DEPARTMENT OF THE ARMY
HUNTSVILLE DIVISION, CORPS OF ENGINEERS
P.O. BOX 1600
HUNTSVILLE, ALABAMA 35807-4301

REPLY TO
ATTENTION OF

CEHNC-OE-ES (200-1c) 2 April 1996

MEMORANDUM FOR Commander, U.S. Army Engineer District, Huntington
ATTN: CEORH-DL-M (Mr. Richard Meadows), 502 8th Street, Huntington, West Virginia 25701-2070

SUBJECT: Action Memorandum for Ordnance and Explosives (OE) Removal Action at the Former West Virginia Maneuver Area, Dolly Sods Wilderness, Davis, West Virginia, Project G03WV006500

1. The enclosed subject Action Memorandum has been revised to include your comments. Funding for this Project has been requested from Headquarters, and it is anticipated that it will arrive here early in the third quarter, FY96.

2. The selected areas in the Memorandum are located in the Dolly Sods Wilderness Area, which is part of the Monongahela National Forest. The areas are accessible by the public and there is a significant possibility that an individual might encounter OE hazards, and that these hazards may cause injury or death if not addressed through the response actions described in the Memorandum.

3. The selected areas to be cleared include hiking trails and camping areas. The hiking trails, with 20 feet on each side, will be cleared to a depth of one (1) foot. There is estimated to be approximately 20.8 miles of recorded trails. Camping areas will be cleared to a depth of four (4) feet. There are 101 recorded camping areas. Ordnance found during a previous field investigation include 4.2", 81mm, and 60mm mortar rounds, and a 57mm projectile. There are also reports that 105mm and 155mm projectiles have been found in the area.

4. Live ordnance is still being found and removed from the area by the public, which is creating a hazardous situation. The risk of accidental detonation represents a substantial endangerment to public welfare and the environment. The remediation alternatives selected will reduce the risk of ordnance exposure 47.6% on the trails and 58.9% in the camping areas. Searching and clearing areas outside of the established trails and campgrounds will be unfeasible due to the large area, terrain, and the costs.

5. The enclosed Action Memorandum requires the signature of the Commander, concurring with the alternative proposed. Request a copy of the signed Action Memorandum be returned to this Center prior to the delivery order being issued. The proposed actions are scheduled for contract award early in the third quarter, FY96.

6. Questions regarding this Memorandum should be addressed to Mr. Bill Sargent (Project Manager, OE Execution) at commercial 205-895-1562 or facsimile 205-895-1819.

FOR THE DIRECTOR:

Encl

TONI S. HAMLEY
Acting Director, Ordnance and Explosives Team

ACTION MEMORANDUM
DOLLY SODS WILDERNESS
FORMER WEST VIRGINIA MANEUVER AREA
NEAR DAVIS, WEST VIRGINIA

I. **PURPOSE:** The purpose of this paper is to document the proposed ordnance and explosives (OE) removal action for the Dolly Sods Wilderness in central West Virginia.

II. **SITE CONDITIONS AND BACKGROUND:** This is a non-time-critical removal action to minimize a threat to the public due to the presence of OE.

A. Site Description

1. Removal Site Evaluation: During World War II this site was a part of the 2,181,000-acre West Virginia Maneuver Area. Due to the need for immediate training during World War II, the Secretary of War leased the area on 6 August 1943 from private companies and used it for less than two years for maneuvers and as an artillery and mortars target area for the Thirteenth Army Corps of the Third Army. Apparently it was also used for a few months by the Office of Scientific Research and Development to test fire rockets and projectiles. The site is now operated by the U.S. Forest Service as the Dolly Sods Wilderness and is open to the public at all times. It is frequently used for hiking, camping, picnics, and hunting. The Forest Service has documented 20.8 miles of frequently used trails and 101 commonly used camping areas in the Wilderness. Although areas were searched and cleared after World War II by military Explosive Ordnance Disposal (EOD) teams, at least three 81-mm mortar shells have been found in recent years by the public in Dolly Sods and at least 4 in adjacent areas. It has been reported that 105-mm shells have also been found in the vicinity. The U.S. Army Corps of Engineers conducted a Feasibility Study in 1991 and concluded that a hazard to the public exists. During the Feasibility Study remains of 4.2", 57-mm, 60-mm, and 81-mm high explosives and smoke rounds were found.

