

ACTION MEMORANDUM

**ALDER CAMP ROAD FIRING RANGE
REDWOOD NATIONAL PARK
ORICK, CALIFORNIA**



August 24, 2015

Prepared for:



**U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
Pacific West Regional Office
333 Bush Street, Suite 500
San Francisco, California 94104**

Prepared by:

**Patriot Technical Consultants, Inc.
Richland, Washington, under P.O. No. P14PX03671**





ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

TABLE OF CONTENTS

1.0	Purpose.....	1
2.0	Site Conditions and Background	1
2.1	Site Description	2
2.1.1	Removal Site Evaluation.....	2
2.1.2	Physical Location.....	3
2.1.3	Site Characteristics.....	3
2.1.4	Release or Threatened Release into the Environment of a Hazardous Substance, or Pollutant or Contaminant.....	3
2.1.5	National Priority List Status.....	4
2.1.6	Maps, Pictures and Other Graphic Representations	4
2.2	Other Actions to Date.....	6
2.2.1	Previous Actions	6
2.2.2	Current Actions.....	6
2.3	State and Local Authorities' Roles.....	6
2.3.1	State and Local Actions to Date.....	6
2.3.2	Potential for Continued State/Local Response	6
3.0	Threats to Public Health or Welfare or the Environment, and Statutory and Regulatory Authorities.....	7
4.0	Endangerment Determination.....	10
5.0	Proposed Actions and Estimated Costs	10
5.1	Proposed Actions.....	10
5.1.1	Proposed Action Description	11
5.1.2	Contribution to Remedial Performance	11
5.1.3	Engineering Evaluation/Cost Analysis	11
5.1.4	Applicable or Relevant and Appropriate Requirements (ARAR)	12
5.1.5	Project Schedule.....	13
5.2	Estimated Costs	13



ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

6.0	Expected Change in the Situation Should Action be Delayed or Not Taken	15
7.0	Outstanding Policy Issues.....	15
8.0	Enforcement.....	15
9.0	Recommendation and Signatures	16

LIST OF FIGURES

Figure 1. General Location of Site.....	5
Figure 2. View from the Long Firing Range Area	5
Figure 3. Summary Data for Soil Samples, #40 Sieve, by Decision Unit.....	22

LIST OF TABLES

Table 1. Final Cleanup Levels	8
Table 2. Applicable or Relevant and Appropriate Requirements.....	12
Table 3. Cost Estimate Basis for Selected Removal Alternative	14

LIST OF ATTACHMENTS

Attachment A – References	17
Attachment B – National Park Service Response to Comments	18
Attachment C – Site Information	21



ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

ACRONYMS, ABBREVIATIONS AND UNITS OF MEASURE

AM	Action Memo
ARAR	Applicable or Relevant and Appropriate Requirement
Ba	Barium
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of Concern
COPC	Contaminant of Potential Concern
Cu	Copper
DOI	U.S. Department of Interior
DU	Decision Unit
Eco-SSL	Ecological Soil Screening Levels
EE/CA	Engineering Evaluation/Cost Analysis
EPA	U.S. Environmental Protection Agency
ITRC	Interstate Technology and Regulatory Council
mg/kg	milligrams per kilogram
NCP	National Oil Pollution and Hazardous Substances Contingency Plan (also known as National Contingency Plan)
ND	Not Detected above the laboratory Reporting Limit
NPS	National Park Service
NTCRA	Non-Time Critical Removal Action
PA	Preliminary Assessment
Pb	Lead
RCRA	Resource Conservation and Recovery Act
RL	Reporting Limit
Sb	Antimony
SI	Site Inspection
SRE	Streamlined Risk Evaluation
UCL	Upper Confidence Limit
USC	United States Code



ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

1.0 Purpose

The purpose of the Action Memorandum (AM) is to request approval of and document the proposed non-time critical removal action (NTCRA) described herein for the Alder Camp Road Firing Range (Site) located within the Redwood National and State Parks near Orick, California.

The content of this AM is in accordance with the guidelines contained in the U.S. Environmental Protection Agency's (EPA) *Superfund Removal Guidance for Preparing Action Memoranda* (EPA, 2009). This AM is supported by the administrative record which includes the *Preliminary Assessment* (Versar, 2011) and the *Engineering Evaluation/Cost Analysis Report* (Patriot, 2015). All references cited in this AM are listed in Attachment A.

The National Park Service (NPS) is the designated lead federal agency for this removal action, under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Alternatives for action at this Site were developed and analyzed through an Engineering Evaluation/Cost Analysis (EE/CA) (Patriot 2015) conducted in 2014 and 2015, in accordance with CERCLA and the National Contingency Plan (NCP). The EE/CA resulted in a recommendation for a NTCRA alternative that would be protective of human health and the environment and would comply with federal and state applicable or relevant and appropriate requirements (ARARs). This EE/CA was completed in accordance with EPA guidance (EPA, 1993) in order to:

1. Satisfy the environmental review requirements for removal actions;
2. Satisfy administrative record requirements for documentation of removal action selection; and,
3. Provide a framework for evaluating and selecting alternative technologies.

The NPS compiled an Administrative Record related to the removal action to be conducted at the Site and held a public comment period from June 6 to August 15, 2015 on the EE/CA Report (Patriot, 2015). The NPS considered all comments received and included a response to significant public comments as Attachment B. The NPS is issuing this AM to document its final decision regarding the removal action.

2.0 Site Conditions and Background

The Site is located in Redwood National and State Parks in Northern California. Redwood National Park is one of four park units managed jointly as Redwood National and State Parks by the NPS and the California Department of Parks and Recreation. The Site is entirely within national park lands. The NPS has managed the Redwood National Park since 1968 and the small arms firing range was physically present at the Site at that time.



ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

2.1 Site Description

The small arms firing range has a line of 12 targets located at the northern end of the Site. The target line is positioned in front of a natural embankment that is known to contain bullets fired at the targets over the years. Several NPS park rangers have historically used the Site twice per year for permit qualifying. The Site was also used occasionally by personnel from California State Parks, the Bureau of Land Management and Tribal Police. The NPS will discontinue use of the Site as a firing range after the NTCRA is complete.

The NPS transitioned to “green” ammunition in 2008, but lead ammunition was still used for specific qualifications. Other agencies that utilized the range had not transitioned to “green” ammunition and typically used lead-based ammunition. The NPS curtailed the use of lead ammunition in 2012 and also eliminated access to the Site by non-NPS staff, thereby prohibiting further use of lead-based ammunition at the Site.

2.1.1 Removal Site Evaluation

A removal action is appropriate for this Site to address the deposition of contaminants to the soil as a result of decades of Site use as a small arms firing range. Contaminants of Potential Concern (COPC) related to firing ranges of this type include lead (Pb), antimony (Sb), copper (Cu) and barium (Ba). Measured concentrations of Pb, Sb, Cu and Ba in the surface and near-surface soils were documented in the EE/CA. Some of the metal concentrations, particularly for Pb, Sb, and Cu in the natural embankment behind the target line, were found to be significant and to pose risks to human health or the environment. Ba was not found at concentrations that pose risk to human health or the environment. Protective cleanup standards for these Pb, Sb, and Cu have been established, based on receptors, which include humans, plants and animals.

A CERCLA Preliminary Assessment (PA) was completed in February 2011 (Versar, 2011). The targets at the firing range consist of a line of 12 targets located at the northern end of the Site. There is no barrier behind the targets to catch stray bullets; therefore, bullets were expected in the area behind and beneath the target line. Bullet casings have been observed on the soil surface at the Site. A release of lead to the soil was expected due to use of lead bullets for over four decades, based on guidelines set by the Interstate Technology and Regulatory Council, *Technical/ Regulatory Guidelines; Characterization and Remediation of Soils at Closed Small Arms Firing Ranges* (ITRC, 2003).

The PA (Versar, 2011) included a recommendation that a Site Inspection (SI) be performed in accordance with CERCLA protocols. The NPS, as lead federal agency, decided to eliminate the SI and proceed directly to an EE/CA, which is a more comprehensive investigative process under CERCLA. The EE/CA (Patriot, 2015) is described in Section 5.1.3.

Contaminant exposure to persons not engaged in firing range activities at the Site is limited because visitors are not allowed access to the Site. There is no plan to open up the area to the public. There are no sensitive receptors within the Site, nor have any off-site transport mechanisms been identified. The Site is not known to contain endangered or threatened species.

The presence of localized elevated lead concentrations in soil within the Site was considered likely during the PA (Versar, 2011), based on the observations of the Site and review of available



ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

information regarding the past and present use of the Site. The presence of elevated concentrations of lead and other metals was confirmed by soil sampling and analysis during the EE/CA (Patriot, 2015). The extent to which lead or other heavy metals associated with firing range activities may have migrated within the soil and potentially to underlying groundwater, has not yet been determined. Elevated concentrations of lead in ground water and surface water is not considered likely, due to the Site's location in relation to existing water bodies. The mobility, fate, bioavailability and toxicity of lead-based ammunition in firing ranges has been studied at other sites as discussed in a 2003 EPA study (EPA, 2003).

2.1.2 Physical Location

The Site is located approximately 19 miles north of the town of Orick, California, off of Highway 101. The Site coordinates are 41.51275° north (latitude) and -124.07571° west (longitude) and is near the Pacific Ocean. The Site is approximately 20 yards by 75 yards in size and is located in an area of second growth forest. There are no structures or areas of human activity within the general area of the Site. The Site topography is generally flat and consists of a grassy area surrounded by alder, Sitka spruce, salmonberry, evergreen huckleberry, salal and sword fern.

Access to the Site is via an unimproved road that ties into Alder Camp Road. The dirt entrance road is approximately 0.1-mile from Alder Camp Road and terminates at the firing range. The road is closed to the general public and can only be accessed with NPS personnel escort.

2.1.3 Site Characteristics

This NTCRA will be the only removal action to be undertaken at this Site. The only known use of this Site, other than habitat for local species, is that of a small arms firing range. The NPS has had responsibility for the Site since 1968 and the Site had been used as a firing range for years prior to 1968.

The Site is located on federal land, so the removal project will be funded entirely with NPS funds. The "Superfund", local or tribal resources will not be used to fund any portion of the removal action.

The Site is not on the National Priority List, as discussed in Section 2.1.5.

2.1.4 Release or Threatened Release into the Environment of a Hazardous Substance, or Pollutant or Contaminant

The EE/CA Report (Patriot, 2015) confirmed through sampling and analysis that lead, antimony and copper had been released to the surface soils and near-surface soils at the Site. Concentrations of these contaminants were high enough to justify a NTCRA under CERCLA. Lead, antimony and copper were therefore determined to be contaminants of concern (COC) through the EE/CA process. Barium, an initial COPC, was found to be at much lower concentrations in the soil than needed to present a risk to human health or the environment. Barium is not considered to be a COC at this Site and will not be considered further during the removal action.



ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

The primary area of contamination at the Site is the natural embankment backstop located directly behind the firing range target line. Lead is the most significant contaminant in this area, as the bullets passed through or missed the targets and entered the soil in the embankment over the years. This embankment is contained in Decision Unit (DU) 1, as described in the EE/CA Report.

