remedy and may be action that completely addresses a geographic part of a site or a specific problem. OU1 addressed the final remedy for the contaminant source areas and the groundwater below the sludge lagoon. OU2 focuses on the wetlands and determines the degree of effect that may have occurred from the known contamination source in OU1.

OU3 was established to address the groundwater contamination plume in Zone 1 and the remedial actions required to cleanup the groundwater at the point of compliance. The primary objective of the remedial action is to capture the release of contaminants to groundwater from the source and maintain compliance with the remedial goals at Hannah Road. The remedy selected for OU3 is extraction of the contaminated groundwater followed by treatment. This process was approved in the Interim Record of Decision (IROD) in September, 1995 and the final design was approved in June, 1996.

Recently, a TCE plume in the GBIA has been more completely delineated. A decision was made by Robins AFB to increase the designed capacity of the OU3 Groundwater Treatment Plant to add the treatment of the GBIA contaminated groundwater as an interim remedial action. The objective, for the GBIA, is to treat localized TCE "hotspots". Additional work, since the original investigatory work was performed in NPL Site, has assisted in locating these "hotspots".

Description of the Groundwater Treatment System

Contaminated groundwater will be pumped from a series of extraction wells installed within OU3 and the GBIA. Six (6) wells have been installed along the eastern boundary of the sludge lagoon and landfill No. 4 area. The wells were given the designations of RW-1 through RW-6. In the GBIA, the four extraction wells, with the designations OT20-EW1 through OT20-EW4, have been installed near the "hotspots" so that the groundwater flows to the well. This will allow for mass removal of contaminants in the "hot spots". Additionally, the installation of a leachate collection system, around the eastern periphery of Landfill No. 4, was completed this year. This system will stop contaminate migration from the landfill into the adjacent wetlands area. The groundwater from the leachate collection system and the two sets of extraction wells will be pumped through an underground piping system to the new 3,800 square foot treatment facility located just east of the existing Sanitary Waste Treatment Plant. Flow from the OU3/GBIA wells is expected to be approximately 140 gallons per minute (gpm).

The treatment facility will feature a technology called ultraviolet (UV)/chemical oxidation. This technology uses ultraviolet light together with a chemical oxidant (hydrogen peroxide) to destroy the organic contaminants. From the piping system, the groundwater enters an equalization tank. From this tank, the water is treated with chemicals to adjust the pH. A small amount of polymer is added to help remove any foreign matter in the water. Hydrogen peroxide is injected into the water to enhance the destruction of the organic contaminants. From here, the groundwater is processed through sand filters to remove any foreign matter. After these filters, the groundwater is directed into the primary treatment unit. The heart of the system, the treatment unit consists of three reactors, piped in parallel, which contain high powered UV lamps. The contaminated groundwater, with the chemical oxidant, is passed through these reactors and is subjected to the intense UV light. The organic contaminants are subsequently destroyed or reduced to permitted levels inside the reactors. After the reactors, the groundwater is piped through two granular activated carbon columns. These columns adsorb any residual hydrogen peroxide and organics. The groundwater flows into a final tank where pH is again monitored and adjusted, if required. In the final step, the groundwater is piped to the outfall from the Base's sewage and industrial treatment plants where it is combined with this treated outflow.

The facility has the capacity to treat up to 375 gpm of groundwater. The plant has been designed to accommodate possible future growth such that it may treat up to 600 gpm of contaminated groundwater flow. The treated effluent from the facility will be discharged in accordance with the limits set forth in the Robins AFB National Pollutant Discharge Elimination System (NPDES) permit.

