Appendix A. Land Use Control Report



Land Use Controls 100% Remedial Design Operable Unit 1, Meyers Landfill Site El Dorado County, California

January 2009

Project No. 28-072

Prepared for:

United States Department of Agriculture Forest Service, Region 5 Lake Tahoe Basin Management Unit South Lake Tahoe, California

Prepared by:



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CERTIFICATION

This document was prepared under the direction and supervision of a qualified Professional Engineer



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Acronyms and Abbreviations

CERCLA Comprehensive Environmental Response, Compensation, and Liability Act

County El Dorado County

EPA (U.S.) Environmental Protection Agency

Forest Plan Land and Resource Management Plan

Forest Service United States Department of Agriculture Forest Service

ICs institutional controls

LFG landfill gas

LTBMU Lake Tahoe Basin Management Unit LUC RD Land Use Control Remedial Design

OU Operable Unit

ROD Record of Decision

STPUD South Tahoe Public Utilities District

μg/L microgram per liter



Section 1. Introduction

This Land Use Control Remedial Design (LUC RD) identifies the institutional controls (ICs) that are part of the final remedy selected for Operable Unit (OU) 1 at the Meyers Landfill Site in El Dorado County, California. This document also proposes implementation strategy for the ICs. The final remedy for OU-1 was selected in the Record of Decision (ROD) (United States Department of Agriculture Forest Service [Forest Service], 2007).

1.1. SITE BACKGROUND

The Meyers Landfill is a closed waste disposal site located northeast of the town of Meyers on National Forest System lands within the Forest Service's Lake Tahoe Basin Management Unit (LTBMU), El Dorado County, California (Figure A-1). The landfill operated from about 1947 through 1971 under a series of Forest Service special use permits that were issued to private parties and El Dorado County (County). Waste disposed of at the landfill included solid waste from residential and commercial sources from within the Lake Tahoe Basin area. The landfill stopped receiving waste in 1971. From 1972 to 1973, the County closed the landfill and placed a sandy soil interim cover over the waste.

Beginning in 1991, a series of environmental investigations were performed at the site and results indicated hazardous substances (including vinyl chloride) were leaching into underlying soils and groundwater, primarily by infiltration of water through existing porous cover soils (Forest Service, 2007).

In 2006, the site was separated into two OUs (OU-1, the landfill waste mass, and OU-2, the groundwater plume) to accelerate selection and implementation of a containment remedy for the landfill waste mass. The Forest Service is the lead agency for the selected remedy pursuant to its delegated authorities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, and Executive Order 12580 (Forest Service, 2007).

1.2. SUMMARY OF ROD AND SELECTED REMEDY

The selected remedy for OU-1 is designed to address potential risks to human health and the environment and consists of the following primary components (Forest Service, 2007):



Section 1 Introduction

• Installation of a multilayer cap and cover system to (1) isolate and eliminate direct contact with waste, (2) reduce or eliminate erosion and surface water infiltration through the waste mass, and (3) reduce or eliminate potential migration of contaminants in soil and groundwater. The cover system includes a passive landfill gas (LFG) venting system to control migration of LFG.

- The relocation of waste from above and east of the South Tahoe Public Utilities District (STPUD) sewer line and consolidation into the main waste mass. As a result, the new footprint of the cover system and waste mass will be away from the existing sewer line.
- Implementation of ICs to safeguard the integrity of the multilayer cap and cover system and associated monitoring systems. ICs to protect human health and the environment and the integrity of the remedy, as specified in this LUC RD, will consist of prohibitions on groundwater use at OU-1 and on-site activities and use that could threaten short-term and long-term integrity of the remedy.
- Long-term post-closure monitoring and maintenance that includes groundwater monitoring and perimeter monitoring for migration of LFG.

The selected remedy for OU-1 is shown on Figure A-2, and is described in further detail in the Remedial Design, to which this document is appended.