2.1.5 National Priority List Status

This Site has not been included on the EPA's NPL. The Site was assigned a hazard ranking system score of 6.3 during the CERCLA PA that was conducted in 2011 (Versar, 2011). A hazard ranking system score of 28.5 is necessary in order to list a site on the NPL. This does not mean that a cleanup action at a site with a score lower than 28.5 should not be undertaken to protect human health and the environment.

The President of the United States is authorized to act whenever there is a release or substantial threat of a release of a hazardous substance into the environment, consistent with the NCP, to remove or arrange for the removal of such hazardous substance or take any other response action, including appropriate investigations, deemed necessary to protect public health or welfare or the environment. This authority is contained in Sections 104(a)(1) and (b)(1) of CERCLA, 42 USC §§ 9604(a)(1) and (b)(1), under which a NTCRA is performed.

This response authority has been delegated to the Secretary of the Department of the Interior pursuant to Executive Order 12580, 52 Fed. Reg. 2923 (1987), and further delegated to the NPS by Department of Interior (DOI) Departmental Manual, Part 207 Limited Delegations, Chapter 7 CERCLA Implementation (DOI, 2001), with respect to property under the jurisdiction, custody, or control of the NPS. Therefore, the NPS has the authority to perform a NTCRA at the Site.

The EPA has classified removal actions into three types: emergency, time-critical, and non-time critical. The classification is based on the type of situation, the urgency to take action, the threat of release or potential release, and the period of time in which the action must be initiated (EPA, 1993). A NTCRA was selected for this Site because no immediate threat is posed to human health or the environment from onsite contaminants. The NTCRA can start later than six months after the determination that a response is necessary. Section 300.415(b)(4)(i) of the NCP requires that an EE/CA is prepared for all NTCRAs to evaluate removal action alternatives.

2.1.6 Maps, Pictures and Other Graphic Representations

The general location of the Site is shown in **Error! Reference source not found.** A Site photograph is provided in Figure 2, taken from the view of the firing lines toward the target area. Additional photographs of the Site, taken during the initial Site visit in September 2014, are included in Attachment C to this report.



ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

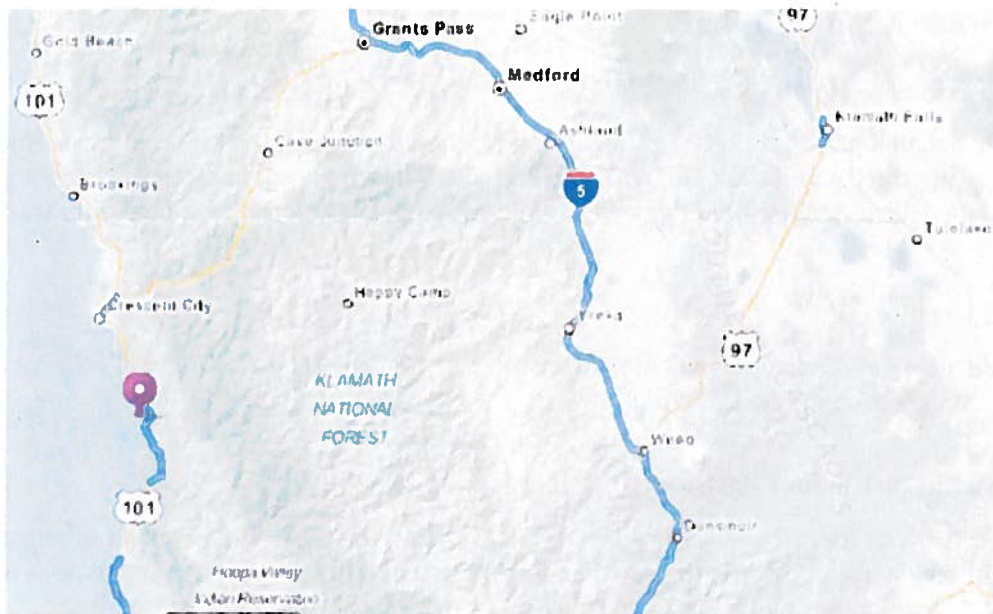


Figure 1. General Location of Site



Figure 2. View from the Long Firing Range Area



ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

2.2 Other Actions to Date

2.2.1 Previous Actions

There have been no prior actions taken regarding cleanup at this Site, based on information obtained during the PA and the EE/CA. The NPS, which has managed activities at the Site since 1968, made a decision to use only “green” ammunition in 2012 and has restricted public access to the Site.

2.2.2 Current Actions

The NPS made a very recent management decision that the Site will not remain as a firing range after the NTCRA is completed. It will allow natural revegetation of the Site.

2.3 State and Local Authorities’ Roles

The NPS is the lead federal agency for this NTCRA under CERCLA. Involvement of any other agency will be via a support role to provide information or comments to NPS and to review information obtained during the NTCRA (e.g., confirmation soil sampling and analysis).

2.3.1 State and Local Actions to Date

Federal, state and local regulatory agencies were contacted and online agency databases were researched as part of the PA. None of these agencies had issued permits, violations, or any other documents related to the Site. No other federal, state or local agencies have taken any actions in regard to operation or cleanup of the Site.

2.3.2 Potential for Continued State/Local Response

Representatives from the Yurok Tribe (Environmental Program and Watershed Department), Del Norte County (Environmental Health Specialist), Humboldt County (Supervising Environmental Health Specialist), and the State of California Department of Toxic Substances and Cleanup were contacted early in the EE/CA process to inform them of the potential to conduct a NTCRA at this Site. Their names, along with several various managers within the NPS, were included on a mailing list for this project and each of them received special notification of the opportunity to comment on the EE/CA Report. Attempts were made to discuss this project with EPA Region 9, as well, but no one from that organization responded to telephone calls or emails. No response actions at the Site by any of these organizations are anticipated.



3.0 Threats to Public Health or Welfare or the Environment, and Statutory and Regulatory Authorities

Potential removal action alternatives were identified which would address antimony, copper and lead contamination in surface and near-surface soils since the scope of work for this project was to address soil contamination.

