SOLID WASTE FACILITY PERMIT

Facility Number: 26-AA-0005

1. Name and Street Address of Facility:	2. Name and Mailing Address of Operator:	3. Name and Mailing Address of Owner:
Chalfant Landfill 500 Locust Street Chalfant, CA 93514	County of Mono Dept. of Public Works P.O. Box 457 Bridgeport, CA 93517	County of Mono Dept. of Public Works P.O. Box 457 Bridgeport, CA 93517

4. Specifications: **a.** Operation: Closed Solid Waste Disposal Site

b. Permitted Area (in acres) Total: 10.0 ac Disposal: 4.5 ac

The attached permit findings and conditions are integral parts of this permit and supersede the conditions of any previously issued solid waste facility permit.

5. Approval: Jill Kearney, REHS

Jill Kearney

Approving Officer Signature

6. Enforcement Agency Name and Address:

Mono County Environmental Health
P.O. Box 476
Bridgeport, CA 93517

7. Permit Issued Date: 6-13-2018

8. Permit Review Due Date: 6-13-2023

9. Legal Description of Facility: The legal description of this facility is contained in the final closure plan and includes Assessor's Parcel Number(s) NW 1/4, SW 1/4, NE 1/4, sec. 9, T.5S., R.33E., MDB&M. APN 26-200-44 (formerly 26-200-32).

10. Findings:

- **a.** This permit is consistent with the standards adopted by the California Integrated Waste Management Board..
- **b.** The closure and postclosure maintenance of the disposal site is consistent with the State Minimum Standards for Solid Waste Handling and Disposal as determined by the Enforcement Agency.
- **c.** A (type of MND) was filed with the State Clearinghouse (SCH #2000012053) and certified by the (Mono County Community Development Department) on (April 18, 2000). A Notice of Determination was filed with the State Clearinghouse on (April 18, 2000).

11. Prohibitions: Disposal of solid waste at this site is prohibited.

12. The following documents describe and/or restrict the closure and postclosure maintenance of this site:

Waste Discharge Requirements Order No. 6-01-58	5-13-2009	APCD Permit to Operate #	N/A
Land Use and/or Conditional Use Permit	N/A		

13. Self Monitoring: The owner/operator shall submit the results of all self-monitoring programs to the Enforcement Agency in accordance with the most recently approved postclosure maintenance plan.

14. Enforcement Agency (EA) Conditions:

- **a.** The owner/operator shall comply with all applicable standards as specified in Title 27, California Code of Regulations (27 CCR) including all appropriate financial assurance requirements.
- **b.** Additional information concerning the disposal site shall be furnished upon request within the time frame specified by the EA.
- **c.** The owner/operator shall comply with the most recently approved Closure Plan and the most recently approved Postclosure Maintenance Plan.
- **d.** All proposed changes, including postclosure land uses, that would cause the design or maintenance of the disposal site to be modified shall be documented in revised closure and/or postclosure maintenance plans and may be implemented only upon approval of the revised plan(s).
- **e.** The EA shall be notified of a change in ownership during closure or postclosure maintenance in accordance with 27 CCR 21200.
- **f.**

MONO COUNTY
DEPARTMENT OF PUBLIC WORKS

FINAL CLOSURE AND POSTCLOSURE MAINTENANCE PLAN

CHALFANT LANDFILL
SWIS# 26-AA-0005
WDID# 6B260300004

Mono County, California

Prepared by:

SRK Consulting
Engineers and Scientists
5250 Neil Road, Suite 300
Reno, Nevada 89502
(775) 828-6800
(775) 828-6820 (Fax)

and

Mono County Department of Public Works
Post Office Box 457
Bridgeport, California 93517
(760) 932-5440
(760) 932-5441 (Fax)

November 2007
Revised February 2008

ENGINEER'S CERTIFICATION

This Final Closure and Postclosure Maintenance Plan were prepared pursuant to Title 27 of the California Code of Regulations under the direct supervision of the undersigned civil engineer and in accordance with generally-accepted engineering principles and practices applicable at the time of its preparation. I certify that the information contained in this report is, to the best of my knowledge, true and correct.

R. Breese Burnley, R.C.E. No. C60507
Principal Engineer
SRK Consulting

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1.0 INTRODUCTION

On behalf of the Mono County Department of Public Works (County), SRK Consulting has prepared this Final Closure and Postclosure Maintenance Plan (FCPMP) for the Chalfant Landfill for review and approval by the California Integrated Waste Management Board (CIWMB). This plan has been prepared in accordance with California Code of Regulations (CCR) Sections 21769(c), 21780, 21800 and 21830.

As stipulated in CCR, Sections 21769(c)(1), 21770 and 21800(a), the purpose of an FCPMP is to:

- Ensure the landfill is closed in a manner that protects public health, safety, and the environment;
- Provide a detailed list of the actions necessary to carry out closure and postclosure maintenance;
- Provide a basis for establishing a reasonable and accurate cost estimate for carrying out closure and postclosure maintenance for the first 30 years; and
- Provide an enforceable list and schedule of actions necessary for providing water quality protection at the unit for closure and postclosure maintenance.

This FCPMP addresses the final closure and postclosure requirements for the Chalfant Landfill and satisfies the combined requirements of CIWMB and the State Water Resources Control Board (SWRCB), as defined in Title 27 CCR.

Mono County submitted a Preliminary Closure and Postclosure Maintenance Plan (PCPMP) by Vector Engineering, Inc., in October 1995. The 1995 PCPMP underwent several minor revisions through March 2001. This Final Closure and Postclosure Maintenance Plan presents updated versions of relevant sections of the preliminary plans, together with revised design drawings and accompanying calculations. Design drawings are included in reduced format in Appendix A for ease of reference, while full-sized drawings are included in Appendix L. The following sections describe the Chalfant Landfill and its closure in accordance with applicable regulations. Note that the alternative final cover design described in Section 3.4.2 is based on the document presented in Appendix C titled “Alternative Final Cover Demonstration – Chalfant Landfill” (SRK, 2007). The Lahontan Regional Water Quality Control Board (LRWQCB) approved a similar alternative final cover demonstration for the nearby Benton Landfill, but has not previously considered the same demonstration for the Chalfant Landfill.

2.0 FACILITY AND SITE DESCRIPTION

2.1 Facility Description

The Chalfant Landfill is a Class III municipal solid waste landfill operated by the Mono County Department of Public Works and located in the community of Chalfant in southern Mono County, California. The site is located on 10 acres of land at latitude 37°34'N and longitude 118°21'W, approximately one-half mile east of the community of Chalfant, California off State Highway 6, as shown on Drawing 1 in Appendices A and L. Access to the site is via State Highway 6 to the town of Chalfant and then east approximately ½ mile on Locust Street to the site. The landfill property, as described by the Public Land Survey System, occupies the NW1/4 SW1/4 NE1/4 of Section 9, Township 5 South, Range 33 East, Mount Diablo Baseline and Meridian. The property boundaries are shown on Drawing 2 in Appendices A and L.

The Chalfant Landfill was established in 1972 to replace an open dump at the site. Landfill operations have historically utilized the trench method of disposal, which means disposal in small, relatively shallow trenches on the order of 15 feet deep. From 1998 through 2004, Mono County operated the site as a combined transfer station and Class III landfill. During that time, only a small portion of the total service area waste stream, limited to construction and demolition waste, was buried on-site and the site was granted Very Small Landfill status by the Lahontan Regional Water Quality Control Board (LRWQCB) based on a demonstration by Mono County.

In 2004, Mono County ceased accepting all waste for on-site burial. Waste received at the site is currently transferred to the County's regional landfill, the Benton Crossing Landfill. Based on available data, it is estimated that only approximately 32,856 cubic yards of waste and cover soil are actually buried at the site.

