

REDWOOD LANDFILL COMPOST FACILITY EXPANSION AND MATERIALS RECOVERY FACILITY PROJECT

Addendum to the 2008 Redwood Landfill
Final Environmental Impact Report

Prepared for
Marin County
Community Development Agency

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CHAPTER 1

Introduction and Project History

Marin County is the lead agency, pursuant to the State Guidelines for the California Environmental Quality Act (CEQA Guidelines Section 15050), for the preparation of this Addendum to the 2008 Redwood Landfill Final Environmental Impact (2008 FEIR; SCH #1991033042). The Addendum reviews proposed changes to the approved “Mitigated Alternative,” which was analyzed in the 2008 FEIR. The changes reviewed in this Addendum are referred to as the Redwood Landfill Compost Facility Expansion and Materials Recovery Facility Project (hereinafter, “Project”). This Addendum has been prepared by the County of Marin in accordance with CEQA, the State of California CEQA Guidelines, and the Marin County Environmental Impact Review Guidelines.

Project History

Beginning in the 1940s or 1950s, the site where Redwood Landfill is located was converted from wetlands to agricultural land. To accomplish this conversion, a perimeter levee partially surrounding the site was constructed using Bay Mud dredged from the surrounding sloughs. The landfill originally operated pursuant to a Use Permit issued in 1958 by Marin County and a garbage dump permit issued by the County’s Environmental Health Services (EHS). The landfill began receiving waste in 1958, and has handled the majority of Marin County’s solid waste since then.

Redwood Landfill also holds a quarry permit (permit #Q-76-01, originally issued in 1976) from the Marin County Department of Public Works to quarry soil on an adjacent property for landfill cover material. The quarry is located immediately north of the landfill access road. When needed, cover soil is removed from the borrow area and transported by off-road trucks to the working face of the landfill, where it is stockpiled for use as daily cover when alternative cover is not used. At present, little quarrying occurs due to the availability of other cover materials.

Since 1978, the landfill’s operations have been governed by a Solid Waste Facility Permit (SWFP). The facility’s first SWFP was issued by the Local Enforcement Agency (Marin County EHS) with the concurrence of the California Waste Management Board, the predecessor of the California Integrated Waste Management Board (CIWMB), which has since been renamed the California Department of Resources, Recycling and Recovery (CalRecycle). In 1990, Redwood Landfill applied to the LEA for a revised SWFP to incorporate changes that had occurred at the facility since 1978 as well as additional proposed changes, and also to respond to regulatory changes promulgated in the Integrated Waste Management Act of 1989 (Assembly Bill 939). An EIR was prepared to analyze potential environmental impacts of the proposed permit revisions

(Marin County, 1994). The FEIR was certified in 1994 and a revised SWFP was issued by the LEA, with the concurrence of the CIWMB, in 1995.

In 1999, the County EHS determined that changes that had occurred and new changes that were being proposed at the landfill necessitated another revision to the SWFP. Environmental review of the proposed revisions was completed in June 2008, when the LEA certified the FEIR.¹ A draft version of the revised SWFP was received by the CIWMB on November 16, 2008. On December 18, 2008, the LEA issued the SWFP, after receiving concurrence from the CIWMB on December 16, 2008. The San Francisco Bay Regional Water Quality Control Board (RWQCB) issued new Waste Discharge Requirements (WDRs) for the facility in July 2009.² Redwood Landfill also operates under a federal Clean Air Act Title V permit and other permits from the Bay Area Air Quality Management District (BAAQMD), as well as other permits.

The revised SWFP issued in 2008 permits the ‘Mitigated Alternative’ that was described and analyzed as an alternative to the proposed project that was the subject of the 2008 FEIR. The Mitigated Alternative involves a smaller increase in total landfill capacity than Redwood Landfill had originally requested as part of their proposal to expand the landfill.³ The approved Mitigated Alternative does not include any increase in the maximum daily tonnage of waste accepted for disposal each day, whereas Redwood Landfill had originally proposed an approximate doubling of the maximum daily tonnage. The 2008 SWFP permits a much lower maximum daily tonnage (2,310 tons per day⁴) than Redwood Landfill had proposed. Redwood Landfill is currently permitted to receive the following:

- 1,390 tons per day total waste for disposal;
- 170 tons per day total material for composting;
- 400 tons per day total material for recycling;
- 350 tons per day total cover materials.

The 2008 SWFP required Redwood Landfill to shift its emphasis from landfill disposal to recovery of energy and materials from waste. The 2008 SWFP includes conditions that direct Redwood Landfill to develop facilities that would utilize landfill gas for electricity generation, and to develop

¹ A separate project, involving construction of a new access road and bridge at the intersection of U.S. 101 and Sanitary Landfill Road, was the subject of another EIR (Marin County, 2002), which was certified by the Marin County Board of Supervisors in 2002. Construction of the access road and bridge were completed and became operational in June, 2006.

² In 2009 following certification of the FEIR and approval of the 2008 SWFP and 2009 WDRs, No Wetlands Landfill Expansion; Sustainability, Parks, Recycling and Wildlife Legal Defense Fund (SPAWLDEF); and Northern California Recycling Association filed suit in Marin County Superior Court seeking to reverse these actions, to require additional environmental review, and to allow appeal of the LEA’s certification of the FEIR to the Marin County Board of Supervisors. The case was remanded to Marin County Superior Court after a hearing before the First District Court of Appeal in March 2012 in which the court denied Petitioners’ request for an appeal to the Board of Supervisors. In December 2012, the Marin County Superior Court ruled that the FEIR failed to fulfill the requirements of CEQA. That ruling is pending appeal. No Wetlands Landfill Expansion, et al. v. County of Marin, et al. (Marin County Superior Court Case No. CV090198).

³ Under the 1995 SWFP, the permitted capacity of the landfill was 20.455 million cubic yards, including the final landfill cover. Redwood Landfill had requested an increase to 34.77 million cubic yards, including the final cover. The project ultimately approved includes an increase in total landfill capacity to 26.077 million cubic yards, including final cover.

⁴ This figure does not include concrete, asphalt, and minimally-contaminated soil, which are used for construction material and cover material.

a facility to recover recyclable and reusable materials from construction and demolition debris, specifically Condition U:

The operator shall apply for additional permits needed to construct and implement a construction and demolition material resource and recovery operation (C&D operation) within the landfill property within two years of issuance of the SWFP and make every effort to complete implementation within three (3) years of SWFP issuance. The C&D operation will be regulated under a separate permit. At the time a separate permit is issued for the C&D operation, the entitlement to receive 400 tons per day of recyclable materials described in the SWFP will terminate, and the maximum tonnage received under this SWFP will revert to 1,910 tons per day.

The proposed permit changes, described in Chapter 2, Project Description, make up the Project analyzed in this Addendum, and consist of the following:

- (1) Development and operation of a MRF with a capacity of 400 tons per day;
- (2) Modification of the existing composting facility, including use of a different composting method and increasing maximum daily acceptance of materials for composting from 170 tons per day to 514 tons per day; and
- (3) An increase in the maximum daily number of vehicles entering the facility from 662 vehicles per day to 690 vehicles per day.

The MRF now being proposed is consistent with what was analyzed as part of the Mitigated Alternative in the 2008 FEIR, and with Condition U of the 2008 SWFP. The increase in composting levels being proposed is consistent with the composting levels that were analyzed in the 2008 FEIR as part of the original proposal (which was not approved), and would serve to accommodate increased demand for composting in the local area. Redwood Landfill is also seeking permits from the BAAQMD to allow it to construct and operate a landfill gas-to-energy plant, consistent with the analysis in the 2008 FEIR. Because the proposed gas plant was analyzed in the 2008 FEIR, and no changes are proposed, it is not included as part of the changes that make up the Project discussed in this document.

Environmental Review of the Proposed Project

The proposed Project, which is summarized above and described in detail in Chapter 2, Project Description, requires environmental analysis under CEQA. The County has determined that an Addendum to the 2008 FEIR is warranted. Pursuant to Section 15164 of the State CEQA Guidelines, the Lead Agency shall prepare an Addendum to a previously certified EIR if some changes or additions are necessary but none of the conditions described in Section 15162 calling for preparation of a subsequent EIR have occurred. CEQA Guidelines Section 15162 lists the following conditions, which require preparation of a subsequent or supplemental EIR:

- (1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

- (2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or
- (3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the Negative Declaration was adopted, shows any of the following:
 - (A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;
 - (B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;
 - (C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible, and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
 - (D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

As discussed in detail in Chapter 3, Environmental Checklist, of this document, the County has conducted a preliminary environmental review of the proposed Project and has found that the Project would not meet any of the conditions in CEQA Guidelines Section 15162; therefore, an Addendum is warranted, and neither a Subsequent EIR, nor a Supplemental EIR (pursuant to CEQA Guidelines Section 15163) is required.

The Environmental Checklist evaluates the CEQA checklist categories in terms of any “changed condition” (i.e. changed circumstances, project changes, or new information of substantial importance) that may result in a different environmental impact significance conclusion from the certified 2008 FEIR. As discussed in Chapter 3, the proposed changes that constitute the Project, in combination with other changed conditions, would not result in new or substantially more severe significant environmental effects requiring revisions to the 2008 FEIR. The continued implementation or application of mitigation measures identified in the 2008 FEIR would be necessary to avoid or reduce potential effects of the proposed Project. These mitigation measures are identified, and their full, final, adopted text is provided, in Section 3, Environmental Checklist.

Following certification of the FEIR in June, 2008, the County prepared Findings, pursuant to CEQA Guidelines Section 15091, and approved the Mitigated Alternative. The Findings state that several of the mitigation measures identified in the FEIR were not applicable to the Mitigated Alternative, because the Mitigated Alternative did not involve any increase in maximum daily disposed tonnage and only a small increase in average daily tonnage for the composting facility. These mitigation measures were not adopted and currently are not in effect. The text of several

other mitigation measures was revised as part of approval of the Mitigated Alternative to make the measures more easily enforceable or applicable to the Mitigated Alternative. In Chapter 3 of this Addendum, where the continuation of previously adopted 2008 FEIR mitigation measures is assumed or application of mitigation measures from the 2008 FEIR that were not previously adopted for the Mitigated Alternative is found to be necessary to reduce or avoid impacts of the current Project, the text of the applicable mitigation measures is provided. In several instances, minor revisions are made to the text of previously adopted mitigation measures. These revisions are for clarity, to make the measures consistent with current regulations, or to make them applicable to the current Project. All revisions to mitigation measures are also compiled in Chapter 4. The text of all adopted mitigation measures, with minor revisions as shown in Chapters 3 and 4, is provided in a revised Mitigation Monitoring and Reporting Program (MMRP), which is included as Appendix B hereto.

CEQA does not require a formal public review and comment period on an EIR Addendum. However, the 2008 FEIR and this EIR Addendum are available for review during the hours of 8:00 am to 4:00 pm, Monday through Thursday, at the Marin County Community Development Agency at 3501 Civic Center Drive, Room 308, San Rafael, CA 94903, and on the Community Development Agency's website at <http://www.co.marin.ca.us/depts/CD/main/comdev/eir.cfm>.

References – Introduction and Project History

Marin County, 1994. *Redwood Landfill Solid Waste Facilities Permit Expansion Project Final Environmental Impact Report*, SCH #91033042, prepared by Woodward Clyde, February 1994.

Marin County, 2002. Marin County Community Development Agency, *Redwood Landfill Inc. Interim Access Road Improvements, Final Supplemental EIR*, June, 2002.

Marin County, 2008, *Redwood Landfill, Final Environmental Impact Report*, 2008.

CHAPTER 2

Project Description

Redwood Landfill, Inc. (hereinafter referred to as “Redwood Landfill” or “the applicant”), a wholly-owned subsidiary of Waste Management, Inc., is seeking changes to its existing permits to enable it to construct and operate a new materials recovery facility (MRF), to expand and modify its existing composting facility, and to increase the maximum daily number of vehicles entering the site. The changes to the permits, including the Solid Waste Facility Permit (SWFP), Waste Discharge Requirements (WDRs), and Air District permits, as well as the physical changes that could be expected to occur as a consequence of these changes, constitute the “Project” that is the subject of this document. The Project is known as the *“Redwood Landfill Compost Facility Expansion and Materials Recovery Facility Project.”*

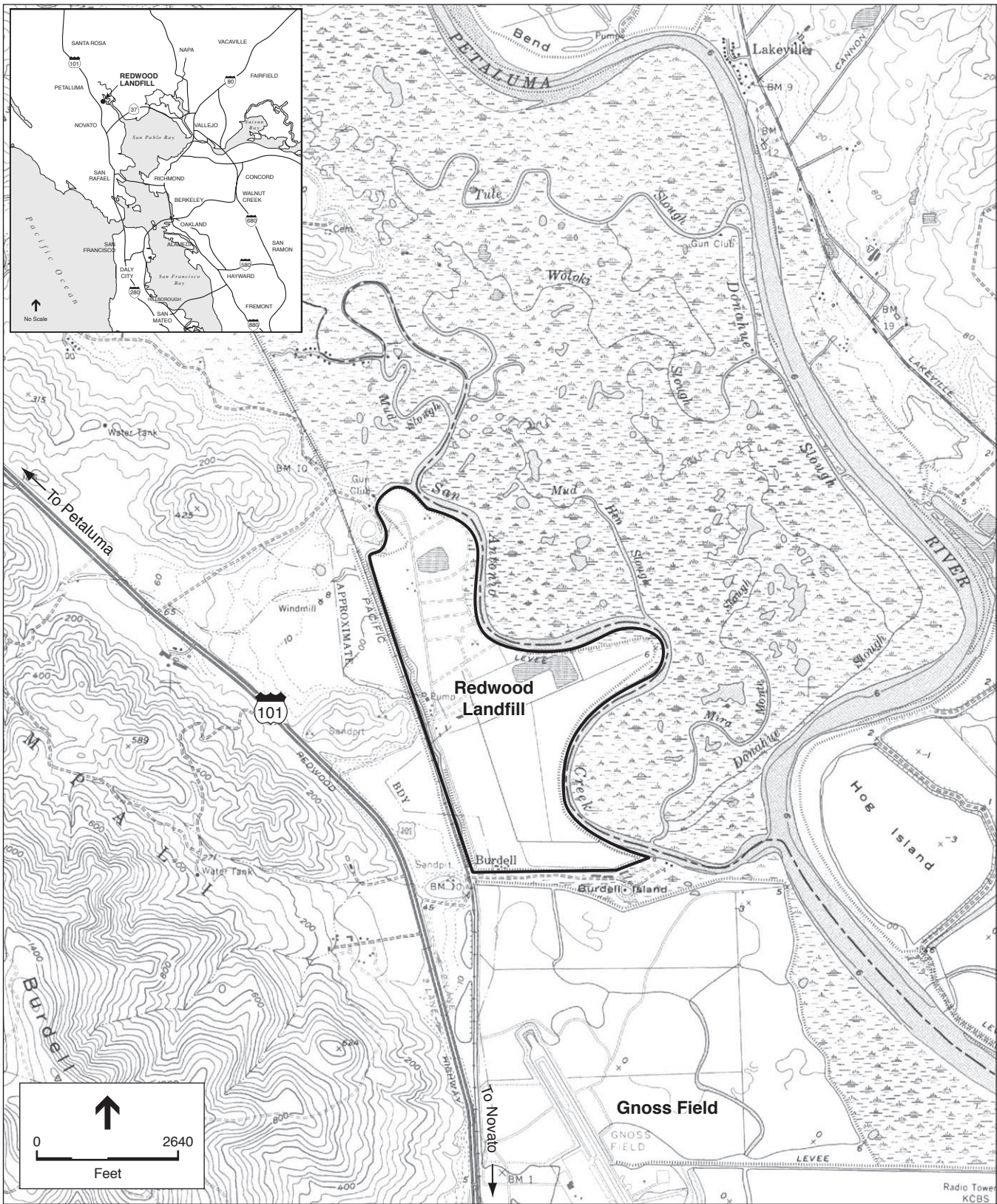
Project Location and Environmental Setting

Redwood Landfill is located in unincorporated Marin County, just east of U.S. 101 and about four miles north of the City of Novato (**Figure 1**). The facility’s address is 8950 Redwood Highway, Novato, CA 94945. It is located at 38° 10’ 00” N, 122° 33’ 30” W, Section 30, T4N, R4W, Mount Diablo Meridian. The Assessor’s Parcel Number for the property is 125-16-13.

The site is accessible from a private access road off of U.S. Highway 101. The landfill is located on diked historic baylands along the western margin of the Petaluma Valley. The valley is bordered by the Sonoma Mountains to the east and by other highlands, including Burdell Mountain, to the west. The facility is nearly surrounded by a network of manmade and natural sloughs, including San Antonio Creek, Mud Slough, West Slough, and South Slough,¹ all of which are tributary to the Petaluma River (Figure 1). As with the rest of the San Francisco Bay Area, the site enjoys a Mediterranean climate, with cool, wet winters and warm, dry summers. Average annual precipitation in the area is approximately 24 inches, most of which falls as rain between November and March. Prevailing winds are from the Northwest.

Agricultural land uses, primarily ranching, and open space predominate in the project vicinity; other nearby land uses include recreation, transportation corridors, and the Marin County Airport (Gross Field). Olompali State Historic Park, the former site of a Coast Miwok settlement, is located on the east-facing slopes of Burdell Mountain west of U.S. 101 near the landfill site. A hill quarried to provide soil for landfill daily cover is located west of the site between U.S. 101 and the Northwestern Pacific Railroad right-of-way, which runs along the site’s western

¹ “South Slough” refers to the slough that runs along the southern boundary of the site, which is unnamed but commonly referred to as South Slough.



SOURCE: ESA

Redwood Landfill EIR Addendum . 210666

Figure 1
Project Location

boundary. Kayaking and other water-oriented recreational uses occur on San Antonio Creek, the Petaluma River, and the sloughs and tidelands east and south of the project site. To the east of the landfill, between San Antonio Creek and the Petaluma River, is a large expanse of tidal marsh (Figure 1). This area is part of the Petaluma Marsh Wildlife Area, which is managed by the California Department of Fish and Game (CDFG). The Wildlife Area is comprised of several non-contiguous units in Marin and Sonoma Counties, totaling 4,191 acres of tidal salt marsh, mudflats, coastal oak woodlands, and coastal scrub habitats. The Petaluma River Unit, which is immediately across San Antonio Creek from the landfill, is the largest remaining natural tidal brackish marsh in California, supporting primarily pickleweed, cordgrass, alkali bulrush, and saltgrass. The upland habitat in the area supports deer, raccoons, jackrabbits, and foxes, among others. Migratory bird species use the area most heavily during the fall and winter months, but many can be found year round. Wetland bird species include willits, curlews, dowitchers, night herons, and black-bellied plovers. CDFG has designated Petaluma Marsh Wildlife area a “Type C Wildlife Area,” meaning no permits, passes, or reservations are required for allowed recreational uses, which include birdwatching, fishing, and wildlife viewing. Hunting is allowed for waterfowl, coots, moorhens, and rabbits (CDFG, 2011).

A privately operated marina (Mira Monte Landing & Boat Storage Marina) is located on Mira Monte Slough on the site’s southern border. The runway of Marin County Airport, Gness Field, is located approximately 3,000 feet south of the site’s southern boundary, and approximately 4,500 feet from the southernmost active landfill area. Gness Field is a general aviation airport that is used both by piston-type aircraft and turbojet aircraft. The County has plans to extend the Gness Field runway 1,100 feet to the northwest, which would result in its reaching closer to the landfill. The Redwood Landfill site itself previously had several tenants with other land uses; however, the lease of the last remaining tenant, an auto wrecking yard, expired in May 2002 and the tenant moved offsite. The site is now used entirely for activities and operations related to landfilling and materials and energy recovery.

The nearest existing residential developments are on Bahia Lagoon and south of the Rush Creek Open Space Preserve, and single family houses and limited agricultural/residential land uses along Atherton Avenue, south of the landfill in an unincorporated section of the County near Novato. The residential development on Bahia Lagoon and the Rush Creek Estates development are both approximately 2.5 miles from the southern border of the landfill property. The Buck Center, a medical research center, is located west of U.S. 101 and south of Olompali State Park, approximately 1.5 miles southwest of the Redwood Landfill boundary.

Project Objectives

The Project is intended to accomplish or further the achievement of the following objectives:

- Implement the Mitigated Alternative, including adopted mitigation measures, as described in the 2008 Final Environmental Impact Report (2008 FEIR);
- Increase diversion and reduce landfilling of wastes;

- Maximize Redwood Landfill’s consistency with policies contained in the Countywide Plan, the Countywide Integrated Waste Management Plan, and the Marin County Greenhouse Gas Reduction Plan;
- Support Countywide goals as well as State and local efforts to work toward “zero-waste;”
- Design, construct, and operate materials recovery facilities that minimize adverse environmental impacts.

Project Elements

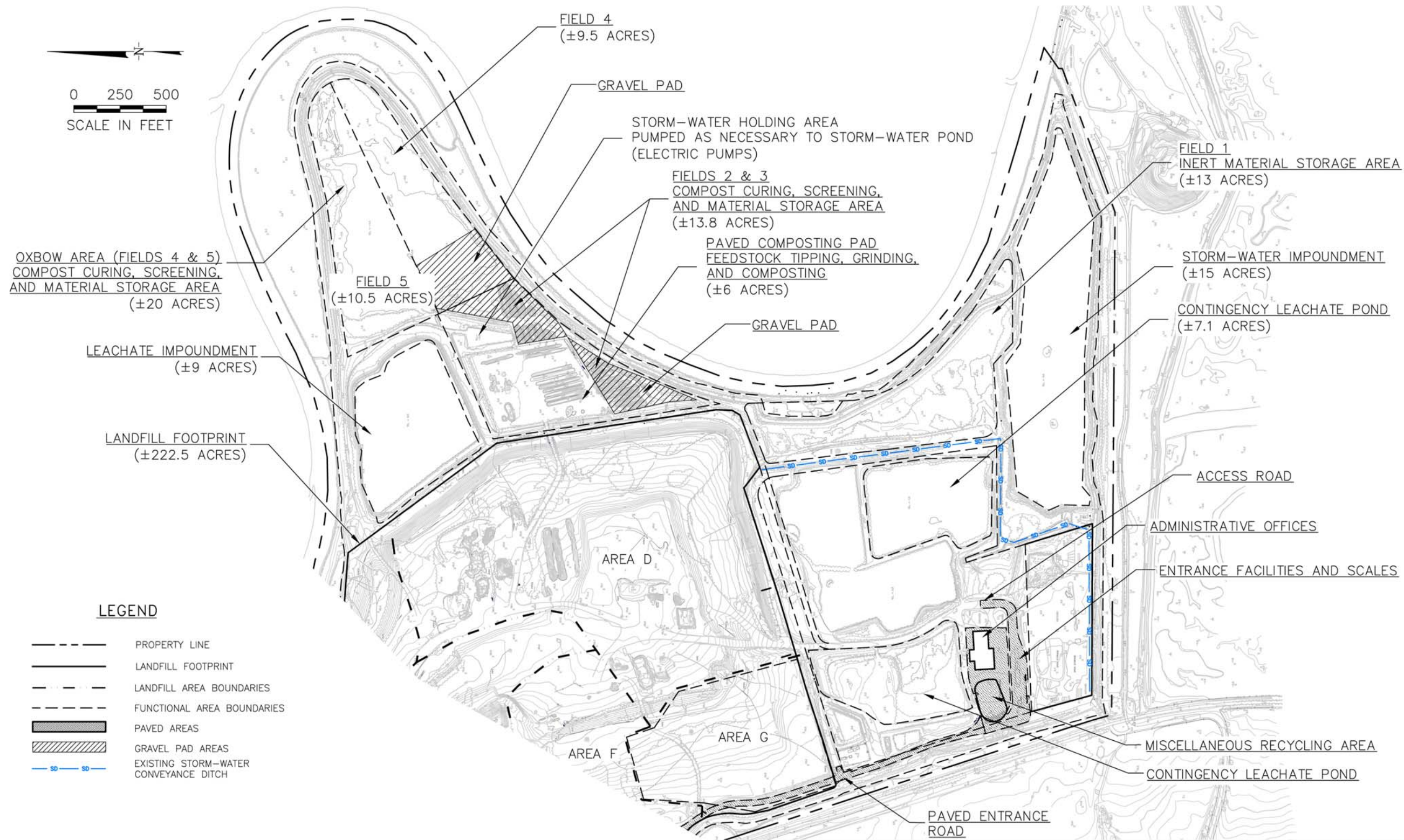
The Project includes three components: (1) development of a MRF; (2) expansion and modification of the existing composting facility; and (3) an increase in the maximum daily number of vehicles entering the facility. The current configuration of the southern part of the landfill, where all of the proposed Project elements would be located, is shown in **Figure 2**. Proposed changes to the facility’s site plan are shown in **Figure 3**. While Redwood Landfill is proposing to construct and operate both a new MRF and an expanded composting facility, the landfill is not proposing to increase the permitted maximum daily intake of wastes for landfill disposal. Nor is Redwood Landfill proposing to increase the capacity of the landfill or to change any of the landfill’s existing environmental controls. Each element of the proposed Project is described in detail below, and summarized in **Table 1**. Proposed changes to the maximum daily amount of waste and to the maximum daily number of vehicles are shown in **Table 2**.