2. Physical Location: Dolly Sods Wilderness is a 10,215-acre site within the Monongahela National Forest in Grant, Tucker, and Randolph Counties of West Virginia. It is bordered by private property to the west (Cabin Mountain) and Forest Service owned land to the north (Blackbird Knob), east (Bell Knob), and south (Flat Rock Plains).

3. **Site Characteristics:** Dolly Sods is an undeveloped area of high elevation with wind-swept plains on the Allegheny Plateau. The terrain is rocky and rugged and the plant and animal life is comparable to that of northern Canada. Notable features include Red Creek and its tributaries, Breathed Mountain and other knobs, and the "sods" or bogs in the level parts of the wilderness. Animal life is diverse with the only known endangered species being the Cheat Mountain Salamander and, possibly, the Northern Virginia Flying Squirrel. There are also areas of archaeological significance and sensitive plant life.

4. **Threat to the Environment:** Portions of Dolly Sods were known target areas for 81-mm mortars and 105 and 155-mm artillery as well as for field maneuvers. Due to the expedited nature of the training, exact records were not kept or have been lost or destroyed. Live ordnance is still being found and removed from the area by the public, creating a hazardous situation.

5. **NPL Status:** The site is neither listed nor proposed to be listed on the National Priority List (NPL). Since there are no known toxic contaminants at the site, it will not receive a Hazard Ranking System rating, be evaluated by the Agency for Toxic Substances and Disease Registry, or be referred to the site assessment program.

6. **Maps:** Maps indicating the firing locations, targets, and locations of discovered ordnance at Dolly Sods are attached.

B. Other Actions to Date

1. Previous Actions

a. Shortly after operations ended at the Maneuver Area, the artillery range was searched and discovered ordnance destroyed. After hikers continued to find isolated ordnance, military EOD teams again searched the area and destroyed ordnance. However the extent of these efforts is not known and ordnance continues to be discovered by the public and reported to the Forest Service or local sheriffs. The Forest Service reports that three 81-mm mortar shells have been recorded at the site and others from adjacent areas. There are also unofficial reports of ordnance found and removed by hikers and hunters.

b. As part of the Defense Environmental Restoration Program, formerly used defense sites were investigated nationwide

by the Corps of Engineers. As a result of this investigation, the Corps conducted the 1991 Feasibility Study. The study included searching a sampling of areas considered to most likely have been used as targets or contain overshots or undershots. A total of 281 of the 10,215 acres were searched with magnetometers. Thirteen pieces of ordnance were found from 6 to 24 inches beneath the surface. One piece of ordnance was found within several feet of a site used as a campfire pit. It was concluded that further remediation of the Wilderness is needed to reduce the risk to the public. It was also concluded that further study was needed of endangered species habitats and means to protect them and of steps to preserve the archaeological value of the area.

c. To accomplish this the "Dolly Sods Wilderness Ordnance Removal Project Environmental Assessment" was prepared in 1995. Means to protect endangered species, their habitat, and archaeologically significant areas were established during the Environmental Assessment (EA) process. A Finding of No Significant Impact was signed by the Commander of the Corps' Huntington District and the Supervisor of the Monangahela National Forest in September of 1995.

2. Current Actions: There are no known actions by the EPA, other regulators, or private entities at this site.

C. State and Local Authorities' Role

1. State and Local Actions to Date: Ordnance found onsite is reported to the Forest Service who arranges to have it destroyed in place by an EOD team from Ft. Belvoir, VA. Ordnance removed from the area is often turned over to the local sheriffs who have it destroyed.

2. Potential for Continued State/Local Response: Support from the Forest Service, local sheriff departments, and Fort Belvoir should continue.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

A. Threats to Public Health or Welfare: The actual amount of ordnance is undetermined but the risk is illustrated by the discovery of ordnance within several feet of a site used as a

campfire pit. If the fire had been located over the buried ordnance, there is the likelihood that the ordnance would have detonated, potentially harming several persons. There is also the potential for tent pegs to be driven into buried ordnance or children to find and pick up pieces of ordnance. A high concentration of ordnance is thought to exist within the Red Creek Valley (where campers are commonly found) of the Wilderness. It is projected that between 45,000 and 76,000 visitors visit the Wilderness annually.