The limits of final waste placement encompass approximately 4.5 acres of the 10-acre site. The existing waste footprint is depicted on Drawing 2 in Appendices A and L. Since the location and extent of former disposal trenches could not be definitively determined from site records, the Mono County Department of Public Works conducted an extensive test-pit investigation throughout the site in January 2004 to identify the limits of waste placement. Additional test-pitting was completed in conjunction with CIWMB in March 2007 to further refine the waste footprint and establish the final footprint depicted on Drawings 2 and 3 in Appendices A and L. Documentation of the March 2007 footprint delineation exercise is included in Appendix B.1.

Remaining site areas outside the waste footprint will be occupied by site access roads, borrow source excavation, environmental monitoring wells, drainage facilities, transfer station operations, equipment storage and stockpiling and/or storage of recyclable materials.

2.2 Facility Ownership and Address

The Chalfant Landfill is owned and operated by the Mono County Department of Public Works. The landfill's address is 500 Locust Street at Valley Road, Chalfant, California 93514. The following person can be contacted for information about the landfill during the closure and postclosure period:

Mr. Evan Nikirk, P.E., Director
Mono County Department of Public Works
Post Office Box 457
Bridgeport, California 93517
(760) 932-5440

In the event of a change of ownership, Mono County Department of Public Works will notify the Local Enforcement Agency (LEA) within 30 days in accordance with Title 27 CCR Section 21200.

2.3 Permits and Approvals for Closure and Postclosure Maintenance

Existing permits maintained for the operation of the Chalfant Landfill include the following:

- Solid Waste Facility Permit No. 26-AA-0005; and
- Waste Discharge Requirements No. 6-01-58.

The Preliminary Closure and Postclosure Maintenance Plan for the Chalfant Landfill (Vector, 1998) was previously approved by CIWMB and LRWQCB.

Copies of the landfill permit and Waste Discharge Requirements are included in Appendices B.2 and B.3, respectively.

2.4 Climate, Geologic, and Hydrogeologic Conditions

The elevation of the Chalfant Landfill varies from approximately 4,295 to 4,335 feet above mean sea level (amsl). Slopes on the site vary from relatively flat to approximately 2.5 percent. There are no significant drainages that cross the site. Native vegetation in the area consists of typical high-desert sagebrush with grass understory. The descriptions below of the climate, geology and hydrogeology of the Chalfant Landfill vicinity are excerpted from the Alternative Final Cover Demonstration (SRK, 2007), a copy of which is included in Appendix C.

2.4.1 Climate

Climatic conditions at the site are represented by data from the Bishop WSO Airport meterological data station (Station ID No. 040822), which is located approximately 13.5 miles south of the Chalfant Landfill, and the Benton interagency remote automated weather station (RAWS) meteorological station, located approximately 21 miles north of the site. The period of recorded data available for the Bishop WSO Airport station

spans 59 years from 1948 through 2007. The Benton RAWS station has been operated since May 1994 to monitor climatic conditions, primarily for use in the event of rangeland or forest fires. Data from this remotely-monitored station is sent via satellite to the National Interagency Fire Center in Boise, Idaho, and distributed from there to several other agencies for use. Data for the Bishop Airport and Benton RAWS stations were obtained from the Western Regional Climate Center website (www.wrcc.dri.edu).

Based on the available data from the referenced meteorological data stations, the climate is semi-arid with an average annual precipitation in the range of 5.26 (Benton) to 6.14 (Bishop AP) inches. Average daily temperatures at the Bishop Airport station range from a high of 97.6 degrees Fahrenheit (^{o}F) in July to a low of 21.7^{o}F in January. Recorded daily temperatures at the Benton RAWS site range from a high of 106^{o}F in July 2002 to a low of 0^{o}F in January 2005. Average monthly temperature and precipitation for the period of record at the Bishop Airport are summarized in Table 2.1.

According to figures reported in the Waste Discharge Requirements for the site, average annual evaporation in the area is approximately 69 inches. This agrees with monthly evaporation data obtained from the Topaz Lake, California meteorological station as the closest and most representative site. Measured average annual pan evaporation at the Topaz Lake station is 69 inches for the period of record from 1957 to 2005. The Topaz Lake station is situated at an elevation of approximately 5,200 feet amsl, similar to the elevation at the Chalfant Landfill (~4,300 feet amsl). Average monthly climatic data are summarized in Table 2.1.

TABLE 2.1. Summary of Climatic Conditions in Chalfant Valley

Month	Temperature (degrees F)[1]			Precipitation[2] (inches)	Evaporation[3] (inches)
	Avg.	Max.	Min.		
January	37.4	53.0	21.7	1.11	0.0
February	42.0	57.9	26.0	0.92	0.0
March	47.2	64.1	30.2	0.5	0.0
April	53.9	71.7	36.1	0.29	7.2
May	62.4	81.0	43.8	0.26	9.1
June	71.0	91.0	50.9	0.14	10.9
July	76.9	97.6	56.1	0.17	12.7
August	74.5	95.4	53.6	0.12	11.6
September	67.3	87.8	46.7	0.19	8.8
October	57.0	76.6	37.3	0.20	5.9
November	45.3	62.9	27.6	0.56	2.8
December	38.2	54.4	21.9	0.81	0.0
TOTAL				**5.26**	**69.0**
Period of Record	1948-2007			1948-2007	1957-2005
NOTES	[1] Temperature data from Bishop Airport, NOAA meteorological data station.				
	[2] Precipitation data from Bishop Airport, NOAA meteorological data station.				
	[3] Evaporation data from Topaz Lake at elev. 5200 ft amsl.				

2.4.2 Regional Geology

The Chalfant Landfill is located in the southern part of the Chalfant Valley, which joins the Owens Valley approximately five miles north of Bishop, California. Chalfant Valley is a narrow alluvial plain bounded on the east by the White Mountains and on the west by the Volcanic Tableland. The White Mountains are composed predominantly of granitic rocks partially overlain by metasedimentary and metavolcanic rocks. The Volcanic Tableland is comprised of pyroclastic deposits derived from the volcanic explosions in the Long Valley caldera. The White Mountains extend to more than 13,000 feet above mean sea level (amsl), while the Volcanic Tableland rises to 6,000 feet amsl.

The Chalfant Valley extends north from its junction with the Owens Valley to a geomorphic intersection with the Millner Creek alluvial fan, approximately 4.5 miles north of Chalfant. The Millner Creek alluvial fan dissects the valley and marks the separation of Chalfant Valley from Hammil Valley to the north. Several faults run through the valley, including the Fish Slough fault approximately 1.8 miles west of the landfill, and the White Mountain range front fault approximately one mile east of the site.

2.4.3 Local Geology

The Chalfant Landfill is situated on an alluvial plain at the western edge of the White Mountains. Three groundwater monitoring wells [MW-1, MW-2 and MW-3] were installed at the facility in August 1990 as part of the Solid Waste Assessment Test (SWAT). These wells were intended to provide background and detection monitoring groundwater quality data. A fourth monitoring well (MW-4) was installed downgradient from the landfill in November 2007. Drilling and well construction logs are included in Appendix C. The subsurface conditions encountered during the installation of these monitoring wells revealed the landfill site is underlain by unconsolidated alluvial deposits consisting of gravel, sand, silt, clay and larger boulders up to several feet in diameter. Intermittent lenses of silty clayey sand interbedded with sand and gravel lenses are common beneath the site. Boulders are more prevalent in the eastern portion of the site.

2.4.4 Hydrogeology

The Chalfant Landfill is located in the upper regions of the Owens Valley Groundwater Basin, which is a subunit of the Lahontan Drainage Province (Kleinfelder, 1992). This sub-unit encompasses an area of approximately 1,030 square miles and is drained by the Owens River. The basin is bounded on the east by the White Mountains and on the west by the Volcanic Tableland. Recharge to the basin is derived from snow-melt and precipitation runoff from the adjacent highlands, and from direct precipitation onto the valley floor. Groundwater in the Chalfant region generally occurs in unconsolidated to semi-consolidated alluvial deposits and flows towards the axis of the valley (Kleinfelder, 1992).

