



FINAL

# Operational Range Assessment Program Phase I Qualitative Assessment Report Keystone Rifle Range, California

U.S. Army Operational Range Assessment Program  
Qualitative Operational Range Assessments

Prepared for:

U.S. Army Environmental Command and  
U.S. Army Corps of Engineers Baltimore District



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Final Operational Range Assessment Program Phase I Qualitative Assessment Range Assessment Reports will be released beginning in March 2008 per the Direction of Army Headquarters. The cover page of this Report reflects the official finalization date. The date on subsequent pages/figures reflects the date upon which this document's conclusions are based.



**ABBREVIATIONS/ACRONYMS**

ARID-GEO	Army Range Inventory Database-Geodatabase
CAARNG	California Army National Guard
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSM	Conceptual Site Model
DoD	Department of Defense
DODI	Department of Defense Instruction
E	Ecological receptors identified. (This refers to range grouping; pathway designation always precedes E designation.)
GW	Groundwater pathway identified. (This refers to range grouping; M designation always precedes GW designation.)
H	Human receptors identified. (This refers to range grouping; pathway designation always precedes H designation.)
KD	Known Distance
LS	Limited Source
M	Munitions used. (This refers to range grouping; M designation always precedes applicable pathway.)
MC	Munitions Constituents
MCOG	Munitions Constituents of Concern
NG	Nitroglycerin
ORAP	Operational Range Assessment Program
PU	Pathway unlikely or incomplete. (This refers to range grouping; M designation always precedes PU designation.)
SW	Surface water pathway identified. (This refers to range grouping; M designation always precedes SW designation.)
U.S.	United States
USACE	United States Army Corps of Engineers
USACHPPM	United States Army Center for Health Promotion and Preventive Medicine
USEPA	United States Environmental Protection Agency

## EXECUTIVE SUMMARY

The United States (U.S.) Army is conducting qualitative assessments at operational ranges to meet the requirements of Department of Defense policy and to support the U.S. Army Sustainable Range Program. The operational range qualitative assessment (hereinafter referred to as Phase I Assessment) is the first phase of the U.S. Army Operational Range Assessment Program (ORAP). This Phase I Assessment evaluates the operational range area at Keystone Rifle Range to assess whether further investigation is needed to determine if potential munitions constituents of concern (MCOC) are or could be migrating off-range at levels that may pose an unacceptable risk to human health or the environment. In conducting the Phase I Assessment, MCOC sources, potential off-range migration pathways, and potential off-range human and ecological receptors are evaluated as appropriate.

Keystone Rifle Range is located in Tuolumne County, approximately one mile north of Keystone, in central California. According to the 2006 Army Range Inventory Database-Geodatabase (ARID-GEO), Keystone Rifle Range encompasses 189.22 acres of land, which consists of three live-fire small arms ranges, a helicopter landing pad, and a maneuver and training area utilized by the California Army National Guard (CAARNG) since 1953. Under license agreement with CAARNG, the three small arms ranges are also utilized by both local law enforcement and the U.S. Marine Corps. In addition to the use of the three small arms ranges, CAARNG uses the series of range roads for wheeled vehicle confidence training. Military munitions use throughout the history of the range complex has only included small caliber munitions.

A review of available records and background data, as well as interviews with CAARNG personnel, indicates that the ranges located at Keystone Rifle Range have been used for training involving military munitions (live-fire). As such, several potential sources of MCOC exist at Keystone Rifle Range including the soil at the small arms firing lines and impact berms. Additionally, environmental conditions such as precipitation, soil, and hydrogeology allow for a potential pathway for MCOC to reach off-range receptors. However, there are neither human nor ecological receptors identified in this assessment that may potentially be affected by the potential groundwater pathway.

The five operational ranges at Keystone Rifle Range are categorized as Unlikely.

### **Unlikely – Five-Year Review**

The five ranges at Keystone Rifle Range are categorized as Unlikely, totaling 189.22 acres. These ranges consist of three small arms live-fire ranges, one helicopter landing pad, and one maneuver and training area. Ranges where, based upon a review of readily available information, there is sufficient evidence to show that there are no known releases or source-receptor interactions on ranges that could present an unacceptable risk to human health or the environment are categorized as Unlikely. Ranges categorized as Unlikely are required to be re-evaluated at least every five years. Re-evaluation may occur sooner if significant changes (e.g., change in range operations or site conditions, regulatory changes) occur that affect determinations made during this Phase I Assessment.

**Table ES-1** summarizes the Phase I Assessment findings.

**Table ES-1: Summary of Findings and Conclusions for Keystone Rifle Range**

Category	Total Number of Ranges and Acreage	Source(s)	Pathway(s)	Human Receptors	Ecological Receptors	Conclusions and Rationale
Unlikely	3 operational ranges; 3.22 acres	Small arms firing lines and impact berms	Shallow groundwater	None	None	Re-evaluate during the five-year review. No receptors were identified.
	2 operational ranges; 186.00acres	Maneuver and training area – No MCOC source identified	Not evaluated (No source identified)			Re-evaluate during the five-year review. No source was identified.