1.3. INTENT OF LAND USE CONTROL REMEDIAL DESIGN

This LUC RD presents the ICs and associated implementation strategy for the final remedy at OU-1. The U.S. Environmental Protection Agency (EPA) defines ICs as "non-engineered instruments such as administrative and/or legal controls that minimize the potential for human exposure to contamination by limiting land or resource use" (EPA, 2000). In addition, EPA recommends that ICs are:

- Used in conjunction with, rather than in lieu of engineering measures such as waste treatment or containment
- Used during all stages of the cleanup process to accomplish various cleanup-related objectives
- "Layered" (i.e., use multiple ICs) or implemented in a series to provide overlapping assurances of protection from contamination

Following this introduction (Section 1), this LUC RD consists of the following sections:

- Section 2 Risk Exposure Assumptions and Anticipated Land Uses
- Section 3 Area Requiring Institutional Controls
- Section 4 Performance Objectives of Land Use Controls
- Section 5 Land Use Restrictions
- Section 6 Forest Service Responsibilities for Inspections, Reporting, and Enforcement of Land Use Controls
- Section 7 Cost Estimate of Land Use Control Provisions
- Section 8 References



Section 2. Risk Exposure Assumptions and Anticipated Land Uses

This section details the reasonably anticipated land uses for OU-1, along with the associated risk exposure assumptions, to establish acceptable land uses and identify restricted activities.

2.1. RISK EXPOSURE ASSUMPTIONS

Available characterization data indicate that CERCLA hazardous substances (most notably vinyl chloride) are releasing from OU-1 into underlying soils and groundwater. Concentrations of vinyl chloride in groundwater exceed the applicable California maximum contamination level of 0.5 microgram per liter (µg/L) by several orders of magnitude (e.g., recent sampling results report up to 76 µg/L), and the groundwater basin where OU-1 is located is a potential drinking water source (Forest Service, 2007). Based on previous site investigation results, the primary method of contaminant transport from the landfill to groundwater and underlying soils is leaching of chemicals and elements from waste and debris by rainfall infiltration and seasonal snow melt through the existing sandy cover soils (Forest Service, 2007). Other contaminant migration pathways include (1) surface erosion by wind or water, (2) volatilization into air, (3) discharge of contaminated groundwater into nearby surface waters, (4) migration of contaminated groundwater, and (5) transport through the food chain.

The OU-1 remedy will reduce the primary migration pathway (leaching of chemicals from landfill waste). In addition, the OU-1 remedy will reduce contaminant migration pathways (i.e., surface erosion, transport through the food chain, etc.) related directly to landfill waste. The OU-2 remedy, which will be selected separately, will address the migration pathways associated with contaminated groundwater at the landfill.

2.2. CURRENT AND ANTICIPATED LAND USES

2.2.1. Current Land Use

OU-1 is closed for public access, subsequent to an area closure order placed in 1999 by the Forest Service to implement removal actions under CERCLA. Although OU-1 is closed, "evidence indicates that the Site is routinely used for snowmobiling in the winter months and other recreational activities in the summer (mountain biking, motorcycles, etc.)" (Forest Service, 2007). This unauthorized public access to the site is not currently restricted by fencing or signs. The site is located within the Tahoe Valley Management Area in zones designated as "Developed Recreation" and "Reduced Timber" areas (Forest Service, 1988). While no specific reuse plan has been established for the site, the following general definitions of "Developed Recreation" and "Reduced Timber" are provided in the Forest Plan.



Developed Recreation (Prescription #1):

"Construct, maintain and operate recreation facilities. Assure an attractive and usable forest setting within and surrounding existing sites. Manage vegetation to insure a healthy forest, to prevent and/or reduce pest-related damage, and to reduce numbers of mechanically defective trees. Manage potential recreation development sites so that they remain suitable until they are utilized for recreation improvements. Other activities may be allowed on the undeveloped sites or within existing developed sites where they do not conflict with the primary emphasis on developed recreation. The visual quality objective is Partial Retention when viewed as middleground and Modification or better when viewed as foreground. The preferred ROS setting [Recreation Opportunity Setting] is Rural or Roaded Natural."

Reduced Timber Harvest (Prescription #11):

"Apply group selection and single tree selection harvest practices to achieve wildlife habitat diversity and a high timber yield over the long term while protecting water quality and providing high quality dispersed recreation opportunities. Opening size produced by group selection will average about 1 to 2 acres but will not exceed 5 acres. Yields from regenerated stands will be approximately 70% of maximum. Openings will benefit early successional stage species such as deer and quail and will increase diversity from the predominantly medium-aged trees in the basin. Existing roads may be reconstructed to meet water quality protection standards and to enhance recreation access, including opportunities. Some temporary roads may be constructed for accessing timber. The visual quality objective is Partial Retention. The preferred ROS setting is Roaded Natural."