Groundwater beneath the Chalfant Landfill occurs within an unconfined gravelly sand to sandy gravel unit of unknown thickness (Kleinfelder, 1992). Based on depth to groundwater measurements recorded in the monitoring wells installed at the site, the depth to groundwater ranges from approximately 58 to 85 feet below ground surface. Based on the most recent data from MW-1, MW-2 and MW-3, the groundwater gradient is approximately 0.0005 feet per foot to the southeast. Drawing 2 in Appendices A and L shows the locations of the monitoring wells relative to the landfill boundary.

There is no perennial surface water in the landfill vicinity. Several ephemeral drainages cut across the alluvial fan both north and south of the landfill. The nearest perennial sources of surface water are the Pine Creek Aqueduct approximately 1.5 miles to the south and Millner Creek approximately 4.5 miles to the north (Kleinfelder, 1992).

2.5 Control and Monitoring Systems

Mono County currently operates monitoring and control systems at the Chalfant Landfill which must be maintained throughout closure and the postclosure maintenance period. The following sections describe each of the monitoring and control system in effect at the landfill site at the time this plan was prepared.

2.5.1 Drainage Control

Drainage control features at the site currently consist of various diversion berms and drainage channels installed to protect filled and active areas of the site. The closure design presented in the Final Closure Plan in Section 3.0 calls for the construction of an upgradient runon diversion channel and internal runoff control channels designed to collect and control runoff resulting from a 100-year, 24-hour storm event. A detailed description of the system design is included in Section 3.4.6, with supporting design documentation in Appendix D.

2.5.2 Landfill Gas Monitoring

Since the site has been granted Very Small Landfill status by the Lahontan RWQCB, subsurface landfill gas monitoring is currently not required during the operational life of the landfill. Ambient air monitoring for landfill gas has been performed on a quarterly basis around the site perimeter during the operational life of the facility. To facilitate landfill gas monitoring during closure and postclosure of the waste management unit, a network of gas probes was installed around the site perimeter in November 2007. Typical gas monitoring probe details are included on Drawing 5. Gas monitoring well locations are illustrated on Drawing 3.

The gas monitoring system was designed by a registered civil engineer. Gas monitoring during the postclosure period will involve quarterly gas surveys to detect the presence of methane in the monitoring probes. At the property boundary, the concentration of methane gas will be monitored and will not exceed five percent by volume in air. Sampling for trace gases is not proposed at this time, but may be recommended should high levels of methane be detected or at the direction of the LEA,

CIWMB, LRWQCB, or Great Basin Unified Air Pollution Control District (GBUAPCD). Monitoring of the probes will continue throughout the postclosure maintenance period on a quarterly basis. A decrease in the monitoring frequency may be proposed by Mono County if methane is not detected for an extended time during the postclosure maintenance period.

The design of the gas monitoring system is discussed in further detail in Section 3.8.2 and procedures for the postclosure landfill gas monitoring program are discussed in detail in Section 4.3.2.

2.5.3 Groundwater Monitoring Program

The Chalfant Landfill currently has four wells for monitoring groundwater quality (wells MW-1, MW-2, MW-3, and the recently installed MW-4). The upgradient well (MW-1) monitors groundwater that flows into the landfill area from the hydraulically higher portion of the drainage basin, and therefore provides background chemistry for constituents of concern. The downgradient wells (MW-2, MW-3 and MW-4) monitor groundwater that has passed beneath the waste footprint, providing an early warning in the event of a contaminant release from the landfill. Monitoring wells MW-1, MW-2 and MW-3 were installed in August, 1990 under the supervision of Kleinfelder, Inc. MW-4 was installed in early November 2007 to augment the County's ability to monitor groundwater for potential impacts from the landfill. A detection monitoring program was initiated at the site by Kleinfelder in September, 1990, beginning with the development of the monitoring wells. Kleinfelder executed the detection monitoring program until 1992, when the firm has replaced by Vector Engineering, Inc. Mono County currently subcontracts monitoring services to an independent contractor. Monitoring well MW-4 has not yet been sampled.

The monitoring program is designed to monitor both background and downgradient concentrations of indicator parameters and possible leachate constituents. Groundwater sampling, testing, and reporting are being performed on a semi-annual basis in accordance with the 2001 Waste Discharge Requirements established by the Lahontan Regional Water Quality Control Board (RWQCB) and Title 23 CCR Chapter 15, Section 2581(c)(3). It is proposed that groundwater monitoring activities continues throughout the postclosure period on a semi-annual basis unless the results of groundwater monitoring indicate that the site has stabilized, and either a reduced monitoring frequency or a shortened postclosure maintenance period is approved by the appropriate governing agencies.

2.5.4 Leachate Monitoring Program

Landfill design and construction did not incorporate a leachate collection and recovery system. As a result, leachate monitoring is not possible and will not be performed as part of postclosure monitoring of the facility.

2.6 Land Use

Mono County owns the landfill property, which has a land use designation of PF, for public or quasi-public facilities. This designation allows development for a number of public uses, including landfill disposal. The land use designations in the vicinity of the landfill are illustrated on the land use zoning map presented as Figure 97 in the Land Use Element of the November 2000 Mono County General Plan. A copy of the map is included in Appendix E.

The majority of the land in the vicinity of the disposal site is publicly owned and administered by United States Department of the Interior, Bureau of Land Management (BLM). BLM lands in the region are zoned as RM, or resource management, and are used predominately for recreation and livestock grazing. A large portion of the land west of the landfill is zoned as OS or AG, for open space or agricultural, respectively. A portion of the town of Chalfant is located within one mile of the landfill and is zoned ER, or "estate residential." There are no residences located within 1,000 feet of the landfill boundary.

Postclosure use of the landfill property is anticipated to include the continued operation of the transfer station in its current location, in addition to the use of the area immediately north and east of the transfer structure for temporary stockpiling and management of diverted waste. Postclosure land use is not proposed over any filled areas. It is anticipated that the remainder of the landfill site will remain as open space, but will retain the PF land use designation during and following the postclosure period. The final cover will be constructed to blend with the surrounding topography and will be seeded with native vegetative species. A postclosure "open space" land use is compatible with the RM resource management zoning designation currently in place in the area. Any future planning change for postclosure land use of the property will be implemented in accordance with Title 27 CCR, or applicable regulations in effect at that time.

3.0 FINAL CLOSURE PLAN

3.1 General

This Final Closure Plan for the Chalfant Landfill has been prepared to address federal and state design standards and Final Closure Plan requirements for Class III Landfills. Design requirements are stipulated in Section 258.60 of Federal Subtitle D and Sections 20950 through 21200 of Title 27 CCR. Final Closure Plan requirements are stipulated in Section 258.61 of Federal Subtitle D and Sections 21769 and 21800 of Title 27 CCR.

Sections 1 and 2 provided a description of the Chalfant Landfill and presented some of the requirements of a Final Closure Plan. Specific closure issues addressed in this section include the following:

- The maximum extent of the landfill requiring closure;
- Closure activities and schedule;
- Closure design;
- Monitoring systems; and
- Closure cost estimate.

3.2 Maximum Extent Requiring Closure

The existing 4.5-acre waste footprint is the maximum extent of the landfill that will require closure construction. This footprint was revised down from earlier footprint delineations (6.6 acres) through the implementation of an extensive test pit investigation completed at the site in March 2007. The horizontal limits of waste fill are illustrated on Drawings 2 and 3 in Appendices A and L. Final proposed site grades are presented on Drawing 3. Documentation of the waste footprint delineation program is included in Appendix B.1.