Materials Recovery Facility

A major component of the Mitigated Alternative described in the certified FEIR was a MRF that would be used to recover recyclable and reusable materials from loads arriving at the landfill. Condition U of the current SWFP includes the requirement for the landfill operator to, “...apply for additional permits needed to construct and implement a construction and demolition material resource and recovery operation (C&D operation) within the landfill property within two years of issuance of the SWFP and make every effort to complete implementation within three (3) years of SWFP issuance.” The SWFP allows the landfill to receive and process up to 400 tons per day of recyclable materials. The MRF now being proposed is a “dry” MRF, which would allow Redwood Landfill to process commingled construction and demolition material (C&D) and other non-putrescible materials that may otherwise be destined for disposal in the landfill.

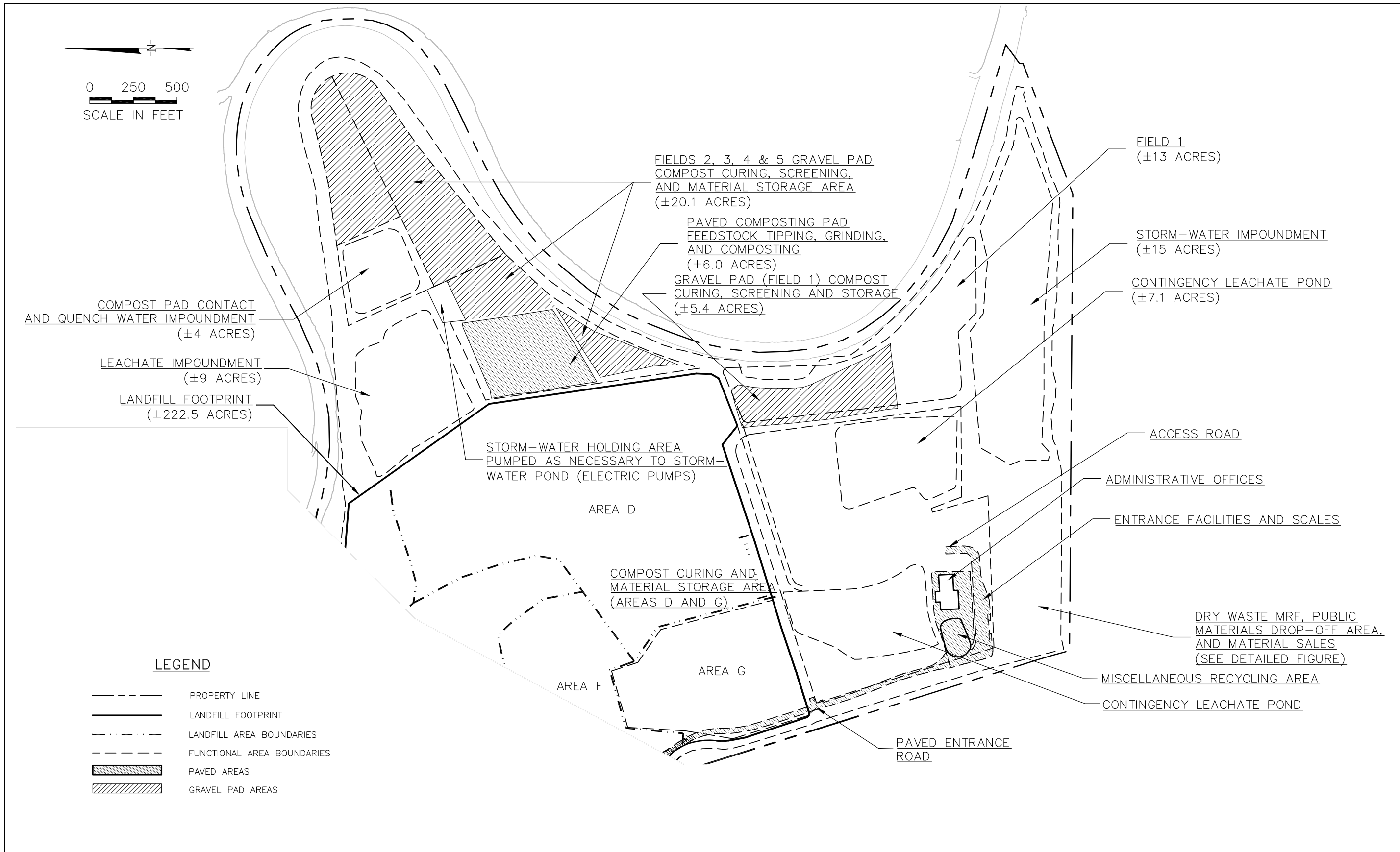
Currently, Redwood Landfill receives some loads that contain high concentrations of commingled recyclable materials. These consist primarily of C&D materials. These materials are not separated and processed on-site, but rather are transferred to the Davis Street MRF in San Leandro (Alameda County). The proposed MRF would allow Redwood Landfill to separate and process for sale C&D materials such as gypsum wallboard, lumber, shingles, metals, concrete, rock, and brick; as well as other dry wastes such as cardboard and plastics.²

² Redwood Landfill’s application for a SWFP and WDRs for the MRF state that permitted wastes to be received include the following categories: construction/demolition, contaminated soils (when accompanying C&D loads), industrial, inert, mixed/municipal solid waste (non-putrescible), and other non-putrescible waste.



NOTES:

1. SITE TOPOGRAPHY PROVIDED BY AEROMETRIC, INC. AERIAL PHOTO DATED 22 APRIL 2011.



SOURCE: Geosyntec Consultants

Redwood Landfill EIR Addendum . 210666

Figure 3
Proposed Site Plan

**TABLE 1
PROPOSED CHANGES TO THE 2008 SOLID WASTE FACILITY PERMIT**

Project Element	2008 SWFP	Proposed Change
Materials Recovery Facility	Permits 400 tons per day for recycling. Condition U requires the operator to apply for additional permits to construct and implement a construction and demolition material resource and recovery operation.	Proposed MRF is intended to fulfill the requirements of Condition U, which requires the operator to apply for additional permits to construct and implement a construction and demolition material resource and recovery operation.
Composting Facility	Permits acceptance of up to 170 tons per day for composting, and a maximum of 60,000 cubic yards of feedstock, active compost, and finished product on site at any time.	Proposed increase to 514 tons per day.
Traffic	Permitted traffic volume is 662 total daily vehicles entering site, of which 50 vehicles may be for employees, visitors, deliveries	Increase total daily vehicles entering the site by 28, to 690.

**TABLE 2
EXISTING AND PROPOSED WASTE AND TRAFFIC LIMITS**

	Current Permit	Proposed	Change
Waste Stream			
Existing and Proposed Waste Limits (all figures are tons per day)			
Total Waste for Disposal	1,390	1,390	-
Total Materials for Composting	170	514	344
Total Materials for Recycling	400	400	-
Total Cover Materials	350	350	-
Total – All Materials ^a	2,310	2,654	344
Vehicle Type			
Existing and Proposed Traffic Limits (vehicles per day)			
Total Daily Vehicles Entering Site ^b	662	690	28

^a This figure does not include concrete and asphalt, which are used for on-site construction material; nor minimally-contaminated soil, which is used for cover material.

^b For both current permit and proposed, of the figure stated, 50 vehicles are employees, visitors, deliveries.

Redwood Landfill generally considers its usual market area for disposal and recycling loads to be areas within a one-hour driving distance. Loads directed to the MRF for recovery may include loads that would otherwise be destined for landfill disposal, as well as loads brought to the facility intentionally for recovery.

The proposed location for the MRF is in the southwestern portion of the landfill, adjacent to the existing administrative building and scalehouse (Figure 3). The MRF would have a capacity of 400 tons per day of incoming commingled materials. It would include a drop-off area for customers with source-separated recyclable materials; a reuse center consisting of a small area for storage of segregated usable items such as building materials, fixtures, bicycles, and furniture; and a garden

center where compost and other landscape products made from recyclable materials would be sold to the public (**Figure 4**). The proposed hours of operation would be the same as the existing hours for the landfill: commercial customers: 12:00 a.m. – 3:00 p.m., Monday through Friday, and 12:00 a.m. – 3:30 p.m. Saturday; and public customers, 7:00 a.m. - 3:00 p.m. Monday – Friday, and 8:00 a.m. – 3:30 p.m. Saturday.³ Processing would take place up to 24 hours per day, 7 days per week. The entire landfill facility is closed on Christmas Day and New Year’s Day.

The scale house operator would direct loads suitable for recycling to the MRF receiving area. The materials would then be unloaded, and sorted for recycling or reuse. The facility would have separate unloading areas for commercial loads and public loads; a long infeed conveyor, one or more screens to separate material sizes, a magnet to remove metals, and a covered area where workers would manually sort materials passing by on a conveyor belt. There would be 8 to 14 sorting stations along the conveyor. The applicant proposes to use fine materials that fall through the smallest screen as an Alternative Daily Cover material for waste placed in the landfill.⁴ The materials sorting system that Redwood Landfill has preliminarily selected is the Super Portable System, produced by Krause Manufacturing, Inc.⁵ All processing equipment would be powered by electricity. The MRF facility would be completely open-air, except for a canopy over the sorting system. Redwood Landfill does not have plans to use a baler or other equipment to reduce the volume of recovered materials prior to shipment, but a baler could be installed at a later date if the quantity of recovered cardboard and other paper products warrants it. All outbound materials are likely to be shipped in 18 wheel tractor trailers.

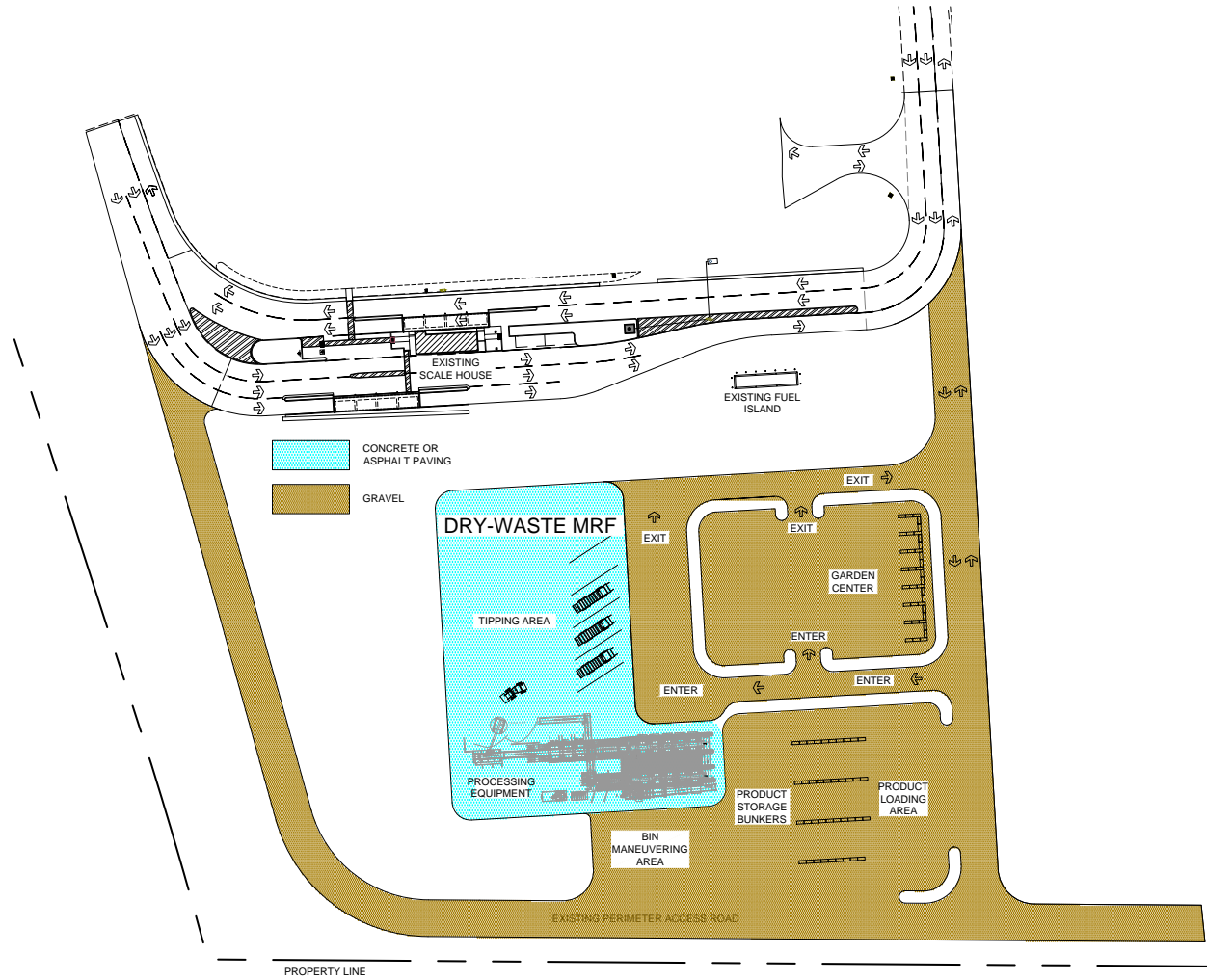
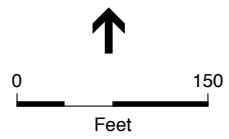
The entire MRF site would be paved with asphalt or concrete, or compacted and graveled as necessary to allow vehicle travel and equipment operations, and to control stormwater runoff (Figure 4). To reduce air emissions, Redwood Landfill has committed to achieving a reduction of 20 percent in emissions of oxides of nitrogen (NOx) below the fleet average for diesel-powered off-road equipment (such as bulldozers, scrapers, and loaders) used to construct the MRF. To demonstrate adherence to this commitment, the applicant has committed to providing a construction plan to Marin County Environmental Health Services (the Local Enforcement Agency, or LEA), prior to commencing construction, that lists the type, model, engine model year, fuel type, and emissions standards for all construction equipment to be used in constructing the MRF; and following completion of construction, to submitting a report to the LEA detailing equipment actually used, including hours of operation for each piece of equipment and fuel type used. The report would be provided within 30 days of completion of construction and would compare estimates of emissions to the fleet average, and demonstrate the 20 percent reduction.

To avoid disturbance or destruction of bird nests, Redwood Landfill has committed to limiting construction activities at the MRF site to the non-nesting season, i.e., between September 1 and January 31, or, alternatively, to employing a qualified wildlife biologist to conduct pre-construction

³ Loads of sewage sludge (biosolids) are accepted at Redwood Landfill 24 hours per day, seven days per week, except Christmas Day and New Year’s Day.

⁴ In order to use this material as Alternative Daily Cover, it will be necessary for an Amendment to the Joint Technical Document to be filed by the Operator and accepted by the LEA.

⁵ This system is described and depicted at the Krause Manufacturing website: <http://www.krausemanufacturing.com/node/26>



surveys to determine whether birds are nesting on or near the site. If nesting birds are found, construction will be delayed until after the nesting season, or, alternatively, Redwood Landfill will consult with the California Department of Fish and Game and implement any measures required to avoid disturbing active nests, such as avoiding areas where birds are found to be nesting and establishing an adequate buffer for their protection. Redwood Landfill has furthermore committed to notifying the LEA 30 days prior to the intended commencement of construction activities, and, prior to commencement of construction, providing a report to the LEA detailing adherence to these commitments.

Stormwater would be directed through surface conveyances to the landfill's existing stormwater pond, located in the southeastern portion of the landfill site. Water from the stormwater pond would also be used for dust control at the MRF. However, the water spray system for dust control would utilize potable water.

Composting Facility

Redwood Landfill's existing SWFP allows the facility to receive and process for composting 170 tons per day of green/yard/wood waste, Class B biosolids (i.e., sewage sludge that meets minimum standards for pathogen reduction and heavy metals concentrations),⁶ and both commercial and residential food waste. The SWFP allows Redwood Landfill to compost up to 170 tons per day and to have up to 60,000 cubic yards of feedstock, active compost, and finished product on site at any time, while the BAAQMD Permit to Operate establishes a maximum annual throughput of compost material of 50,000 tons per year. The facility currently conducts windrow-type composting, as described in the existing Report of Composting Site Information (Redwood Landfill, Inc., 2009). The existing operation includes grinding or chipping of the composting feedstock; forming the processed feedstock into windrows and periodically turning the windrows (at least once every three days for 15 days) to promote aerobic decomposition (this is the "active" stage of the composting process); and then placing the material into curing piles for several weeks to months. Upon completion of the curing stage, the finished compost is screened. It is then either sold to customers on site or delivered off site.

Figure 2 shows the location of the current composting operation, in the Oxbow area in the eastern portion of the landfill site. The composting area features a six-acre paved pad, where receiving, grinding, and active composting occur. Material is also screened, cured, and stockpiled on adjacent unpaved areas of Fields 2, 3, 4, and 5, on or off of gravel pads located in these areas (Figure 2).⁷

Redwood Landfill is now proposing to convert the existing windrow composting operation to a "covered aerated static pile" (CASP) composting operation, and to increase the permitted throughput from 170 tons per day to 514 tons per day. The maximum annual throughput would be

⁶ While Redwood Landfill is permitted to compost biosolids mixed with greenwaste and other feedstock, the facility has not in fact composted any biosolids for at least three years. The composting of biosolids together with other feedstocks, such as greenwaste, is called "co-composting."

⁷ Note that, in Figures 2 and 3, labels indicating, "Compost Curing, Screening, and Materials Storage Area" are currently used, and proposed to be used, for storing and handling only compost materials that have completed the active composting stage.

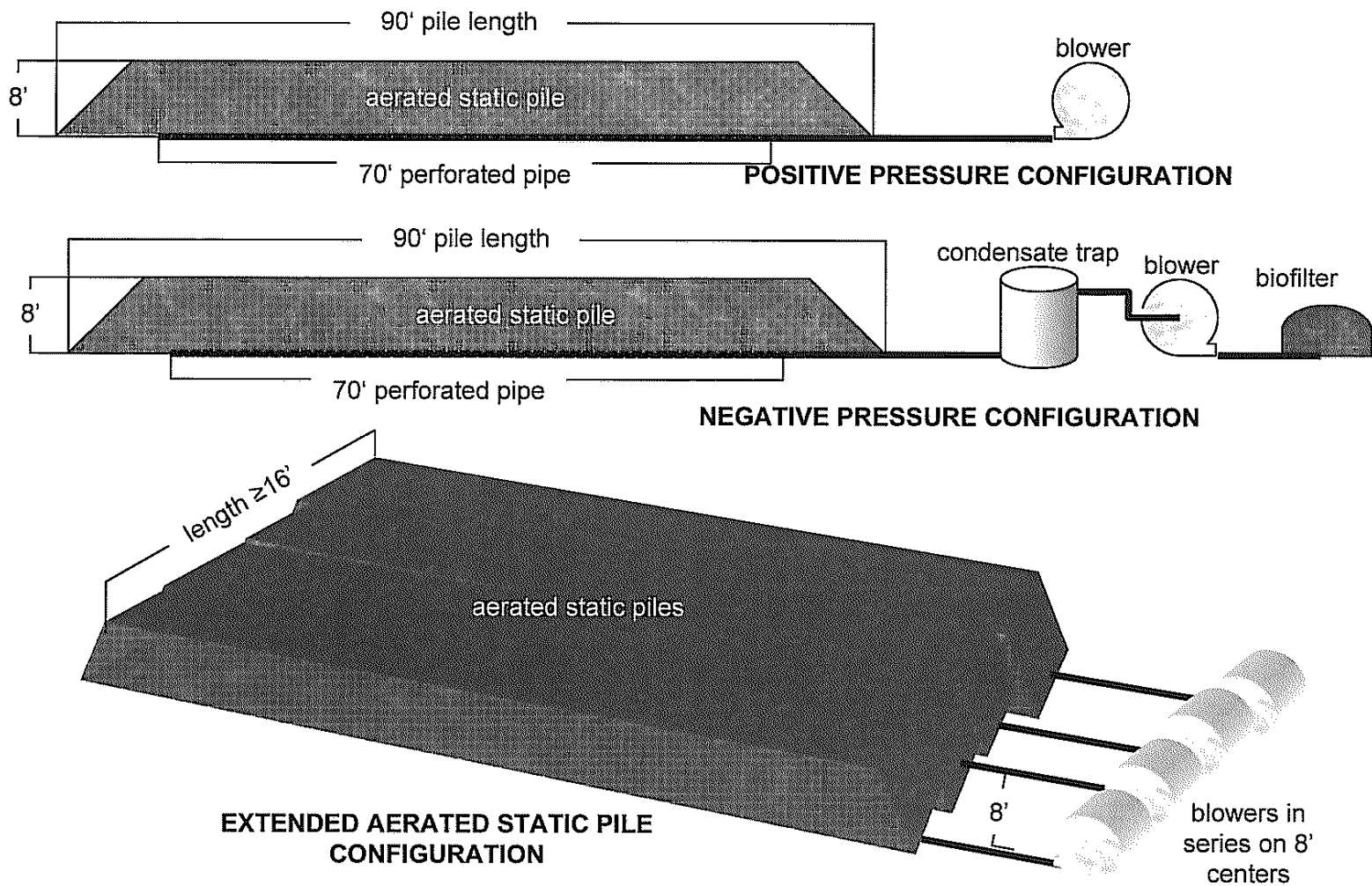
160,368 tons. This would increase the maximum amount of material accepted for composting by 344 tons per day. The total material permitted to be received per day for the entire landfill site would therefore increase by 344 tons per day.⁸ The composting facility would use the same feedstocks as it currently is permitted to use, including green/yard/wood waste, foodwaste, and biosolids for composting. Redwood Landfill is also proposing to add agricultural materials (such as grape pomace and animal manure) to improve the quality or nutrient content of the compost. Equipment used in the expanded composting operation would remain the same as for the current composting operation, except that windrow turners would no longer be used and electric blowers would be used to aerate the piles.

The CASP method has several advantages over windrow composting. Primarily, the CASP method has the ability to reduce air emissions substantially, including volatile organic compounds, dust, bioaerosols, and odors, as compared to open windrow operations. With the CASP method, the materials prepared for composting are placed into a large pile atop perforated pipes and covered with a layer of finished compost approximately 6-12 inches thick, or with other materials. Other materials used for covering piles may include synthetic materials, such as Gore-tex, wood chips, and compost “overs” (materials that do not pass through a screen). CASP composting piles are built in a round, oval, or trapezoidal shape, with dimensions up to 100 feet long or across, and up to 25 feet high. Once constructed, the piles are not turned. Bulking agents, typically wood chips or compost overs, are added to the pile to increase porosity and enhance air flow through the pile. During the active composting phase, the piles are monitored for temperature, moisture content, and oxygen levels to ensure that suitable conditions are maintained.

With the CASP method, aerobic conditions within the pile are maintained by pushing (pressure-based, i.e., positive aeration) or pulling (vacuum-based, i.e., negative aeration) air through the pile (**Figure 5**). In a vacuum-based CASP system, an electric blower draws air from a perforated plastic pipe inside the pile, thus creating a vacuum within the pile, and promoting the flow of fresh air from the surface of the pile, through the mass of composting materials, and into the pipe. Each perforated pipe end may have an individual blower attached or multiple pipes may run from one larger blower. At the blower end of the piping system, a biofilter, created from moist, organic material such as wood chips or compost overs, is used to reduce odors and other air emissions. Lastly, a condensate trap is used to capture moisture extracted from the pile during the vacuum process.

In a pressure-based CASP configuration, a blower pushes fresh air into the perforated PVC pipe buried in the pile, which then forces air outward through the pile to the surface. The possible blower configurations are the same as described above for a negative air system. When the pile is constructed, finished compost, ash, compost overs, or other materials, including synthetics, are applied as the cover and act as a biofiltration layer. This layer allows air from the CASP to pass through the surface, but reduces pollutant emissions.

⁸ The figures for total amount of materials accepted are exclusive of concrete, asphalt, and minimally petroleum-contaminated soil for construction and cover material.



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To reduce noise emissions and avoid potential impacts on sensitive species in Petaluma marsh, Redwood Landfill has committed to enclosing the blowers used for the CASP composting system in a portable enclosure that achieves a minimum sound reduction of 20 A-weighted decibels (20 dBA), and locating the blowers at least 700 feet from the edge of the marsh.

After sufficient time in the CASP (typically 4-6 weeks), the pile would be broken down, and the composted material removed to another pile, which is not aerated, to mature and cure. The compost would then be screened and tested to ensure it meets all regulatory requirements for pathogen reduction and heavy metals concentration prior to sale. Finished compost would be sold on site or transported off site for sale.

All receiving of compost feedstocks, preparation of feedstocks for composting (including grinding of material) and active composting in the CASP piles would continue to take place in the same location as the existing operation, on the six-acre paved compost pad, which is located on a portion of Fields 2 and 3 in the Oxbow area (Figures 2 and 3). Redwood Landfill is currently using adjacent, unpaved areas of Fields 2, 3, 4, and 5, some of which have a gravel surface, for screening, curing, and storage of composted materials that have completed the active composting stage (Figure 2). Redwood Landfill is proposing to use other unpaved areas of the Oxbow and other areas in the eastern portion of the site, including approximately 5.4 acres in the northern part of Field 1, as well as the top deck of the southern-half of the landfill (areas D and G) for curing and storage of composted materials that have completed the active composting stage (Figure 3). Screening would occur in these same areas, except it would not occur in Areas D and G. As indicated in Figure 3, Redwood Landfill is planning to construct new or extended gravel pads in some of these areas.