2.2.2. Anticipated Land Uses

Meyers Landfill Site is located on National Forest System Lands, and the long-term future use of the land is dictated by the LTMBU Land and Resource Management Plan (Forest Plan) (Forest Service, 1988). The landfill and surrounding areas are designated in the Forest Plan as Reduced Timber Areas and Developed Recreation (Forest Service, 1988). The Forest Service expects to maintain the current closure status on the property; however, it is understood that without significant additional enforcement resources, the area will likely remain popular for unauthorized recreational use by off-highway vehicles. Therefore, it is assumed that the future use will remain similar to current use.

Although the Forest Plan allows for developed recreational uses to occur in the area, any allowed future use would have to be compatible with the selected remedy to ensure that the long-term performance and effectiveness of the remedy is not compromised. The OU-1 remedy has been selected to meet current and reasonably anticipated future land uses with appropriate restrictions to protect the cap. After the cap is constructed and the surface of the cap is revegetated, the waste will be isolated from contact with humans and wildlife. The Forest Service is responsible for ensuring that any acceptable land use does not diminish the landfill cap's ability to achieve the remedial action objectives. The Forest Service is responsible for implementation of appropriate engineering controls and ICs to protect the integrity of the remedy.



2.3. SITE USERS REQUIRING ACCESS

The Forest Service will be responsible for implementing and enforcing the ICs and regularly monitoring and inspecting OU-1 to ensure that the remedy is not compromised.

A segment of the Trout Creek trunk sewer line, owned by STPUD, currently crosses beneath the landfill mass in a north-south direction. After the remedial action has been completed, the trunk will lie outside the eastern edge of the consolidated landfill mass and must remain accessible to vehicles to receive maintenance or repair. In addition, the fire service road east of OU-1 must remain accessible to fire service vehicles and personnel.



Section 3. Area Requiring Institutional Controls

The area requiring ICs at OU-1 is shown on Figure A-3. This area includes the proposed consolidated landfill footprint, all associated existing and proposed drainage and culvert systems, site-specific access roads, anticipated borrow locations, and infiltration structures. A buffer zone ranging from 50 to 200 feet beyond the consolidated landfill footprint is proposed to provide a work zone for monitoring and assessment of the remedy provisions. Signs prohibiting digging or disturbing the soil and indicating that the area is closed to public will be used to delineate this area (see sign text in Appendix F).

To the north, the area extends 200 feet from the toe of the northernmost slope of the landfill, allowing for maintenance and inspection of the area. To the west, Forest Service Road 12N08 (Garbage Dump Road) provides a natural boundary and potential access point requiring controls. A natural tree line around the perimeter of OU-1 yields a buffer of 50 to 150 feet from existing and proposed features. The tree line shall demarcate the southern and eastern extent of the area requiring ICs for OU-1.

The existing network of monitoring, pumping, and extraction well features, along with known extents of groundwater contamination extending north of the landfill, will be addressed during future work on OU-2, and is not covered in this LUC RD.



Section 4. Performance Objectives of Land Use Controls

The LUC performance objectives were developed and presented in the OU-1 ROD (Forest Service, 2007), and are intended to limit the exposure of users of the property to hazardous substances on the property, and to maintain the integrity of the remedy until remedial action objectives are met. The LUC performance objectives are:

- 1. Prevent excavation or physical alteration of the landfill cap
- 2. Prevent unacceptable risk to human health caused by excavation of contaminated materials from the landfill
- 3. Prevent use of water that presents an unacceptable risk to human health
- 4. Protect monitoring equipment
- 5. Prevent unauthorized access to OU-1
- 6. Preserve access to OU-1 and associated monitoring equipment for authorized personnel to inspect, monitor, and maintain the remedy



Section 5. Land Use Restrictions

Land use restrictions implementing LUC performance objectives for OU-1 restrict the future occupants of the property to prevent exposure to hazardous substances and to ensure the remedy remains effective until the remedial action objectives are met. The proposed land use restrictions to be incorporated into the Forest Plan as a site-specific amendment are listed below.