3.3 Closure Activities and Schedule

Current plans call for the completion of closure construction at the Chalfant Landfill during early 2008. Gas monitoring well installation was completed in November 2007. During and after closure construction, waste will continue to be accepted at the site via the transfer station. Landfill customers have been previously notified of the County's intention to cease landfill operations and permanently close the landfill portion of the facility. In anticipation of this, Mono County stopped accepting was for on-site burial as of 2004. A notification sign has been posted at the site entrance consistent with regulatory requirements. The sign, which states the date of landfill closure and the alternate waste disposal point (the transfer station), will remain in place for the duration of closure construction. A notification of site closure has been advertised in the local newspaper in anticipation of the initiation of final closure activities. Notices have also been mailed to solid waste account-holders who use the facility, and handed out to customers at the gatehouse.

Site closure activities will include the following:

- Installation of fencing or other barriers to prevent public access to areas of the landfill property that will be closed;
- Posting a sign providing a phone number to call in case of an emergency and stating the location where a copy of the closure and postclosure maintenance plan may be reviewed and/or obtained;
- Removal of all structures, stockpiles, and appurtenances that will not be used as part of the transfer station operation;
- Construction of an upgradient runon diversion channel;
- Regrading the existing covered landfill surface, including moisture conditioning and compaction to specifications;
- Placement of the final cover system to the minimum final cover layer thickness and specifications;
- Installation of internal runoff control drainage channels;
- Verification of final cover thickness;
- Installation of survey monuments;
- Seeding the final landfill surface;
- Placement of 1 to 3 inches of wood chips to provide erosion protection; and
- Completion of a final as-built topographic survey of the landfill.

At the conclusion of closure construction, an as-built report will be prepared and submitted to CIWMB and LRWQCB to certify that the construction was completed in accordance with the approved closure plan.

3.4 Closure Design

The primary design components of closure construction for the Chalfant Landfill include final grading, final cover placement and runon and runoff control system construction. The following sections address specific design considerations for each of these components.

3.4.1 Final Grading Plan

The final grading plan of the landfill is designed to accommodate the predicted future settlement of the landfill and to minimize potential stormwater runoff flow velocities over the final surface of the landfill and in the runoff control channels. The closure design is illustrated on Drawings 3, 4 and 5 in Appendices A and L. The existing site topography depicted on Drawing 2 will be smoothed and regraded as shown on Drawing 3. Regrading will extend beyond the existing waste footprint to blend with surrounding topography while maintaining a minimum grade of three percent on all slopes. Low-lying areas will be filled and the existing interim cover layer will be scarified, moisture conditioned, and recompacted according to the specifications. As illustrated on Drawing 3, the design incorporates smooth slopes without angular slope transitions, gently sloping internal drainage control channels, an upgradient runon diversion channel and internal access roads to facilitate postclosure access to all areas of the final cover and environmental monitoring systems.

The final regraded landfill surface will generally grade from east to west. Because the final landfill configuration is primarily a below-grade fill, does not have significant sideslopes, and the top surface is generally less than five feet above surrounding ground surface, the final landfill configuration does not present any concerns for slope stability and a slope stability analysis has not been prepared.

3.4.2 Final Cover System

Mono County requests approval of a soil monolayer alternative final cover for the Chalfant Landfill. The feasibility of the proposed alternative final cover is presented in Appendix C of this report titled *Alternative Final Cover Demonstration* (SRK, 2007). The technical justification presented in the alternative final cover document (SRK, 2007) demonstrates the effectiveness of the proposed 36-inch-thick monolayer cover in limiting the infiltration of meteoric waters into the waste mass. Mono County is also proposing to use a thin protective wood chip layer over the final cover surface to protect the final cover layer until revegetation success can be established. The proposed final cover design is illustrated on Drawing 5 in Appendices A and L and on Figure 3 in Appendix C.

The landfill is currently covered by an interim cover consisting of a minimum of 12 to 24 inches of native soil. Test pitting completed at the site in March 2007 indicated some areas of the landfill have as much as 5 or 6 feet of soil cover. Following regrading, the interim cover layer will be scarified to a minimum depth of 12 inches, moisture conditioned, and recompacted to meet specifications. A minimum of 24 inches of additional soil will be placed and nominally compacted over the interim cover to reach a minimum cumulative total of 36 inches of compacted native soil cover. Minimum cover thickness will be verified by observation during regrading and covering and by random test pitting in the final cover layer. Areas that are deficient will receive additional compacted cover material.

Following final cover placement and finish grading, the cover layer will be lightly scarified and seeded with a BLM-approved seed mixture of native plant species. The final cover and all disturbed areas not proposed for use in future operations will then be covered by one to three inches of wood chips generated and stockpiled through on-site waste diversion activities performed at the Chalfant Landfill and other County landfills.

The wood chip layer will serve to protect the final cover from the effects of wind and water erosion and rain drop impact. Mono County has successfully used wood chips for erosion protection at several of their existing landfill and transfer station sites. In all cases, the feedstock for wood chips to be used in final cover construction will be clean green material generated through shredding trees, tree limbs, brush, or clean unpainted, untreated lumber. In no case will painted, treated or any wood products that contain glues or adhesives be used as feedstock during wood chip processing. The effectiveness of wood chips in this application will be routinely evaluated and documented during the postclosure maintenance period to ensure the requirements of 27 CCR 21090(a)(3) are satisfied. Should this method prove to be ineffective in

preventing erosion during the establishment of vegetation, an alternative approach will be developed and submitted for regulatory approval.

3.4.3 Erosion

Erosion analyses were completed and added to the 1995 PCPMP in 1998 (Vector, 1995) to evaluate the suitability of the proposed final cover layer. While the exact configuration of the final cover layer has changed since the preparation of those calculations, the final surface soil considered then and now are the same. Based on the results of the 1998 erosion analysis, Mono County will place one to three inches of wood chips over the proposed alternative final cover layer to minimize surface erosion caused by wind and water until revegetation efforts can be established (as described above in Section 3.4.2). It is anticipated that the use of the wood chip layer will reduce surface erosion to only a fraction of the 1998 estimates. The reduced landfill footprint and elimination of sideslopes, as described above, mean that the 1998 estimates overstate the erosion potential. The original soil erosion calculations thus serve as a conservative baseline for surface erosion and are included in Appendix F for reference and described briefly below.

The 1998 estimate of potential soil loss during the closure construction phase and the postclosure maintenance period was computed using the Universal Soil Loss Equation (USLE) to determine soil loss due to rainfall. Wind erosion was estimated using a calculation developed by the U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS). Both analyses considered a native soil cover as the final landfill surface. Soil loss due to rainfall and surface water sheet flow is relatively insignificant, but wind erosion is anticipated to be the primary concern. The results of the analysis projected a total soil loss from the combined effects of wind and rain of 17.5 tons per acre from the top surface and 20.1 tons per acre of sideslope area in the initial year of construction, assuming full site exposure without the benefit of a tree wind break. These estimates are expected to reduce by half following establishment of vegetation on landfill surfaces These estimates translate to the erosion of 0.5 inches of soil from the landfill surface during the first five years of postclosure, and potentially as much as 2.8 inches during the entire 30-year maintenance period.

As described above, the final landfill surface will be constructed to minimize erosion and protect the integrity of the final cover using one to three inches of wood chips to minimize surface erosion caused by wind and water until revegetation efforts can be established. On-going diversion and processing of clean green waste at the transfer station throughout the postclosure period will provide a steady supply of wood chips for replenishment of the erosion protection layer as needed.

3.4.4 Settlement

A prediction of the total waste settlement was performed for preparation of the original PCPMP and was based on a study by Edil, et al. (1990), entitled “Settlement of Municipal Refuse”. The study was initially presented at Geotechnics of Waste Fills-

Theory and Practice (ASTM Special Technical Publication 1070, 1990) in Philadelphia, Pennsylvania in 1990. A copy of this article has been included with the revised settlement predictions presented in Appendix G. The study analyzed two mathematical models for determination of settlement within four municipal solid waste landfills located in Wisconsin, Michigan, and Connecticut. The Power Creep Law, used extensively in modeling the transient creep behavior of engineering materials, was found to effectively represent actual waste settlement in the field and was utilized for this analysis. Waste input parameters for the model were taken from average data for the four sites examined in the study. Because the Chalfant Landfill is located in an arid climate and would therefore be less susceptible to biological and chemical decay processes than the landfills examined by Edil, et al. (1990), it can be expected that the input parameters used in the settlement prediction will yield conservative results, and that the actual settlement may be considerably less than the predicted.