B. Threats to the Environment: Accidental detonation of ordnance has little impact on the environment unless fires are started, as occurred due to artillery fire when the Maneuver Area was active. Due to its harsh environment the Wilderness Area is extremely slow in recovering from any detrimental activities. (In the early 1900's, fires destroyed the humus layer, leaving the current, relatively infertile rocky terrain.)

IV. ENDANGERMENT DETERMINATION: The risk of accidental detonation of any remaining ordnance, if not addressed, represents a substantial endangerment to public welfare and the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions: Three alternatives were evaluated - (1) No Action, (2) clear hiking trails and 20 feet on each side to a depth of one foot, and (3) clear camping areas to a depth of four feet and trails as in alternative 2. For each alternative, the remaining risk to the public was evaluated using methodology specifically developed for the Corps of Engineers to assess sites containing UXO. Risk is evaluated based on the potential for an individual to come within the immediate proximity of UXO and the potential consequences. A comparison of the alternatives is provided on the following table assuming continued high use of the area by the public. (Exposure is defined as a member of the public being present in immediate proximity to UXO.)

Alt.	Area Remediated (acres)	Projected Exposures	Risk Reduction	Costs
1	None	1258/year	None	None
2	103.7	659/year	47.6%	$1.23M

3	105.2	517/year	58.9%	$1.29M

1. Proposed Action Description: In alternatives 2 and 3 trails will be searched their entire length and 20 feet to each side by UXO specialists using handheld ordnance detection devices such as metal detectors. If metal is indicated the area will be excavated by hand to a depth of one foot. In alternative 3 cleared areas used for camping will also be searched and excavated to a 4-foot depth where metal is indicated. Small undergrowth, grasses, and fallen trees will be cleared only if necessary to search an area and only if the area is accessible to hikers, campers, or hunters. Earth will be excavated only if metal objects are detected. Discovered UXO will be destroyed in place by detonation. Before any onsite work commences, trained personnel will work closely with the U.S. Forest Service, U.S. Fish and Wildlife Service, and the State of West Virginia Department of Natural Resources to define potential archaeologically significant areas, sensitive plants, and animal habitats that must be protected and to establish steps to avoid or minimize impacts. Prior to any excavation or detonation the impacted area will be investigated and endangered or threatened plants and animals removed and archaeologically significant items removed or protected. Disturbed areas will be covered with leaves and other materials found in the area to minimize exposure to the elements.

2. Contribution to Remedial Performance: As noted in the previous tables, remediation alternatives 2 and 3 will reduce the risk of exposures by a projected 47.6% and 58.9% respectively. Lessons learned from other sites indicate that searching and clearing areas outside of the established trails and campgrounds will be unfeasible due to the large area, terrain, and costs.

3. Description of Alternative Technologies: In this project there are no practical alternatives to manually searching the areas and detonation in place. It is not safe to move UXO.

4. EE/CA: A Feasibility Study, a separate Risk Assessment, and an Environmental Assessment were performed to complete the Engineering Evaluation Cost Analysis (EE/CA) process. The described alternatives were evaluated in the Risk Assessment dated February 1995 and the Environmental Assessment.

5. Applicable or Relevant and Appropriate Requirements (ARARs): Federal ARARs determined to apply to this site are the

Defense Environmental Restoration Program (DERP) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Remediation shall be in accordance with the Occupational Safety and Health Administration (OSHA) Standards, the National Contingency Plan, and the Department of Defense Explosive Safety regulations.

B. Estimated Costs: See preceding table.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN: Popularity of the Wilderness Area is steadily increasing. Consequently the potential for accidental detonation of ordnance and subsequent injury to or death of members of the public will increase as use of the area increases.

