

SECTION 4

HUMAN AND ENVIRONMENTAL RECEPTORS

The pathways by which human and environmental receptors may be exposed to releases of site-related contaminants are discussed in this section.

4.1 RELEASES TO GROUNDWATER

Potential sources of groundwater contamination include:

- Leaching of chemical agents, chemical agent by-products, and decontaminants from soils in former and current training, decontamination, storage, and disposal sites.
- Inadequate isolation of leachate from the former or current landfills.
- Percolation from Range L (Lima Pond), a surface water disposal site for World War II munitions.
- Leaking underground storage tanks (USTs).

Groundwater is used directly in Calhoun County through groundwater wells. Groundwater also supplies spring discharge and the base flow of Cane, Cave, and Choccolocco Creeks.

The most used spring in Calhoun County is Coldwater Spring. This spring, with an average discharge rate of 49.5 cubic feet per second, is located approximately 5 miles south of Pelham Range and 8 miles southwest of the Main Post. Work by the Geological Survey of Alabama has determined that the spring is recharged primarily by quartzites of the Weisner Formation and dolomites of the Knox Group [R-32]. The most probable recharge area for this spring includes an irregular band of land averaging 1 mile in width along the southwestern corner of Fort McClellan. This recharge area also extends through the Anniston Ordnance Depot up to but not beyond the southernmost tip of Pelham Range.

4.2 RELEASES TO SURFACE WATER

Surface water analyses conducted in 1982 indicate no detectable surface water contamination within Range L (Lima Pond), a man-made pond reportedly used for the disposal of captured World War II munitions, at that time [R-24].

Possible contaminant releases to surface water impoundments, creeks, and storm water collection systems result from overland flow over parking, maintenance, and outdoor storage areas. Probable contaminants include spilled fuel, oil, and lubricants. Overland flow over training and decontamination sites may result in contamination from residual chemical agents and chemical agent by-products. These contaminants may also enter the surface water system attached to eroded soil or resuspended sediment. The possibility of contamination of surface water is increased at Rideout Field (Battle Drill Area) and Range 24A, where chemical warfare training occurs adjacent to Cane Creek and nearby wetlands.

All surface water drainage from Fort McClellan and Pelham Range eventually drains into the Coosa River, the Alabama River, and Mobile Bay. This large drainage system provides not only downstream municipal water supplies but also habitat for aquatic wildlife that is consumed in part by wildlife predators and humans.

4.3 RELEASES TO SOIL

Potential sources of soil contamination include:

- Surface contact with chemical agents, chemical agent by-products, and decontaminants associated with training, decontamination, storage, and disposal sites and subsequent downward leaching into the subsoil.
- Surface contact with unexploded ordnance within impact areas.
- Subsurface contact with petroleum-based fuels and solvents from leaking USTs.

Contaminated soils would provide a hazard where intrusive activities such as excavation, plowing, and road construction were conducted. The relationship between soil contamination and groundwater and surface water contamination is discussed in Section 5.

Sediments that have been eroded and redeposited within streams are a special case. Because surface soil is the most likely to be both eroded and contaminated, higher concentrations of some persistent contaminants are likely in sediment. Persistent contaminants and contaminated by-products that might be in sediment include:

- Zinc -- a by-product of HC (hexachloroethane smoke agent) [R-49].

- HD (distilled mustard).
- Bis(2-diisopropylaminoethyl) disulfide -- the principal by-product formed from the decontamination of nerve agent VX with DS-2 [R-50].

Sediments provide habitat to a portion of the aquatic food chain. Sediments are also a potential source of contamination to surface water, either through leaching within effluent streams or resuspension.

4.4 RELEASES TO AIR

Ongoing sources of air contamination are fog oil and HC from smoke-generating training sites, smoke from controlled burning of underbrush, and atmospheric suspension of particulates resulting from ordnance explosions. Because these activities occur in relatively isolated areas, are limited both in time and extent, and are conducted by properly protected personnel, no human receptors are expected.

Potential sources of air contamination include asbestos exposure and smoke from uncontrolled forest fires.

Primary receptors of potential asbestos exposure would be inhalation by humans occupying any building containing asbestos-containing materials (ACMs). This would include office workers, maintenance personnel, and any remediation or demolition workers. It should be noted, however, that any building containing ACMs would require the removal of asbestos prior to any demolition activities.

Primary receptors of potential smoke from an uncontrolled fire would be wildlife and humans occupying adjacent downwind areas.

4.5 OTHER HAZARDS

4.5.1 FIRE AND EXPLOSION

A potential safety hazard associated with the extensive wooded tracts at Fort McClellan is uncontrolled forest fires.

A potential safety hazard associated with the mortar firing range is unexploded ordnance and munitions debris.

4.5.2 DIRECT CONTACT

A potential safety hazard associated with chemical warfare agent storage areas is direct contact with chemical warfare agents.