

## 2.0 HISTORY OF BUILDING 1727 SUMP

Rocky Mountain Arsenal was developed when the United States Government bought 17,000 acres (approximately 27 square miles) of land in Adams County, Colorado (Figure 1) in 1942. Its primary function was to manufacture and assemble chemical warfare materials (i.e., mustard and lewisite), and incendiary munitions for use in World War II.

Industrial chemicals were produced at RMA from 1947 to 1982. The North Plant Facility (Figure 2) was constructed between 1950 and 1953 to manufacture the nerve agent GB (isopropyl methylphosphonofluoridate). Production of GB ended in 1957, but GB munitions filling operations continued until late 1969. Between 1970 and 1982, the mission of RMA concentrated on the destruction of chemical warfare materials. From 1946 to 1982, a major portion of the plant was also leased to private industries (including Shell Chemical Company) for the manufacture of various insecticides and herbicides.

All liquid waste generated in the North Plant Facility from 1953 to 1973 was discharged to Sump 1727 (Figure 3). The liquid waste was neutralized with caustic solution and water, and later discharged to either of two wastewater evaporation lagoons near the center of RMA, Basin A and Basin F. From 1973 to 1976, contaminated sump waste was discharged to a spray-drying facility adjoining Building 1703, while non-contaminated sump waste was discharged to Basin F. After 1976, however, all wastes collected in the sump were disposed in the spray-drying facility. The discharge pipeline to Basin F was capped in 1982; spray-drying was discontinued in 1985.

In December 1982, a Memorandum of Agreement (MOA) was entered into between the Colorado Department of Health, the U.S. Environmental Protection Agency, Shell Chemical Company, and the

Army. The MOA initiated a cooperative development plan for a comprehensive remedy for the environmental situation at RMA.

A source control study conducted by U.S. Army Toxic and Hazardous Materials Agency (USATHAMA) over a three-year period resulted in submission of a final report to the MOA parties in September 1983. That report identified several remedial actions necessary to facilitate the restoration of RMA.

Sump 1727 was designed to handle the liquid waste generated within the North Plants facility. The main sources of wastewater collecting in the sump were floor washdowns, spill neutralizations/flushings, and stormwater runoff from diked storage areas. However, North plant Facility operations ceased in 1985. Despite the cessation of operations, water has continued to collect in Sump 1727. Suspected sources of inflow are leakage of water lines, possible groundwater infiltration, and inflow of stormwater runoff in the North Plants area. In January 1987, underground potable water lines outside of Building 1501 broke as a result of freezing temperatures. The water that leaked into the basement was subsequently pumped into Sump 1727, nearly filling it. In an emergency response to the near overflow condition of the sump throughout the year, over 50,000 gallons of water were pumped from the sump to tanks and tanker trailers. Although integrity of the entire sump has not been verified, internal walls that were inspected appeared to be in good condition with no indications of seepage from the sump.

Analytical tests of the sump water taken in February 1987 indicated that the water was contaminated with arsenic (As), cadmium (Cd), fluoride (F), lead (Pb), and isopropylmethylphosphonate (IMPA). Water quality test from upstream water sources showed low concentrations of As, F, and IMPA; and Cd and Pb were not detected. It is suspected that upstream water is being contaminated by sediments and sludges in the sump. During

October and November of 1987, an emergency response system consisting of an activated alumina and carbon adsorption treatment system was installed. The treated effluent is being discharged to the RMA sanitary wastewater treatment system.

On February 1, 1988, a proposed Consent Decree was lodged in the U.S. v. Shell Oil Company with the U.S. District Court in Denver, Colorado. The Proposed Decree was commented upon by interested parties and modified in response to comments received. A modified proposed decree was submitted to the Court on June 7, 1988. The Army and Shell Oil Company agreed that IRAs were necessary and appropriate to clean-up RMA. These were to be developed and performed with the oversight of the U.S. Environmental Protection Agency and with numerous opportunities for review and comment by the State of Colorado. The long-term cleanup is a complex task that will take several years to complete. To alleviate the most urgent problems, the Consent Decree specifies a number of interim response actions. One of these interim response actions is to remediate contaminated liquid in Sump 1727.