To reduce air emissions associated with construction activities, Redwood Landfill has committed to achieving a reduction of 20 percent in emissions of oxides of nitrogen (NO_x) below the fleet average for diesel-powered off-road equipment (such as bulldozers, scrapers, and loaders) used to construct the expanded composting facility. To demonstrate adherence to this commitment, the applicant has committed to providing a construction plan to the LEA prior to commencement of construction activities that lists the type, model, engine model year, fuel type, and emissions standards for all construction equipment to be used in constructing the expanded composting facility; and, within 30 days of completion of construction, to submit a report to the LEA detailing equipment actually used, including hours of operation for each piece of equipment and fuel type used; the report would compare estimates of emissions to the fleet average, and demonstrate the 20 percent reduction.

Consistent with existing operations in the Oxbow and in Field 1, the Project would not involve the filling or dredging of any wetlands that may be present at the landfill site, including federal waters or Waters of the State.

Runoff from the existing six-acre compost pad is currently conveyed to the leachate impoundment in the Oxbow. Under the proposed expanded and modified composting operation, runoff from the compost pad, including precipitation that contacts inbound feedstock materials and compost, would be managed separately from landfill leachate. Instead of being conveyed to the existing leachate

impoundment, it would be placed in a new wastewater impoundment in the westernmost portion of Field 5 and utilized as quench water in the composting operation. Preliminary calculations provided by the applicant indicate that the new impoundment would have a capacity of 13.3 acre feet, which would provide adequate capacity for runoff from the compost pad from the 1,000-year, 24-hour storm event (Geosyntec, 2012). The existing stormwater pond located at the southern end of the site (Figures 2 and 3) would also continue to be a source of quench water.

The State Water Resources Control Board (SWRCB) has developed draft General Waste Discharge Requirements for the Discharge of Wastes at Compost Management Units, as well as a Monitoring and Reporting Program for the General Waste Discharge Requirements for the Discharge of Wastes at Compost Management Units (collectively referred to here as the draft General Compost WDRs). The August 2012 draft General Compost WDRs contain management procedures and design standards to address water quality concerns associated with each stage of the composting process, as well as standards and requirements for the disposition of water used in and generated from compost management units. The applicant has stated their commitment to comply with the Tier 2 standards contained in the draft General Compost WDRs, which are incorporated by reference into the description of the Project, and attached to this Addendum as Appendix C. To the extent the standards in the draft General Compost WDRs are modified as the SWRCB proceeds with its rulemaking process, the applicant would, at the time of permitting of the expanded composting operation, comply with the current standards applicable to the composting operation or any other standards or conditions required or approved by the Regional Water Quality Control Board (RWQCB).

To demonstrate compliance with the requirements of the draft General Compost WDRs, and to ensure protection of water quality, the applicant will, prior to commencing operation of the expanded compost facility, prepare a technical report according to the guidelines and requirements detailed in Attachment C of the draft General Compost WDRs. In addition, the applicant will prepare a monitoring and reporting program to comply with the requirements contained in the draft Monitoring and Reporting Program for the General Compost WDRs.

The applicant has proposed the following design criteria for the compost wastewater impoundment and working surfaces for the compost operation (Geosyntec Consultants, 2013a, 2013b):

- Management of runoff from the existing six-acre paved area in a new impoundment with adequate capacity to store all runoff from at least a 1,000-year, 24-hour storm event (consistent with State Water Resources Control Board Class II Impoundment specifications and Tier 2 draft General Compost WDRs).
- Design of the impoundment with a hydraulic conductivity of 1×10^{-6} cm/s with a base liner system of at least 2 feet of compacted clay or engineered alternative approved by the RWQCB (consistent with Class II Impoundment specifications and Tier 2 draft General Compost WDRs).
- Design of the impoundment to withstand the Maximum Credible Earthquake (MCE) (consistent with Class II Impoundment specifications).

- Demonstration of hydraulic conductivity of 1×10^{-6} cm/s or engineered alternative approved by the RWQCB for soils underlying working surfaces used for compost curing, screening and storage outside the landfill footprint (consistent with Class II Impoundment specifications and Tier 2 draft General Compost WDR).

The applicant is also proposing that runoff from additional unpaved areas proposed for use for curing, screening, and storage of composted material, including Fields 1, 4, and 5, and landfill areas D and G, would be conveyed to the stormwater pond at the southern end of the site. Runoff from the unpaved portions of Fields 2 and 3, where screening, curing, and storage of composted materials now occurs, would continue to be conveyed to the existing stormwater pond (Figure 2).

Storm water runoff from the composting facility is currently managed and monitored according to a Storm Water Pollution Prevention Plan (SWPPP), pursuant to the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Industrial Activities (General Industrial Permit). The SWPPP will be revised to include Best Management Practices (BMPs) and a storm water monitoring program to ensure that storm water runoff from the expanded composting operation will not adversely affect water quality. BMPs will include performance standards for any storm water from the composting operation that is discharged off-site. The SWPPP will also include a monitoring and reporting program to determine whether BMPs are effective. The monitoring program will be developed with reference to the “constituents of concern” contained in Table 1 of the draft Monitoring and Reporting Program contained in the draft General Compost WDRs.

Most of the water used for quench water at the composting facility would come from the stormwater pond or the proposed new wastewater pond. The composting facility may also use water supplied by the Marin Municipal Water District through an existing connection, as it does currently. During periods of drought, however, Redwood Landfill proposes using only water from non-potable sources for quench water for the expanded composting operation.

Traffic

Redwood Landfill expects compost loads to arrive in a range of truck sizes and load volumes. The expectation is that the majority of loads would be small and would originate an average of 10 miles from the landfill. The greatest volume of compost materials, however, is expected to arrive in large heavy-duty trucks, from more distant sources (average of 18 miles away).

The current SWFP limits Redwood Landfill to a maximum of 662 vehicles entering the site each day, 50 of which are reserved for employees, visitors, or deliveries only. The maximum number of vehicles bringing waste and other materials to the site is 612 vehicles per day.

Redwood Landfill is requesting an increase of 28 additional vehicles per day, consistent with the traffic levels analyzed as the original “proposed project” (which was not adopted) in the 2008 FEIR, to accommodate MRF traffic. This would increase the maximum number of vehicles entering the facility to 690 per day (Table 2).

Discretionary Approvals

The Project would require permits and approvals from the following agencies:

Lead Agency (Marin County Environmental Health Services, Local Enforcement Agency)

The Project would require changes to the terms and conditions contained in the 2008 SWFP. If approved, the Project would result in the LEA removing reference to a “construction and demolition material resource and recovery operation” and associated maximum permitted daily tonnage from SWFP-21-AA-0001 and issuing a new SWFP specifically for the MRF. The LEA also would remove references to the existing composting facility, and either include the expanded composting facility in the same SWFP as the MRF, or issue a third permit exclusively covering the composting facility. CalRecycle must concur in the issuance of all SWFPs.

Responsible Agencies

San Francisco Bay Regional Water Quality Control Board

Redwood Landfill’s 2009 WDRs acknowledge the existing composting operations at the site, and the change to the CASP process and increased throughput would not necessarily require any changes to those WDRs. As explained above, the SWRCB is in the process of promulgating new regulations that are specific to composting facilities.⁹ After the new regulations are adopted, the applicant will submit a “Notice of Intent” (NOI) to the San Francisco Bay Regional Water Quality Control Board (RWQCB). The NOI will state the applicant’s intent to design and operate the composting facility pursuant to the standards and requirements of the General Compost WDRs, and will include a technical report describing how this will be achieved. The RWQCB will determine whether the proposed expansion of the compost facility complies with the requirements of the General Compost WDRs and is protective of water quality. In the event that the General Compost WDRs have not been adopted, the substantive requirements of the latest draft of the General Compost WDRs will be addressed in a technical report, and may, as appropriate, be incorporated as BMPs and a monitoring and reporting program into a revised SWPPP.

Bay Area Air Quality Management District

Redwood Landfill has requested a change of condition of the site’s BAAQMD Permit to Operate (PTO) and a Minor Revision of its Major Facility Review (MFR or Title V) Permit to accommodate the proposed CASP composting operation. Redwood Landfill has also applied to the BAAQMD for an Authority to Construct/Permit to Operate and Title V Permit Revision for the proposed MRF.

⁹ Information on the SWRCB’s regulatory process may be found at: http://www.waterboards.ca.gov/water_issues/programs/compost/

Other Permits and Approvals

Non-Disposal Facility Element Revision

The Project may require a revision of the Non-Disposal Facility Element of the Countywide Integrated Waste Management Plan, to include more detailed descriptions of the MRF and expanded compost facility. This action would be undertaken by the Marin County Hazardous and Solid Waste Management Joint Powers Authority.

Building Permit

The Project would require a building permit from the Marin County Building Department.

Grading Permit

Construction of the Project would also require a Grading Permit from the Marin County Public Works Department.

References – Project Description

California Department of Fish and Game, *Petaluma Marsh Wildlife Area - Marin & Sonoma Counties*. <http://www.dfg.ca.gov/lands/wa/region3/petalumamarsh.html> Accessed August 30, 2011.

Geosyntec Consultants, 2012, *Conceptual Layout of the Compost Pad Runoff Impoundment, Redwood Landfill*. Memorandum from Arnab Chakrabarti (Geosyntec) to Jessica Jones (Redwood Landfill, Inc.), May 8, 2012.

Geosyntec Consultants, 2013a, *Design Memorandum #1, Composting Facility Design, Redwood Landfill: Working Surface Design Recommendations for Compost Curing, Screening and Storage Areas*. Memorandum from Krzysztof Jesionek (Geosyntec) to Daniel North (Redwood Landfill, Inc.), January 21, 2013.

Geosyntec Consultants, 2013b, *Design Memorandum #2, Composting Facility Design, Redwood Landfill: Conceptual Design of Compost Pad Run-off Pond*. Memorandum from Krzysztof Jesionek (Geosyntec) to Daniel North (Redwood Landfill, Inc.), January 30, 2013.

Marin County, 1994. *Redwood Landfill Solid Waste Facilities Permit Expansion Project Final Environmental Impact Report*, SCH #91033042, prepared by Woodward Clyde, February 1994.

Marin County, 2002. Marin County Community Development Agency, *Redwood Landfill Inc. Interim Access Road Improvements, Final Supplemental EIR*, June, 2002.

Marin County, 2008, *Redwood Landfill, Final Environmental Impact Report*, 2008.

Redwood Landfill, Inc., 2009, *Report of Composting Site Information for Redwood Landfill*. October 22, 2009.

CHAPTER 3

Environmental Checklist for Supplemental Environmental Review

The purpose of this checklist is to evaluate the Redwood Landfill Compost Facility Expansion and Materials Recovery Facility Project (Project) in order to determine, for each environmental resource area, whether any “changed condition” (i.e., changed circumstances, Project changes, or new information of substantial importance) may result in a new or substantially more severe environmental impact. A “no” answer does not necessarily mean that there are no potential impacts relative to that environmental area, but that there is no change in the condition or status of the impact since it was analyzed and addressed (with or without mitigation) in a prior environmental document (i.e., the 2008 Final Environmental Impact Report (FEIR)¹). Accordingly, the answer in the checklist may be “no” if the Project does not involve changes that would result in a modification to the conclusion of the prior environmental documents with regard to that particular impact.

Explanation of Checklist Evaluation Categories

Where Impact was Analyzed

The first column in the checklist, “where impact was analyzed,” provides a cross-reference to the particular FEIR document and impact number, section, or pages in which information and analysis that pertain to the environmental issue listed under each topic may be found. The FEIR consists of the following documents:

- FEIR Volume I (Revisions to the Draft Supplemental Environmental Impact Report) and Volume II (Response to Comments on the Draft Supplemental Environmental Impact Report) (July, 2005);
- FEIR Response to Comments Amendment (March, 2008);
- FEIR Second Amendment (May, 2008);
- Mitigation Monitoring and Reporting Program (November, 2008).

¹ Redwood Landfill Final Environmental Impact Report (State Clearinghouse #1991033042), 2008.

Do Proposed Changes Involve New or Substantially More Severe Significant Impacts?

Pursuant to Section 15162(a)(1) of the State CEQA Guidelines, this checklist column indicates whether the proposed changes in the current Project would result in new significant impacts that have not already been considered in the FEIR or a substantial increase in the severity of a previously identified significant impact.

Do Any New Circumstances Involve New or Substantially More Severe Impacts?

Pursuant to Section 15162(a)(2) of the State CEQA Guidelines, this checklist column indicates whether there have been circumstances under which the Project is undertaken (e.g., changes to the Project site or the vicinity) that have occurred subsequent to the prior FEIR, which would result in the current Project having new significant environmental impacts that were not considered in the FEIR or which would substantially increase the severity of a previously identified significant impact.

Any New Information of Substantial Importance Requiring New Analysis or Verification?

Pursuant to Section 15162(a)(3)(A-D) of the State CEQA Guidelines, this column indicates whether new information of substantial importance which was not known and could not have been known with the exercise of reasonable diligence at the time the previous FEIR was certified as complete is available requiring an update to the analysis of the previous FEIR to verify that the environmental conclusions remain valid. If the new information shows that: (A) the Project would have one or more significant effects not discussed in the prior environmental documents; or (B) that significant effects previously examined would be substantially more severe than shown in the prior environmental documents; or (C) that mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects on the Project, but the Project proponents decline to adopt the mitigation measure or alternative; or (D) that mitigation measures or alternatives which are considerably different from those analyzed in the prior environmental documents would substantially reduce one or more significant effects on the environment, but the Project proponents decline to adopt the mitigation measure or alternative, then the question would be answered 'Yes' and would either require the preparation of a subsequent or supplemental EIR or a mitigated negative declaration. However, if the additional analysis completed as part of this environmental review finds that the conclusions of the prior environmental documents remain the same and no new significant impacts are identified, or identified environmental impacts are not found to be more severe, or additional mitigation is not necessary, then the question would be answered 'No' and no additional environmental documentation is required. New studies completed as part of this environmental review are attached to this checklist, or are on file with the Marin County Community Development Agency.

Do Existing FEIR Mitigation Measures Reduce Impacts to a Less-Than-Significant Level?

Pursuant to Section 15162(a)(3) of the State CEQA Guidelines, this column indicates whether the prior FEIR identifies feasible mitigation measures to avoid or minimize the significant impacts of the proposed Project. In most cases, the mitigation measures that were identified in the FEIR were adopted, made conditions of Project approval, and have already been implemented. A “yes” response is provided if previously-adopted mitigation measures would effectively reduce new or more severe impacts of the current Project. A “no” response would indicate that previously-adopted measures are insufficient to reduce new or more severe impacts. If “NA” is indicated, this Supplemental Environmental Review concludes that the impact does not occur with this Project and therefore no mitigation is needed.

Discussion and Mitigation Sections

Discussion

A discussion of the elements of the checklist is provided under each environmental category in order to clarify the answers. The discussion provides information about the particular environmental issue, how the Project relates to the issue, and the status of any mitigation that may be required or that has already been implemented.

Mitigation Measures

Applicable mitigation measures from the prior environmental review that are required to reduce or avoid impacts of the current Project are listed under each environmental category. New mitigation measures are included, if needed. The final text of the mitigation measures from the FEIR is included in the “Mitigation Measures” section of each checklist item. In several instances, revisions to previously adopted mitigation measures are provided. Revisions are for clarity, for consistency with current regulations, or to make them applicable to the current Project. All revisions to mitigation measures are also compiled in Chapter 4. Revisions are indicated by ~~strikethrough~~ and underline text.

Conclusions

A discussion of the conclusion relating to the analysis contained in each section.

1. Aesthetics

Environmental Issue Area	Where Impact Was Analyzed in FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
1. Aesthetics. Would the Project:					
a. Have a substantial adverse effect on a scenic vista?	FEIR Volume I, Impacts 3.1.1, 3.1.2, 3.1.3, 3.1.4, CU-1; FEIR Volume II, Master Response 110.	No	No	No	N/A
b. Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	FEIR, Volume I, Impact CU-1.	No	No	No	N/A
c. Substantially degrade the existing visual character or quality of the site and its surroundings?	FEIR Volume I Impact 3.1.6.	Yes	No	No	Yes
d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	FEIR Volume I, Impacts 3.1.5, 3.6.2.	Yes	No	No	Yes

Discussion

To address aesthetics impacts, the proposed Project was evaluated for differences from the project previously analyzed in the FEIR, and compared to the analysis in the FEIR.

- a) The FEIR analyzed the visual impact of four vantage points, three along US 101 and one from Olompali State Park looking Northeast. The FEIR found that the project being analyzed at that time would not cause a significant adverse impact on scenic views. The distance across Petaluma Marsh from publically-accessible viewing locations to the east, such as Lakeview Highway, was too far from the landfill for the project then being reviewed to affect views adversely. See FEIR Response to Comments Amendment, Master Response 110. The currently-proposed Project would include the construction of a new MRF facility and expanded composting facility. Neither of these Project elements would involve permanent structures or alterations of existing landscape features, but would only involve minor changes to the Project site. Therefore, the current Project would not cause a new or more severe impact on scenic vistas.
- b) The FEIR concluded that the landfill site does not contain any notable scenic resources, and that the site is not within view of any officially-designated State scenic highway. This is still the case (Marin County, 2007). The FEIR also examined whether the project might

make a considerable contribution to a cumulative degradation of the visual character of the surrounding area, and found that it would not (Impact CU-5). The currently-proposed Project would not alter these conclusions.

- c) The FEIR identified a significant impact related to the potential for the Project then being reviewed to result in increased litter, which could degrade the visual quality of the area (Impact 3.1.6). The proposed increase in the size of the composting operation from 170 tons per day to 514 tons per day, and the addition of a MRF, may increase the possibility of materials escaping from incoming loads and causing litter. As with the project analyzed in the FEIR, this may substantially degrade the visual quality of the surrounding area. However, the litter control program specified in previously adopted Mitigation Measures² 3.1.6a, b, c, and e would be effective in minimizing litter, and would ensure that the Project now being proposed would not substantially or significantly increase the severity of this impact. Therefore, with continuation of these mitigation measures, no new or more severe impact would occur.
- d) The FEIR identified a less-than-significant impact as a result of increased light and glare (Impact 3.1.5). The applicant is now proposing to construct a MRF facility that operates up to 24 hours per day, seven days per week. Nighttime MRF operations can be expected to require new or additional lighting. The 2008 FEIR found that the proposal to increase the amount of waste accepted at the landfill could result in increased nighttime lighting. The 2008 FEIR concluded, however, that the increase would not be substantial, as the facility was already permitted to operate 24 hours per day, and that the impact would be less than significant. The discussion of Impact 3.1.5 in the FEIR also noted that Mitigation Measure 3.6.2c, which was required to reduce potential effects of nighttime lighting on operations at Gness Field (see discussion in Section 10, Land Use and Planning), would further reduce the potential impact on visual character and nighttime views. This measure was subsequently adopted and incorporated into the facility's Mitigation Monitoring and Reporting Plan (MMRP). Mitigation Measure 3.6.2c was broadly written to ensure that any future changes in lighting would not adversely affect Gness Field operations. This measure, if applied to the current proposal to operate a MRF, would also be effective in reducing to less-than-significant the impacts of new lighting on the visual character of the area, as well as on Gness Field operations.

The proposed Project does not involve construction of any new structures or features that may be a substantial new source of daytime glare. The Project now being proposed would include an increase in the maximum daily number of vehicles entering the facility from 662 vehicles per day to 690 vehicles per day, the same level examined in the FEIR. Therefore, the current Project is not expected to result in any new or more severe impact related to increased nighttime lighting or glare from vehicles, beyond that examined in the FEIR and found to be less than significant.

² Mitigation Measure 3.1.6d in the Final EIR stated that "The waste tipper shall not be operated in wind conditions that would result in windblown litter, regardless of wind speed." This measure, however, was not adopted for the approved, Mitigated Alternative.

Mitigation Measures

Previously adopted Mitigation Measures 3.1.6a, b, c, and e would continue to reduce potential impacts resulting from litter that might substantially degrade visual character or quality. Mitigation measures 3.1.6a, b, and c are shown below, with minor revisions. Previously adopted Mitigation Measure 3.6.2c, if revised slightly as shown below, would reduce potential aesthetic impacts resulting from a new source of nighttime lighting at the proposed MRF facility.

Text of Previously Adopted Mitigation Measures

Mitigation Measure 3.1.6e: Any changes to procedures or practices in the approved project must be reported to and approved (with conditions of approval, as appropriate) by the appropriate oversight agency.

New or Revised Mitigation Measures

Previously adopted Mitigation Measures 3.1.6a, 3.1.6b, and 3.1.6c are shown below with revisions for consistency and clarity. The text of previously adopted Mitigation Measure 3.6.2c is revised to make it applicable to the current Project. Revised text is indicated below by ~~striketrough~~ and underline text.

Mitigation Measure 3.1.6a: RLI will continue its current litter-control program, which includes the following elements (Geosyntec, 1998):

- compaction of the waste,
- application of daily cover,
- placement of fixed and portable litter fences around the active working face,
- construction of a semi-permanent litter fence on the east and north sides of the landfill adjacent to San Antonio Creek,
- daily use of a clean-up crews to collect litter from the site and surrounding area, and
- use of signage to advise haulers that incoming loads must be properly covered and that tarps ~~are to~~ must be removed only in designated areas.

Mitigation Measure 3.1.6b: The tipper is shall not be operated in winds exceeding 50 mph.

Mitigation Measure 3.1.6c: RLI shall update as necessary and implement its current litter-control program to ensure compliance with 27 CCR §20830. The updated program will take into account the use of the waste tipper and ~~will~~ shall indicate the means to prevent litter from escaping the Oxbow area proposed for composting. Measures may include, but are not limited to, the following:

- use of additional portable litter fencing in the Oxbow area,
- use of higher temporary fences at the working face, as needed to prevent litter from escaping when loads are emptied by the tipper, and

- increasing the staff of the daily clean-up crew to adequately police the additional areas proposed for composting.

RLI shall submit the updated litter control plan to the LEA for approval prior to project implementation.³

Mitigation Measure 3.6.2c: To ensure that nighttime activities do not interfere with operations at Gness Field, lights used during nighttime landfill operations will not be colored, will be shielded and directed downward to reduce glare, and will be placed in an irregular pattern in order not to appear to be a runway. The applicant shall notify the Gness Field Airport prior to any change in the way lighting is used for nighttime operations.

Conclusion

The Project could result in increased litter, which could lead to degradation of scenic resources in the vicinity of the landfill. Previously adopted Mitigation Measures 3.1.6a, b, c, and e would mitigate the potential impact to less than significant. The application of Mitigation Measure 3.6.2c to the current Project would reduce to less-than-significant the potential for new lighting at the MRF facility to have an adverse effect on the visual character and nighttime views of the area. Consequently, with the continuation of these mitigation measures, the Project now being proposed would not result in a new or more severe impact on aesthetic resources.

2. Agriculture

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
2. Agriculture. Would the Project:					
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	FEIR Volume I, Impact 3.6.3.	No	No	No	N/A
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	FEIR Volume I, Impact 3.6.3.	No	No	No	N/A

³ An updated Litter Control Plan was submitted to the LEA in September, 2008 (Waste Management, 2008).

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
2. Agriculture. Would the Project:					
c. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	FEIR Volume I, Impact 3.6.3.	No	No	No	N/A

Discussion

a,b,c) As stated in the FEIR, while neighboring properties are designated “Locally Important Farmland” or “Grazing Land,” the project then being examined did not involve expansion beyond the existing landfill property and therefore would not encroach on neighboring agricultural lands. The Project now being proposed would also occur within the existing landfill boundary. Therefore, the Project would not result in a new or more severe impact on agriculture.

Mitigation Measures

No mitigation measures related to agriculture were identified in the FEIR.

Conclusion

The Project would not result in new or more severe significant impacts related to agriculture.

3. Air Quality

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
3. Air Quality. Would the Project:					
a. Conflict with or obstruct implementation of the applicable air quality plan?	438638.1	No	No	Yes	N/A
b. Violate any air quality standard or contribute substantially to an existing or Projected air quality violation?	FEIR Volume I, Impacts 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.10, 3.2.11, 3.2.12, 3.2.13, and 3.2.14; FEIR Volume II,	No	No	Yes	Yes

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
3. Air Quality. Would the Project:					
	Master Response 104; FEIR Second Amendment, Topics 7 and 13.				
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	FEIR Volume I, Impacts 3.2.1, 3.2.2, 3.2.4, 3.2.5, 3.2.6, 3.2.7, 3.2.10, 3.2.11, 3.2.12, 3.2.13, and 3.2.14; FEIR Volume II, Master Response 104; FEIR Second Amendment, topics 7 and 13.	No	No	Yes	Yes
d. Expose sensitive receptors to substantial pollutant concentrations?	FEIR Volume I, Impacts 3.2.3, 3.2.8, and 3.8.2.	No	No	No	Yes
e. Create objectionable odors affecting a substantial number of people?	FEIR Volume I, Impact 3.2.9.	No	No	No	N/A

Discussion

To address air quality impacts, the application and Project description-related materials provided by the applicant were peer reviewed by an air quality expert with expertise in CEQA analysis. The following analysis is based on new modeling of air emissions related to construction and operation of the proposed Project, and comparison with modeling results from the FEIR.

