Frequently Asked Questions:

Rocky Mountain Arsenal and Possible Oil and Gas Operations in the Surrounding Area

In response to recent inquiries about potential oil and gas drilling near the Rocky Mountain Arsenal (Arsenal), the Remediation Venture Office (RVO) (U.S. Army, Shell Oil Company, and the U.S. Fish and Wildlife Service) and regulatory agencies have provided information about the environmental remedy and deep injection well to the Colorado Oil and Gas Conservation Commission (COGCC). The RVO has also offered to answer any questions about the Arsenal that the COGCC commissioners may have to assist them with their independent decision-making regarding the safety of oil and gas activities. The RVO has no review or decision-making authority over private business operations outside the boundaries of the Arsenal, including oil and gas operations.

The RVO is responsible for ensuring the environmental cleanup of the site remains protective of public health and the environment. The regulatory agencies—the U.S. Environmental Protection Agency (EPA), Colorado Department of Public Health and Environment (CDPHE), and Tri-County Health Department (TCHD)—provide oversight of the RMA cleanup. The remedy was designed to be protective for centuries under a wide range of conditions, including floods, earthquakes, droughts, and other events. To ensure the remedy performs as designed, the RVO monitors groundwater wells and conducts regular inspections of the landfills and waste consolidation areas, including the caps and covers, and groundwater treatment facilities. The Army permanently operates and maintains these facilities. In addition, as required under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the RVO conducts a comprehensive review of the remedy every five years in cooperation with the regulatory agencies and community, and the results of those reviews are publicly available.

Information about the environmental cleanup and the latest Five-Year Review can be found by visiting www.rma.army.mil. You can also leave a message on the Rocky Mountain Arsenal Community Information Line at 303.289.0136., and an appropriate Arsenal staff person will respond to answer your questions.

FAQs

1.) **What was the deep well injection program, and how do we know the fluid injected into the deep well isn't dangerous to the public or environment?**

The Rocky Mountain Arsenal deep injection well was used from 1962 to 1966 to dispose of 165 million gallons of liquid waste from a former disposal basin. Although the exact chemistry of the fluid is unknown, the Army estimates it consisted of salty wastewater containing some metals, chlorides, and organics.

The Army's deep injection well was constructed using techniques designed to prevent groundwater contamination. The well was drilled and cased to a depth of roughly 12,000 feet below the ground surface.

The injected fluid has very little potential for reaching the surface or useable groundwater because the injection point was 12,000 feet below the ground surface and has thousands of feet of rock above it. After testing the integrity of the well casings, the Army permanently sealed the well in 1985 with cement and bentonite clay.

A fact sheet with more information about the RMA deep injection well is available online at www.rma.army.mil.

2.) **Could hydraulic fracturing create a pathway to the deep injection well fluid that would cause public or environmental health concerns?**

It is highly unlikely that the deep injection well fluid would ever reach the surface or useable groundwater to cause public or environmental health concerns. The Army's deep injection well was drilled and cased to a depth of roughly 12,000 feet into the Precambrian-age basement rock, which is thousands of feet below the deepest groundwater aquifer. Thousands of feet of rock also lie above the deep well injection zone.

The RVO has provided the Colorado Oil and Gas Conservation Commission with information about the deep injection well to assist with its environmental and technical review of oil and gas permit applications around the Arsenal. State and local regulatory agencies with oversight responsibilities at the Arsenal have also asked to be included as referral agencies to provide comments on specific well permit applications in the surrounding area.

For information about ongoing groundwater treatment or the deep injection well, visit the Arsenal online at www.rma.army.mil. You can also leave a message on the Rocky Mountain Arsenal Community Information Line at 303.289.0136, and an appropriate Arsenal staff person will respond to answer your questions. For questions about hydraulic fracturing, contact the Colorado Oil and Gas Conservation Commission at 303.866.3311, x8665.

3.) Could earthquakes near RMA damage the remedy and lead to public and environmental health problems?

The remedy of the Rocky Mountain Arsenal was designed to be protective of public health and the environment for centuries under a wide range of conditions. For example, during the design of the landfills, engineers assessed how the subsurface soils and groundwater would react to external pressures applied by an earthquake. Computer modeling was then used to ensure that the covers and liner systems would withstand the stresses of a maximum probable earthquake. The landfills were also designed to withstand a 100-year flood and to isolate the contained waste from impacting groundwater for at least one thousand years.

If a natural disaster temporarily damaged the groundwater treatment facilities or other structures, the Army would repair them with oversight from federal, state, and local regulatory agencies. Groundwater contamination from past Arsenal manufacturing and disposal activities is limited to the shallow aquifer, and the treatment facilities are used to treat groundwater in that aquifer until it meets state and federal standards. The Army provided residents using shallow aquifer wells with a connection to treated municipal water supplies, so residents do not use the contaminated groundwater for household use. As a result, public health would not be compromised while repairs to the Arsenal groundwater treatment facilities were made.

4.) Who owns the mineral rights beneath the Rocky Mountain Arsenal, and who decides if oil and gas drilling will be allowed at the site?

With just three exceptions, the Federal Government obtained all of the mineral rights under the Rocky Mountain Arsenal at the time of the condemnation of tracts in the early 1940s when the Arsenal was built. Other parties reserved the mineral rights in three areas. The State of Colorado reserved the mineral rights under Section 36, and private entities reserved mineral rights under an 80-acre parcel in the northwest quadrant of Section 23 and a 15-acre parcel in the northeast quadrant of Section 11.

The Army owns the surface land in Section 36. It is unlikely that the State of Colorado would try to access the mineral rights under Section 36, and the Army would resist any such overtures to do so.

Cleanup of the surface land in Section 23 and 11 has been completed, and the surface land has been transferred from the Army to the U.S. Fish and Wildlife Service to join the Rocky Mountain Arsenal National Wildlife Refuge. It is unclear to the Federal Government at this time who may currently own the mineral rights that were reserved by private entities in Section 23 and Section 11 in the 1940s. If any such mineral rights owners were to come forward with a desire to access these minerals from the overlying surface, they would be required to work with the U.S. Fish and Wildlife Service and Colorado Oil and Gas Conservation Commission in accordance with

their respective regulations. The EPA, CDPHE, and TCHD would also be notified of requests to access these subsurface minerals.

5.) Where are the plumes of groundwater contaminated by past Arsenal manufacturing activity located?

The groundwater plumes extend north of the Arsenal, as shown in the 2009 map of RMA Off-Post Groundwater Standards Exceedance Areas provided for the Commerce City website. The map summarizes data from the ongoing groundwater monitoring and treatment program and illustrates where the on-post and off-post groundwater treatment systems are located.

Groundwater contamination from past Arsenal manufacturing and disposal activities is limited to the shallow aquifer, and the treatment facilities are used to treat groundwater in that aquifer until it meets state and federal standards. The Army provided residents using shallow aquifer wells with a connection to treated municipal water supplies, so residents do not use the contaminated groundwater for household use.

The groundwater plume has decreased substantially since the groundwater treatment program began. The groundwater treatment program will continue until all water leaving the site meets state and federal standards.