- Construction of facilities, structures, appurtenances, or any other land-disturbing activity into, or onto, the surface of the landfill that may affect drainage or increase erosion, including any activity that will damage the cap or affect drainage and erosion controls developed to protect the cap, is prohibited. Excavations into the landfill are generally prohibited, except as necessary to maintain or repair the landfill cap.
- Planting vegetation that could threaten the integrity of the landfill cap is prohibited. Landdisturbing activity on lands adjacent to the landfill that may cause adverse effects on the remedy through erosion of the soil cover or diversion of off-site surface water onto the site is also prohibited.
- Removal of, tampering with, or damage to security features (e.g., locks on monitoring wells) is prohibited.
- Irrigation of the landfill surface is prohibited.
- Construction of any buildings on the cover system is prohibited.
- Withdrawal of groundwater for potable, irrigation, industrial, or agricultural use is prohibited.
- Construction or operations that interfere with the Forest Service's implementation of the final remedy (including monitoring and assessment work) is prohibited.

The above-listed land use restrictions shall apply throughout the area requiring institutional controls (Figure A-3). If the subject property is transferred from Forest Service ownership, the LUC RD will be revised to specify the appropriate legal mechanism(s) (such as a restrictive covenant) in which these land use restrictions will be recorded.



Section 6. Forest Service Responsibilities for Inspections, Reporting, and Enforcement of Land Use Controls

The Forest Service will take the following actions to ensure that the LUC performance objectives (Section 4) are met and maintained:

- 1. **Site Inspections.** The Forest Service will continue annual site inspections to ensure that all LUC performance objectives are complied with by all future user(s), report the results of those inspections, and enforce the land use restrictions in Section 5.
- 2. Compliance Reporting. The Forest Service will prepare an annual LUC Compliance Certificate for OU-1 consistent with the form attached hereto as Attachment A1 at the end of this section. In addition, should any deficiency(ies) be found during the annual inspection, the Forest Service will prepare a separate written explanation with the LUC Compliance Certificate indicating the specific deficiency(ies) found and what efforts or measures have or will be taken to correct those deficiencies. The need to continue to provide such inspections and certifications on an annual basis will be reevaluated every 5 years by the Forest Service.
- 3. **CERCLA 5-Year Reviews.** The Forest Service shall conduct 5-Year Reviews of the OU-1 LUC remedy, as required by CERCLA section 121(c) and the National Oil and Hazardous Substances Pollution Contingency Plan.
- 4. **Notice of Planned Property Conveyance.** Prior to conveyance of the OU-1 property to any other agency, person, or entity, the Forest Service will describe the mechanism by which LUCs will continue to be implemented, maintained, inspected, reported, and enforced. This description will be included in appropriate land transfer documents and will be reported to the California Department of Toxic Substances Control for inclusion in the state's EnviroStor database, to ensure continued maintenance of the LUCs. Reference to this LUC RD will be a sufficient description of the mechanism.
- 5. **LUC Enforcement.** If the LUC elements of the remedy reflected in this RD fail, the Forest Service will coordinate with the appropriate parties to ensure that appropriate actions are taken to reestablish its protectiveness. These actions may range from informal resolutions with the violator of a LUC provision(s), as described in this RD, to the institution of judicial action under the auspices of state of California property law or CERCLA. Alternatively, should circumstances warrant, the Forest Service could choose to exercise its response authorities under CERCLA then seek cost recovery after the fact from the person(s) or entity(ies) who violated a given LUC. If the Forest Service becomes aware that any future user of the property has violated any LUC requirement over which a local agency may have independent jurisdiction, the Forest Service will notify these agencies of such violation(s) and work cooperatively with them to reachieve user compliance with the LUCs.



6. **Termination and Release of Land Use Restrictions.** When the Forest Service determines that one or more of the land use restrictions at OU-1 or a portion of OU-1 requiring ICs are no longer needed for protection of human health and the environment, the Forest Service will record an appropriate release.



Section 7. Cost Estimate of Land Use Control Provisions

The costs for implementing and maintaining the LUCs are tabulated in Appendix I, along with other capital and ongoing costs to implement the final remedy.