The FEIR analyzed air quality impacts of construction and operation of the project then being proposed, as well as the Mitigated Alternative. For the project as proposed at that time, 16 air quality impacts were identified, of which 12 were found to be significant and four less than significant. Of the 12 significant impacts, mitigation measures provided in the FEIR and incorporated in the MMRP were found capable of reducing seven to less-than-significant levels. Even with mitigation, however, five would remain significant and unavoidable. Greenhouse gas emissions and climate change impacts associated with the project then being proposed were examined in the FEIR Response to Comments Amendment and Second Amendment; see Section 7, Greenhouse Gas Emissions and Climate Change, below.

This analysis relies on the BAAQMD’s 2011 CEQA Thresholds of Significance (“Thresholds”). The County acknowledges that the Alameda County Superior Court recently ordered the BAAQMD to set aside its approval of the 2011 Thresholds and not disseminate them as officially sanctioned air quality thresholds until BAAQMD conducts CEQA review of them. However, the

Court did not rule that the 2011 Thresholds lacked substantial evidence to support them or that they were substantively flawed or scientifically unsound. Rather, it simply held that the BAAQMD is required to conduct further environmental review of the Thresholds before it can readopt them. Accordingly, the basis for using the Thresholds remains valid, and the County retains its discretion under CEQA to use any threshold of significance that is supported by substantial evidence. Here, the County independently finds that the thresholds on which it relies to analyze the impacts of the proposed Project are supported by substantial evidence, and reflect the levels below which the impacts of the proposed Project should not be considered significant. Therefore, a revised analysis is presented to evaluate the impacts of the proposed Project in the context of the 2011 Thresholds. In addition, revised emissions modeling was conducted to account for changes in recommended methodologies and to address additional thresholds for pollutants that were not previously estimated.

BAAQMD is the regional air quality agency for the San Francisco Bay Area Air Basin (SFBAAB), which includes Marin County. BAAQMD prepares plans in order to attain ambient air quality standards in the SFBAAB. More specifically, BAAQMD prepares ozone attainment plans (OAP) for the National Ambient Air Quality Standards (NAAQS) for ozone and clean air plans (CAP) for the California Ambient Air Quality Standards (CAAQS) both in coordination with the Metropolitan Transportation Commission (MTC) and the Association of Bay Area Governments (ABAG). With respect to applicable air quality plans, BAAQMD prepared the *Bay Area 2010 CAP* to address nonattainment of the national 1-hour ozone standard and nonattainment of the CAAQS in the SFBAAB. As stated in the State CEQA Guidelines Appendix G Checklist, conflict with an applicable air quality plan is considered in determining significant environmental effects.

The BAAQMD's significance criteria are intended to support attainment of its air quality plans, so the criteria may be relied upon to make CEQA significance determinations. The 2011 BAAQMD *CEQA Air Quality Guidelines*, which have been adopted by the County, establish the following quantitative and qualitative thresholds of significance for criteria pollutant emissions, and are used here also to determine consistency with air quality plans:

- Result in construction emissions of ROG, NO_x, or PM_{2.5} (exhaust) of 10 tons per year or greater, or an average of 54 pounds per day or greater.
- Exceed a construction emission threshold for PM₁₀ (exhaust) of 15 tons per year or greater, or an average of 82 pounds per day or greater.
- For PM₁₀ and PM_{2.5} as part of fugitive dust generated during construction, the BAAQMD Guidelines specify compliance with Best Management Practices as the threshold.
- Result in total operational emissions of ROG, NO_x, or PM_{2.5} of 10 tons per year or greater, or 54 pounds per day or greater.
- Exceed an operational emission threshold for PM₁₀ of 15 tons per year or greater, or 82 pounds per day.
- Result in CO concentrations of 9.0 ppm (8-hour average) and 20.0 ppm (1-hour average).

- The proposed residents would be exposed to, or if the Project would cause an excess cancer risk level exceeding 10 in one million or a Hazard Index greater than 1.0 at the maximally exposed individual (MEI); or
 - The Project would result in an incremental increase of greater than 0.3 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) annual average PM_{2.5}.
- a) BAAQMD recommends that the agency approving a project where an air quality plan consistency determination is required analyze the project with respect to the following questions: 1) does the project support the primary goals of the air quality plan? 2) does the project include applicable control measures from the air quality plan? 3) does the project disrupt or hinder implementation of any 2010 CAP control measures? If the answer to questions 1 and 2 is “yes” and the answer to question 3 is “no,” then the BAAQMD considers the project consistent with air quality plans prepared for the Bay Area. Any project that would not support the 2010 CAP goals would not be considered consistent with the 2010 CAP. The recommended measure for determining project support of these goals is consistency with BAAQMD CEQA thresholds of significance (which have been independently reviewed by the County and are used as the applicable thresholds of significance for the analysis in Section 3, Air Quality, of this checklist). As presented under topic b, below, the Project now being proposed would not exceed the significance thresholds; therefore, the Project would support the primary goals of the 2010 CAP.

Projects that incorporate all feasible air quality plan control measures are considered consistent with the 2010 CAP. One 2010 CAP control measure, MSM C-1, would be applicable to the Project. The intent of MSM C-1 is to reduce diesel particulate emissions from construction equipment through either installation of filters or upgrading to cleaner-burning engines. The Project would be consistent with this measure because the applicant would be required to comply with phase-in of the California Air Resources Board (CARB) In-Use Off-Road Diesel Vehicle Regulation (CARB, 2011). Furthermore, the Project would not disrupt or hinder implementation of any of the 2010 CAP control measures.

In summary, the Project would support the primary goals of the 2010 CAP, it would include all applicable 2010 CAP control measures, and it would not disrupt or hinder implementation of any 2010 CAP control measures. Therefore, the Project would not conflict with or obstruct implementation of the 2010 CAP.

- b) This discussion examines both short-term construction-related emissions and long-term operational emissions.

Short-Term Construction

Similar to the project analyzed in the FEIR, the Project now being proposed would include construction activities. The proposed expansion of the composting area and construction of the MRF would involve a construction period of approximately six months. During construction, criteria air pollutant emissions would be temporarily and intermittently generated from a variety of sources. Project-related excavation and site grading activities

would generate fugitive particulate matter (PM) dust emissions. Fugitive PM dust emissions are primarily associated with ground disturbance and material transport and vary as a function of parameters such as soil silt content and moisture, wind speed, extent of disturbance area, and the intensity of activity performed with construction equipment. Exhaust emissions from diesel equipment, material transport trips, and construction worker-commute trips also contribute to short-term increases in PM emissions, but to a lesser extent. Construction would involve use of equipment and paving materials that would emit ozone precursors (i.e., reactive organic gases or ROG, and nitrogen oxides, or NOx). Construction activities would also result in the emission of other criteria pollutants from equipment exhaust, construction-related vehicular activity, and construction worker automobile trips. Emission levels for these activities would vary depending on the number and type of equipment, duration of use, operation schedules, and the number of construction workers. Criteria pollutant emissions of ROG and NOx from these emission sources would incrementally add to the regional atmospheric loading of ozone precursors during Project development.

According to BAAQMD, PM10 is the pollutant of greatest concern with respect to construction-related emissions. Construction-related emissions of criteria air pollutants were modeled in accordance with BAAQMD methodologies using Project specifications (e.g., area disturbed, duration) described in the Project Description and construction schedule, and where necessary using default parameters contained in the California Emissions Estimator Model (CalEEMod) for Marin County. A summary of modeled average daily construction emissions is presented in **Table AQ-1**. The FEIR did not address construction-related ROG, NOx, or PM2.5. Construction emissions related to the proposed Project therefore were not examined in the FEIR, and constitute new information for the proposed Project.

TABLE AQ-1
SUMMARY OF AVERAGE DAILY CONSTRUCTION-RELATED POLLUTANT EMISSIONS
(Pounds/Day) FOR PROPOSED PROJECT^a

Year	ROG	NOx	Exhaust PM10 ^b	Exhaust PM2.5 ^b
2012 Modeled Construction Emissions (using default factors)	9	66	4	4
NOx Emissions with 20 Percent Reduction Committed to by Applicant		53		
<i>BAAQMD Construction Threshold</i>	54	54	82	54
Significant Impact?	No	No	No	No

^a Emissions were modeled using CalEEMod with default assumptions in most cases. Detailed assumptions and modeling output files are included in Appendix A.

^b BAAQMD's proposed construction-related significance thresholds for PM10 and PM2.5 apply to exhaust emissions only and not to fugitive dust.

As shown in Table AQ-1, the average daily construction-related emissions for the Project now being proposed, including construction of the expanded composting facility and MRF, would be expected to exceed BAAQMD's thresholds of significance for construction-related

emissions of NO_x, using the model's default assumptions. However, as explained in Chapter 2, Project Description, the applicant has committed to using construction equipment that achieves NO_x emissions 20 percent below the fleet average. As shown in Table AQ-1, with the use of this cleaner equipment, all criteria pollutant emissions would be below the significance threshold. In addition, previously-adopted Mitigation Measures 3.2.1b and c and 3.2.2 a, b, and c would continue to apply to the currently-proposed Project, further reducing emissions. Therefore, the Project's construction-related emissions would not contribute to a violation of air quality standards, and would not conflict with air quality planning efforts. For these reasons, the Project now being proposed is not expected to result in new or more severe significant impacts from construction-related emissions of criteria pollutants.

The BAAQMD recommends inclusion of basic best practices to control fugitive dust emissions during construction, whether or not construction-related emissions would exceed applicable thresholds. The basic control measures are similar to those included in previously-adopted Mitigation Measure 3.2.1c. Mitigation Measure 3.2.1c would continue to apply to the current Project, and would reduce construction-related fugitive dust emissions.

Long-Term Operations

Long-term sources of criteria air pollutants analyzed in the FEIR included on-road vehicles, fugitive dust, windrow composting/co-composting, and off-road equipment, which would also be associated with the proposed Project operations, including the proposed use of covered aerated static pile (CASP) composting and MRF operations. With regard to on-road traffic, the FEIR analyzed traffic and associated air emissions for the project then being proposed (690 daily vehicle trips). The FEIR Response to Comments Amendment also analyzed traffic and associated air emissions for the Mitigated Alternative (Master Response 104; 662 daily vehicle trips). The FEIR additionally analyzed fugitive dust emissions associated with project operations, including composting of 514 tons per day for the project as proposed and 170 tons per day for the Mitigated Alternative. Since the Project now being proposed would include 690 daily vehicle trips and composting of 514 tons per day, the previous analyses already quantified vehicular and fugitive dust emissions at the level of composting operations now being proposed.

With regard to fugitive dust, the proposed Project would differ from the previous analyses due to new MRF operations and different composting methodology. CASP composting/co-composting would reduce fugitive dust compared to windrow turning since the piles would be covered and do not need to be disturbed by turning. As noted in the Application for Authority to Construct/Permit to Operate for the MRF (SCS Engineers, 2010), fugitive dust associated with the handling and processing of the dry waste (controlled by water spray) and additional vehicle trips would generate less than one pound per day of PM₁₀, which would be negligible.

With regard to ROG produced through the composting process, the current permit allows 170 tons per day of material (including greenwaste/wood waste, biosolids, and food waste) throughput for windrow composting. The EIR estimated that the 170 ton per day composting

facility examined as part of the Mitigated Alternative would generate approximately 213 pounds per day of ROG. The Project now being proposed would allow the processing of 514 tons per day of a similar mix of materials, but using the CASP method (with a biofilter), which is estimated to reduce ROG emissions by 85 percent. Project emissions of ROG from CASP composting at the capacity now being proposed are estimated to be a maximum of 101 pounds per day, which would be less than half of the ROG emissions for the currently-permitted facility.

Finally, with regard to off-road equipment, the FEIR did not differentiate between equipment used for the composting operation from the landfill operation but analyzed all equipment together. In order to develop a direct comparison for the proposed composting facility and the proposed MRF, therefore, estimated equipment emissions were compared to equipment estimated for the currently permitted capacities for composting and recycling operations. The estimated emissions depicted in **Table AQ-2** are based on OFFROAD 2007 emission factors and equipment information (i.e., types and hours) provided by the applicant for the CASP and MRF. As shown in Table AQ-2, emissions associated with expected equipment usage for the proposed Project would be less than emissions from equipment associated with the currently permitted operations.

**TABLE AQ-2
OPERATIONS-RELATED EMISSIONS
FOR PROPOSED COMPOSTING FACILITY EXPANSION AND MRF (Pounds/Day)^a**

Scenario	ROG	NOx	PM10	PM2.5
Currently-Permitted Composting and Recycling (at Capacity)	4	85	3	3
Proposed Project	3	52	2	2
Net Increment (Project minus Permitted)	(1)	(33)	(1)	(1)
<i>BAAQMD Threshold</i>	54	54	82	54
Significant Impact?	No	No	No	No

NOTE: Values in (parentheses) represent a negative number

^a Emissions were modeled using OFFROAD2007 emission factors with updated Air Resources Board load factors. The Proposed Project scenario is based on operations in the year 2013, whereas the Currently-Permitted Capacity scenario is based on operations in the year 2012. Equipment types and hours of activity were provided by the applicant for both scenarios. Detailed assumptions are included in Appendix A.

In summary, the proposed Project is not expected to result in any new or more severe air quality impacts related to long-term operations. Previously-adopted Mitigation Measures 3.2.2 a, b, and c would apply to the current Project, further reducing operational emissions.

- c) According to the BAAQMD, no single project is sufficient in size, by itself, to cause nonattainment of ambient air quality standards (BAAQMD, 2011). Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. Therefore, according to the BAAQMD *CEQA Air Quality Guidelines*, if a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air

quality conditions (BAAQMD, 2011). Alternatively, if a project does not exceed the identified significance thresholds, then the project would not be considered cumulatively considerable and would result in less-than-significant air quality impacts. As discussed under topic b, above, the proposed Project would not result in new or substantially more severe significant construction or operations emissions; therefore, cumulative emissions would also be considered less than significant.

- d)** The FEIR analyzed the potential health risks from TAC exposure associated with the entire landfill facility, including TACs from landfill gas, composting, and diesel trucks and equipment, and identified a potentially significant impact (Impact 3.2.8). The FEIR found that this impact would be reduced to less than significant with implementation of Mitigation Measures 3.2.8a, b, c, and d. Given the Project's relatively small changes from the previous analyses (as noted under topic b, above); the proposed use of electrically-powered sorting equipment for the MRF (rather than diesel); the CASP process's reduction in TAC emissions from diesel equipment use; anticipated future reductions in diesel PM exhaust emissions from required engine and equipment upgrades; as well as the implementation of previously adopted Mitigation Measures 3.2.8b, c, and d, it is anticipated that TAC emissions associated with the Project now being proposed would be less than for the previously analyzed project, and would not result in an incremental increase in cancer risk that exceeds 10 in one million. Consequently, the Project now being proposed is not expected to result in any new or more severe impacts related to TACs.

Bioaerosols, also termed organic dust, which can be produced by the composting process, were analyzed in the FEIR in Impact 3.8.2 and found to be less than significant with the implementation of measures to control dust. Bioaerosols are particles of microbial, plant, or animal origin that can include live or dead bacteria, fungi, viruses, allergens, and bacterial endotoxins, many of which are known to cause symptoms and/or illness. Bioaerosols are frequently adsorbed onto dust particles, and dust control measures have been shown to reduce the generation of bioaerosols (Epstein, et al., 2001; Harrison, 2007). Of particular concern for composting operations is the bioaerosol, *Aspergillus fumigatus*, a common microbe that thrives in dead plant matter and that is ubiquitous in the environment. With regard to the Project now being proposed, the CASP process of composting/co-composting would reduce fugitive dust compared to windrow turning, since the piles would be covered and would not be disturbed by windrow turning. Therefore, with the continuation of previously adopted mitigation measures 3.8.2a, b, and c, the Project now being proposed would not be expected to result in increased health risk from bioaerosols.

- e)** The FEIR, which analyzed windrow composting of 514 tons per day, identified a potentially significant odor impact (Impact 3.2.9). The FEIR concluded that Mitigation Measures 3.2.9a and b would reduce this impact to less than significant. The CASP method now being proposed for the composting facility has several advantages over open windrow composting, including the substantial reduction in air pollutant emissions and odors, since piles are not turned once formed, and since a biofilter is employed. Since the increased volume of compostable materials now being proposed was already been analyzed in the FEIR for open

windrow composting and was determined to be less than significant, and since the CASP composting method would reduce associated odors, the proposed Project would not result in any new or more severe impacts related to odors. Operation of the proposed MRF is not expected to result in substantial odors, since the MRF would handle only inert materials.

Mitigation Measures

The FEIR identified Mitigation Measures 3.2.1b and c to reduce construction-related fugitive dust emissions. Mitigation Measures 3.2.2a, b, and c were included to reduce NOx emissions from off-road equipment and would also apply to construction equipment used at the site. Mitigation Measures 3.2.8b, c, and d, and Mitigation Measures 3.8.2a, b, and c were included to reduce toxic air contaminant emissions from composting operations and from diesel-powered equipment. Mitigation Measures 3.2.9a and b were included to reduce odor impacts. All of these mitigation measures were previously adopted and would be necessary to reduce air quality impacts of the proposed Project to less than significant levels, or would further reduce less-than-significant Project emissions. Several have been revised slightly, as shown below.

Text of Previously Adopted Mitigation Measures

Mitigation Measure 3.2.1b: The applicant shall implement good construction practices to minimize fugitive dust. Such practices shall include general watering of exposed areas, the use of palliatives or other dust suppressants on any unpaved haul roads, and periodic cleaning of paved roads.

Mitigation Measure 3.2.1c: The applicant shall implement a Construction Dust Abatement Program. Construction contractors and landfill staff involved in construction activities at the site shall implement a Construction Dust Abatement Program to reduce the contribution of project construction-related dust emissions to local respirable particulate matter concentrations. Some of these measures are similar to those identified under Measures 3.2.1a and 3.2.1b, but with additional specificity. This program shall include the following elements as needed to reduce fugitive dust to acceptable levels, using the BAAQMD Regulation 6 visible emissions standards as a guide:

- Water all active construction areas at least twice daily.
- Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least 2 feet of freeboard (i.e., the minimum required space between the load and the top of the trailer).
- Pave, apply water three times daily, or apply nontoxic soil stabilizers on all unpaved access roads, parking areas, and construction staging areas.
- Sweep daily with water sweepers all paved access roads, parking areas, and staging areas at construction sites.
- Sweep streets daily with water sweepers, if visible soil material is carried onto adjacent public streets.
- Hydroseed or apply nontoxic soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more).

- Enclose, cover, water twice daily, or apply nontoxic soil binders to exposed stockpiles (dirt, sand, etc.).
- Limit traffic speeds on unpaved roads to 15 miles per hour.
- Install silt fences or other erosion-control measures to prevent silt runoff to public roadways.
- Replant vegetation in disturbed areas as quickly as possible.
- Designate a person or persons to oversee the implementation of a comprehensive dust control program and to increase watering, as necessary.

Mitigation Measure 3.2.2a: The project applicant shall keep all off-road equipment well-tuned and regularly serviced to minimize exhaust emissions, and shall establish a regular and frequent check-up and service/maintenance program for all operating equipment at the landfill.

Mitigation Measure 3.2.2b: The project applicant shall comply with CARB requirements for equipment and truck operations, including but not limited to use of ultra-low sulfur fuel (with low sulfur and low aromatic content) in combination with a fuel additive (such as Puri-NO_x) in all diesel-powered off-road equipment to minimize NO_x emissions to the extent that these materials are available to Bay Area transit agencies and may be purchased by the Redwood Landfill as well. Products such as this can reduce NO_x emissions by roughly 14 percent.

Mitigation Measure 3.2.2c: As off-road equipment ages and requires replacement, the project applicant can be expected to purchase new equipment that incorporates technology that meets more stringent emission standards mandated by CARB. Alternatively, the project applicant may purchase electrically-powered equipment, or equipment fueled by an alternative, less-emitting fuel (e.g., liquefied natural gas [LNG] or compressed natural gas [CNG]). Use of alternative fuel engines can be expected to achieve a reduction in NO_x emissions of at least 37 percent. At the time of replacement, the applicant shall purchase new equipment that meets then-current emission and pollution control standards. Older equipment still in use at the site that does not meet new CARB standards shall be fitted with diesel particulate traps and fueled with a biodiesel blend to reduce particulates and other pollutants.

Mitigation Measure 3.2.8c: New federal regulations for offroad diesel equipment were promulgated in May 2004. These regulations require that, starting in 2010, new equipment will have to reduce emissions of NO_x and diesel PM by about 90%. However, any equipment already in use at the time of the new regulation would be grandfathered and would not have to meet the new emissions limits. Since this equipment can operate for many years before needing replacement, future emissions would be at a higher rate. If Mitigation Measures 3.2.2a-d are adopted on the existing equipment, diesel PM emissions from off-road equipment can be reduced to levels that are less than significant. Some of the measures specified to reduce NO_x emissions, such as the use of natural gas as an alternative fuel, would also reduce diesel PM emissions. Use of alternative fuels can reduce fine PM emissions by as much as 90 percent, and electrically-powered equipment does not emit any diesel PM. Alternatively, all off-road diesel equipment at the site could be retrofitted with diesel particulate traps that are capable of removing over 85 percent of the

diesel PM emissions, and since diesel equipment with diesel PM traps must use ultra low sulfur fuel, this would also reduce NOx emissions. Therefore, the incremental health risk associated with offroad diesel equipment would be reduced from 18 in a million to 2.7 (with diesel PM traps) or less (with electric or natural gas fueled engines) new cancer cases for every million people exposed.

Mitigation Measure 3.2.8d: Although diesel PM emissions from new on-road trucks after 2007 will be reduced because the trucks will have to comply with the federal regulations, trucks that were purchased before 2007 would not be subject to the new regulations. Diesel PM emissions from the older truck fleet shall be reduced by retrofitting the trucks with particulate traps, or by implementing other such measures as may be required by CARB.

Mitigation Measure 3.8.2b: Implement Mitigation Measure 3.2.4 (development and implementation of a Dust Mitigation Plan/Program).

Mitigation Measure 3.8.2c: The project applicant shall follow sound composting management practices, including maintaining moisture, temperature and pH levels, and properly aerating, turning and mixing the composting materials. Specifically, the following practices will help minimize the generation and dispersal of dust and fungus spores during composting operations and thus limit exposure:

- Refrain from turning, screening, or loading activities on windy days;
- Use water sprays or mists during grinding, screening, and pile turning activities;
- Maintain proper moisture levels in active composting piles;
- Maintain good housekeeping practices, including site cleanliness; and
- Provide employee training and the use of personal protective equipment.

New or Revised Mitigation Measures

Several mitigation measures are revised as shown below for consistency with current regulations, for clarity, or to make them applicable to the current project.

Mitigation Measure 3.2.8b: Best management practices for the composting and co-composting operation, including but not limited to scheduled pile turning and managing piles to avoid excessively high temperatures, will reduce the emissions of TACs from composting and co-composting operations.

Mitigation Measure 3.2.9a: ~~Continuation of e~~ Current odor management practices shall be continued. These include but are not limited to: covering landfilled waste at the end of each day with either soil or mixed ADC and maintaining windrows or static piles in a manner that optimizes the composting process.

Mitigation Measure 3.2.9b: The project applicant shall formulate an Odor Impact Minimization Plan in accordance with the recently revised State composting regulations (Title 14 CCR § 17863.4.) This plan will be submitted to the LEA as part of the application for a solid waste facilities permit for the composting facility and implemented upon issuance of the revised SWFP. In accordance with the above-cited regulations, the plan shall contain, at a minimum:

- an odor monitoring protocol which describes the proximity of possible odor receptors and a method for assessing odor impacts at the locations of the possible odor receptors; and,
- a description of meteorological conditions effecting migration of odors and/or transport of odor-causing material off-site. Seasonal variations that effect wind velocity and direction shall also be described; and,
- a complaint response protocol that includes the verification and documentation upon receipt of any odor complaints and immediate notification of County LEA staff upon receipt of any odor complaints upon receipt of the call; and,
- a description of design considerations and/or projected ranges of optimal operation to be employed in minimizing odor, including method and degree of aeration, moisture content of materials, feedstock characteristics, airborne emission production, process water distribution, pad and site drainage and permeability, equipment reliability, personnel training, weather event impacts, utility service interruptions, and site specific concerns; and,
- a description of operating procedures for minimizing odor, including aeration, moisture management, feedstock quality, drainage controls, pad maintenance, wastewater pond controls, storage practices (e.g., storage time and pile geometry), contingency plans (i.e., equipment, water, power, and personnel), biofiltration, and tarping.
- The odor impact minimization plan shall be revised to reflect any changes, and a copy shall be provided to the LEA, within 30 days of those changes.
- The odor impact minimization plans shall be reviewed annually by the operator to determine if any revisions are necessary.