Threats to public health or welfare are summarized as they relate to the pertinent NCP factors (from Section 300.415[b][2]) below:

i. “Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants”

Contaminant exposure of persons not engaged in firing range activities at the Site is limited because visitors are not allowed access to the Site. There is no plan to open up the area to the public. There are no sensitive receptors within the Site, nor have any off-site transport mechanisms been identified. The Site is not known to have habitat to support endangered or threatened species. Exposure to local animals, birds and invertebrates to these contaminants is of concern, as the contaminants are uncontained and are at or near the ground surface.

A streamlined risk evaluation (SRE) was conducted for lead, antimony, copper and barium as part of the EE/CA. Potential risks were evaluated for exposure to soil contamination resulting from use of the firing range. The SRE was used to evaluate potential risks to determine if a removal action was warranted. The SRE was also used to develop appropriate preliminary cleanup levels and removal action alternatives to reduce risk. The potential risks to human and ecological receptors from exposure to the COPCs were evaluated by comparing Site concentrations to appropriate screening levels.

Screening levels were obtained from published sources and are presented in the Table 9 of the EE/CA Report (Patriot, 2015). The NPS protocol (NPS, 2014a) was used to determine which published sources containing ecological screening levels should be used to identify COCs and which ecological screening level sources should be used in the SRE. Ecological soil screening levels (Eco-SSL) from four sources, four ecological receptor groups (plants, invertebrates, mammals and birds) and four contaminants are presented in Table 9 of the EE/CA Report (Patriot, 2015).

Preliminary cleanup levels were established in the EE/CA Report (Patriot, 2015). Table 1 is a summary of the final cleanup levels set for antimony, copper, and lead in order to mitigate the threat to ecological receptors. There was no change to the preliminary cleanup levels after consideration of all public comments on the EE/CA Report, so these levels are now final. The levels set for ecological protection are far more stringent than the levels necessary to protect human health, so protection of ecological receptors and the environment will drive the cleanup at the Site.



ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

Table 1. Final Cleanup Levels

Contaminant of Concern	Maximum Level Found (mg/kg)	Final Cleanup Level (mg/kg)	Basis for Final Cleanup Level
Antimony	130	3	Measured Site background values in soil are all lower than the laboratory RL of 3 mg/kg. Therefore, the final cleanup level is set at the RL.
Copper	1,100	34	Measured Site background values in soil range from 23 mg/kg to 42 mg/kg. The most stringent ecological screening level for copper is 15 mg/kg, based on the ecological screening level for mammals plus birds. The 95 percent UCL of the background data is calculated as follows: $\text{UCL at 95\%} = \text{mean} + t(0.05, \text{sample size } [9]-1) \times \text{standard deviation/square root of sample size.}$ $\text{UCL at 95\%} = 30.22 + 1.86 \times 5.7/\text{square root of } 9.$ $\text{UCL at 95\%} = 33.73 \text{ mg/kg [round to 34 mg/kg].}$ Therefore, the final cleanup level is set at 34 mg/kg.
Lead	36,000	11	Measured Site background values are all lower than the laboratory RL of 3 mg/kg. The most stringent ecological screening level for lead is 11 mg/kg, based on the ecological screening level for birds. Therefore, the final cleanup level is set at 11 mg/kg.

mg/kg = milligrams per kilogram

RL = Reporting Limit

UCL = Upper Confidence Limit

Note: Analytical results are based on EPA Method 6010

ii. "Actual or potential contamination of drinking water supplies or sensitive ecosystems"

The presence of localized elevated lead concentrations in soil within the Site was considered likely when the PA was performed (Versar, 2011) and was confirmed by soil sampling and analysis during the EE/CA (Patriot, 2015). Risk to surface water and groundwater is believed to be low and, therefore, is outside the scope of this removal action (Versar, 2011). Any removal action activities for contaminated soil at the Site will further protect both surface water and groundwater by removing or controlling the primary contaminant source.



ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

The extent to which lead or other heavy metals associated with firing range activities may have migrated within the soil and potentially to underlying groundwater has not yet been determined. Elevated concentrations of lead in ground water and surface water is not considered likely, due to the Site's location in relation to existing water bodies. The mobility, fate, bioavailability and toxicity of lead-based ammunition in firing ranges has been studied at other sites as discussed in a study conducted for EPA: *Technical Review Workgroup for Lead, Recommendations for Performing Human Health Risk Analysis on Small Arms Shooting Ranges* (EPA, 2003).

iii. ***“Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release”***

This is not applicable to the Site. The known contaminants (lead, antimony and copper) are located in the surface and near-surface soils.

iv. ***“High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate”***

Lead, antimony and copper are present in the surface and near-surface soils at the Site. Soil sampling during the EE/CA indicated that some of the concentrations are very high (e.g., lead at 36,000 mg/kg). Contaminants have the potential to leach deeper into the soil over time; however, they are not expected to impact either surface water or groundwater. Contaminants can also be spread through mechanical or biological means by animals.

v. ***“Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released”***

The Site is not subject to significant flooding; however, the Site is subject to heavy precipitation, which could increase the potential for leaching of metals deeper into the soil.

vi. ***“Threat of fire or explosion”***

The Site consists of a wooded area with extensive natural vegetation. There is no threat of explosion at the Site. The Site could be involved in a wild fire; however, the impact of a fire to the lead, antimony, and copper in the near-surface soils would be insignificant.

vii. ***“The availability of other appropriate federal or state response mechanisms to respond to the release”***

The NPS is the lead federal agency for a removal action at this Site under CERCLA. The NTCRA will be funded by the NPS, so no other state or federal agency response is required.



ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

viii. "Other situations or factors that may pose threats to public health or welfare of the United States or the environment"

This removal action will result in cleanup of contaminants at the Site to the specified final cleanup levels. The Site will no longer be used as a firing range after the NTCRA and the Site will be allowed to revegetate. No further cleanup action will be required at the Site.

4.0 Endangerment Determination

Actual or threatened releases of hazardous substances from this Site may present an imminent and substantial endangerment to public health, or welfare or the environment. This determination is based on the PA (Versar, 2011) and the EE/CA Report (Patriot, 2015). The SRE identified significant risks to ecological receptors for antimony, lead, and copper in the surface and near-surface soils at the Site. Concentrations of these metals in soils were compared to the published ecological screening levels that are referenced in Table 9 of the EE/CA Report (Patriot, 2015).

5.0 Proposed Actions and Estimated Costs

Removal of antimony, lead and copper contaminants from the Site, followed by off-site disposal at a licensed hazardous waste disposal facility is the only feasible solution for mitigating threats to ecological and human receptors. The "no-action alternative", also considered in the EE/CA Report (Patriot, 2015) would allow significant threats to these receptors to remain at the Site.

5.1 Proposed Actions

Excavation of contaminated soil, followed by off-site disposal at a licensed disposal facility is the recommended alternative. Selection of this alternative is based on the ARARs and conclusions of the risk assessments presented in the EE/CA Report (Patriot, 2015). Excavation and off-site disposal is selected as the preferred alternative as it meets the following key CERCLA criteria for removal actions:

- It is relatively easy to implement;
- It provides maximum protection to human health and the environment; and,
- It is cost effective.

This action and the cleanup levels are supported through public comments received on the EE/CA Report (Patriot, 2015).



ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

5.1.1 Proposed Action Description

The NTCRA will consist of the following steps:

1. Contaminated soil, defined as soil exceeding the preliminary cleanup levels, will be excavated and placed in one or more temporary staging piles. Incremental sub-samples will be gathered during excavation for subsequent analysis to determine the level of contamination in each staging pile.
2. In-process characterization using soil sampling and analysis or x-ray fluorescence will be used as needed to determine if additional excavation is needed within each decision unit to meet the cleanup level.
3. Soil that requires treatment to meet disposal requirements will be treated.
4. Incremental sub-samples that represent the staging pile(s) will be combined and measured for antimony, copper and lead to designate the waste, determine if treatment is necessary, and for use in selecting an appropriate off-site disposal facility.
5. Soil for off-site disposal will be packaged and labeled to meet transportation requirements.
6. Soil for off-site disposal will be transported to an off-site disposal facility.
7. Surface topography appropriate for post-cleanup use determined by the NPS will be established.
8. Temporary institutional controls will be used to protect workers and the public from exposure to contamination and industrial hazards. Institutional controls apply at the contaminated waste Site, adjacent areas used for handling waste, and other areas where industrial hazards may be present such as heavy equipment use areas.
9. Dust control will be employed at the Site during excavation to meet metals and dust abatement controls for air emissions.

5.1.2 Contribution to Remedial Performance

NPS must consider whether the selected removal action will contribute to the efficient performance of any anticipated long-term remedial action with respect to the release concerned (NCP Section 300.415[d]). The removal action described herein is intended to constitute the final CERCLA response action at the Site; therefore, no future remedial action is contemplated.

5.1.3 Engineering Evaluation/Cost Analysis

The NPS issued the EE/CA Approval Memorandum for this Site on November 6, 2014 (NPS 2014b). This document contains background on the need for an EE/CA and a possible removal action under CERCLA authority. The Approval Memorandum is contained in the Administrative Record for this project.

Patriot Technical Consultants, Inc. (Patriot) was retained by the NPS to conduct an EE/CA for the Site. This work was conducted under purchase order #P14PX03671 and in accordance with



ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

the EE/CA Work Plan for the Site (Patriot, 2014). This EE/CA was prepared following the EPA guidance, *Conducting Non-Time-Critical Removal Actions Under CERCLA* (EPA, 1993).

Patriot issued a Draft EE/CA Report for NPS review and comment in April 2015. Patriot and NPS communicated on several occasions regarding NPS comments and issued the EE/CA Report in June 2015 (Patriot, 2015). The NPS included this document the Administrative Record for this CERCLA action and made it available for public comment in July 2015. A response to significant public comments is contained in Appendix B.

5.1.4 Applicable or Relevant and Appropriate Requirements (ARAR)

The complete list of ARARs and “to be considered” items including a description of the requirements are included as Appendix B of the EE/CA Report (Patriot, 2015). The ARARs for this removal action that are classified “applicable” or “relevant and appropriate” are shown in Table 2.

Table 2. Applicable or Relevant and Appropriate Requirements

Standard, Requirement, Criteria or Limitation	Citation	ARAR Designation
NPS Organic Act of 1916	16 USC §1, <i>et seq.</i> , 36 Code of Federal Regulations (CFR) Part 1, General Authorities Act, <i>et seq.</i> , 16 U.S.C § 1a-1	Applicable
An Act to Establish a Redwood National Park in the State of California, 1968. Redwoods National Park Expansion Act, 1978.	Public Law. No. 90-545 Public Law No. 95-250 16 USC Chapter 1, subchapter VII: Redwood National Park, <i>et seq.</i>	Applicable
Resource Conservation and Recovery Act (RCRA) 40 USC §7601 Identification and Listing of Hazardous Waste	40 CFR Part 261	Applicable
RCRA 40 USC §7601 Standards Applicable to Generators of Hazardous Waste	40 CFR Part 262	Applicable
RCRA 40 USC §7601. Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities	40 CFR Part 264	Applicable
RCRA 40 USC §7601. Land Disposal Restrictions	40 CFR Part 268	Applicable
Fugitive Dust Emissions	40 CFR Part 50.6	Applicable
National Historic Preservation Act of 1966.	16 USC §470; 36 CFR Part 800 40 CFR 6.301(b)	Relevant and Appropriate



ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

Table 2. Applicable or Relevant and Appropriate Requirements

Standard, Requirement, Criteria or Limitation	Citation	ARAR Designation
Archeological and Historic Preservation Act	16 USC §469 40 CFR 6.301(c)	Applicable
Native American Graves Protection and Repatriation Act	25 USC §3001 <i>et seq.</i> and 43 CFR 10	Relevant and Appropriate
Endangered Species Act of 1973	16 USC §§1531-1543; 40 CFR 6.302 (h); 50 CFR Part 402	Applicable
Migratory Bird Treaty Act of 1972	16 USC § 703-712 50 CFR Parts 10 and 21	Relevant and Appropriate
California Endangered Species Act	Fish and Game Code §§2051 <i>et seq.</i> and §2080	Relevant and Appropriate
California Health and Safety Code, Division 20	Title 22, California Code of Regulation, Division 4.5	Applicable

5.1.5 Project Schedule

The NPS has not yet established the project schedule. The cost for the removal action must be authorized in the NPS budget. The NPS will have to advertise for a qualified contractor to perform the removal action, as described in the selected removal action alternative.

The time necessary to complete the field activities is expected to be less than six months. This includes the time necessary to complete the laboratory analysis of soil samples. Excavation of contaminated soil from the Site is expected to take 10 to 14 days.

5.2 Estimated Costs

The estimated capital cost to implement the removal action ranges from a low estimate of \$644,319 to a high estimate of \$1,380,683 in 2015 dollars. It is anticipated that no post-construction maintenance will be required. The estimated volume of soil requiring removal to meet cleanup levels is 540 cubic yards (equivalent to 757 tons). Site restoration will be required following excavation of contaminated soils for off-Site disposal. The following table presents a breakdown of the estimated costs for excavation and disposal.

Present value cost estimates were not calculated using the real discount rate published in Appendix C of the Office of Management and Budget Circular No. A-94 because the selected removal actions alternative is expected to take less than six months to complete. Cost estimates are expected to be within +50% to -30% of actual costs as described in EPA guidance for remedial actions. (EPA, 2000). A breakdown of costs is provided in Table 3.



ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

Table 3. Cost Estimate Basis for Selected Removal Alternative

Task	Quantity	Unit	Unit Cost	Total Cost
Direct Costs				
Site mobilization and demobilization	1	each	\$3,000	\$3,000
Clearing and Grubbing (primarily in DU1)	600	m2	\$5	\$3,000
Excavation, temporary on-site management and transport to off-site disposal facility.	930	m3	\$500	\$465,000
Off-site disposal (nonhazardous)	930	m3	\$240	\$223,200
X-ray fluorescence rental fee	2	weeks	\$1,200	\$2,400
Laboratory analysis of staging pile samples	2	each	\$2,100	\$4,200
Site completion sample analysis at lab	30	each	\$150	\$4,500
Site restoration after contaminant removal	3,900	m2	\$2	\$7,800
Total Direct Costs				\$713,100
Indirect Costs				
Design including work plan				\$30,000
Project oversight				\$25,000
Health and Safety Plan				\$4,000
On-site environmental oversight				\$15,000
On-site sampler	1	month	\$5,000	\$5,000
Contingency (15% of direct cost)				\$106,965
Health and safety (3% of direct cost)				\$21,390
Total Indirect Costs				\$207,355
Total Cost (Direct plus Indirect)				\$920,455
Total Cost (+50% to -30%)				\$1,380,683 to \$644,319



ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

6.0 Expected Change in the Situation Should Action be Delayed or Not Taken

A delay in the action, or no action at this Site, would increase the actual or potential threats to sensitive receptors known to be present in the nearby environment. It is also expected that costs associated with a delayed removal action at the Site will increase over time.

7.0 Outstanding Policy Issues

There are no outstanding policy issues associated with this NTCRA.

8.0 Enforcement

There is no record of any federal, state, or local enforcement actions related to the Site. The NPS has been responsible for the Site, which has been used as a small arms firing range, since 1968. This is a federal facility and no other potentially responsible parties have been identified.



ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

9.0 Recommendation and Signatures

This decision document represents the selected removal action for the Alder Camp Road Firing Range Site in Redwood National Park, developed in accordance with CERCLA as amended, and is not inconsistent with the NCP. This decision is based on information contained in the Administrative Record for the Site.

Conditions at the Site meet the NCP Section 300.415(b) criteria for a removal action and through this document I am approving the proposed removal actions.

**STEPHEN
MITCHELL**

Digitally signed by STEPHEN MITCHELL
DN: c=US, o=U.S. Government, ou=Department
of the Interior, ou=National Park Service,
cn=STEPHEN MITCHELL,
0.9.2342.19200300.100.1.1=14001000377357
Date: 2015.08.25 06:55:13 -07'00'

Recommended:

Date _____

Stephen J. Mitchell, PE
Operations/Environmental Program Lead
National Park Service, Pacific West Region

Concurred:

Date

8-25-2015

Stephen Prokop, Superintendent
National Park Service, Redwood National Park

Approved:

Date

8/28/15

Patricia L. Neubacher, Acting Regional Director
National Park Service, Pacific West Region



ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

Attachment A – References

The following references are cited in this Action Memorandum.

Interstate Technical Regulatory Council (ITRC), 2003) *Technical/Regulatory Guidelines; Characterization and Remediation of Soils at Closed Small Arms Firing Ranges*. January. <http://www.itrcweb.org/Guidance/GetDocument?documentID=93>.