The original settlement calculations [Appendix G of the *Preliminary Closure and Postclosure Maintenance Plan* (Vector, 1995), added to the PCPMP in March 1998] indicated that the proposed vertical expansion would settle an estimated 1.6 feet during the 30-year postclosure period. Revised calculations were completed based on the revised site closure design without the previously-planned vertical expansion. New settlement estimates are on the order of 1.0 foot for a maximum waste height of 20 feet (15 feet below grade and five feet above grade). Revised settlement calculations are included in Appendix G.

With proper maintenance, the predicted magnitude of settlement will not significantly affect the ability of the landfill slopes to promote stormwater from the surface of the landfill. In order to effectively monitor the settlement of the waste mass during the postclosure period, permanent settlement monuments will be installed on the final landfill surface following closure construction. The proposed settlement monument locations are depicted on Drawing 3 in Appendices A and L. The installation of settlement monuments is discussed in further detail later in this section.

3.4.5 Infiltration

One of the primary purposes of the alternative final cover system is to minimize infiltration into the underlying waste materials. The computer program HELP (Hydrologic Evaluation of Landfill Performance) version 3.07 was used to evaluate the relative infiltration performance of different thicknesses of the proposed soil monolayer cover. HELP computes the water balance of the cover system taking into account precipitation, runoff, evaporation, soil storage, and percolation. The analyses were completed for a 100-year simulation using average monthly precipitation data obtained for the Bishop Airport station for the period of record from 1948 to 2007.

In addition, various final cover thicknesses were evaluated using version 5.2 of the SoilCover™ computer model to evaluate their relative abilities to minimize infiltration of meteoric water through the final cover layer and into the waste mass. SoilCover™ is a one-dimensional finite element model that approximates the inter-relationship between subsurface saturated and unsaturated soils and the atmosphere. The model predicts

the flux of water between the soil surface and the atmosphere and within a defined soil column. In contrast to the HELP3 model, SoilCover™ incorporates an evaluation of the flux boundary condition imposed by the atmosphere. SoilCover™ models the three-component system of the soil-atmosphere interface, the near-surface unsaturated zone, and when applicable, the deeper saturated zone, and thus is more effective in evaluating water movement through unsaturated soil cover profiles.

The SoilCover™ model routine combines the principles of Darcy's Law and Fick's Law for water and water vapor flow together with Fourier's Law for conductive heat flow to model the movement of water and heat within a defined one-dimensional soil column. Evaporation calculations are based on the modified Penman equation. The SoilCover™ model was used strictly as a design tool with the primary objective of assessing the relative performance of several final cover thicknesses in limiting infiltration into the waste mass. The resulting information was then used to determine the most appropriate cover thickness based on the actual daily climatic data recorded at the Bishop Airport during the period from June 1994 through May 1999.

The results of the *Alternative Final Cover Demonstration for the Chalfant Landfill* (SRK, 2007) indicate that the proposed alternative final cover will be effective in limiting the infiltration of incoming meteoric water into the waste mass. The document is included for reference in Appendix C.

3.4.6 Stormwater Control

Proposed drainage control features at the site include an upgradient runon diversion channel and internal runoff control channels. The drainage control systems for final site closure have been designed to accommodate the anticipated volume of precipitation and peak runon and runoff generated by the 100-year, 24-hour precipitation event falling within the landfill property and the upgradient catchment.

A hydrologic analysis was performed to estimate the peak flow rates for runoff from the closed landfill surface using the Natural Resource Conservation Service's WinTR-55 method (version 1.0.08, USDA, 2005). The predicted peak flows were then used in conjunction with the FlowMaster computer program (Haestad, 2005) to design and size a system of channels to route runoff from the site. Runon flow will be diverted around the site in a new 24-inch-deep trapezoidal diversion channel and re-directed into a natural drainage channel south of the site. Drawings 3 and 5 in Appendices A and L show the individual channel alignments and configurations, while Figures D-1 and D-2 in Appendix D illustrate the on-site and off-site drainage sub-areas used in the hydraulic analyses. The output results of the WinTR-55 and FlowMaster modeling are described in the Drainage Control System Design Report in Appendix D. All drainage channel segments and intersections with natural drainages will be lined with riprap as specified on Drawings 3 and 5.

Drainage facilities at the landfill will be installed using appropriate personnel and equipment by a contractor or the Mono County Department of Public Works. As part of the closure construction, appropriate quality control procedures will be implemented to

ensure that the final drainage system is constructed according to the approved closure plan. All drainage channels constructed to divert water from the landfill will be inspected and repaired quarterly throughout the postclosure period to ensure that areas of surface water ponding do not develop. Sedimentation in the channels will be periodically removed and areas of erosion repaired to maintain the effectiveness of the drainage system.

3.5 Construction Documents and CQA

Technical Specifications and a Construction Quality Assurance Manual were prepared to guide closure in accordance with this plan. Both documents were prepared under the direct supervision of a California-registered civil engineer.

Closure construction for most elements of the closure design will be performed by a contractor. It is anticipated that the contractor will use wheel loaders, dump trucks, belly dumps, a sheepsfoot and/or vibrating roller compactor, water truck, and motor grader to complete closure activities. Although it is anticipated that the contractor will furnish his own equipment, except for the compactor(s), all equipment is currently available if required from the Road District 2 maintenance shop in Benton. The compactor(s) could be rented from vendors in Bishop, California or Gardnerville, Nevada. Alternatively, the County may elect to complete the closure construction using their own equipment and resources. All equipment will be operated by experienced personnel. Only areas which require grading and covering will be disturbed and a water truck will be used at all times to aid in compaction and minimize the generation of fugitive dust. If necessary, chemical additives will be employed in the dust control operations.

During the construction of the final cover layer, a survey crew will verify that the cover has been constructed to the prescribed elevations and dimensions in accordance with the approved plans and specifications. The Department of Public Works has completed preliminary grading to smooth out the landfill surface and prepare the subgrade. Prior to contractor mobilization, the surveyor will establish grade stakes on a 100-foot by 100-foot grid throughout the site to be used for vertical control during cover construction.

Technical Specifications are included in Appendix H, while the Construction Quality Assurance Plan is presented in Appendix I. The CQA plan will be implemented by an independent third party during closure construction to verify that construction complies with approved construction drawings, specifications, and the CQA Plan. CQA activities will be completed under the supervision of a registered Civil Engineer or certified Engineering Geologist in the State of California. All CQA documentation will be presented in the final As-Built Report for the site.

3.6 Recording

Upon completion of closure construction at the Chalfant Landfill, the Mono County Department of Public Works will file the following with the County Recorder's Office, the LEA, LRWQCB, and CIWMB in accordance with Section 21170 of Title 27 CCR:

- A description of the closed unit that includes the date closure was completed;
- The boundaries, height, and approximate depth of the Chalfant Landfill;
- A copy of the as-closed topographic map;
- The location where the FCPMP may be obtained; and
- A statement that future site use is restricted in accordance with the Final Postclosure Maintenance Plan.

3.7 Discharges of Liquids to the Cover System

No liquids will be discharged to the cover system following closure. The final surface of the landfill will be covered with 1 to 3 inches of wood chips to minimize erosion and will not receive irrigation water.

3.8 Monitoring Systems

Monitoring systems to be employed at the Chalfant Landfill during the postclosure period will include individual networks of groundwater monitoring and landfill gas monitoring wells. Groundwater monitoring will continue in accordance with the approved Waste Discharge Requirements for the facility. Landfill gas monitoring in a newly-constructed landfill gas monitoring well network will be initiated upon completion of final closure construction activities and will continue through the postclosure period or until such time as Mono County can demonstrate the landfill has stabilized and no longer requires monitoring. The following sections describe the existing components of both monitoring systems.