Mitigation Measure 3.8.2a: Redwood Landfill's existing composting operation includes dust control measures, such as the addition of water (using a water truck or portable sprinkler system) to composting windrows as needed to control dust and to maintain the appropriate moisture content for the composting process, all of which shall be continued (Geosyntec, 1998). Because bioaerosols and endotoxins are both carried on dust particles (particulate matter), measures to control dust at Redwood Landfill also will help limit the dispersal of *Aspergillus fumigatus* and endotoxins.

Conclusion

The proposed Project, particularly Project-related construction activities, could result in new emissions not analyzed in the FEIR. With the continued implementation of the previously-adopted mitigation measures listed above, the proposed Project would not result in a new or substantially more severe significant impact related to air quality, however. Other air quality impacts of the proposed Project, including criteria pollutant emissions other than NO_x, would not result in a new or more severe significant impact.

4. Biological Resources

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
4. Biological Resources. Would the Project:					
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	FEIR Volume I, Impacts 3.3.2, 3.3.4, 3.3.5, 3.3.6, and 3.3.7; FEIR Volume II, Master Response 10; FEIR Response to Comments Amendment, Master Response 102; FEIR Second Amendment, Topic 8.	No	No	No	Yes
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	FEIR Volume I, Impact 3.3.10; FEIR Volume II, Master Response 10; FEIR Response to Comments Amendment, Master Response 102; FEIR Second Amendment, Topic 8.	No	No	No	Yes
c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	FEIR Volume I, Impact 3.3.3.	No	No	No	N/A
d. Interfere substantially with the movement of any native resident or migratory fish and wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	FEIR Volume I, Impacts 3.3.1, 3.3.8, and 3.3.9.	No	No	No	N/A
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	FEIR Volume I, Section 3.2, Biological Resources, Regulatory Framework discussion; FEIR Response to Comments Amendment, Table 1-1.	No	No	No	N/A

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
4. Biological Resources. Would the Project:					
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	FEIR Volume I, Section 3.2, Biological Resources, Regulatory Framework discussion.	No	No	No	N/A

Discussion

To address biological resources impacts, a wildlife biologist with CEQA expertise reviewed Project application materials and the Project description, conducted a reconnaissance of the Project site, and conducted database, literature, and regulatory research.

- a) The FEIR analyzed potential impacts on several special-status plant and animal species associated with coastal brackish marsh adjacent to the landfill, including California red-legged frog and western pond turtle potentially occurring in the 18-acre stormwater impoundment, special-status bats potentially roosting in structures within the landfill site, and special-status raptors foraging and nesting in and around the landfill site. Previously adopted mitigation measures were found to be sufficient to reduce all impacts on special-status species to less-than-significant levels.

The FEIR determined that it was possible, but unlikely, for salt marsh harvest mouse (*Reithrodontomys raviventris*) to occur in the Project area, based on the limited availability of saline emergent wetland habitat within the landfill site and surveys conducted for the site in 1992 that did not detect the species. Previously adopted Mitigation Measure 3.3.4b restricts the timing of levee construction in order to prevent impacts to salt marsh harvest mouse and other marsh species in work areas adjacent to saline emergent wetland. The currently proposed Project would not occur within or directly adjacent to any saline emergent wetlands. Habitat for salt marsh harvest mouse is not present in any proposed CASP composting sites or in the MRF site; therefore, no impacts to this species are anticipated.

The FEIR assumed presence of both California Clapper rail and California black rail in the coastal brackish marsh associated with San Antonio Creek and the Petaluma River (Petaluma Marsh). More recent surveys conducted by the Point Reyes Bird Observatory in 2010 detected approximately nine clapper rails and three black rails in Woloki Slough, less than 1.5 miles north of Redwood Landfill’s Oxbow area (PRBO, 2011). While noise effects on California clapper rail and black rail are not completely understood, research has shown

that elevated noise levels can affect breeding behavior in bird species (Reijnen and Foppen, 1995; Ellis, 1981; Jehl and Cooper, 1980). California clapper rail vocalize at night to defend their territories, and increased noise may interfere with this defense against competitors and predators, potentially resulting in take of juvenile or adult clapper rails (Zeiner, 1990). While California black rail are not known to vocalize at night, elevated noise levels may still result in altered nesting behavior or nest abandonment. Research suggests that a noise increase of 10 dbA above ambient conditions could adversely impact breeding birds (Nicholoff, 2003).

The FEIR analyzed impacts from expanding composting activities in the Oxbow area and Field 1, and concluded that elevated noise levels associated with composting operations could significantly impact breeding and foraging behavior of both species. Mitigation Measure 3.3.5a required positioning all composting equipment in a manner that would prevent short-term noise increases from exceeding 76 dBA at the marsh boundary. Additionally, Mitigation Measures 3.7.3a, b, and c in the FEIR Noise section required restriction of compost grinder operations to daytime hours, required a buffer of 600 feet between the grinder and the marsh edge, and required noise screening using compost windrows or a levee if the grinder were to be located within 600 feet of the marsh.

Noise impacts from the composting operation could increase in extent and intensity under the Project now being proposed, as an additional electric blower or blowers would need to operate constantly for the covered aerated static pile (CASP) composting operation. The blowers would be housed in a portable enclosure designed to reduce noise emissions, and would be located no less than 700 feet from the marsh edge. As discussed below in Section 12, Noise, with these design features, the blowers are expected to produce a maximum noise level of 35 dBA at the marsh boundary. Actual noise levels at the marsh boundary would likely be lower, since the perimeter levee and compost piles would further attenuate noise from the blowers. The expected noise level from the blowers would not substantially increase nighttime ambient noise in the marsh and would not be expected to adversely impact California clapper rail or California black rail. Therefore, noise impacts to both species would be less than significant.

The proposed MRF site is currently used to store discarded materials and old equipment. While natural habitats in this area have been heavily disturbed, open pipes and concrete structures have been stored for many years without being moved, and could support cavity-nesting birds. The vast majority of nesting birds in California are protected by either the Migratory Bird Treaty Act (MBTA), section 3503 of the California Fish and Game Code (protects nests or eggs of any bird), section 3503.5 (protects birds of prey and their eggs), or section 3511 (protects white-tailed kite under designation of a fully protected species). Due to these regulations, nesting birds are considered special-status species. The nesting bird season is conservatively interpreted as the period between February 1 and August 31. Birds capable of nesting in discarded materials that would be cleared prior to construction of the MRF include black phoebe (*Sayornis nigricans*), barn swallow (*Hirundo rustica*), house wren (*Troglodytes aedon*), dark eyed-junco (*Junco hyemalis*), house finch

(*Carpodacus mexicanus*), and mourning dove (*Zenadia macroura*). Additionally, large eucalyptus trees less than 300 feet west of the proposed MRF location could support nesting raptors, including red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), and white-tailed kite (*Elanus leucurus*).

Current conditions at the MRF site are characterized by truck and automobile traffic, occasional heavy equipment operation, and materials handling, as well as ambient noise from US 101 and Gness field. MRF construction would not cause a substantial change in the noise environment in the vicinity of the MRF site, and so would not be expected to alter breeding behavior of any nesting birds in the vicinity. While any birds nesting in the vicinity of the MRF site can be expected to be habituated to noisy conditions, clearing, grading, paving, and other construction activities could directly disturb or destroy active nests within or nearby the MRF site. The applicant, however, has committed to avoid disturbance or destruction of bird nests. This would be ensured by limiting construction activities to the non-nesting season, i.e., between September 1 and January 31, or, alternatively, by conducting pre-construction surveys to determine whether birds are nesting on or near the site. If nesting birds are found, the applicant has agreed to delay construction until after the nesting season, or, alternatively, to consult with the California Department of Fish and Wildlife and implement any measures required to avoid disturbing active nests, such as avoiding areas where birds are found to be nesting and establishing an adequate buffer for their protection.

- b)** Coastal brackish marsh is the only California Department of Fish and Wildlife designated sensitive natural community in the vicinity of the landfill site, occurring directly east of the landfill in Petaluma Marsh. No Project activities are proposed within this habitat. As discussed in Section 9, Hydrology and Water Quality, in the discussion of topics a, c, e, and f, the proposed Project is not expected to result in discharge of contaminated runoff from the composting facility or MRF facility into San Antonio Creek and the Petaluma River, which could potentially impact the function of coastal brackish marsh. The proposed Project therefore does not have the potential to cause a new significant impact of this kind.
- c)** The FEIR stated that no federal jurisdictional wetlands are present within the landfill site. Both the Oxbow and Field 1 contain depressions where water collects, especially during the wet season. Based on exemptions in Code of Federal Regulations (CFR) 33-328 (e),⁴ these features were not considered federal jurisdictional wetlands in the FEIR. Due to recent Supreme Court cases further clarifying the definition of wetlands under Army Corps of Engineers jurisdiction, the regulatory provisions identified in 33 CFR 328(e) have since been removed from the CFR. However, based on the origin of these ponded areas, which appear to form in areas that have been subjected to extensive grading and other land disturbance; the relatively short time period that water ponds in these areas; the lack of saline or freshwater wetland vegetation; and continuing disturbance from regular landfill

⁴ 33 CFR 328.3(e) provides that the Corps generally does not consider to be waters of the United States those "[w]aterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States."

activities, ponded areas within the Oxbow and Field 1 are not likely to be considered federal jurisdictional wetlands. These areas, however, could be considered Waters of the State, which are defined much more broadly than federal jurisdictional waters. Waters of the State are defined as “any surface water or groundwater, including saline waters, within the boundaries of the state. Examples include, but are not limited to, rivers, streams, lakes, bays, marshes, mudflats, unvegetated seasonally ponded areas, drainage swales, sloughs, wet meadows, natural ponds, vernal pools, diked baylands, seasonal wetlands, and riparian woodlands.” Waters of the State can include isolated waters. Redwood Landfill’s Waste Discharge Requirements (WDRs), last issued in 2009, specifically state that they do not authorize “the filling of wetlands or Waters of the State on the Landfill property.” As described in the Project Description, the applicant has committed not to fill federal jurisdictional wetlands or Waters of the State, and, through the permitting process for the proposed expanded composting facility, to confirm with the RWQCB that construction of the expanded composting facility would not result in filling of Waters of the State. Therefore, the Project would not result in a significant impact related to filling of federal jurisdictional wetlands or Waters of the State.

- d)** Currently, much of the existing landfill contains ruderal or annual grassland habitat, and movement by common terrestrial mammals is not substantially hindered by regular landfill activities. Expansion of composting activities into the Oxbow and Field 1 may obstruct movement of some terrestrial species along the western portion of the landfill, but this would not be considered substantial, as a large network of annual grassland open space is present north, west, and south of the landfill. Additionally, as mentioned in the 2005 EIR, ponded seasonal water is not deep enough to support foraging diving birds. Seasonally ponded areas may provide some foraging habitat for shorebirds such as American avocets (*Recurvirostra americana*) and black-necked stilts (*Himantopus mexicanus*); however, these ponded areas represent small potential foraging habitats when compared to the extensive mudflats and shallow brackish waters in the adjacent Petaluma Marsh, and their removal would not affect any shorebird migratory corridors. No direct impacts on aquatic or terrestrial wildlife corridors in the adjacent coastal brackish marsh of Petaluma Marsh are anticipated. Overall, expansion of the composting facility and construction and operation of the MRF would not substantially alter existing wildlife movement at the landfill.

Wildlife nursery sites for California clapper rail and nesting birds are addressed in topic a, above.

- e)** No tree removal would be required for the proposed Project. The proposed Project would not conflict with any other provisions of the Marin County Code pertaining to biological resources, nor would they conflict with regional or local plans, including the policies of the Marin Countywide Plan.
- f)** No habitat conservation plans, natural community conservation plans, or other approved local, regional, or state habitat conservation plans apply to the landfill site. The Project now being proposed would have no impacts on established conservation plans.

Mitigation Measures

Previously adopted Mitigation Measures 3.3.5a and 3.7.3a, b, and c would limit compost facility noise from exceeding 76 dBA at the marsh edge. Enclosure of the CASP blowers, and locating them at least 700 feet from the marsh edge, which are proposed as a part of the Project, would ensure that compost facility noise would not have a deleterious effect on breeding California clapper rail and black rail. Impacts on nesting birds within or in the vicinity of the proposed MRF site would be avoided by seasonal restrictions on construction activities or preconstruction surveys of nesting activities committed to by the applicant.

Text of Previously Adopted Mitigation Measures

Mitigation Measure 3.3.5a: Bird deterrent practices and compost machinery, including grinders, trommel screens, and windrow turners, and other composting equipment capable of generating high noise levels shall be operated to assure that noise levels do not exceed 76 dBA at the marsh boundary east of the levee during the California clapper rail nesting season (February 1 – August 31). Furthermore, the existing screening between the composting area and the marsh shall be maintained in place to minimize line-of-sight views of composting activities from the adjacent low intertidal marsh. See also Mitigation Measure 3.7.3.

Mitigation Measure 3.7.3a: Operating hours for the grinder shall be restricted to 7 a.m. to 7 p.m.

Mitigation Measure 3.7.3b: The grinder shall be operated at least 600 feet from the outer edge (creek side) of the road along the perimeter levee.

Mitigation Measure 3.7.3c: Alternatively, the landfill operator could construct an earthen berm (or other similar noise dissipating structures) between the grinder operations area and all parts of the eastern landfill boundary within 600 feet of the grinder location. If an earthen berm is used, it must be at least as high as the highest part of the grinder itself. Compost windrows or other similar structures could be substituted for the earthen berm, as long as they are as high as the highest part of the grinder, and located between the grinder operations area and the eastern landfill boundary.

New or Revised Mitigation Measures

None required.

Conclusion

With the continued implementation of previously adopted mitigation measures, as well as specific design and operational standards incorporated by the applicant into the Project, the proposed Project would not have the potential to cause new or more severe impacts to biological resources.

5. Cultural Resources

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
5. Cultural Resources. Would the Project:					
a. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	FEIR Volume I, Section 1.9.	No	No	No	N/A
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	FEIR Volume I, Section 1.9.	No	No	No	N/A
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	FEIR Volume I, Section 1.9.	No	No	No	N/A
d. Disturb any human remains, including those interred outside the formal cemeteries?	FEIR Volume I, Section 1.9.	No	No	No	N/A

Discussion

a-d) The FEIR (Volume I, Section 1.9, page 1-17) determined that the Project then being reviewed would not have the potential for a significant adverse effect on cultural resources, because the Project site consists of entirely diked and filled bay lands and was first developed in the 1950s; therefore it is unlikely that the site contains any significant historical resources, paleontological resources, or human remains.

Mitigation Measures

No mitigation measures related to historical resources, paleontological resources, or human remains were identified in the FEIR.

Conclusion

The conclusions in the FEIR are still applicable: the Project now being proposed would not have the potential for a significant adverse effect on cultural resources.

6. Geology and Soils

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
6. Geology and Soils. Would the Project:					
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving: <ul style="list-style-type: none"> i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42. ii. Strong seismic ground shaking? iii. Seismic-related ground failure, including liquefaction? iv. Landslides? 	FEIR Volume I, Impact 3.4.1; FEIR Volume II, Master Response 22; FEIR Response to Comments Amendment, Master Response 108; FEIR Second Amendment, Topic 3.	No	No	No	N/A
b. Result in substantial soil erosion or the loss of topsoil?	FEIR Volume I, Impact 3.4.4	No	No	No	N/A
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	FEIR Volume I, Impact 3.4.2, 3.4.3, 3.4.12, 3.4.13; FEIR Volume II, Master Responses 4, 7, and 22; FEIR Response to Comments Amendment, Master Responses 106 and 109; FEIR Second Amendment, Topic 3.	No	No	No	N/A
d. Be located on expansive soil, as defined in Table 18- 1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	FEIR Volume I, Impact 3.4.2, 3.4.3, 3.4.12, 3.4.13; FEIR Volume II, Master Responses 4, 7, and 22; FEIR Response to Comments Amendment, Master Responses 106 and 109; FEIR Second Amendment, Topic 3.	No	No	No	N/A

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
6. Geology and Soils. Would the Project:					
e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	Not discussed in FEIR, as no such facilities were proposed.	No	No	No	N/A

Discussion

- a,b,d)** The proposed Project would not alter the design of the landfill itself, including no change to landfill geometry, fill sequencing, or environmental controls (other than wastewater and stormwater management; see Section 9, Hydrology and Water Quality, below). Neither the proposed MRF operation nor the proposed composting facility expansion would involve the construction of permanent structures or alterations of existing landscape features that may result in exposure of people or property to seismic hazards, hazards related to expansive soils, or substantially increase erosion.
- c)** FEIR Impact 3.4.13 found that excess pore pressure resulting from infiltration of quench water (water applied to the compost piles to achieve optimum moisture conditions) for composting operations conducted within the landfill footprint could cause landfill slope instability, and that this would be a significant impact. Mitigation Measures 3.4.13a, b, and c required the applicant to conduct any composting within the landfill footprint on a low-permeability pad; to control runoff; and to comply with State and federal siting and operational requirements. These measures were found to be sufficient to mitigate this impact to a less than significant level, but were not adopted. The applicant is again proposing to conduct composting operations within the landfill footprint, specifically within Areas D and G. However, the applicant is proposing to conduct only compost curing and stockpiling within the landfill footprint. These activities do not require application of quench water. Therefore, Impact 3.4.13 would not apply to the current proposal, and Mitigation Measures 3.4.13 a, b, and c, are not required. As described in Chapter 2, Project Description, the applicant has committed to designing the soils underlying working surfaces used for compost curing, screening and storage outside the landfill footprint to achieve hydraulic conductivity of 1×10^{-6} cm/s, or an engineered alternative approved by the RWQCB.
- e)** The applicant is not proposing to install any new septic system or alternative waste water disposal system for the disposal of waste water; therefore, there would be no impact related to septic systems.

Mitigation Measures

No Geology, Soils, and Seismicity mitigation measures from the FEIR or new/revised mitigation measures are required for the currently proposed Project.

Conclusion

The Project now being proposed would not result in new or more severe significant geologic or soils impacts, compared to the analysis presented in the FEIR.

7. Greenhouse Gas Emissions

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
7. Greenhouse Gas Emissions. Would the Project:					
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	FEIR Response to Comments Amendment, Master Response 112; FEIR Second Amendment, Topic 5.	Yes	Yes	Yes	Yes
b. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	FEIR Response to Comments Amendment, Table 1-1 and Master Response 112; FEIR Second Amendment, Topic 5.	No	No	Yes	N/A

Discussion

To address greenhouse gas emissions of the Project, an air quality expert peer-reviewed the application and Project description materials, and conducted new modeling of greenhouse gas emissions related to construction and operation of the proposed Project. Modeling results were compared with the modeling from the FEIR. In addition, the proposed Project was analyzed for consistency with policies in the Countywide Plan and other adopted policies.

As noted in Section 3, Air Quality, of this Supplemental Environmental Review Checklist, the BAAQMD's 2011 CEQA Guidelines, including recommended thresholds of significance, were set aside by the Alameda County Superior Court in March, 2012. On May 31, 2012, the BAAQMD issued a revised version of its previous CEQA Guidelines, which includes thresholds of significance originally adopted in 1999 (BAAQMD, 2012). These do not contain a threshold of significance for greenhouse gas (GHG emissions). The 2011 version of the Guidelines used a significance threshold of 1,100 metric tons (MT) per year of CO₂ equivalent (CO₂e).

The FEIR Response to Comments Amendment, in its analysis of GHG emissions and climate change impacts of the project then being examined (Master Response 112), used a significance threshold derived from the Marin County Greenhouse Gas Reduction Plan (GHG Reduction Plan), adopted by the Board of Supervisors in October 2006. The GHG Reduction Plan sets a GHG emission reduction target for the County of 15 to 20 percent below 1990 levels by the year 2020 for internal government operations, and 15 percent Countywide. The 15 percent figure was applied to the project then being analyzed. In light of the Court's decision to set aside the significance thresholds adopted by the BAAQMD in 2011, the same threshold used in the FEIR is retained here, for the purpose of determining the significance of GHG emissions related to the currently-proposed Project: if the Project is found to have the potential to add emissions to the existing landfill facility, such that total emissions exceed a figure that is 15 percent below the estimated 1990 emissions from the landfill facility, then the impact would be considered significant.

The FEIR Response to Comments Amendment, Master Response 112, notes that composting and recycling benefit GHG reduction efforts:

- Ongoing and planned composting operations will directly and indirectly reduce GHG emissions that contribute to global climate change, since composting produces primarily biogenic CO₂ [i.e., CO₂ not from fossil sources]; and some compost products are applied to the soil, which improves soil fertility and tilth, reducing the need for other fertilizers and water. Of particular importance in this regard is the inclusion in both the Mitigated Alternative and in the applicant's current proposal, for use of food waste as a feedstock, since food waste has a high methane generation potential when landfilled;
 - Ongoing recycling operations and new recycling operations specified in the Mitigated Alternative will reduce greenhouse gas emissions (recycled and reused goods are generally less energy-intensive than goods produced from virgin materials).
- a) The FEIR quantified GHGs for the Mitigated Alternative from on-road vehicles, off-road equipment, fugitive landfill gas, and flare emissions, and compared these to estimated emissions based on operations under the landfill's existing permits. The proposed Project would result in GHG emissions different from those of the Mitigated Alternative, as analyzed in the FEIR, by adding 28 additional daily on-road vehicle trips associated with the MRF, use of electric-powered MRF and compost facility equipment, and use of different types and average hours of use of off-road equipment (for example, discontinuation of use of a windrow turner, which would not be needed for the CASP composting system). In addition, construction GHG emissions were not quantified in the FEIR. GHG emissions from construction and operations are described separately below. Detailed assumptions and model outputs are included in Appendix A.

Short-Term Construction

Construction GHGs were estimated using CalEEMod and would be generated by fuel combustion by diesel equipment, material transport trips, and construction worker-commute trips. Over the 6-month duration of construction, which would include expansion of the composting facility and construction of the MRF, the proposed Project would result in

emissions of approximately 339 metric tons of CO₂e. Since these emissions were not occurring in 1990, they may be considered above the significance threshold for this analysis, which is 15 percent below 1990 levels.

Long-Term Operations

Annual GHG emissions associated with the 28 additional on-road daily vehicle trips, MRF and compost facility electricity use, and equipment operation were quantified using EMFAC2011 emission factors, PG&E electricity emission factors from CalEEMod for Marin County, and OFFROAD 2007 emission factors, respectively. These emissions are depicted below in **Table GHG-1**.

**TABLE GHG-1
OPERATIONS-RELATED GHG EMISSIONS (MT CO₂E/YEAR)^a**

Source	CO ₂ e
Equipment – Currently-Permitted Capacity	1,380
Equipment – Proposed Project	1,034
Net Equipment Increment (Project minus Permitted)	(346)
Additional On-Road Vehicles	494
MRF and CASP Electricity	253
Total Incremental GHG Emissions	401

NOTE: Values in (parentheses) represent a negative number

^a Emissions were modeled using OFFROAD2007 emission factors with updated Air Resources Board load factors. The Proposed Project scenario is based on operations in the year 2013, whereas the Currently-Permitted Capacity scenario is based on operations in the year 2012. Equipment types and hours of activity were provided by the applicant for both scenarios. Detailed assumptions are included in Appendix A.

As depicted in Table GHG-1, the incremental increase in operations-related GHGs from the proposed Project would be about 400 tons per year. Since these emissions were not occurring in 1990, they may be considered above the significance threshold for this analysis, which is 15 percent below 1990 levels.

The FEIR included two mitigation measures for reduction of GHG emissions: Mitigation Measure 3.2.5f required the applicant to prepare and implement a GHG reduction plan; and Mitigation Measure 3.2.5g required the applicant to maintain the landfill gas collection system for an extended period after closure of the landfill. In compliance with the first measure, the applicant prepared a GHG reduction plan (SCS Engineers, 2008). This plan calculates GHG emissions from landfill operations, and also estimates reductions from implementation of the programs specified in the Mitigated Alternative, including construction and operation of a MRF, expansion of the composting facility to 170 tons per day capacity, and adding foodwaste as a composting feedstock. While the proposed Project would result in new GHG emissions not previously quantified from construction and operation of the MRF (including increased vehicle trips) and expanded composting facility, these would be more than offset by reductions in GHG emissions attributable to increased composting and recycling of wastes that would otherwise be landfilled. RLI's 2008

Greenhouse Gas Reduction Plan indicates that, in 2015, increased recycling at the MRF is expected to reduce emissions by 232,887 MT CO₂e per year, and composting at the rate allowed under the Mitigated Alternative (50,000 tons per year) is expected to reduce emissions by an additional 9,938 MT CO₂e per year. Composting at the rate now being proposed would approximately triple the latter figure. The calculated offset far exceeds the estimated incremental increase in emissions associated with the Project operations, as shown in Table GHG-1. The proposed Project would not, therefore, result in a new or more severe impact related to GHG emissions and climate change.

- b) Both the Countywide Plan Update (Marin County, 2007) and the Marin County Greenhouse Gas Reduction Plan (Marin County, 2006) contain policies that would reduce or minimize GHG emissions. The FEIR concluded that the Mitigated Alternative, which was the project that was approved by the County, would be consistent with the GHG reduction goals, policies, and programs in these plans (FEIR Response to Comments Amendment, Master Response 112), including the following Countywide Plan Update Goals, Policies, and Implementing Programs:

Goal

AIR-4 Minimization of Contributions to Greenhouse Gases. Prepare policies that promote efficient management and use of resources in order to minimize greenhouse gas emissions. Incorporate sea level rise and more extreme weather information into the planning process.

