DECISION SUMMARY FOR THE RECORD OF DECISION

1.0 SITE NAME, LOCATION, AND DESCRIPTION

The Rocky Mountain Arsenal (RMA) National Priorities List (NPL) site is comprised of two Operable Units (OUs): Onpost and Offpost. As shown in Figure 1.1, the Offpost Study Area occupies approximately 27 square miles in southern Adams County, Colorado, and lies north of the Denver metropolitan area and east of Commerce City, Colorado. The Offpost Study Area is defined as the area southeast of the South Platte River, north of 80th Avenue, southwest of Second Creek, and north of the north and northwest boundaries of RMA. Additionally, the Offpost Study Area includes the surface waters of O'Brian Canal and Burlington Ditch as they extend northeast from Second Creek to Barr Lake and the surface waters of First Creek and Barr Lake. The Offpost OU (also shown in Figure 1.1) is defined by the RMA Federal Facility Agreement (FFA) as that portion of the Offpost Study Area where hazardous substances, pollutants, or contaminants from RMA are found and are subject to remediation. The Offpost OU encompasses rural residential, agricultural, and commercial and industrial areas located north and northwest of RMA.

Areas within the Offpost OU are used for rangeland, dryland farming, and irrigated farming with some rural residential areas and scattered areas of intensive agricultural use. Parts of the Offpost OU are currently zoned and developed for commercial/industrial activities. Commerce City, located west of RMA, is the only urban area in the immediate vicinity of the Offpost OU and has recently annexed lands within the Offpost OU.

On the basis of an evaluation of planning information provided by the Adams County Planning Commission, it is projected that areas of commercial, industrial, and urban residential land use will increase in the Offpost OU (Adams County Planning Commission, 1987). Rural residential (including agricultural) land use is expected to decrease in the Offpost OU because anticipated increases in property values are expected to preclude increased traditional crop and livestock production land use, including hobby farming as discussed in the Airport Environs Plan (Adams County, City of Aurora, City of Brighton, City of Commerce City, 1990).

1.1 Environmental Setting

The topography of the Offpost Study Area consists of stream-valley lowlands separated by gently rolling uplands. The maximum local topographic relief in the Offpost Study Area is approximately 100 feet. The elevation above mean sea level ranges from approximately 5140 feet at the northern and northwestern boundary of RMA to approximately 5030 feet at the South Platte River.

Cropland and rangeland provide habitat for numerous animal species. Lake and wetland areas at Barr Lake provide feeding, breeding, and roosting areas for waterfowl and endangered species, including the bald eagle. The climate of the Offpost Study Area is characterized by sunny, semiarid conditions.

The regional surface drainage is to the northwest toward the South Platte River. Surface water originating south of RMA, on RMA, or in the Offpost Study Area flows toward the South Platte River. Two major canals, O'Brian Canal and Burlington Ditch, and several smaller ditches flow from southwest to northeast between RMA and the South Platte River. O'Brian Canal receives some drainage from the Offpost Study Area and RMA where the canal intercepts First Creek. Burlington Ditch may receive surface water infrequently from First Creek.

1.2 Geology

Sediment at the land surface in the Offpost Study Area consists of unconsolidated alluvial and eolian deposits. The composition of the unconsolidated sediment varies from clays to coarse gravels, and the thickness varies from less than 10 feet to approximately 100 feet. The thickest deposits of unconsolidated sediment occur in paleochannels eroded into the underlying Denver Formation.

The Denver Formation consists of 250 to 300 feet of interbedded shale, claystone, siltstone, and sandstone, with a regional dip of 1/2 to 1 degree to the southeast. The presence of paleochannels in the Denver Formation surface impacts groundwater flow in the unconsolidated sediment and the upper weathered portion of the Denver Formation. Three such paleochannels, the First Creek,

northern, and northwestern paleochannels, are present in the Offpost Study Area. Coarse, unconsolidated materials commonly found within these paleochannels provide preferential pathways for groundwater movement. Groundwater contaminant plumes that have historically migrated across the RMA boundaries to the Offpost OU contain the highest concentrations of contaminants in and near these paleochannels. The Arapahoe Formation lies beneath the Denver Formation at depths of 230 to 300 feet at the RMA north boundary and has a regional dip of 1/2 to 1 degree to the southeast. The formation consists of 400 to 700 feet of interbedded conglomerate, sandstone, siltstone, and shale. The upper portion of the Arapahoe Formation consists predominantly of 200 to 300 feet of blue to gray shale with some conglomerate and sandstone beds. The lower portion consists largely of sandstone and conglomerate with less prevalent beds of shale. The lower portion is a source zone for many water-supply wells in the area. A thick, impermeable claystone unit is variously assigned to the lower Denver formation and the upper Arapahoe Formation. The claystone unit is called the "Buffer Zone" and is approximately 50-ft. thick. This unit further isolates the underlying Arapahoe aquifer from any localized contamination in the Denver confined flow system. The Arapahoe Formation is the oldest geologic unit present beneath the Offpost Study Area that was investigated during the Offpost Remedial Investigation program.

Alluvial and eolian deposits form the ground surface in the Offpost Study Area. The Denver Formation and Arapahoe Formation are not present at the ground surface anywhere in the Offpost Study Area.

1.3 Hydrogeology

The two principal water-bearing units in the Offpost Study Area that have been impacted by contaminants originating from RMA are the unconsolidated alluvial deposits and the underlying Denver Formation. The hydraulic properties of these two units, including hydraulic conductivity, porosity, and associated groundwater flow velocities, are distinctly different. The low permeability of the Denver Formation and upper Arapahoe Formation limit contaminant transport into the lower

Arapahoe Formation. Hydraulically, the two units generally behave as two distinct hydrostratigraphic units: the unconfined flow system (UFS) and the confined flow system (CFS).

The UFS includes groundwater present in the unconsolidated materials overlying the Denver Formation, the weathered upper portion of the Denver Formation, and, where the Denver Formation is missing near the South Platte River, the weathered upper portion of the Arapahoe Formation. The CFS includes the deeper portions of the Denver Formation and the underlying Arapahoe Formation. On the basis of an evaluation of the distribution of contaminant plumes in the Offpost Study Area, the UFS is considered the principal migration route for groundwater contaminants from RMA to the Offpost Study Area, although some contaminants are present in the CFS. Although low-level contamination may be present in isolated portions of the Denver Formation CFS, this formation has low productivity as a groundwater resource.