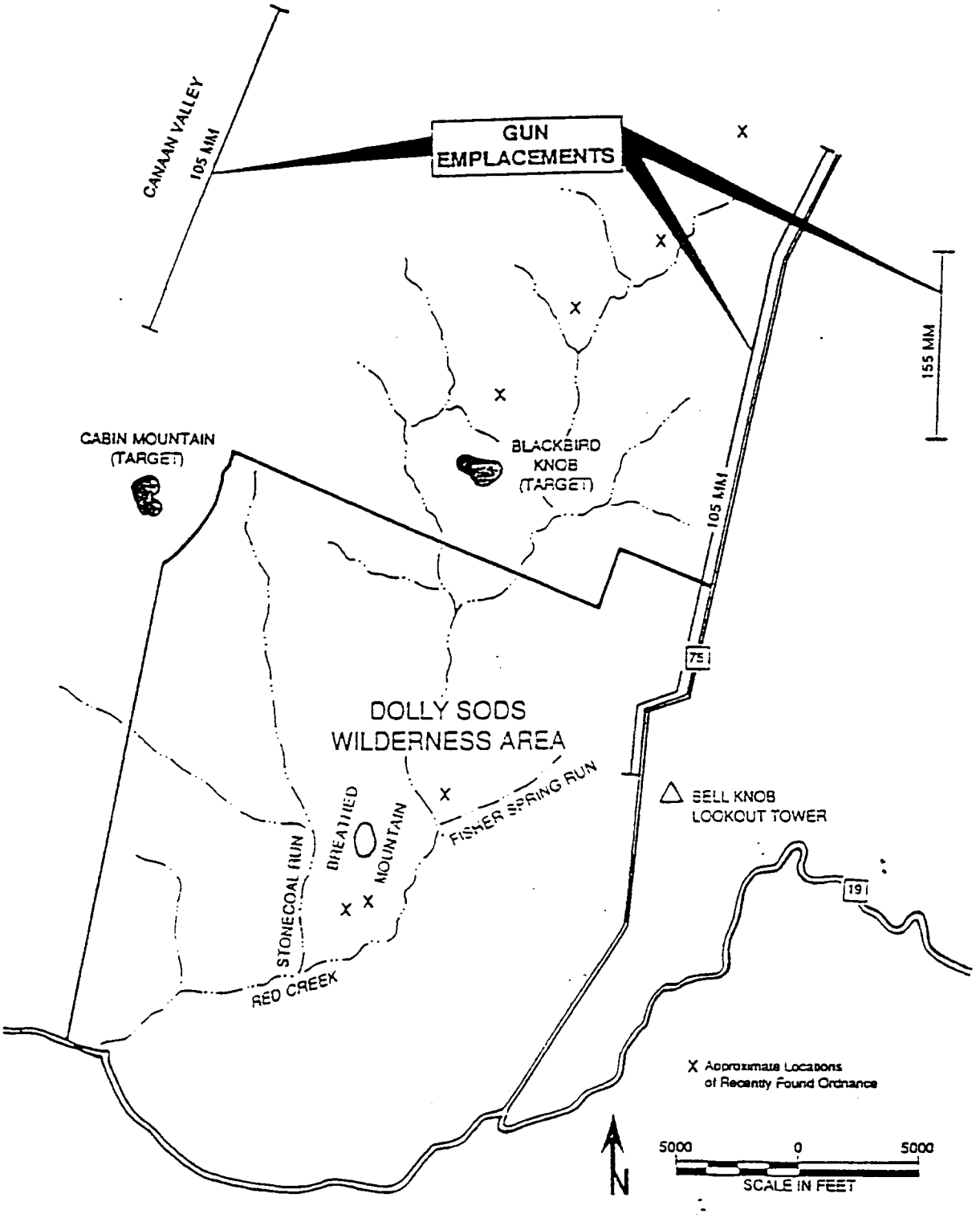
VII. Outstanding Policy Issues: Before any onsite work commences, trained personnel will work closely with the U.S. Forest Service and the Department of Natural Resources to define archaeologically significant areas, sensitive plants, and animal habitats that must be protected and to establish steps to avoid or minimize impacts. These steps and procedures will be explained in a workplan.

VIII. Enforcement: Since no nonfederal entities are known to have contributed to the contamination, no enforcement strategy is needed.

IX. Recommendation: Alternative 3, clearing 20.8 miles of recorded trails and 20 feet on each side of the trails to a depth of one foot and the 101 recorded camp sites to a depth of 4 feet, is recommended. Alternative 3 is preferred over alternative 2 because with less than a 5% increase in cost, another 24% reduction in the projected risk is achieved. The No Action alternative is not recommended because of the increasing risk to the public.

ALEXANDER R. JANSEN
Colonel, Corps of Engineers
Commander

5/8/96
(Date)



Firing locations and general target areas at Dolly Sods.