Policies

AIR-4.1 Reduce Greenhouse Gas Emissions. Adopt practices that promote improved efficiency and energy management technologies; shift to low-carbon and renewable fuels and zero emission technologies.

AIR-4.2 Foster the Absorption of Greenhouse Gases. Foster and restore forests and other terrestrial ecosystems that offer significant carbon mitigation potential.

Implementing Programs

AIR-4.a Reduce Greenhouse Gas Emissions Resulting from Energy Use in Buildings. Implement energy efficiency programs and use of renewable energy.

AIR-4.b Reduce Greenhouse Gas Emissions Resulting from Transportation. Increase clean-fuel use, promote transit-oriented development and alternative modes of transportation, and reduce travel demand.

AIR-4.c Reduce Methane Emissions Released from Waste Disposal. Encourage recycling, decrease waste sent to landfills, require landfill methane recovery, and promote methane recovery for energy production from other sources.

AIR-4.f Establish a Climate Change Planning Process. Continue implementation of the approved Marin County Greenhouse Gas Reduction Plan. Integrate this plan into long-range and current planning functions of other related agencies. Establish and maintain a process to implement, measure, evaluate, and modify implementing programs, using the Cities for Climate Protection Campaign as a model.

AIR-4.h Evaluate the Carbon Emissions Impacts of Proposed Developments. Incorporate a carbon emissions assessment into land use plans and the environmental impact report for proposed projects.

AIR-4.k Encourage the Planting of Trees. Adopt urban forestry practices that encourage re-forestation as a means of storing carbon dioxide.

AIR-4.o Implement Proposed State Programs to Reduce Greenhouse Gas Emissions. Implement proposed State programs to reduce greenhouse gas emissions, including the Renewable Portfolio Standards, California Fuel Efficiency (CAFE) standards, and carbon cap and trade programs.

Development of a MRF was a key aspect of the Mitigated Alternative, and is considered consistent with County GHG reduction policies. The Mitigated Alternative limited expansion of the composting facility to 170 tons per day, and allowed the addition of foodwaste as a compost feedstock; this was also considered consistent with County GHG reduction policies. While the additional composting capacity now being proposed may accommodate materials from both within and outside of Marin County, this does not render this Project aspect inconsistent with County GHG reduction plans and policies. Additional diversion of material for composting can be expected to result in GHG emission reductions, and is therefore considered consistent with County GHG reduction plans and policies.

Mitigation Measures

Previously adopted Mitigation Measures 3.2.5f and 3.2.5g would continue to reduce potential impacts of GHGs.

Text of Previously Adopted Mitigation Measures

Mitigation Measure 3.2.5f: Prior to project approval, the applicant will develop a Greenhouse Gas Reduction plan that demonstrates how the landfill will achieve by 2020 a reduction in annual GHG emissions such that emissions are no greater than 15 percent below 1990 levels. This will include but is not limited to development of alternative energy, including additional landfill gas-to-energy production capacity and solar generation capacity; use of alternative fuels in on-site equipment and in truck fleets; increased recycling, development of other on-site renewable energy generation capacity. Measures may also include practices discussed in the CIWMB Guidance document entitled: *CIWMB, Technologies and Management Options for Reducing Greenhouse Gas Emissions From Landfills*, April 2008, available at: <http://www.ciwmb.ca.gov/Publications/Facilities/20008001.pdf>. For emission reductions that cannot feasibly be achieved through on-site measures, the plan may specify purchase of off-site carbon credits that are verified and listed with the California Climate Action Registry; available from the Chicago Climate Exchange or the Regional Greenhouse Gas Initiative (RGGI); or otherwise deemed acceptable by the Marin County Marin County Community Development Agency/BAAQMD. The plan will include specific measures and a timeline for reducing the landfilling and use as landfill cover material of putrescible organic material. This will include, but is not limited to, phasing out the use of raw greenwaste and sewage sludge as alternative daily cover material, reducing the landfilling of sewage sludge, food waste, and other materials with a potential for high methane generation, and cooperative programs with waste collectors, individual municipalities, and joint powers authorities to increase

source separation of organic materials for composting. The plan will include cost estimates for plan implementation GHG reduction measures and will identify funding sources, including but not limited to tip fee increases. The plan shall include an implementation schedule that demonstrates compliance with the following interim and final targets:

By 2015: Greenhouse gas emissions reduced by 25% below annual baseline;

By 2020: Greenhouse gas emissions reduced to 15% below 1990 levels;

Beyond 2020: Greenhouse gas emissions not to exceed 15% below 1990 levels.

The plan will include an updated inventory of lifecycle GHG emissions including an updated estimate of GHG emissions in 1990. The updated inventory shall constitute the annual baseline for the purpose of determining the above-stated targets. The plan will be updated and submitted for review at least every 5 years. The plan will be subject to review and approval by Marin County Community Development Agency and the BAAQMD.

Because the release of GHG emissions has been identified as a potentially significant impact associated with the expansion of landfill capacity, the increase in the permitted capacity, as part of the project, will be contingent upon meeting the above GHG reduction requirements. The total additional capacity granted under the Mitigated Alternative is 5.9 million cubic yards (without final cover), and will be granted contingent upon other project conditions.

Mitigation Measure 3.2.5g: Following closure of the landfill, the applicant shall continue to operate, maintain, and monitor the landfill gas collection and treatment system as long as the landfill continues to produce landfill gas, or until it is determined by the BAAQMD that emissions no longer constitute a considerable contribution to greenhouse gas emissions, whichever comes first. Because the landfill could continue to produce substantial quantities of landfill gas well beyond the 30-year post-closure maintenance period specified in the Joint Technical Document (JTD), BAAQMD approval must be obtained prior to shutdown of the LFG system. The applicant shall prepare a revised Preliminary Post-Closure Maintenance Plan that plans for and provides financial assurances for operation, maintenance, and monitoring of the landfill gas collection and treatment system that is consistent with the requirements of California Code of Regulations Title 27, Chapter 6, and shall be sufficient for the entire cost of closure and post-closure maintenance.

New or Revised Mitigation Measures

None required.

Conclusion

With continuation of previously-adopted Mitigation Measures 3.2.5f and g, the Project would not result in a new or more severe significant impact related to GHG emissions and climate change.

8. Hazards and Hazardous Materials

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
8. Hazards and Hazardous Materials. Would the Project:					
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	FEIR Volume I, Impact 3.8.1.	No	No	No	Yes
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	FEIR Volume I, Impact 3.8.1.	No	No	No	N/A
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	Not discussed in FEIR, as the landfill is not within one quarter mile of any school.	No	No	No	N/A
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	Not discussed in the FEIR.	No	No	No	N/A
e. For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard for people residing or working in the Project area?	FEIR Volume I, Impacts 3.8.5 and 3.6.2.	No. See Land Use and Planning Discussion	No. See Land Use and Planning Discussion	Yes. See Land Use and Planning Discussion	Yes. See Land Use and Planning Discussion
f. For a Project within the vicinity of a private airstrip, would the Project result in a safety hazard for people residing or working on the Project area?	Not discussed in the FEIR, as the landfill is not within the vicinity of a private airstrip.	No	No	No	N/A

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
8. Hazards and Hazardous Materials. Would the Project:					
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	Not examined in the FEIR	No. See Traffic and Transportation Discussion	No. See Traffic and Transportation Discussion	No. See Traffic and Transportation Discussion	N/A. See Traffic and Transportation Discussion
h. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	Not examined in the FEIR	No	No	No	N/A

Discussion

In preparation of this section, a hazardous materials specialist reviewed the Project description and application materials, and conducted a database search of hazardous materials sites.

- a) The FEIR described the Prohibited Waste Control Program, which is intended to prevent the acceptance of prohibited waste at the landfill. The program includes employee training, signage at the landfill entrance, initial screening by the attendant at the gate house, and a load check program. Specific employees receive training in load checking procedures and proper handling and safety procedures. The load checking program follows California Department of Health Services guidelines. The existing Prohibited Waste Control Program is considered adequate to prevent or minimize acceptance of hazardous materials, including materials that may be present in loads destined for the proposed expanded composting facility and MRF facility. Therefore, the Project now being proposed would not result in a new or more severe impact to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- b) The landfill is not permitted, and is not proposing, to receive hazardous waste. Impact 3.8.1 in the FEIR analyzed the potential impact on site worker safety and the general public from the receipt of designated wastes, in particular the potential for spill or upset conditions resulting from the receipt and handling of designated wastes. The impact was found to be significant, but previously adopted Mitigation Measures 3.8.1a and b would reduce the impact to a less than significant level through implementation of the landfill’s existing worker health and safety program and through limiting receipt of designated waste. The Project now being proposed would not increase the amount of designated waste received at the landfill. Therefore no new or more severe impact to the public or the environment

through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment would occur.

- c) The landfill is not located within one quarter mile of a school or proposed school site.
- d) Redwood Landfill is not listed on the State of California DTSC's hazards waste and substance site (Cortese) list (DTSC 2007). Nor is the landfill listed with DTSC as the location of a leaking underground storage tank (DTSC 2007). The landfill is not identified on DTSC's list of solid waste disposal sites with waste constituents above hazardous waste levels outside the waste management unit (DTSC 2007). Consequently, the landfill is not included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and would not pose a significant hazard to the public or environment.
- e) Please refer to Section 10, Land Use and Planning, topic b of the checklist for a discussion of potential hazards associated with aircraft using Gness Field.
- f) The landfill is not within the vicinity of a private airstrip.
- g) Please see Section 16, Traffic and Transportation, topic e for a discussion of emergency response and evacuation plans.
- h) The landfill site has low susceptibility to catastrophic wildfire, as much of the site is bare earth or paved; it is nearly surrounded by water; it contains very little vegetation other than seasonal grasses; and it is not located on the urban-wildland interface. Regarding the potential for the proposed Project to increase the risk of fire and increase the need for fire protection services, please see Section 14, Public Services.

Mitigation Measures

The proposed Project would not result in a new or more severe impact related to hazards and hazardous materials. No mitigation measures are required.

Conclusion

The proposed Project would not result in a new or more severe significant impact related to hazards and hazardous materials.

9. Hydrology and Water Quality

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
9. Hydrology and Water Quality. Would the Project:					
a. Violate any water quality standards or waste discharge requirements?	FEIR Volume I, Impacts 3.4.13, 3.5.3, 3.5.4, 3.5.5, and 3.5.8; FEIR Volume II, Master Response 14; FEIR Response to Comments Amendment, Master Response 105; FEIR Second Amendment Topic 2.	No	No	No	Yes
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted?)	The Project analyzed in the FEIR did not propose use of groundwater.	No	No	No	N/A
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	FEIR Volume I, Impacts 3.5.1 and 3.5.8.	No	No	No	N/A
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	The FEIR identified no impact of this kind.	No	No	No	N/A
e. Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage	FEIR Volume I, Impact 3.5.9	No	No	No	Yes

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
9. Hydrology and Water Quality. Would the Project:					
systems or provide substantial additional sources of polluted runoff?					
f. Otherwise substantially degrade water quality?	The FEIR identified no other impacts of this kind.	No	No	No	N/A
g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	The Project reviewed in the FEIR did not propose to place housing within a floodplain.	No	No	No	N/A
h. Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	FEIR Volume I, Impact 3.5.1, 3.5.6; FEIR Response to Comment Amendment Master Response 106; FEIR Second Amendment Topics 3 and 4	No	No	No	N/A
i. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	The FEIR identified no impacts of this kind.	No	No	No	N/A
j. Inundation by seiche, tsunami, or mudflow?	The FEIR identified no impacts of this kind.	No	No	No	N/A

Discussion

In preparation of this section, a hydrologist with expertise in CEQA environmental analysis reviewed the Project description and application materials, conducted a search of applicable literature and regulations, and visited the Project site.

a,c,e,f)

Compost Facility

The FEIR addresses water quality issues related to the landfill, the leachate containment and removal system (LCRS), and the existing and then-proposed composting operations. The FEIR analyzed a proposal for a composting operation with the same capacity as that currently proposed (514 tons per day); however, the project that ultimately was approved (i.e., the Mitigated Alternative) has a composting operation limited to 170 tons per day.

The FEIR found that the expanded composting operation then being analyzed had the potential for significant adverse effects on water quality. These included handling runoff that has come into contact with compost materials as clean storm water, not as leachate (Impacts 3.5.3 and 3.5.4); conducting composting operations on surfaces not engineered for low permeability (Impacts 3.4.13 and 3.5.3); and using leachate as quench water (Impact 3.5.5). The FEIR included mitigation measures for each of these impacts which would have reduced them to less than significant. Several of the mitigation measures, however, were not adopted, as they were found to be inapplicable or unnecessary to address the less-severe water quality impacts associated with the Mitigated Alternative.

Several of the mitigation measures that were adopted were given different number designations in the final adopted MMRP. Adopted mitigation measures that are currently in effect, and their adopted numbering, include the following:

- FEIR Mitigation Measure 3.5.3a (requires wet season composting to occur only on low permeability pads). This was adopted as Mitigation Measure 3.5.5b;
- FEIR Mitigation Measure 3.5.3b (Requires use of low-permeability pads for composting in all seasons). This was adopted as Mitigation Measure 3.5.5c;
- FEIR Mitigation Measure 3.5.3d (requires handling all contact water separately from stormwater). This was adopted as Mitigation Measure 3.5.4b;
- FEIR Mitigation Measure 3.5.4 (requires RLI to demonstrate adequate capacity exists for storing compost contact water). This was adopted as Mitigation Measure 3.5.4a;
- FEIR Mitigation Measure 3.5.5a (requires testing of leachate before use as quench water). This was adopted without a numbering change.

Potential water quality constituents of concern related to composting facilities include salts, nutrients, metals, and pathogens (SWRCB, 2011, 2012); the Petaluma River is listed as an “impaired water body” on the State’s 303(d) list⁵ for, among other things, nutrients and pathogens. The currently-proposed expansion and increase in the maximum daily throughput of the composting operation would be coupled with the potential for a wider variety of feedstock material than is currently permitted, including the proposed addition of agricultural materials such as grape pomace and animal manure. Compost curing, screening, and storage activities would take place over a larger area of the site, including portions of Fields 1, 4, and 5, which are not currently being used for such purposes. Landfill areas D and G would be used for compost curing and storage, but not screening. More water, both applied “quench water” (water applied to the active compost piles to achieve optimal moisture conditions) and precipitation, would contact exposed compost.

The applicant has also proposed to cease use of the existing leachate impoundment for storage of runoff from the 6-acre compost pad, where materials receiving, processing, and active composting take place, and instead developing a new impoundment specifically for

⁵ The current (2008-2010) 303(d) list of impaired water bodies may be accessed at: http://www.waterboards.ca.gov/water_issues/programs/tmdl/integrated2010.shtml

composting pad runoff. The new impoundment would be located in the westernmost portion of Field 5. Wastewater stored in the impoundment would be utilized as quench water in the composting operation. Preliminary calculations provided by the applicant indicate that the new impoundment would have a capacity of 13.3 acre feet, which would provide adequate capacity for runoff from the compost pad from the 1,000-year, 24-hour storm event (Geosyntec, 2012). The existing stormwater pond located at the southern end of the site (Figures 2 and 3 in Chapter 2) would also continue to be a source of quench water.

As described in the Project Description, the State Water Resources Control Board (SWRCB) is in the process of promulgating new regulations for composting facilities.⁶ The SWRCB has developed General Waste Discharge Requirements for the Discharge of Wastes at Compost Management Units, as well as a Monitoring and Reporting Program for the General Waste Discharge Requirements for the Discharge of Wastes at Compost Management Units (collectively referred to below as the General Compost WDRs). The General Compost WDRs are currently in draft form (SWRCB, 2012); there is currently no scheduled date for the SWRCB to consider their adoption. Also as described in the Project Description, the applicant is proposing to submit a “Notice of Intent” (NOI) to comply with the General Compost WDRs once they are adopted by the SWRCB. Through the NOI submittal process, the applicant will seek coverage for the proposed expanded compost facility under the General Compost WDRs. If approved, the facility would be subject to the provisions, prohibitions, and discharge specifications set forth in the General Compost WDRs.

The draft General Compost WDRs (dated August 6, 2012) contain management procedures to address water quality concerns associated with each stage of the composting process, as well as standards and requirements for the disposition of water used in and generated from compost management units. The applicant intends to manage compost wastewater and storm water consistent with the General Compost WDRs. If they have not yet been adopted at the time of permitting of the expanded composting operation, the applicant intends to comply with the requirements of the draft General Compost WDRs.

The definitions in the draft General Compost WDRs provide distinctions between liquid effluents from different stages of the composting process:

‘leachate’ means any liquid formed by the drainage of liquids from, or percolation/flow of liquids through any feedstock, additive, amendment, or active compost pile;

‘process storm water’ refers to any form of precipitation which either: (1) falls onto, or otherwise comes into contact with any feedstock, additive, amendment, and/or active compost pile, and runs off the aforementioned piles without flowing through the pile; or (2) comes into contact with either leachate or washwater;

⁶ Information on the SWRCB’s regulatory process may be found at: http://www.waterboards.ca.gov/water_issues/programs/compost/

'*storm water*' refers to any form of precipitation which does not either: (1) fall onto, or otherwise come into contact with any feedstock, additive, amendment, and/or active compost pile, and runs off the aforementioned piles without flowing through the pile; or (2) come into contact with any wastewater;

'*washwater*' refers to a type of wastewater generated from the washing of vehicles and/or equipment at any Compost Management Unit; and

'*wastewater*' refers collectively to leachate, washwater, and/or process storm water.

(Draft General Compost WDR, Attachment A. See also Draft General Compost WDR, p. 5, Sections 11 and 12, storm water management).

The draft General Compost WDRs focus on regulation of effluents other than storm water, as they pose a greater threat to water quality.

Compliance with the draft General Compost WDRs, or the final version of the General Compost WDRs once adopted by the SWRCB, is part of the proposed Project and would be protective of water quality, and would be sufficient to prevent discharge of contaminated runoff. In particular, the applicant has stated their intent to comply with the Tier 2 specifications in the draft General Compost WDRs, which provide prescriptive requirements for larger composting operations. As stated in Chapter 2, Project Description, the applicant has proposed to adhere to several important design criteria for the proposed new compost wastewater impoundment and working surfaces for the compost operation. These are consistent with, or exceed the Tier 2 criteria in the draft General Compost WDRs, and include the following:

- Design of the wastewater impoundment with a hydraulic conductivity of 1×10^{-6} cm/s with a base liner system of at least 2 feet of compacted clay or engineered alternative approved by the RWQCB (consistent with Class II Impoundment specifications and Tier 2 draft General Compost WDR).
- Design of the wastewater impoundment to withstand the Maximum Credible Earthquake (MCE) (consistent with Class II Impoundment specifications).
- Demonstration of hydraulic conductivity of 1×10^{-6} cm/s or engineered alternative approved by the RWQCB for soils underlying working surfaces used for compost curing, screening and storage outside the landfill footprint (consistent with Class II Impoundment specifications and Tier 2 draft General Compost WDR).

Storm water from the expanded composting operation would continue to be managed under the terms of the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Industrial Activities (General Industrial Permit). Storm water from areas of the expanded composting operation other than the 6-acre compost pad would continue to be conveyed to the storm water pond located at the southern end of the site. Adopted mitigation measures would continue to apply, unless superseded by the standards contained in the General Compost WDRs. Therefore, no new or more severe significant water quality impacts would be expected from the proposed expansion of the compost facility.

MRF

The FEIR described a MRF operation as part of the Mitigated Alternative, and provided a preliminary (i.e., program-level) impact analysis of the MRF operation.

Potential pollutants from the MRF operation that could contaminate stormwater runoff would include sediment, petroleum products, and organic matter. The landfill's existing WDRs do not address a MRF operation. However, the landfill also operates under the terms of the Stormwater Industrial General Permit. The conditions of this permit require the landfill operator to implement practices to reduce contamination of stormwater runoff from landfill activities. This permit would also apply to the proposed MRF facility, and adherence to the requirements of this permit would be sufficient to prevent discharge of contaminated runoff. Therefore, no new or more severe significant impacts would be expected.

Construction

Construction-related water quality impacts, including construction of the then-proposed expansion of the composting facility, were examined in the FEIR and found to be potentially significant (Impact 3.5.8). Mitigation Measure 3.5.8 was found in the FEIR to be sufficient to reduce construction-related water quality impacts to less than significant. The current proposal to expand the composting facility and construct a MRF would have similar impacts. Previously adopted Mitigation Measure 3.5.8 would reduce these impacts to less than significant.

- d,g,h,i)** Areas outside of the 222.5-acre landfill footprint, including areas proposed for the expanded composting facility and the MRF, are located within the 100-year flood plain. If these areas are inundated during a large flood event, it could result in the direct discharge of waste and/or other contaminants to San Antonio Creek and the Petaluma River. The FEIR addressed the potential impact of flooding within the areas outside of the 222.5-acre landfill footprint, as well as the potential for levee or slope failure to alter streamflow or cause flooding on or off site. Mitigation Measures 3.5.1a and b, and 3.5.6a, b, c, and d, which remain applicable and adequate with respect to the current Project, and would reduce this potential impact to a less-than-significant level. Neither the project examined in the FEIR, nor the current proposal would place housing or other structures within a 100-year flood zone, or expose people or structures to risk associated with flooding or dam failure.⁷
- b,j)** The FEIR found no impacts associated with depletion of groundwater; neither would the current proposal affect groundwater supply. The Project site is not within an area subject to inundation by seiche, tsunami, or mudflow.

⁷ The landfill has an Emergency Response Plan in place, which would be implemented in the event of a flood or other natural disaster. Please see FEIR Section 3.8, Public Health and Safety.

Mitigation Measures

Previously adopted Mitigation Measures 3.5.4a and 3.5.4b; and Mitigation Measures 3.5.5a, 3.5.5b, and 3.5.5c remain applicable, unless superceded by the design criteria and standards contained in the draft General Compost WDRs. Together with adherence to the Tier 2 requirements in the draft General Compost WDRs these measures will reduce the potential for impacts related to water quality to a less-than-significant level. Mitigation Measures 3.5.4a, 3.5.4b, and 3.5.5a are revised to include use of the term “wastewater,” which is defined in the draft General Compost WDRs.

Previously adopted Mitigation Measures 3.5.1a and b, and 3.5.6a, b, c, and d remain applicable and adequate with respect to the current Project, and would reduce potential impacts related to flooding to a less-than-significant level. Mitigation Measure 3.5.6a is revised slightly to correct the acreage given for the landfill footprint, consistent with the rest of the FEIR and the landfill’s existing permits. Mitigation Measures 3.5.1a and 3.5.1b are revised slightly for clarity.

Previously adopted Mitigation Measure 3.5.8 remains applicable and adequate with respect to construction-related water quality impacts.

Text of Previously Adopted Mitigation Measures

Mitigation Measure 3.5.5b: Outside of areas with a LCRS, future composting/co-composting activities will be conducted on appropriate composting pads to limit infiltration and to control run-off (GeoSyntec, 1998). Based on the applicant’s “Comments and Project Clarification Discussion [on the project]” (RLI/WM, 2000), wet-weather composting will not take place in unlined areas. Thus, year-round composting will take place only on lined pads (i.e., lined with 2 feet of clay, as in Fields 1 and 2). Pads will be designed and constructed to promote surface drainage and prevent ponding. Portions of the composting pads may be surfaced with 6 to 12 inches of gravel, asphalt, or other suitable material to provide for all weather access (GeoSyntec, 1998). Dry-weather composting will be conducted on pads comprised of a minimum of either 1 foot of native soils or recompacted imported soils possessing a maximum saturated hydraulic conductivity of 1×10^{-6} centimeters per second.

Mitigation Measure 3.5.5c: For composting operations outside the landfill footprint, including any operations in the area currently known as the main sludge impoundment, pads used for both wet weather and dry weather operations must meet permeability specifications established by the RWQCB. Although Bay Mud is generally a low-permeability soil, lenses of more permeable sand or organic material are known to occur within it. The applicant shall provide documentation to the RWQCB of site-specific studies documenting that areas proposed to be used for composting meet RWQCB specifications throughout the proposed area.

Mitigation Measure 3.5.6b: The applicant shall conduct slope stability analyses of the recently completed levee upgrades to determine whether the factor of safety is adequate for static and dynamic stability.⁸ The slope stability analyses shall utilize the methods and

⁸ The required slope stability analyses were completed and peer-reviewed in 2008 (Miller Pacific Engineering Group, 2008d; Geosyntec Consultants, 2008a).

factors recommended by Geosyntec (2007d), and shall take into account site-specific differences in surface and subsurface conditions. The same analyses shall be applied to designs for future levee upgrades. All analyses shall be independently peer reviewed by a Registered Geotechnical Engineer at the Applicant's expense and subject to approval by the LEA or, if subsequent work requires a Grading Permit, by the Marin County Department of Public Works, or, if a building permit is required, by the Community Development Agency Building and Safety Division. If analysis of the recently-completed levee sections reveals that they do not meet minimum static factor of safety and seismic performance standards, the applicant shall develop a remedial action plan for further levee improvements. Any such plan shall be independently peer reviewed by a Registered Geotechnical Engineer at the applicant's expense and subject to approval by the LEA or the Marin County Department of Public Works or Community Development Agency Building and Safety Division. The schedule for implementation of the remedial action plan shall be included in the construction schedule and subject to the same requirements specified in Mitigation Measure 3.5.6a, above.