3.8.1 Groundwater

The Chalfant Landfill currently has four wells for monitoring groundwater quality (Wells MW-1, MW-2, MW-3 and recently completed MW-4). The upgradient well (MW-1) monitors groundwater that flows into the landfill area from the hydraulically higher portion of the drainage basin, and therefore provides background chemistry for constituents of concern. The downgradient wells (MW-2, MW-3 and MW-4) monitor groundwater that has passed beneath the waste footprint, providing an early warning in the event of a contaminant release from the landfill. Well locations are illustrated on Drawing 2 in Appendices A and L.

The existing monitoring wells MW-1, MW-2 and MW-3 were installed in August, 1990 under the supervision of Kleinfelder, Inc. Monitoring well construction logs are included in Appendix C. A detection monitoring program was initiated at the site by Kleinfelder in September, 1990, beginning with the installation and development of the monitoring wells. Kleinfelder, Inc., executed the detection monitoring program until 1992 when the firm was replaced by Vector Engineering, Inc. Mono County currently contracts with an independent contractor for monitoring services. Monitoring well MW-4 was installed in early November 2007 downgradient of the waste footprint. MW-4 is anticipated to be incorporated into the detection monitoring program during the next quarterly sampling event. A construction log for new monitoring well MW-4 is included in Appendix B.4.

The monitoring program is designed to monitor both background and downgradient concentrations of indicator parameters and possible leachate constituents. The water samples obtained during the quarterly monitoring events are analyzed for concentrations of metals, minerals, volatile organics, and general indicator parameters. The sampling frequency and analysis of the wells is currently performed in accordance with 2001 Waste Discharge Requirements (6-01-58) established by the LRWQCB. Existing groundwater monitoring activities will continue throughout the postclosure period, although on a semi-annual basis (instead of quarterly) for indicator parameters (pH, TDS, Cl, NO_3, SO_4, and VOCs), and once every five years for the existing suite of metals and Appendix II constituents. If the results of groundwater monitoring indicate that the site has stabilized, Mono County may request approval of a reduced monitoring frequency or a shortened postclosure maintenance period.

3.8.2 Landfill Gas

To facilitate landfill gas monitoring during closure and postclosure of the Chalfant Landfill, a network of four gas monitoring wells has been installed around the site perimeter, as shown on Drawing 3. The network is comprised of four gas monitoring wells with a total of eight probes varying in depth from 5 to 40 feet below ground surface (bgs). Each well is constructed with gas probes of ¾-inch diameter, schedule 40 PVC pipe with a minimum of one five-foot-long, 0.02-inch machine-slotted screened interval per probe. The location of each screened interval was determined based on the total depth and geology of the borehole and the lowest elevation of the waste mass within 1,000 feet of the well. One gas probe was installed in each well between approximately 5 and 10 feet bgs. In wells GW-1, GW-2 and GW-4, the lowest waste elevation is more than 15 feet bgs, and a second probe was installed with a screened interval at approximately 20 to 25 feet bgs. In GW-2, the lowest waste elevation is more than 30 feet bgs and a third probe was installed with a screened interval at approximately 40 to 45 feet bgs.

Each pipe section has flush-joint, machine-threaded ends – glue was not used. The annular space between the slotted screen section and borehole walls was backfilled with clean 3/8-inch pea gravel to 12 inches above the screened interval. A minimum five-foot bentonite seal was placed on top of each pea gravel layer and hydrated. The remaining annular space above the uppermost bentonite seal was backfilled to within 3 feet of the surface with native soil, followed by a concrete surface plug and pad. Well head protection was installed in the form of a locking aluminum surface casing set into the three-foot by three-foot concrete pad.

The number and placement of probe completions per well are consistent with 27 CCR 20925(c), and are based on the lowest elevation of waste within 1,000 feet of the well. Detailed gas monitoring well construction logs are included in Appendix B.4.

3.8.3 Settlement

Following the completion of closure construction, nine permanent settlement monuments will be installed in the cover layer within the waste footprint to monitor

settlement of the waste mass in accordance with Title 27, CCR, Section 21090(e). Two additional survey control monuments will be installed in native soil near the site entrance and monitoring well MW-2, and at the approximate midway along the eastern property boundary. The approximate locations of survey and settlement monuments are illustrated on Drawing 3 in Appendices A and L. All monuments will be installed by or under the supervision of a licensed land surveyor or a registered civil engineer. The monuments will provide reference points from which the location and elevation of the waste and monitoring facilities can be determined by ground surveys throughout the postclosure maintenance period.

An aerial topographic survey of the final regraded and covered landfill surface will be performed following the completion of construction activities. The survey will also include a baseline survey of installed survey monuments. A ground survey of the settlement monuments will be performed every five years to evaluate the potential differential settlement of the waste mass. From this data, iso-settlement maps will be generated and compared to the baseline survey. Because the waste mass is relatively shallow (~15 feet deep) and contains a significant amount of soil (1:1 waste to soil ratio), total settlement is not anticipated to be significant.

3.9 Closure and Postclosure Costs and Financial Assurance

Title 27 CCR Section 21820 requires the development of a detailed estimate of the cost of hiring a third party contractor to perform closure construction in accordance with the closure plan. A detailed Eastin cost estimate was included in the PCPMP (Vector, 1998) and presented estimated closure construction costs for a 6.6.-acre waste footprint with a prescriptive final cover layer at $389,600. Postclosure costs were estimated at $26,200 per year or $786,000 for the 30-year postclosure maintenance period. Closure and postclosure costs have been revised to reflect the implementation of an alternative final cover and a reduction in the size of the closure area from 6.6 acres to 4.5 acres. Revised closure and postclosure cost estimates are included in Appendix J.

The revised estimated cost of closure construction with the approved alternative final cover is $250,500. The annual postclosure maintenance cost has been revised upward to $32,100. The total estimated cost for the 30-year postclosure period is then $963,000. Table 4.2 presents an estimated disbursement schedule for closure and postclosure funding, based on the completion of closure construction during the 2007 construction season.

Mono County has established financial assurance mechanisms for closure construction and postclosure maintenance as required by 27 CCR, sections 22205, 22207, 22210, and 22212. On August 14, 1990, the Mono County Board of Supervisors adopted Resolution No. 90-63, which pledged that revenues generated by various solid waste fees in effect at that time were to be deposited in the previously-established Solid Waste Enterprise Trust Fund to finance the requirements for closure and postclosure funding. Subsequent resolutions have amended the Enterprise Fund, the charges and

fees for solid waste services within Mono County, and the administration of revenues generated by those charges and fees.

Currently, Mono County has established special revenue accounts within its Solid Waste Enterprise Fund to deposit annual closure funds for each of its landfills, consistent with 27 CCR 22241. Further, Mono County has a Pledge of Revenue fund agreement with the CIWMB for postclosure maintenance in accordance with 27 CCR Section 22245. To that end, the Mono County Board of Supervisors adopted Resolution No. 97-67 authorizing the agreement between Mono County and the CIWMB, and subsequently executed a pledge of revenue agreement for financial assurance. Copies of the resolution and agreement are included in Appendix J, together with an updated summary of the 2007 financial assurance contributions to Mono County's financial assurance fund for the Chalfant Landfill.

The anticipated disbursement schedule for closure funds will include one disbursement for closure work following the completion of closure construction, followed by annual disbursements during the postclosure period for postclosure monitoring and maintenance. An estimated schedule for disbursement of closure and postclosure funds is presented in Table 3.1.

TABLE 3.1. Estimated Closure and Postclosure Fund Disbursements

Expense	Estimated Amount	Date
Closure Construction	$250,500	Following closure construction – est. August 2008
Postclosure Care	$32,100	Annually through 2039

4.0 FINAL POSTCLOSURE MAINTENANCE PLAN

Once the certification of closure is approved by the LEA, RWQCB, and CIWMB, the approved Final Postclosure Maintenance Plan will become the enforcement document for the Chalfant Landfill. This section describes the postclosure maintenance program that will be implemented throughout the 30-years postclosure maintenance period.