National Park Service (NPS), 2014a. *Protocol for the Selection and use of Ecological Screening Values for Non-Radiological Analytes*. Revision 1, January 2014.

NPS, 2014b. *Engineering Evaluation & Cost Analysis Approval Memorandum Alder Camp Road Firing Range at Redwood National Park*. Signed November 6.

Patriot Technical Consultants Inc., (Patriot) 2014. *Engineering Evaluation/Cost Analysis Work Plan, Alder Camp Road Firing Range, Redwood National Park, Orick, California*. October 31, 2014.

Patriot, 2015. *Engineering Evaluation/Cost Analysis Report, Alder Camp Road Firing Range, Redwood National Park, Orick, California*, June 6, 2015.

U.S. Department of Interior (DOI), 2001. *Department of Interior Departmental Manual*, Part 207 Limited Delegations, Chapter 7 CERCLA Implementation. <http://elips.doi.gov/elips/0/doc/781/Page1.aspx>.

U.S. Environmental Protection Agency (EPA), 1993. *Conducting Non-Time-Critical Removal Actions Under CERCLA*. EPA/540/F-94/009. <http://www.epa.gov/superfund/policy/remedy/pdfs/540f-94009-s.pdf>.

EPA, 2000. *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study*. EPA 540-R-00-002. OSWER 9355.0-75. <http://www.epa.gov/superfund/policy/remedy/pdfs/finaldoc.pdf>.

EPA, 2003. *Technical Review Workgroup for Lead, Recommendations for Performing Human Health Risk Analysis on Small Arms Shooting Ranges*. OSWER #9285.7-37. March. <http://epa.gov/superfund/lead/products/firing.pdf>.

EPA 2009. *Superfund Removal Guidance for Preparing Action Memoranda*. OSWER Final Guidance, September 2009. <http://www2.epa.gov/emergency-response/superfund-removal-guidance-preparing-action-memoranda>.

Versar, 2011. *Preliminary Assessment, Camp Alder Road Firing Range, Redwood National and State Parks, Alder Camp Road, Orick, California*. Versar Project No. 104700.4929.041. March 1.



ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

Attachment B – National Park Service Response to Comments

Introduction

This responsiveness summary has been prepared in accordance with the requirements of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) §117(b), as amended. The purpose of this responsiveness summary is to summarize and respond to significant public comments, criticisms and new information submitted during the public comment period on the Engineering Evaluation/Cost Analysis (EE/CA) Report and the Administrative Record (AR) for this project.

Community Involvement

The public comment period ran from July 1 through August 15, 2015. The announcement for the opportunity to comment was issued in a NPS press release on July 1, 2015. The public was invited to submit written comments via email or by regular mail. A separate announcement of the opportunity to comment was emailed to individuals on a mailing list that represented various organizations and agencies. These individuals had previously self-identified as having a particular interest in this project.

The EE/CA Report and the rest of the AR for this project were available to the public at the National Park Service (NPS) office in Orick, California. This information was also available to the public via the NPS website that is designed for public access to documents. The NPS web link for these documents during the public comment period was:

<http://parkplanning.nps.gov/projectHome.cfe?projectID=35401>.

Comments and Responses

The NPS, as the lead federal agency for this project, is required by CERCLA to issue a response to significant comments received during the public comment period. Significant comments received and the NPS responses are provided in this Attachment to the Action Memorandum. A total of two comments were received, both from the same individual. Those comments and the NPS responses are included on the following two pages.



ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

Comment 1. Support of NPS Decision

“Thank you for the opportunity to comment. The EE/CA appears to be well thought out, comprehensive, and supportive of the recommended removal action.”

“Cleanup goals appear to be appropriately conservative considering the location, habitat quality, and future use.”

NPS Response:

Comments acknowledged and appreciated.

Comment 2. Counting Bullet Fragments Found in Soil Samples:

“The EE/CA Workplan called for soil samples to be sieved and to have the lead particles that were left in the sieve counted, and weighed. The EE/CA Report appears to show that actual sample handling differed from the workplan. The sample Chain of Custody forms in Appendix C appear to only request lead particles be removed and counted. Finally, in Appendix C, a 12/19/2014 email from Dan Chavez, Sunstar Labs, (page 114 of 249) indicat[e]s that a log with the particle count is attached to the Lab Report, however it doesn't appear in the EE/CA Report. I am interested in the relationship between the number of lead particles and the soil sub-sample concentrations. Please include the particle count data. If particle weight was collected. Please also include that data.”

NPS Response:

The Statement of Work issued by the NPS contained the following statement for Task 8, Sample Analysis: “Soil samples should be screened with a #40 sieve prior to sampling to remove visible lead particles and provide particle count data”. There was no requirement to weigh the visible lead particles.

The Sampling and Analysis Plan for this project, attached as Appendix C to the EE/CA Work Plan, included the following statement on page 5: “The number of visible lead particles collected on the sieve will be counted and noted on a table”. There was no mention of weighing the particles.

Initial soil samples were taken during the first week of December 2014. The sampling team decided it would be best to have the samples sieved and lead particles counted at the laboratory, due to heavy rain conditions at the Site. The requirement for sieving and counting was passed along to the SunStar Laboratories. The laboratory provided a lead particle count with their laboratory data package on December 19, 2014, as indicated in the comment.

The NPS evaluated the particle count information and determined it would serve no purpose in supporting the eventual cleanup decision for the following reasons:

- a. The laboratory encountered difficulty in determining which sieved particles were actually lead bullet fragments and which were comprised of other material, based on a visual examination.



ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

- b. The size of the particles was not considered in the count, as long as the particles did not pass through the sieve. This meant that the smallest particles were counted along with the largest particles to form a total count, with no weight given to the larger particles.
- c. There appeared to be no correlation or logic in the distribution of counted particles from one decision unit to another. One would have expected a significantly higher count in the soil in Decision Unit (DU) 1, the bullet backstop area behind the target line, but that was not the case.
- d. The information on lead particle counts, even if they could be considered accurate, would not have an impact on the cleanup decision at the Site because all the contaminated DUs are being excavated to meet the cleanup levels.

The NPS decided to not include the lead particle count information in further documents related to this project. The actual soil analyses for lead and other metals was used to determine the need for and anticipated extent of excavation needed to meet cleanup levels. Additional soil sampling and analysis was conducted after the initial round of sampling in December 2014 and there was no attempt to count lead particles for these samples based on the determination that it would serve no purpose in supporting the eventual cleanup decision.

End of Public Comments and NPS Responses to Comments



ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

Attachment C – Site Information

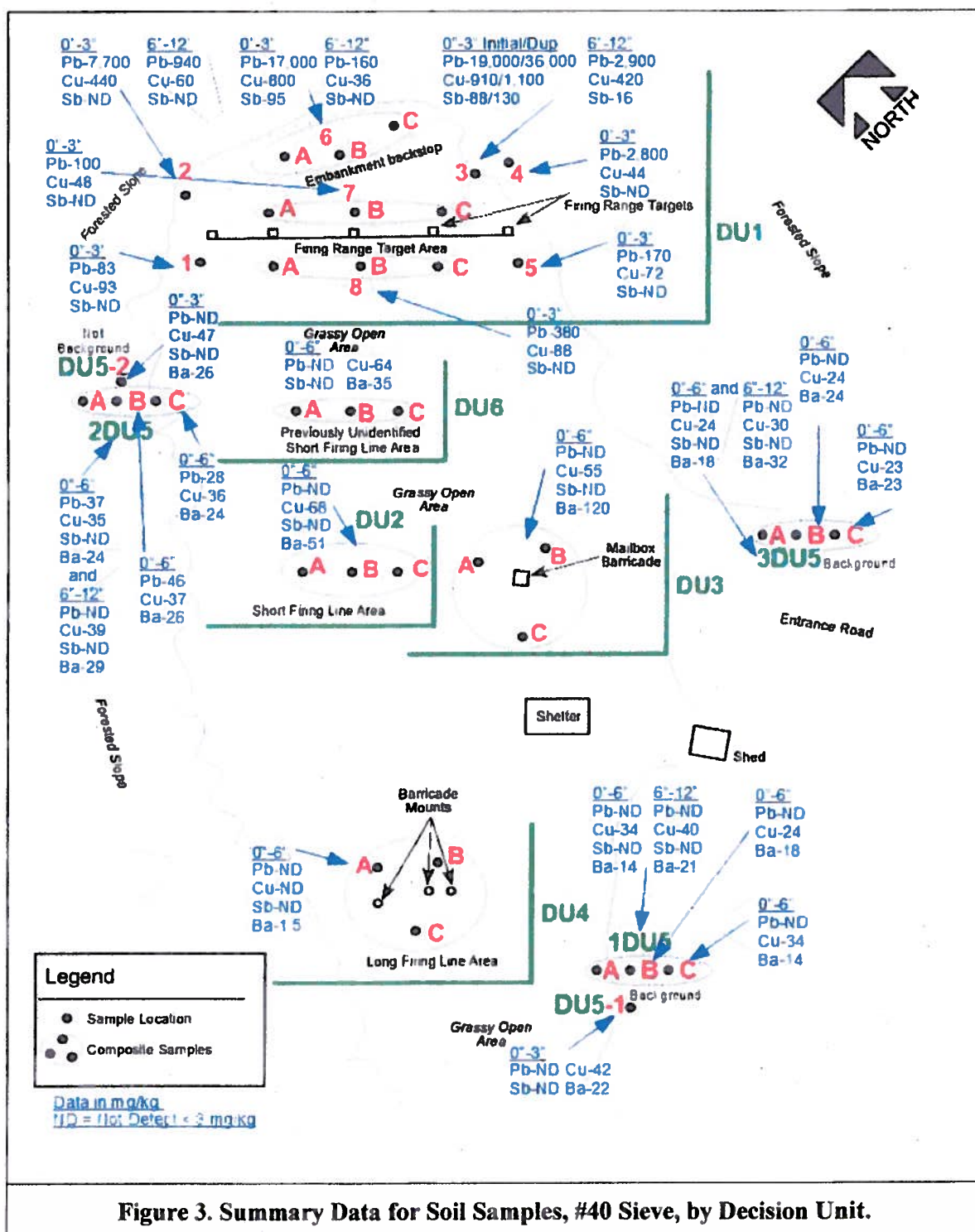
This attachment contains additional Site information, including

- A diagram (Figure 3) of soil sampling locations and the analytical results for lead (Pb), copper (Cu), antimony (Sb) and barium (Ba). All these data were obtained during the EE/CA.
- Photographs taken during the EE/CA initial Site visit on September 29 and 30, 2014.

Information in this attachment is also included in the EE/CA Report (Patriot, 2015).

ACTION MEMORANDUM

**National Park Service – Redwood National Park
Alder Camp Road Firing Range**





ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

Photograph # 1

View:

Facing southwest

Description:

View of firing range
from behind the
target area.



Photograph # 2

View:

Facing west

Description:

View of the
embankment
backstop behind
target area.





ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

Photograph # 3	
View: Facing east	
Description: View of fence that held targets.	

Photograph # 4	
View: Facing north	
Description: View of the firing range target area, previously unidentified firing line area and mailbox barricade.	



ACTION MEMORANDUM

National Park Service – Redwood National Park
Alder Camp Road Firing Range

Photograph # 5

View:

Facing northeast

Description:

View from the
long firing line
area.



Photograph # 6

View:

Facing south

Description:

Access road to
Site.