Mitigation Measure 3.5.6c: The applicant shall re-analyze the stability analysis contained in the remedial action plan for the failed levee segment, per the recommendations of Treadwell and Rollo's peer review (Appendix F). All analyses shall be independently peer reviewed by a Registered Geotechnical Engineer⁹ at the applicant's expense and subject to approval by the LEA, or, if a Grading Permit or a Building Permit is required, by the Marin County Department of Public Works or Community Development Agency Building and Safety Division, respectively. If the new analysis reveals that the design contained in the remedial action plan does not achieve an acceptable static factor of safety and seismic performance standard, the applicant shall develop a new design for the levee repair. This may require, for example, use of higher sheet piles as a parapet wall along the creek to provide flood protection, with the earthen fill and roadway placed at a lower elevation to reduce the static load on the Bay Mud. Any new design shall be independently peer reviewed by a Registered Geotechnical Engineer and subject to approval by the Marin County Department of Public Works. The schedule for implementation of the new design shall be included in the construction schedule and subject to the same requirements specified in Mitigation Measure 3.5.6a, above.

Mitigation Measure 3.5.6d: Prior to project approval, the applicant shall prepare and submit to the LEA and the San Francisco Bay Regional Water Quality Control Board a plan for long-term flood protection of the site.¹⁰ The plan will include a consideration of feasible options for achieving protection from the 100-year flood in the face of rising sea level and increased flood frequency and intensity. The plan shall include selection of the preferred method or methods for achieving flood protection, and both a schedule and financial assurances for their implementation. The engineering basis for the plan shall be independently peer reviewed by a Registered Geotechnical Engineer prior to submittal for approval. The plan will be drafted and then updated every 5 years during the remaining operational life of the landfill and the post-closure maintenance period to ensure that it is current with the most recent and broadly-accepted predictions for flood levels, following consultation with the U.S. Geological Survey, the San Francisco Bay Conservation and Development Commission, and other monitoring

⁹ The required analysis and peer review were completed in 2008 (Miller Pacific Engineering Group, 2008c).

¹⁰ The required plan, and peer review of the plan, were completed in 2008 (Geosyntec Consultants, 2008b; Miller Pacific Engineering Group, 2008b).

agencies that track bay and ocean levels and that may provide estimates of mean sea level rise and areas subject to future inundation.

Mitigation Measure 3.5.8: Prior to construction, the applicant will prepare a construction Storm Water Pollution Prevention Plan (SWPPP) to minimize impacts to storm water runoff quality from construction activities.¹¹ The construction SWPPP will be kept on site and available to RWQCB and LEA staff upon request.

New or Revised Mitigation Measures

Mitigation Measure 3.5.6a, which was previously adopted, is revised to correct the figure given for the landfill footprint, from 223 acres to 222.5. Mitigation Measures 3.5.1a and b are revised for clarity. Mitigation Measures 3.5.4a, 3.5.4b, and 3.5.5a are revised to include use of the term “wastewater,” which is defined in the draft General Compost WDRs

Mitigation Measure 3.5.1a: ~~The applicant shall continue to implement~~ Measures 3.4.1b (regarding RLI’s Post Earthquake Inspection and Corrective Action Plan¹² and ensuring that costs to remediate groundwater or surface water degradation resulting from earthquake-caused damage to landfill or levee slopes or the LCRS are financially assured), and Measure 3.4.2a (regarding utilization of criteria developed by Geosyntec for monitoring the lateral and vertical deformation of Bay Mud to provide advance warning or potential landfill instability).

Mitigation Measure 3.5.1b: ~~The applicant shall continue to implement~~ Measures 3.4.1c (i.e., update the facility’s Post Earthquake Inspection and Corrective Action Plan to address changes resulting from the project), and Measures 3.4.2b (regarding the conduct and reporting of the geotechnical monitoring program), 3.4.2c (regarding actions to take in response to indications of an increasing rate of deformation in the monitored slopes), 3.4.2d (regarding the modification of the fill sequencing plan, as needed, if the strength of the Bay Mud is less than anticipated), and Measure 3.4.3 (regarding regular inspection for cracks in cover material and regular monitoring of pressure and volume changes in the landfill gas collection system).

Mitigation Measure 3.5.4a: The applicant shall produce and present to the LEA and RWQCB for approval a report demonstrating that sufficient capacity exists to contain ~~contact water~~ wastewater from areas outside the landfill footprint, proposed to be used for composting, co-composting and sludge processing, that would result from a 100-year storm event. Approval of use of these areas for composting, co-composting, and sludge processing shall be conditioned upon submittal and approval that this standard has been met.

Because the amount of ~~contact water~~ wastewater generated at Redwood Landfill would increase as a result of the expanded composting area, RLI will have to demonstrate to the satisfaction of the LEA and the RWQCB where, within the landfill boundaries, ~~contact water~~ wastewater from this area would be directed, and that such ~~contact water~~ wastewater impoundment will have sufficient capacity to accommodate run-off from a 100-year storm event. Storage capacity shall be adequate to contain ~~contact water~~ wastewater generated

¹¹ The landfill’s current SWPPP is dated July, 2011 (Redwood Landfill, Inc., 2011).

¹² The Post Earthquake Inspection and Corrective Action Plan was completed and provided to the LEA in October, 2008 (Geosyntec, 2008).

from a storm occurring mid- or late-season, when the impoundment could have water in it from previous storms.

Mitigation Measure 3.5.4b: To ensure storm water discharges do not contaminate off-site receiving waters, all ~~contact water~~ wastewater shall continue to be managed separately from ~~non-contact storm~~ water and retained on site. Storm water and wastewater management shall include the following measures:

1. Composting operations areas outside of the landfill footprint, including areas used for active composting, stockpiling of feedstock, and other processing, shall be fitted with ~~contact water~~ wastewater collection systems, such as site grading and perimeter drain systems, that prevent pooling of liquids, that collect any free liquid, including leachate, excess quench water, and other ~~liquids~~ wastewater, and that convey the collected ~~liquid~~ wastewater to the leachate collection pond or other ~~leachate~~ wastewater treatment facility or utilization of other such measures as approved by RWQCB.
2. Areas used for wet season handling, storage, or stockpiling of dried sludge, materials to be used for ADC, or other materials capable of producing ~~contaminated runoff~~ wastewater shall be fitted with impermeable pads and ~~leachate~~ wastewater collections systems, or the materials themselves shall be protected from contact with rainwater or utilization of other such measures as approved by RWQCB.

Mitigation Measure 3.5.5a: The applicant ~~will~~ shall test leachate and wastewater to be used as quench water quarterly, consistent with current testing and use protocols applied to the use of leachate for dust control. The leachate or wastewater will be used for quench water as long as, and only if, it meets RWQCB-approved standards established for the use of leachate for dust control at the site. This measure will be reflected as a requirement in the Solid Waste Facilities Permit as well as the landfill's Waste Discharge Requirements.

The current program to reuse leachate for dust control, upon which the program to reuse leachate or wastewater for quench water will be based, requires RLI to sample the leachate pond on a quarterly basis prior to use for dust control to insure that levels of chemical constituents are at "clean" standards. Reporting of the leachate sampling is included with the Self Monitoring Program associated with Redwood Landfill's Waste Discharge Requirements. Written detection monitoring reports, which include compliance evaluation summaries, are filed by the 15th day of the month following the report period; an annual report also is required, by January 31 for the previous calendar year.

Mitigation Measure 3.5.6a: To ensure the site and project elements are protected from potential impacts of flooding, the applicant shall complete their planned increase in the height of the exterior levee that encompasses the entire landfill site (i.e., the approximately 380 acres of the 420-acre Southern Area currently located within levees) to 9 feet above msl and their planned increase in the width of the levee to 10 feet prior to implementation of project elements in the Oxbow or other areas outside the permitted ~~223~~ 222.5-acre landfill footprint.

The applicant's JTD (Geosyntec, 1998) states on page 4-21 that the levee is approximately four miles long and separates the site from adjacent sloughs. As part of the description of the existing facility (pages 5-1 and 5-2) the JTD states that the levee encompasses approximately 380 acres of the 420-acre Southern Area of the landfill property, and that the

height of the levee will be increased to 9 feet above mean sea level around the entire landfill, and that the crest will be widened to 10 feet. These changes to the levee are not specified as project elements, and elsewhere in the JTD some ambiguity exists as to whether references to a levee refer to a levee around only the permitted landfill footprint (approximately ~~223~~ 222.5 acres) or around the entire landfill site (approximately 380 acres of which are within existing levees). This analysis assumes that as part of the facility's existing operation, as stated on the aforementioned pages, RLI intends to increase the exterior levee that encompasses the entire 380 acres of the 420-acre Southern Area to 9 feet above msl and to widen its crest to 10 feet.

Because the base flood elevation for the 100-year storm is 6 to 7 feet above mean sea level (msl), increasing the levee to 9 feet would protect the landfill property from the 100-year flood. Increasing the width should contribute support to the levee's stability and ability to withstand the dynamic forces of the river at flood stage. The ~~223~~ 222.5-acre landfill footprint already is located outside the 100-year flood plain due to existing levees. The portion of the site outside the landfill footprint remains vulnerable to flooding until these planned changes to the exterior levee are completed.

The applicant shall prepare and adhere to a construction schedule for completion of the levee improvements specified above. The construction schedule must be prepared and submitted to the LEA prior to project approval and issuance of a revised SWFP.¹³ It is expected that the construction schedule will indicate that phased or sequenced construction is required, in order to allow consolidation and strengthening of the Bay Mud beneath the levee (see Mitigation Measure 3.5.6b and 3.5.6c, below). The construction schedule must show that all planned improvements of the entire levee system will be completed no later than December 31, 2011, or, if phased or sequenced construction is required, completion of the first phase or sequence by this date. The first phase or sequence must include improvements to any and all parts of the exterior levee that encompasses the entire 380 acres of the 420-acre Southern Area that are not yet at the design elevation of +9 feet msl and the design top width of 10 feet. The construction schedule shall further indicate that completion of all phases or sequences will be completed in the shortest feasible time, given the limitations of construction on Bay Mud. The construction schedule shall be peer reviewed, at the applicant's expense, by a Registered Geotechnical Engineer selected or approved by Marin County.

Conclusion

Compliance with the requirements of the General Compost WDRs, in addition to application of the previously-adopted mitigation measures, stated above, would be sufficient to ensure that the proposed Project would not result in a significant adverse effect on hydrology and water quality.

¹³ The construction schedule was completed in 2008 (Miller Pacific, 2008b).

10. Land Use and Planning

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
10. Land Use and Planning. Would the Project:					
a. Physically divide an established community?	The FEIR identified no impact of this kind.	No	No	No	N/A
b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	FEIR Volume I, pp. 3.6-1 through 3.6-14, Impacts 3.6.1, 3.6.2, 3.6.3, 3.6.4, 3.6.5, 3.6.6., 3.6.7; FEIR Response to Comments Amendment, Tables 1-1 and 1-2, Master Responses 106 and 112, and Response to Comment C-13; FEIR Second Amendment, Topic 5.	No	No	Yes	Yes
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	The FEIR identified no impact of this kind.	No	No	No	N/A

Discussion

In preparation of this section, a planner reviewed the Project description and application materials, reviewed County plans and policies, and reviewed related documents, including the Gness Field Runway Extension Draft EIR.

FEIR Volume I, Section 3.6, Land Use and Planning, analyzed the consistency of the originally-proposed project with policies of the 1994 Countywide Plan, which was in effect at that time (i.e., in 2005). The FEIR also analyzed consistency with the County's waste management policies, and addressed relevant policies contained in the then-current draft of the Countywide Plan update. The FEIR Response to Comments Amendment included information on relevant policies contained in the 2007 Countywide Plan, which had been adopted before the FEIR Response to Comments Amendment was published in 2008. Specifically, the FEIR Response to Comments Amendment included a review and comparison of relevant 1994 Countywide Plan policies and the corresponding relevant 2007 Countywide Plan policies (Table 1-1), a review and comparison of County waste management plans that had been presented in FEIR Volume I with 2007 Countywide Plan policies (Table 1-2), an evaluation of the consistency of the Mitigated Alternative (the alternative that was ultimately approved) with the "zero waste" policy contained in the 2007 Countywide Plan (Response to Comment C-13), an evaluation of the consistency of the originally-proposed project with the goal and policies in the 2007 Countywide plan addressing risks to low-lying coastal areas associated with

global climate change (Table MR 106-2), and the consistency of the Mitigated Alternative with the 2007 Countywide Plan goals, policies, programs pertinent to global climate change (Table MR112-5). In 2006, after the 2005 release of the FEIR Volumes I and II, the County adopted a Greenhouse Gas Reduction Plan. To ensure Project compliance with the Greenhouse Gas Reduction Plan, the FEIR Response to Comments Amendment, prepared in 2008, added mitigation measures to address greenhouse gas emissions (Mitigation Measure 3.2.5f and g), and the FEIR Second Amendment included additional refinements to Mitigation Measure 3.2.5f (see FEIR Response to Comments Amendment, Master Response 112; and FEIR Second Amendment, Topic 5). Thus, relevant policies contained in the 2007 Countywide Plan and the County's Greenhouse Gas Reduction Plan were addressed in the FEIR, as amended and certified.

- a) The proposed Project would be located within the boundaries of the existing Redwood Landfill site, a single parcel (Assessor's Parcel Number 125-16-13), which the landfill has occupied for more than fifty years. Adjacent land uses consist primarily of agricultural and open space lands, also including a transportation corridor (U.S. 101) located to the west, a small private marina and the County airport to the south, and San Antonio Creek and the Petaluma River to the east. The nearest residences are about 2.5 miles to the south. Therefore the proposed Project would not divide an established community.
- b) **Gross Field.** The FEIR summarized provisions of the Gross Field Airport Land Use Plan (ALUP); Federal Aviation Administration (FAA) distance criteria, and U.S. Environmental Protection Agency (EPA) and California requirements related to the proximity of landfills to airports due to the potential risk of bird strikes in Section 3.6, Land Use and Planning. The FEIR also acknowledged County plans to expand the airport runway, noting that the expanded runway would move the airport safety zones closer to the landfill. FEIR Impact 3.6.2 evaluated potential impacts on operations of Gross Field and identified Mitigation Measures 3.6.2a, b, c, and d, which reduced potential impacts to a less-than-significant level; these measures were subsequently incorporated into the facility's Mitigation Monitoring and Reporting Plan (MMRP). Since the FEIR was certified in 2008, however, the County's plans to extend the Gross Field runway have progressed and a Draft EIR on the proposed runway expansion was released for public review in December 2011. The County plans to extend the runway 1,100 feet to the northwest, which as noted in the FEIR, would bring the runway closer to Redwood Landfill, and would result in a shift of the safety zones closer to the landfill. (The Gross Field Draft EIR cites this information from the FEIR but does not provide additional or specific information on changes to the safety zones.) In addressing potential bird air strike hazards of the runway expansion, the Gross Field Airport Draft EIR (Impact 4.2-4) cites the analysis presented in the FEIR and mitigation measures identified to reduce potential conflicts with airport operations, including adaptive management required in Mitigation Measure 3.6.2d, and concludes that continued adherence by Redwood Landfill to these mitigation measures would reduce potential conflicts resulting from the runway expansion to a less-than-significant level.

Gulls (*Larus* spp.) are the dominant species of nuisance birds at the landfill, as they scavenge for food waste within the active face and compost piles. The number of gulls at

the landfill at any given time can vary based on a number of factors: research suggests gulls forage in landfills when preferred marine foraging habitats are less desirable due to weather or competition (Sibley, 2001). If the proposed Project is approved, composting activity would increase by up to 344 tons/day, which would be an increase in the total forage available for nuisance gulls. However, the majority of composting materials would be largely inaccessible to gulls, as the CASP composting method covers the compost piles with a layer of finished compost or synthetic material. Increased availability of compost materials before being covered, such as during receiving, processing, grinding, and forming into piles, could result in increased gull attraction and foraging. Implementation of Mitigation Measures 3.6.2a, and 3.6.2d from the FEIR would continue use of sound and light visual bird deterrent measures, which are required to be adapted based on potential gull increases. These measures are considered adequate to prevent substantial increases in foraging gulls; the proposed Project would not result in a more severe impact on public safety associated with bird air strike hazards.

Nondisposal Facility Element. Both the existing co-composting facility and the planned MRF are described in the current Nondisposal Facility Element for Marin County (Marin County Hazardous and Solid Waste Management Joint Powers Authority, 2010). This element of the Countywide Integrated Waste Management does not include policies, but rather describes facilities within the County that handle but do not dispose of waste.

- c) Potential conflict with an adopted habitat conservation plan was not considered as a potential impact in the FEIR or the preliminary analysis that preceded it (Final Initial Study Type Review, prepared for the County by John Roberto Associates, December 1999) because there are no applicable adopted habitat conservation plans in the Project vicinity. No federal, state, or local conservation plan or natural community conservation plan, which includes or is in close proximity to the Project site, has been adopted. Therefore the proposed Project would not conflict with the provisions of such a plan, or other approved local, regional, or state habitat conservation plan.

Mitigation Measures

Previously adopted Mitigation Measures 3.6.2a, c, and d would continue to apply and would be necessary to ensure that there would be no conflict with the planned extension of the Gness Field runway. Mitigation Measure 3.6.2a is revised for clarity. Mitigation Measure 3.6.2b was not written as an enforceable measure, is inapplicable to the current Project, and is deleted. Mitigation Measure 3.6.2c is revised to make it applicable to the current Project.

Text of Previously Adopted Mitigation Measures

Mitigation Measure 3.6.2d: If bird activity at the landfill, including the areas outside the permitted landfill footprint proposed for composting, increases as a result of the project, as determined by the LEA during regular site inspections, RLI shall adjust its existing bird control program as necessary to ensure that the facility does not pose a bird hazard to aircraft. RLI shall modify as necessary the demonstration required in 40 CFR Part 258, §258.10 (a) and 27 CCR, §20270(a) (that the landfill does not pose a bird hazard to aircraft).

New or Revised Mitigation Measures

Mitigation Measure 3.6.2a: The applicant ~~proposes to~~ shall continue their existing bird control program. Redwood Landfill’s bird control program focuses on gulls, the predominant avian scavengers at the site, and consists of using pyrotechnic devices to discourage gulls from landing or circling overhead during refuse placement and compaction. The devices provide noise (bang or whistle), a flash of light, smoke, and the sound of the propellant. RLI focuses its deterrent efforts when the birds first begin to arrive in the morning (shortly after dawn) and the morning hours, having found that this results in fewer gulls approaching the site during the rest of the day. RLI also may use a gas-fired cannon, which emits a loud blast, in conjunction with the pyrotechnic devices. Redwood Landfill shall periodically re-evaluates and revises bird control techniques as necessary.

Mitigation Measure 3.6.2b: The applicant ~~proposes no change in the number or type of lights used for nighttime operations. There are no records that indicate that the existing use of lights at the landfill poses a hazard to operations at Gness Field.~~

Mitigation Measure 3.6.2c: To ensure that nighttime activities do not interfere with operations at Gness Field, lights used during nighttime landfill operations will not be colored, will be shielded and directed downward to reduce glare, and will be placed in an irregular pattern in order not to appear to be a runway. The applicant shall notify the Gness Field Airport prior to any change in the way lighting is used for nighttime operations.

Conclusion

New information regarding the planned expansion of the Gness Field runway could result in a more severe significant environmental impacts related to land use plan and policy consistency than was identified in the FEIR. This impact would be mitigated to less than significant with implementation of previously adopted Mitigation Measures 3.6.2a, c, and d. The proposed expanded composting facility and MRF would be consistent with current Marin County land use designations and zoning, and would not conflict with the 2007 Countywide Plan.

11. Mineral Resources

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
11. Mineral Resources. Would the Project:					
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	FEIR Volume I, Section 1.9	No	No	No	N/A
b. Result in the loss of availability of a locally-important mineral	FEIR Volume I, Section 1.9	No	No	No	N/A

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
11. Mineral Resources. Would the Project:					
resource recovery site delineated on a local general plan, specific plan or other land use plan?					

Discussion

a,b) Section 1.9 (page 1-18) of FEIR Volume I determined that the Project then being reviewed would not have the potential for a significant adverse effect on mineral resources, as no known mineral resources exist at the landfill site.

Mitigation Measures

No mitigation measures related to mineral resources were identified in the FEIR.

Conclusion

The conclusion in the FEIR is still applicable: the proposed Project would not have the potential for a significant adverse effect on mineral resources.

12. Noise

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
12. Noise. Would the Project result in:					
a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	FEIR Volume I, Impact 3.7.1, 3.7.2, 3.7.3, and 3.7.4.	No	No	No	Yes
b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	The FEIR identified no impact of this kind.	No	No	No	N/A

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
12. Noise. Would the Project result in:					
c. A substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?	FEIR Volume I, Impact 3.7.1, 3.7.2, 3.7.3, and 3.7.4.	No	No	No	Yes
d. A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project?	FEIR Volume I, Impact 3.7.1.	No	No	No	N/A
e. For a Project located within an airport land use plan or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?	FEIR Volume I, Impact 3.7.4, pages 3.7.1, 3, 5, and 7.	No	No	No	N/A
f. For a Project within the vicinity of a private airstrip, would the Project expose people residing or working in the Project area to excessive noise levels?	Not Analyzed – not applicable	No	No	No	N/A

Discussion

This section was prepared by a noise analyst with CEQA expertise, following review of the Project description and application materials.

a,c,d) The FEIR examined the potential for the proposed increased intensity of landfill and composting operations to increase ambient noise levels and significantly adversely affect nearby land uses and receptors. The FEIR found that use of equipment for composting operations in the Oxbow area and other areas proposed for composting operations could cause an increase in the ambient noise level for adjacent land uses and result in a significant adverse impact. Previously adopted Mitigation Measures 3.7.3a, b, and c were found to be effective in reducing noise to a less-than-significant level. Previously adopted Mitigation Measure 3.7.3a limits compost grinder hours of operation. Previously adopted Mitigation Measures 3.7.3b and c require compost grinding operations to be set back 600 feet from the perimeter of the site, or the construction of a berm to block noise. In addition, previously

adopted Mitigation Measure 3.3.5a establishes a performance threshold for noise levels at the boundary of Petaluma Marsh, with the express intent of protecting sensitive biological resources from disturbance.

The location of the proposed expansion of the composting facility is the same general area of the landfill site previously analyzed in the FEIR. The proposed expanded composting facility would use different equipment than the equipment examined in the FEIR, consisting of a different grinder and the addition of two electric-powered blowers for the CASP system. As described in the Project Description, the applicant is proposing to enclose the blowers in a permanent housing and to locate them at least 700 feet from the marsh edge. The addition of blowers operating 24 hours per day would constitute a new noise source, particularly because the equipment would be newly operated during the more sensitive evening and nighttime hours.

Based on specifications provided by the applicant, each blower would operate at 95 decibels (dBA) at a distance of 5 feet (New York Blower Co., 2004). Two blowers operating simultaneously can be expected to produce about 98 dBA at 5 feet. Noise attenuates with distance at a constant rate; about 43 dBA of attenuation can be expected at 700 feet from the blower location. Based on the applicant's commitment to house the blowers in a portable enclosure that achieves a minimum 20 dBA of attenuation, the resulting noise level at the marsh edge from the blowers would be no more than 35 dBA.

The noise impact of the currently-proposed expansion would not, therefore, be expected to be substantially greater than that examined in the FEIR. With the measures committed to by the applicant and the continuation of the previously-adopted mitigation measures stated above, the proposed compost facility expansion is not expected to cause a new or more severe significant noise impact. See also Section 4, Biological Resources, for a discussion of the proposed expanded compost facility's potential noise impacts on wildlife.

The FEIR examined the potential for the project then being reviewed to increase noise associated with the then-proposed increase in the maximum allowable number of vehicles entering the facility, and found this to be a less than significant impact (Impact 3.7.4). The current Solid Waste Facility Permit, which is based on the Mitigated Alternative examined in the FEIR, limits Redwood Landfill to a maximum of 662 vehicles entering the site each day. The applicant is now proposing 28 additional vehicles per day for a total of 690 vehicles per day, which is the same level analyzed in the FEIR. There are no pertinent new circumstances under which the proposed Project would take place, such as new sensitive receptors located closer to the landfill. Because the same traffic level analyzed and found to be less than significant in the FEIR is now again being proposed, there is no potential for a new or more severe noise impact related to traffic.

The proposed MRF operation can be expected to generate new sources of noise, including noise associated with vehicle and equipment movement and materials handling. The MRF would be located in the southwest corner of the landfill site in an area already used for materials storage. While the MRF facility would increase ambient noise levels in this

portion of the site by intensifying the level of activity occurring there, there are no sensitive land uses or (human) receptors in proximity to this area that might be affected by increased noise levels. Furthermore, the area is already affected by noise from landfill operations, U.S. 101, and Gness field. Therefore, operation of the proposed MRF facility would not be expected to result in a new or substantially more severe significant noise impact. See also Section 4, Biological Resources, for a discussion of the proposed MRF facility's potential noise impacts on wildlife.