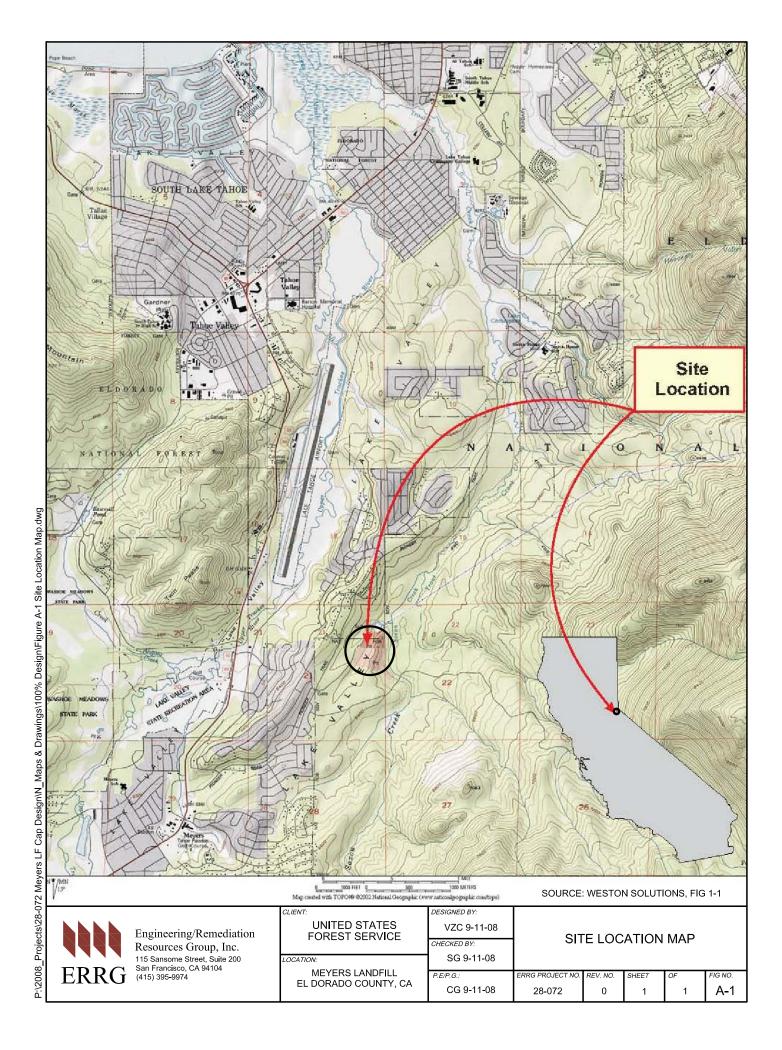
Section 8. References

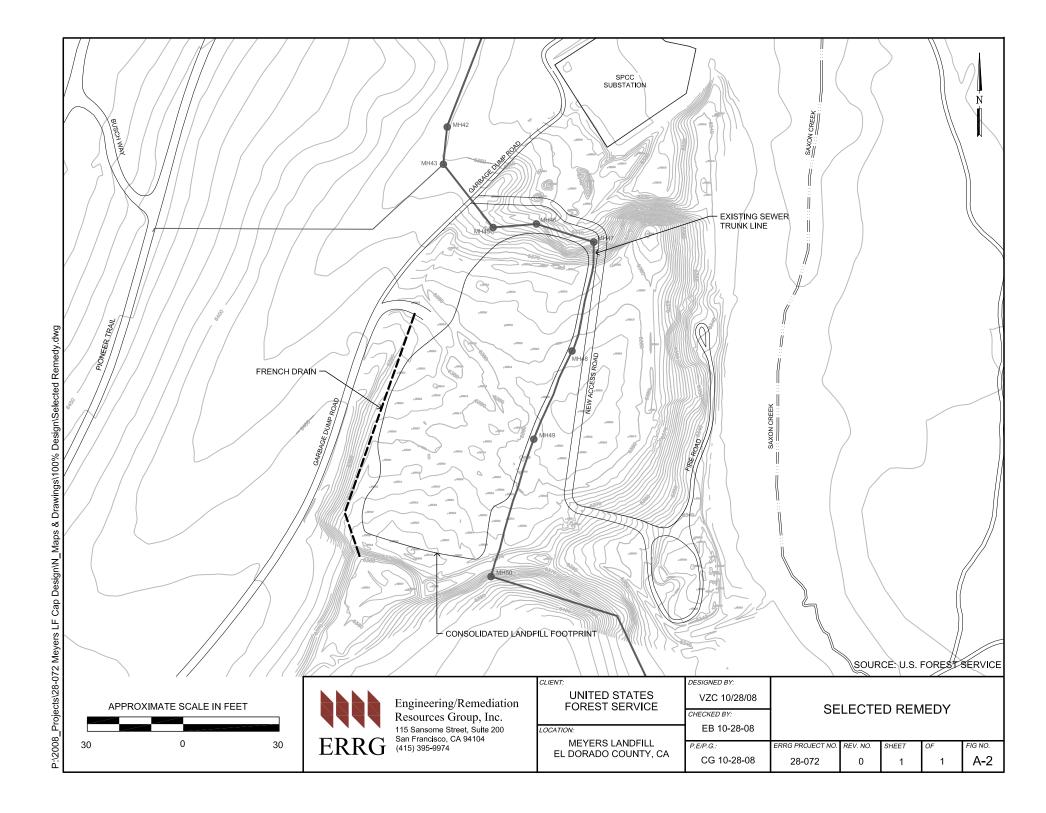
- U.S. Department of Agriculture Forest Service (Forest Service). 2007. "Record of Decision for Myers Landfill, Operable Unit 1 Landfill Waste Mass, El Dorado County, California." Prepared by Lake Tahoe Basin Management Unit. November.
- Forest Service. 1988. "Land and Resource Management Plan (Forest Plan)." Prepared by Lake Tahoe Basin Management Unit. Available Online at: http://www.fs.fed.us/r5/ltbmu/publications/1988-forest-plan/.
- U.S. Environmental Protection Agency. 2000. "Institutional Controls: A Site Manager's Guide to Identifying, Evaluating, and Selecting Institutional Controls at Super fund and RCRA Corrective Action Cleanups." OSWER 9355.0-74S-P, EPA 540-F-00-005. Office of Solid Waste and Emergency Response. September. Available Online at: http://epa.gov/superfund/policy/ic/guide/guide.pdf.