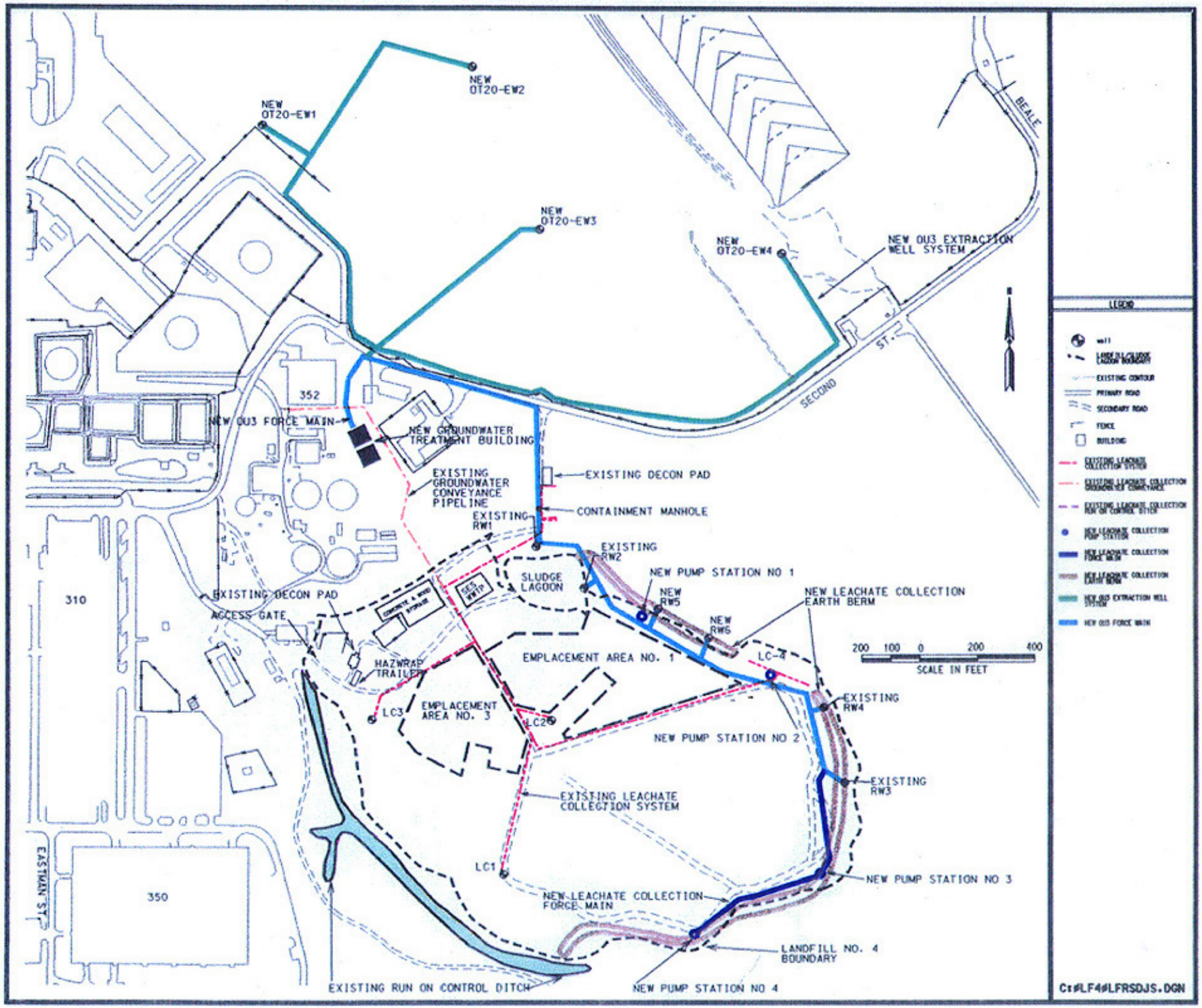
Project Cost

Leachate Collection System Construction	$1,890,360
OU3/BIA/Facility Construction	$3,391,176
Design and Oversight	$1,447,913
Total Design/Construction/Oversight Cost	**$6,729,449**
Operations and Maintenance for Fiscal Year 1998	$1,124,741

Contractors

Prime Contractor	MARCOR Environmental
OU3/BIA - Design and Oversight Contractor	Rust Environment & Infrastructure
LCS Design and Oversight Contractor	HAZWRAP
Landscaping	Robins Maintenance

Attached is the site plan showing the 4 GBIA Extraction Wells (EW's), 6 OU3 Recovery Wells (RW's), and the LF 4 Leachate Collection System (Pump Stations).



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