This Final Postclosure Maintenance Plan addresses the requirements of Sections 21090, 21769, 21770, and 21830 of Title 27 CCR. Specific elements addressed in this section include the following:

- Identify emergency response procedures and responsible people in charge of postclosure maintenance;
- Describe monitoring and control systems operating during the postclosure maintenance period;
- Describe and develop the inspection and maintenance procedures for the closed landfill;
- Report the results of monitoring and collection;
- Describe the postclosure land use; and
- Estimate postclosure maintenance costs.

Postclosure maintenance of the Chalfant Landfill will be performed in accordance with Title 27 CCR, Section 21180. Postclosure activities will consist of perimeter fence repair, access road repair, environmental control systems (landfill gas monitoring, groundwater monitoring, stormwater runon diversion channel repairs and stormwater runoff collection system repairs), the inspection of the final cover system, cover repair, settlement monument survey, and final cover revegetation. Postclosure monitoring and maintenance will occur for a period of at least 30 years unless a reduced monitoring frequency is approved by all applicable regulatory agencies.

4.1 Responsibility and Emergency Response

The Mono County Department of Public Works will be responsible for implementing postclosure maintenance and monitoring activities. Relevant contact information is summarized below:

Owner and Operator:	Mono County Department of Public Works
Address:	Post Office Box 457
	Bridgeport, California 93517
Telephone:	(760) 932-5440

A number of unforeseen or unpredictable events may occur during the landfill postclosure maintenance period. The Emergency Response Plan included in Appendix K describes emergency response procedures, coordination agreements, and reporting requirements. The plan address events such as vandalism, fires, earthquakes, hazardous substance discovery or spill, medical emergency, propane gas leak, slope failure, and vehicle or equipment accident.

The plan will be amended in the event that it does not provide an adequate response to a failure or release, or changes occur in the postclosure land use or on-site structures which are not addressed in the plan. A copy of any plan amendments will be submitted to the LEA.

4.2 Site Inspection and Maintenance

Postclosure maintenance of the Chalfant Landfill will be performed in accordance with Title 27 CCR, Section 21180. Postclosure inspection and maintenance activities will focus on perimeter fence and access road repair, environmental control systems (landfill gas monitoring, groundwater monitoring, stormwater runon diversion channel repairs and stormwater runoff collection system repairs), inspection and repair of the final cover, revegetation and maintenance of the wood chip layer. Postclosure monitoring and maintenance will occur on a quarterly basis during the postclosure period unless a reduced monitoring frequency is subsequently approved by all applicable regulatory agencies. The Mono County Department of Public Works will be responsible for implementing postclosure inspection and maintenance activities.

4.2.1 Final Cover System

The final cover will be inspected quarterly to ensure that the final cover continues to function as a barrier to significant infiltration. Visual inspections will be performed for the following:

- **Final Cover Integrity**. Qualified personnel will inspect the final cover for signs of settlement and subsidence, erosion, cracking or other items that adversely affect the integrity and effectiveness of the final cover. Any area requiring corrective action will be repaired within two weeks of its identification.

- **Wood Chip Cover**. Qualified personnel will inspect the wood chip layer for exposed soil or areas where the wood chips are noticeably thin and evidence of erosion is prevalent. Areas requiring corrective action to minimize surface erosion will be addressed within two weeks of the inspection. Remediation will involve the application of additional wood chips to areas with inadequate coverage.

- **Vegetation**. Qualified personnel will inspect the vegetation growth over the final landfill surface for areas where revegetation success is inadequate. Areas requiring corrective action will be addressed during the fall of the year of inspection, or sooner if climatic conditions are suitable. Remediation may involve reseeding the area in the fall of the year of inspection to take advantage of the wetter winter months.

- **Leak Search**. In addition to the above-mentioned regular inspections of the final cover, Mono County will perform a leak search once per year during the postclosure period in accordance with 27 CCR Section 21090(a)(4)(A). The leak search will consist of walking the closed surface of the landfill in a regularly spaced grid pattern across the closed landfill surface while using the hand-held gas detection monitor (Heath Gasurveyor Model 442) to search for the presence of methane. The leak search will be performed at a time when winds are calm to maximize the possibility of methane detection. As with ambient air monitoring around the landfill perimeter, the gas detection monitor will be held at waist height and remain in continuous measuring mode while the inspector slowly walks the landfill. Methane readings will be recorded and plotted on a map of the landfill using GPS coordinates, and areas of methane concentration, if present, will be closely inspected for evidence of damage to the final cover layer. The results of the leak inspection will be incorporated into the postclosure landfill gas monitoring reports. If the results of the leak search indicate an area of the final cover may require repair, the area will be repaired and the repair documented and test in accordance with the original Construction Quality Assurance Manual (Appendix I).

4.2.2 Drainage System

Stormwater drainage control channels will be inspected following each significant storm event and on a quarterly basis throughout the postclosure period for any evidence of damage, excessive erosion, settlement, and obstruction by debris. The effectiveness of the surface water drainage ditches will be maintained by keeping the ditches clear of debris, excess soils and vegetation. Repairs to the structures will be made as necessary to ensure the proper functioning of the system as designed.

4.2.3 Environmental Controls

During semi-annual (groundwater) and quarterly (landfill gas) sampling events, groundwater and landfill gas monitoring wells will be inspected for damage. Locks, caps, sampling ports and or tubes that appear damaged will be identified and replaced.

4.2.4 Site Security

All locks, gates, signs, and fences for the Chalfant Landfill will be inspected on a quarterly basis throughout the postclosure period, unless a reduced schedule is subsequently approved by all applicable regulatory agencies. Any damage to the security system due to vandalism, trespassing, or natural wear and tear will be immediately repaired and/or replaced. Signs will be repainted or replaced on an as-needed basis in order to maintain their visibility and legibility and to update information as necessary.

4.3 Monitoring

Postclosure monitoring will include monitoring groundwater quality, monitoring for the presence of landfill gas, and monitoring landfill settlement via the settlement monuments to be installed in the final cover layer. Each of these is discussed below.

4.3.1 Groundwater Monitoring

The existing groundwater monitoring program is designed to monitor both background and downgradient concentrations of indicator parameters and possible leachate constituents. The water samples obtained during the semi-annual monitoring events are analyzed for concentrations of metals, minerals, volatile organics, and general indicator parameters. The sampling frequency and analysis of the wells is currently performed in accordance with 2001 Waste Discharge Requirements (6-01-58) established by the LRWQCB, and a reduced monitoring frequency (semi-annual) granted by LRWQCB in response to a petition from Mono County in the fall of 1999. Existing groundwater monitoring activities will continue throughout the postclosure period on a semi-annual basis for indicator parameters (pH, TDS, Cl, NO_3, SO_4), annually for VOCs, biannually for total metals, and once every five years for total cyanide, total sulfide and Appendix II constituents. Monitoring parameters and schedules are summarized in Table 4.1 below. If the results of groundwater monitoring indicate that the site has stabilized,

Mono County may request approval of a reduced monitoring frequency or a shortened postclosure maintenance period.

TABLE 4.1. Summary of Groundwater Monitoring Parameters and Schedule (All Wells)

Parameter	Frequency
Water Level	Semi-annual
pH - Indicator	Semi-annual
TDS – Indicator	Semi-annual
Chloride – Indicator	Semi-annual
Nitrate (as N) – Indicator	Semi-annual
Sulfate - Indicator	Semi-annual
Volatile Organic Compounds (Appendix I, 40 CFR Part 258)	Semi-annual
Appendix II, 40 CFR Part 258	Every 5th Year

[1] Required sampling and analysis per 2001 WDRs, Monitoring and Reporting Program No 01-58.