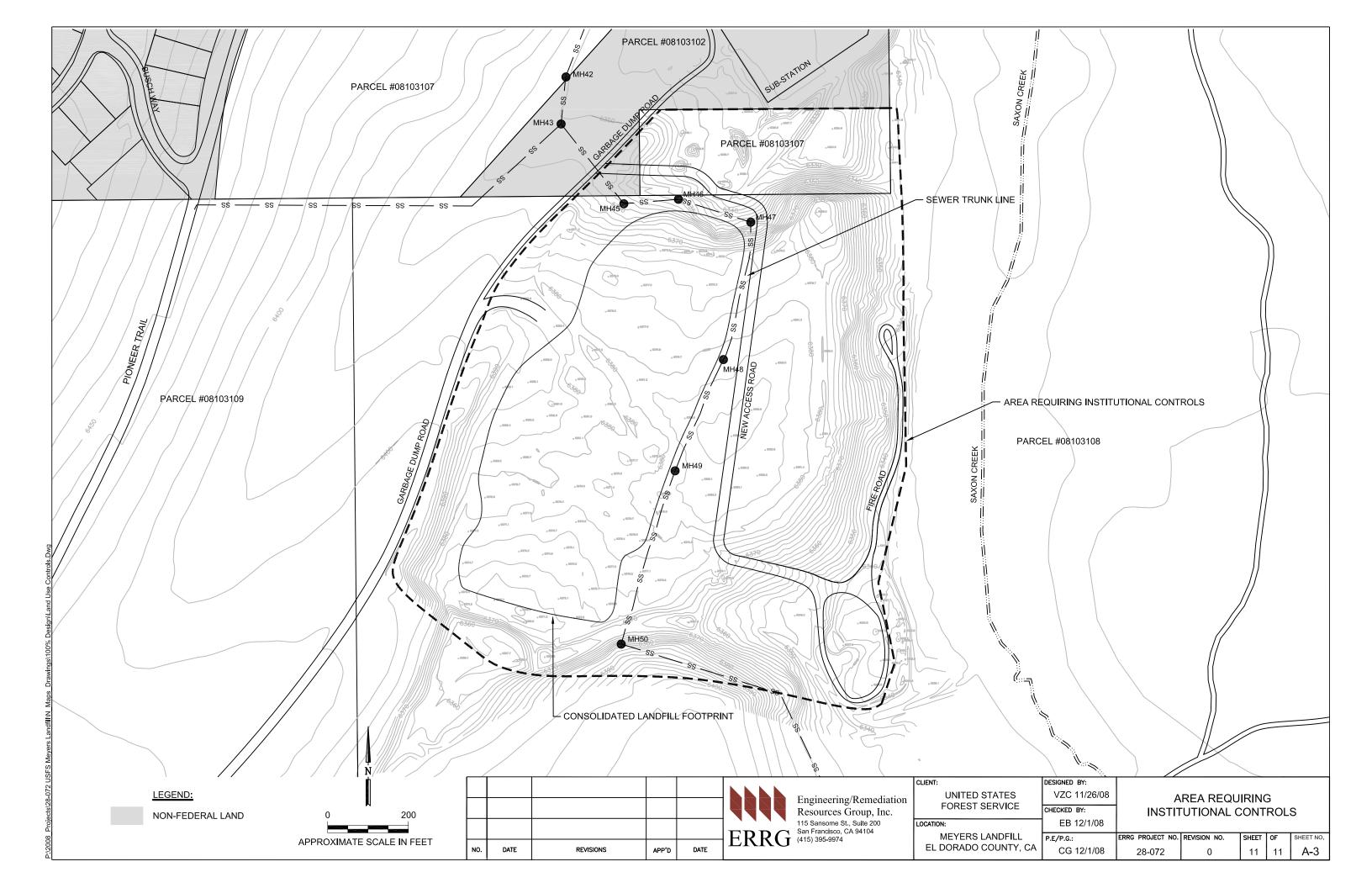


Figures









Attachment A1. LUC Compliance Checklist



Exhibit A Land Use Controls Compliance Certificate Operable Unit 1, Meyers Landfill

Operable Unit 1, Meyers Landfill
Lake Tahoe Basin Management Unit
U.S. Department of Agriculture Forest Service

Pro	Property Owner:					
Annual Inspection Evaluation Period:						
Checklist						
	<u>In</u>	Compliance	Non-Compliance	See Comment		
1)	No construction or other land-disturbing activities into or onto the landfill cover systems, except as necessary to maintain or repair the landfill cover.					
2)	No construction or other land-disturbing activities within the area requiring institutional controls which affect drainage patterns or erosion controls needed to protect the landfill cover systems.					
3)	No planting of vegetation that could threaten the integrity of the landfill cover (including, but not limited to, vegetation with root structures extending greater than 24 inches below the ground surface).					
4)	No altering, disturbing, or removing groundwater and landfill gas wells and associated equipment within the area requiring institutional controls.					
5)	No groundwater use for any purpose (including, but not limited to, human consumption, irrigation, heating/cooling purposes, and other industrial processes).					
6)	No construction or operations within the area requiring institutional controls that interfere with the Forest Service's implementation of the final remedy (including, but not limited to, monitoring, inspection, assessment, and maintenance work).					
7)	Parcel use consistent with the LTMBU Land and Resource Management Plan (original 1988).					

Comments:

Exhibit A (continued) Land Use Controls Compliance Certificate

Meyers Landfill Operable Unit 1 Lake Tahoe Basin Management Unit U.S. Department of Agriculture Forest Service

I, the undersigned, hereby certify that the above-described land use restrictions have been complied with for the period noted. Alternately, any known deficiencies and completed or planned actions to address such deficiencies are described in the attached Explanation of Deficiencies.

are described in the attached Explanation of Deficiencies.				
Signature	Date			
Notes:				
Mail completed form(s) to the Forest Service addresses below by July 15 of each calendar year.				
U.S. Department of Agriculture Forest Service				
Lake Tahoe Basin Management Unit				
35 College Drive				
South Lake Tahoe, CA 96150				
U.S. Department of Agriculture Forest Service				
Tahoe National Forest				
631 Coyote Street				
Novada City CA 05050				