4.3.2 Landfill Gas Monitoring

Landfill gas monitoring is currently performed in on-site structures and in ambient air around the landfill perimeter. Ambient air monitoring will continue during the postclosure period, but will be augmented by subsurface monitoring in the recently-installed network of perimeter landfill gas monitoring wells. Postclosure ambient air and subsurface landfill gas well monitoring activities are described in the following sections.

AMBIENT AIR MONITORING - A Heath Gasurveyor Model 442 is currently used to monitor for the presence of methane in ambient air at the landfill perimeter and in site structures, including the gatehouse, portable restroom, used oil storage tank, and two household hazardous waste storage lockers. All five structures are portable and constructed on skids, so the base of each is elevated above the surrounding grade to allow the free circulation of air between the floor frame and ground surface. The Gasurveyor samples air continuously and electronically records results in an internal memory that can be downloaded to a personal computer. The Gasurveyor Model 442 is capable of measuring methane concentrations from zero to 1,000 ppm and the lower explosive limit (LEL) for methane from zero to 100 percent. For structure monitoring, the Heath Gasurveyor sampling tube is slowly moved throughout the interior of each structure at both floor and ceiling height. Monitored locations include all areas where gas may potentially accumulate, including under the floor frame of the five portable structures at the transfer station.

During ambient air monitoring around the landfill perimeter, a technician holds the Gasurveyor sampling tube at waist height and walks the landfill perimeter. The results of structure and perimeter monitoring are reported as a percentage of the LEL for methane in quarterly reports to the Mono County Health Department. To date, methane has not been detected in ambient air at the Chalfant Landfill.

SUBSURFACE GAS MONITORING - The network of perimeter landfill gas monitoring wells (GW-1 through GW-4) will be monitored for methane concentrations using the Gasurveyor. Gas monitoring well locations are illustrated on Drawing 3. The Gasurveyor's sampling pump inlet tube will be connected to a valve at the top of each gas probe and the sampling pump and monitor set to continuous monitoring mode. The variation of gas concentrations over time will be recorded until the concentrations of all gases (CO2, O2 and CH4) do not fluctuate more than 0.5 percent.

REPORTING - Results of gas monitoring, including the initial and steady state concentrations of methane, will be submitted to the Mono County Health Department within 90 days of sampling. Monitoring reports will include:

- the concentration of methane measured at each monitoring location;
- date, time, barometric pressure, atmospheric temperature, and weather conditions;
- the name(s) of sampling personnel, equipment utilized, and a brief description of the methods used; and,
- a numbering system to correlate monitoring results to a corresponding probe location.

If the concentration of methane exceeds the compliance levels described above, Mono County personnel will immediately take all steps necessary to protect public health and safety and the environment. The Mono County Health Department will be notified in writing within five working days of learning that compliance levels have been exceeded. Health Department notification will include a description of the actions taken or proposed to be taken to resolve the problem.
Within 10 working days, Mono County will submit correspondence to the Health Department describing the nature and extent of the problem, and any immediate corrective actions necessary to protect public health and safety and the environment. If the nature of the problem requires the development of a remediation plan and landfill gas control system, a plan and control system design will be prepared in accordance with 27 CCR Section 20937(b-g). Approval will be obtained from the Health Department prior to plan implementation. Following approval, Mono County will enter the plan in the facility's operating record, implement the plan, and notify the Health Department when the plan has been implemented.

4.3.3 Settlement Monitoring

A detailed topographic survey of the final regraded and covered landfill surface will be performed following the completion of construction activities. The survey will also include a baseline survey of installed survey monuments. An aerial photographic survey or an approved alternative survey (as required by Title 27, California Code of Regulations (27 CCR), Section 21090(e)) will be performed every five years to evaluate the potential differential settlement of the waste mass. From this data, iso-settlement maps will be generated and compared to the baseline survey. Because the waste mass is relatively shallow (~15 feet deep) and contains a significant amount of soil (1:1 waste to soil ratio), total settlement is not anticipated to be significant.

The final cover will be repaired and maintained based on the visual inspections described in Section 4.2.1 and the information acquired during the settlement surveys. Continual maintenance will be performed to prevent ponding on, and promote drainage away from, the landfill surface. All topographic mapping and iso-settlement maps will be produced with a contour interval of not more than one foot. If only very small amounts of settlement are indicated from the first postclosure settlement survey (five years after closure), additional iso-settlement maps may be discontinued pending regulatory approval.

4.4 Erosion and Cover System Repair

The soil monolayer final cover design with a surficial wood chip component should minimize erosion and the need for maintenance and repair. However, it is anticipated that occasional maintenance and repair will be required for surface erosion and areas of subsidence, as described below.

- **Reseeding**. It is anticipated that annual reseeding of at least 15 percent of the final cover surface may be required each year during postclosure to fully establish vegetation on the closed landfill surface.

- **Wood Chip Layer**. It is anticipated that the wood chip component of the final cover design will require annual maintenance. Mono County will inspect the wood chip layer each year and will identify and repair areas which show signs of erosion by wind or water. If replenishment becomes necessary, wood chips will be available either on-site or from another County stockpile.

- **Erosion Rills**. If erosion rills are identified, they will be filled, graded smooth, compacted to final cover layer specifications, and covered with a minimum of one to three inches of wood chips. This type of repair would be completed with a small backhoe. Efforts will be made to identify and mitigate the cause of the erosion rills.

- **Subsidence**. Localized areas of differential settlement may result in ponding on the cover. Should settlement cause ponding on landfill surfaces, additional cover material will be added and the final surface reconstructed to provide positive grades. Construction procedures and CQA methods will follow the applicable requirements of the final closure documents.

Repairs to the cover system will be made promptly. It is anticipated that significant repairs requiring the use of heavy equipment will be made in the dry season during or following the inspection that noted the need for the repairs. If permanent repairs are delayed until the dry season, interim measures will be implemented to stabilize the area requiring repair.

4.5 Postclosure Land Use

The Chalfant Landfill property will be maintained under County control and ownership during the postclosure period and into the foreseeable future and will be used for the existing solid waste transfer station with peripheral areas used for materials storage, processing and sorting (in the Transfer Operations Area, see Drawings 2 and 3), as is currently the practice. No structures or other facilities will be constructed over the waste footprint.

The only structures anticipated to remain on-site during the postclosure maintenance period are those associated with transfer station operations, including the transfer station enclosure, gatehouse, toilet, used oil storage tank, and two household hazardous waste storage sheds. The latter five structures are portable and constructed on skids, so the base of each is elevated above the surrounding grade to allow the free circulation of air between the floor frame and ground surface. Additional facilities within the transfer station operating area will include roll-off bins for temporary storage of old corrugated cardboard (OCC), recyclable beverage containers, and scrap metal and appliances. None of the preceding structures or functions will be located over the waste footprint. The only other function remaining on-site will be stockpiling and processing of agricultural wastes, yard wastes and other organics., This activity will occur in two designated locations, one over the waste footprint and the second south of the entrance and north of the transfer station along the western property boundary – both stockpile locations are shown on Drawing 3. The stockpile area located over the waste footprint will consist of a compacted gravel layer constructed over the final cover layer. A design detail showing pad construction over the final cover is included on Drawing 5.

In accordance with the requirements of Title 27, CCR, Section 21170, and prior to completion of closure activities, the Mono County Department of Public Works will place in the deed to the site, or some other instrument that is normally examined during a title search, information notifying potential purchasers of the property that the site has been used as a landfill. In addition, the deed will be modified to state that the use of the parcel is restricted in accordance with the postclosure land uses set forth in the Final Postclosure Maintenance Plan and Waste Discharge Requirements for the landfill, and that the property owner will be responsible for carrying out postclosure maintenance and any corrective action necessary to address a release. The CIWMB, LEA and LRWQCB will be provided with a copy of the modified deed once it has been completed.

4.6 Postclosure Cost Estimates and Financial Assurance

Closure and postclosure costs, financial assurance, and disbursements are discussed in detail in Section 3.9 above.

5.0 REFERENCES

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