- b) The proposed Project does not involve pile driving or other activities that could result in generation of excessive groundborne vibration or groundborne noise levels.
- e) The FEIR noted that the noise environment at and in the vicinity of the landfill is affected by aircraft using Gness Field, which is located just south of the landfill site. The Project now being proposed would not result in moving landfill operations or site facilities closer to Gness Field. The proposed extension of the Gness Field runway (see discussion in Section 10, Land Use and Planning) may result in an increase in noise levels at the landfill, as the runway would be extended toward the landfill. This, however, would occur with or without the currently-proposed Project. Furthermore, as noted above, the ambient noise levels at the landfill are already affected by aircraft noise. There are no residences at or in the vicinity of the landfill. The Project would not, therefore, expose residents or workers to excessive noise levels from aircraft using Gness Field.
- f) There are no private airstrips in the vicinity of the landfill site.

Mitigation Measures

Previously adopted Mitigation Measures 3.7.3a, b, and c and 3.3.5a would reduce potential impacts resulting from a substantial increase in ambient noise levels in the Project vicinity associated with increased composting facility operations. These measures would be sufficient to reduce the potential increased noise levels to less than significant. Mitigation Measure 3.7.3c is revised slightly for clarity.

Text of Previously Adopted Mitigation Measures

Mitigation Measure 3.7.3a: Operating hours for the grinder shall be restricted to 7 a.m. to 7 p.m.

Mitigation Measure 3.7.3b: The grinder shall be operated at least 600 feet from the outer edge (creek side) of the road along the perimeter levee.

Mitigation Measure 3.3.5a: Bird deterrent practices and compost machinery, including grinders, trammel screens, and windrow turners, and other composting equipment capable of generating high noise levels shall be operated to assure that noise levels do not exceed 76 dBA at the marsh boundary east of the levee during the California clapper rail nesting season (February 1 – August 31). Furthermore, the existing screening between the composting area and the marsh shall be maintained in place to minimize line-of-sight views of composting activities from the adjacent low intertidal marsh.

New or Revised Mitigation Measures

Mitigation Measure 3.7.3c is revised for clarity:

Mitigation Measure 3.7.3c: ~~As an alternative to Mitigation Measure 3.7.3b, Alternatively,~~ the landfill operator could construct an earthen berm (or other similar noise dissipating structures) between the grinder operations area and all parts of the eastern landfill boundary within 600 feet of the grinder location. If an earthen berm is used, it must be at least as high as the highest part of the grinder itself. Compost windrows or other similar structures could be substituted for the earthen berm, as long as they are as high as the highest part of the grinder, and located between the grinder operations area and the eastern landfill boundary.

Conclusion

With the continued implementation of previously-adopted mitigation measures, the proposed Project would not be expected to result in a new or more severe significant noise impact.

13. Population and Housing

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
13. Population and Housing. Would the Project:					
a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	FEIR Volume I, Section 1.9	No	No	No	N/A
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	FEIR Volume I, Section 1.9	No	No	No	N/A
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	FEIR Volume I, Section 1.9	No	No	No	N/A

Discussion

a,b,c) Section 1.9 (page 1-17) of FEIR Volume I found that the project then being reviewed would not have the potential for a significant adverse effect on population and housing, because the project would not result in displacement of existing housing and would not

induce population growth or create new employment. The currently-proposed Project would increase the overall number of full-time employees at the Redwood Landfill by about ten, including eight new MRF employees and two new compost operations employees. However, the positions would likely be filled locally and are not likely to necessitate the construction of new homes or induce substantial population growth. No new impact on population and housing would occur as a result of the proposed Project.

Mitigation Measures

No mitigation measures related to population and housing were identified in the FEIR, and no new mitigation measures are required.

Conclusion

The conclusion in the FEIR is still applicable: the Project would not have the potential for a significant adverse effect on population or housing.

14. Public Services

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
14. Public Services.					
Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any the public services:					
Fire protection?	FEIR Volume I, Impact 3.9.1	No	No	No	N/A
Police protection?	FEIR Volume I, Page 3.9-2	No	No	No	N/A
Schools?	FEIR Volume I, Page 3.9-1	No	No	No	N/A
Parks?	FEIR Volume I, Page 3.9-1	No	No	No	N/A
Other public facilities?	FEIR Volume I, Page 3.9-1	No	No	No	N/A

Discussion

The FEIR (Volume I, Section 3.9, Public Services, Utilities, and Energy, Impact 3.9.1) determined that the project then being reviewed could increase the risk of fire occurring at the composting facility if the facility were expanded to 514 tons per day (TPD). Mitigation Measure 3.9.1, identified in the FEIR, required adherence to California Code of Regulations Title 14 requirements for measures to reduce fire risk at compost facilities (14 CCR §17867(a) 8), and also adherence to

the conditions of the Landfill’s then-existing composting facility permit that pertain to fire control. This measure was found to be sufficient to reduce this impact to a less than significant level, but was not adopted by the County for the Mitigated Alternative because of the smaller scale of composting operations under the Mitigated Alternative, compared to the project proposed by the applicant (for which the measure was written). There appears to be no increase in fire risk in a CASP composting system compared to the previously approved windrow composting system. Adherence to the requirements of the Title 14 fire hazard reduction requirements cited above would be sufficient to avoid a significant fire risk for the proposed expanded composting facility. The impact would therefore be less than significant.

Police protection for the landfill site was discussed briefly in the FEIR Volume I, on page 3.9-2; no impact associated with a possible increase in demand for police services was identified. The FEIR also briefly discussed potential impacts associated with schools, parks, or other public facilities (FEIR Volume I, page 3.9.1), and found that there was no potential for such an impact. The proposed Project is not expected to affect these public facilities and services.

Mitigation Measures

No previously adopted mitigation measures are applicable to the current Project, and no new measures are required.

Conclusion

No new or more severe impacts to public services or facilities are associated with the proposed Project.

15. Recreation

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
15. Recreation.					
a. Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	FEIR Volume I, Section 1.9	No	No	No	N/A
b. Does the Project include recreational facilities or require the construction or expansion of	FEIR Volume I, Section 1.9	No	No	No	N/A

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
15. Recreation.					
recreational facilities which might have an adverse physical effect on the environment?					

Discussion

a,b) FEIR Volume I, Section 1.9 (page 1-18) determined that the Project then being reviewed would not have the potential for a significant adverse effect on recreational use because no new or expanded recreational use is proposed at the landfill site, nor would the proposed Project create demand for or increased use of existing recreational facilities.

Mitigation Measures

No mitigation measures related to recreation were identified in the FEIR and no new mitigation measures would be required for the proposed Project.

Conclusion

The conclusion in the FEIR is still applicable: the Project would not have the potential for a significant adverse effect on recreation.

16. Transportation/Traffic

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
16. Transportation/Traffic. Would the Project:					
a. Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ration on roads, or congestion at intersections)?	FEIR Volume I, Impacts 3.10.1, 3.10.2, and 3.10.3; FEIR Response to Comments Amendment, Master Response 101	No	No	No	N/A

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/Resolve Impacts?
16. Transportation/Traffic. Would the Project:					
b. Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	FEIR Volume I, Impacts 3.10.1, 3.10.2, and 3.10.3.	No	No	No	N/A
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	FEIR Volume I, Impacts 3.6.2, 3.6.6, and 3.8.5	No	No	No	N/A
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	FEIR Volume I, Impact 3.10.4	No	No	No	N/A
e. Result in inadequate emergency access?	FEIR Volume I, pages 3.8-3, 3.8-11	No	No	No	N/A
f. Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	Not Analyzed in the FEIR	No	No	No	N/A

Discussion

This section was prepared by a traffic engineer with CEQA expertise, who reviewed the Project description and application materials, and who conducted a review of current road conditions in the vicinity of the landfill.

a,b) The FEIR analyzed potential Level of Service (LOS) impacts at the intersection of Highway 101 and Sanitary Landfill Road (for northbound traffic to and from the landfill), at the Highway 101 ramp junction areas at the overpass (for southbound traffic to and from the landfill), and on the Highway 101 mainline (northbound and southbound). At the time that Volumes I and II of the FEIR were published (in 2005), the overpass and closure of the median opening at the Highway 101 / Sanitary Landfill Road intersection were proposed as part of the project. Those improvements were completed in June 2006. The FEIR found that the project being analyzed at that time would not cause a significant adverse transportation and traffic impact. In 2008, the FEIR Response to Comments Amendment, Master Response 101, responded to public comments about potential impacts on roads

other than Highway 101 (e.g., Highway 37 and Atherton Avenue) by concluding that traffic on Highway 37 would not be expected to increase under the proposed project (due to the expected limited potential to increase landfill materials from areas served by Highway 37), and that Atherton Avenue does not provide travel time savings as an alternative to the freeway. The currently-proposed Project would include an increase in the maximum daily number of vehicles entering the facility from 662 vehicles per day to 690 vehicles per day, the same level of traffic proposed in the project analyzed in the FEIR. In addition, the latest data from Caltrans indicates that the average annual daily traffic (AADT) on Highway 101 in the Project area is about 80,000 vehicles, which is lower than the AADT that Caltrans reported at the time of the EIR analysis. Therefore, the current Project would not cause a new or more severe transportation and traffic impact.

- c) The FEIR addressed potential impacts to airports in Volume I, Section 3.6, Land Use and Planning, and Section 3.8, Public Health and Safety. The proposed Project would not increase air traffic at Gness Field or elsewhere.
- d) The FEIR analyzed potential traffic safety impacts on Highway 101 in the vicinity of the landfill, and concluded that the project impact would be less than significant on the basis of the applicant's commitment to construct the grade-separated access connection between the landfill's access road and southbound Highway 101. That overpass and closure of the median opening at the Highway 101 / Sanitary Landfill Road intersection were completed in June 2006. The currently-proposed Project would neither change the physical characteristics of the street network surrounding the site nor generate traffic that is incompatible with existing traffic patterns. The previously-identified less-than-significant impact related to traffic safety would remain less than significant.
- e) The FEIR did not specifically address impacts on emergency access, although emergency response planning and training, which State regulations require for landfill operations, are discussed in FEIR Section 3.8, Public Health and Safety. In the event of an emergency, vehicles can access the landfill via Redwood Landfill Access Road, or via Fire Road from northbound Highway 101 north of San Antonio Road. The Project now being proposed would not change this existing condition. Therefore, there would be no impact of the proposed Project related to the adequacy of emergency access.
- f) The FEIR did not specifically address conflicts with policies, plans, or programs supporting alternative transportation. The current Project would not directly or indirectly eliminate alternative transportation corridors or facilities, and would not include changes in policies or programs that support alternative transportation. Therefore, the Project would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

Mitigation Measures

No mitigation measures related to transportation and traffic were identified in the FEIR, and no new mitigation measures are required.

Conclusion

The proposed Project would not result in new or more severe significant traffic and transportation impacts, compared to the analysis presented in the FEIR.

17. Utilities and Service Systems

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
17. Utilities and Service Systems. Would the Project:					
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	Not examined in the FEIR	N.A.	N.A.	N.A.	N.A.
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	Not examined in the FEIR	N.A.	N.A.	N.A.	N.A.
c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	Section 3.5, Hydrology and Water Quality	Yes. See Hydrology and Water Quality Discussion	Yes. See Hydrology and Water Quality Discussion	Yes. See Hydrology and Water Quality Discussion	No. See Hydrology and Water Quality Discussion
d. Have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed?	FEIR Volume I, Impact 3.9.2	Yes	No	No	Yes
e. Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's Projected demand in addition to the provider's existing commitments?	The landfill site is not served by a wastewater treatment plant.	No	No	No	N/A
f. Be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs?	FEIR Volume I Impact 3.6.4, Impact 3.6.7, Master Responses 12 and 21; FEIR Response to Comments Amendment, Table 1.1, Master Response 107.	No	No	No	N/A

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
17. Utilities and Service Systems. Would the Project:					
g. Comply with federal, state, and local statutes and regulations related to solid waste?	FEIR Volume I Impact 3.6.4, Impact 3.6.7, Master Responses 12 and 21; FEIR Response to Comments Amendment, Table 1.1, Master Response 107.	No	No	No	N/A

Discussion

- a,b)** The landfill is not serviced by a wastewater treatment system (other than the facility’s own leachate treatment system). Nor does the proposed Project require use of a wastewater treatment system. Therefore, these issues were not discussed in the FEIR and are not analyzed further in this environmental checklist.
- c)** The Project would not require construction of new stormwater drainage facilities other than as described in the Project Description. Please see Section 9, Hydrology and Water Quality for a discussion of potential stormwater system impacts to water quality.
- d)** The FEIR (Volume I, Section 3.9, Impact 3.9.2) determined that the Project then being reviewed could place increased demand on public water supplies, exceeding available capacity, especially during periods of drought if the material received for composting increased to 514 tons per day (TPD). The adopted Mitigated Alternative capped the capacity of the composting facility at 170 TPD. The applicant is again proposing to increase the daily capacity of the composting facility to 514 TPD. As with the current composting operation, the water supply for the proposed expanded and modified composting operation would continue to be the existing stormwater pond located at the southern end of the site. The applicant is now proposing that wastewater from the compost pad could also be conveyed to a new pond that has not yet been designed or sited. Wastewater stored in the new pond would also be used for composting quench water. The applicant is also proposing that runoff from additional unpaved areas proposed for use for curing, screening, and storage of composted material, including Fields 1, 4, and 5, and landfill areas D and G, would be conveyed to the stormwater pond at the southern end of the site. As with the Project reviewed in the FEIR, the currently-proposed Project could result in increased demand on public water supplies, possibly exceeding available capacity during drought. Mitigation Measure 3.9.2, which would have limited RLI to using only water from non-potable sources for dust control and quench water during drought, was not included in the final MMRP, and is not in effect. However, as described in the Project Description, the applicant has committed to adhering to the requirements of Mitigation

Measure 3.9.2, by not using potable water sources for quench water during periods of drought. This measure would be sufficient to ensure that the proposed Project would not result in a significant impact to water supply.

- e) The Project site is not served by a public waste water treatment system; therefore this issue is not applicable.
- f) The FEIR (Impact 3.6.7) determined that the project then being reviewed could increase the rate of fill at the landfill, which could result in a conflict with Countywide Integrated Waste Management Plan, Summary Plan Goal 13 and Siting Element Goal 1, which require the County to assure 15 years of disposal capacity. The Project now being analyzed would increase the composting facility capacity to 514 TPD and recyclable commodity diversion to 400 TPD, which could potentially increase diversion from the landfill, thereby increasing the life expectancy for the landfill; therefore, the Project would not conflict with Countywide Integrated Waste Management Plan goals regarding assurance of disposal capacity.
- g) This Project does not propose to substantially increase the rate of disposal and could in fact serve to divert materials from landfill.

Mitigation Measures

FEIR Mitigation Measure 3.9.2 would reduce to less than significant the potential for the proposed Project to place a burden on public water supplies. No new mitigation measures are required; however, Mitigation Measure 3.9.2 was not previously adopted, it is not in effect. The applicant has, however, committed to incorporating this measure into the Project. This would avoid a new or more significant impact related to public water supplies.

Text of Previously Adopted Mitigation Measures

No previously adopted mitigation measures are applicable.

New or Revised Mitigation Measures

While not previously adopted, the applicant has committed to implementing FEIR Mitigation Measure 3.9.2. The text of the measure, as revised to reflect the current proposal, is as follows:

Mitigation Measure 3.9.2: During periods of drought RLI shall use only water from non-potable sources for dust control and/or quench water for the expanded composting operation.

Conclusion

The 2008 FEIR included Mitigation Measure 3.9.2 to reduce potentially significant burdens on public water supply during drought. This mitigation measure, however, was not adopted by the County for the Mitigated Alternative, because the Mitigated Alternative allowed only a small increase in maximum daily tonnage for composting. Adoption of this measure, as it was written

in the 2008 FEIR, would avoid the potential for the Project to impact public water supplies. No other aspects of the Project, changed circumstances, or new information would result in new or more severe significant impacts with respect to utilities and service systems.

18. Mandatory Findings of Significance

Environmental Issue Area	Where Impact Was Analyzed in the FEIR.	Do Proposed Changes in the Project Involve New Significant Impacts or Substantially More Severe Impacts?	Any Changed Circumstances Involving New Significant Impacts or Substantially More Severe Impacts?	Any New Information of Substantial Importance Requiring New Analysis or Verification?	Do Previously Adopted FEIR Mitigation Measures Address/ Resolve Impacts?
18. Mandatory Findings of Significance.					
a. Does the Project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	FEIR Volume I, Impacts 3.3.2, 3.3.4, 3.3.5, 3.3.6, and 3.3.7; FEIR Volume II, Master Response 10; FEIR Response to Comments Amendment, Master Response 102; FEIR Second Amendment, Topic 8.	No	No	No	N/A
b. Does the Project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a Project are considerable when view in connection with the effects of past Projects, the effects of other current Projects, and the effects of probable future Projects)?	FEIR Volume I, Section 4, Growth-Inducting and Cumulative Effects	No	No	No	N/A
c. Does the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	FEIR Volume I, Impacts 3.2.8, 3.8.1, 3.8.2, 3.8.3, 3.8.4, 3.8.5, 3.8.6.	No	No	No	N/A

Discussion

- a) The discussion of potential biological resources impacts in Section 4, Biological Resources, in particular potential impacts to Waters of the State, sensitive habitat, and special status species, concludes that, with the continued implementation of existing mitigation measures,

the proposed Project would not result in a new or more severe significant impact on these sensitive biological resources.

- b) The FEIR examined the potential for the Project proposed at that time to contribute to cumulative impacts, and concluded that the only case in which such a contribution would be cumulatively considerable was air quality. This Supplemental Environmental Review Checklist has concluded, for each environmental topic area, that the Project would not result in new or more severe significant impacts. The less-than-significant impacts of the proposed Project would not be expected to make a considerable contribution to any cumulative impacts; therefore, no new or substantially more severe significant cumulative impacts would occur.
- c) Section 3, Air Quality, in this Supplemental Environmental Checklist examines the potential for the proposed Project to result in new or more severe significant impacts related to release of toxic air contaminants and bioaerosols, and finds that, with the continued implementation of mitigation measures from the FEIR, the Project would not have such a potential. The Land Use and Biological Resources discussions examine the potential for increased bird attraction and bird air strike hazards, and find that existing mitigation measures would be sufficient to reduce the potential for a new or more severe impact of this kind. In conclusion, the proposed Project would not result in new or more severe impacts on human beings.

Mitigation Measures

In some instances, previously adopted mitigation measures from the FEIR would be necessary to reduce the impacts described above to less than significant levels. In other cases, the Project is not expected to have a new or more severe impact, and no mitigation is required. No new mitigation measures are required to reduce or avoid any impacts associated with the Mandatory Findings of Significance.

Conclusion

The proposed Project would not exceed any of the thresholds leading to a Mandatory Finding of Significance.

Summary Findings of Checklist

This environmental checklist review analyzes the proposed Project and compares the potential impacts to the conclusions of the 2008 FEIR. This analysis was completed to determine the requirement for further environmental documentation pursuant to State CEQA Guidelines sections 15162, 15163 and 15164. This analysis has identified no new or substantially more severe impacts of the Project compared to those identified and evaluated in the 2008 FEIR. Mitigation measures identified in the 2008 FEIR would be applied to the Project, as proposed, to reduce or avoid significant impacts. The topic areas in which 2008 FEIR mitigation measures would apply are the following: Aesthetics, Air Quality; Biological Resources; Greenhouse Gases;

Hydrology and Water Quality; Land Use and Planning; Noise; and Utilities and Service Systems. With the application of these previously-identified mitigation measures, summarized below and reproduced in full in the Environmental Checklist, no new significant impacts or substantial increases in the severity of previously identified impacts requiring revisions to the 2008 FEIR would occur. No new mitigation measures are required for the adoption and implementation of the proposed Project.

Summary of Applicable Mitigation Measures

Mitigation measures identified in the 2008 FEIR that are necessary to reduce or avoid potentially significant impacts of the proposed Project are identified below. Please refer to Appendix B for the full text of all adopted mitigation measures from the 2008 FEIR.

Aesthetics

Previously adopted Mitigation Measures 3.1.6a, b, c, and e would continue to reduce potential impacts resulting from litter that might substantially degrade scenic resources. Previously adopted Mitigation Measure 3.6.2b would reduce potential impacts from new sources of nighttime lighting.

Air Quality

The 2008 FEIR identified Mitigation Measures 3.2.1b and c to reduce construction-related fugitive dust emissions. Mitigation Measures 3.2.2a, b, and c were identified to reduce NO_x emissions from off-road equipment, and would also apply to construction equipment used at the site. Mitigation Measures 3.2.8b, c, and d, and Mitigation Measures 3.8.2a, b, and c were identified to reduce toxic air contaminant emissions from composting operations and from diesel-powered equipment, respectively. Mitigation Measures 3.2.9a and b were identified to reduce odor impacts. All of these mitigation measures were previously adopted and would reduce air quality impacts of the proposed Project to less than significant levels, or would further reduce less-than-significant Project emissions.

Biological Resources

Previously adopted Mitigation Measures 3.3.5a and 3.7.3a, b, and c would limit compost facility noise from exceeding 76 dBA at the marsh edge. Enclosure of the CASP blowers, and locating them at least 700 feet from the marsh edge, which are part of the proposed Project, would ensure that compost facility noise would not have a deleterious effect on breeding California clapper rail and black rail. Impacts on nesting birds within or in the vicinity of the proposed MRF site would be avoided by seasonal restrictions on construction activities or preconstruction surveys of nesting activities committed to by the applicant.

Greenhouse Gases

Previously adopted Mitigation Measures 3.2.5f and 3.2.5g would continue to reduce potential impacts of GHGs.

Hydrology and Water Quality

Previously adopted Mitigation Measures 3.5.1a and b, and 3.5.6a, b, c, and d remain applicable and adequate with respect to the Project, as proposed, and would reduce potential impacts related to drainage and flooding to a less-than-significant level. Previously adopted Mitigation Measure 3.5.8 remains applicable and adequate with respect to construction-related water quality impacts.

Previously adopted Mitigation Measures 3.5.4a and 3.5.4b; and Mitigation Measures 3.5.5a, 3.5.5b, and 3.5.5c remain applicable, unless superceded by the design criteria and standards contained in the draft General Compost WDRs. Together with adherence to the Tier 2 requirements in the draft General Compost WDRs these measures will reduce the potential for compost facility impacts related to water quality to a less-than-significant level.

Land Use and Planning

Previously adopted Mitigation Measures 3.6.2a, c, and d would continue to apply and would be necessary to ensure that there would be no conflict with the planned extension of the Gness Field runway.

Noise

Previously adopted Mitigation Measures 3.7.3a, b, and c and Mitigation Measure 3.3.5a would reduce potential impacts resulting from a substantial increase in ambient noise levels in the Project vicinity associated with increased composting facility operations. These measures would be sufficient to reduce the potential increased noise levels to less than significant.

Utilities and Service Systems

FEIR Mitigation Measure 3.9.2 would reduce to less than significant the potential for the proposed Project to place a burden on public water supplies. No new mitigation measures are required; however, previously identified Mitigation Measure 3.9.2 was not adopted in 2008 in connection with approval of the Mitigated Alternative. Adoption of this mitigation measure, as agreed to by the applicant, would avoid a new or more significant impact related to public water supplies.

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CHAPTER 4

Revised Mitigation Measures

As described in Chapter 3, Environmental Checklist for Supplemental Environmental Review, revisions are provided for several previously adopted mitigation measures from the 2008 Final Environmental Impact Report (FEIR). Revisions are intended to make these measures clearer, to make them consistent with current regulations, or to make them applicable to the current Project. The specific reasons for each revision are provided in Chapter 3. None of the revisions alters the overall intent or meaning of the mitigation measures. Revisions are indicated by ~~strike through~~ and underline text. These revisions are also included in a revised Mitigation Monitoring and Reporting Program, which is attached to this document as Appendix B.

Revised Mitigation Measures

Aesthetics

Mitigation Measure 3.1.6a: RLI will continue its current litter-control program, which includes the following elements (Geosyntec, 1998):

- compaction of the waste,
- application of daily cover,
- placement of fixed and portable litter fences around the active working face,
- construction of a semi-permanent litter fence on the east and north sides of the landfill adjacent to San Antonio Creek,
- daily use of a clean-up crews to collect litter from the site and surrounding area, and
- use of signage to advise haulers that incoming loads must be properly covered and that tarps ~~are to~~ must be removed only in designated areas.

Mitigation Measure 3.1.6b: The tipper ~~is~~ shall not be operated in winds exceeding 50 mph.

Mitigation Measure 3.1.6c: RLI shall update as necessary and implement its current litter-control program to ensure compliance with 27 CCR §20830. The updated program will take into account the use of the waste tipper and ~~will~~ shall indicate the means to prevent litter from escaping the Oxbow area proposed for composting. Measures may include, but are not limited to, the following:

- use of additional portable litter fencing in the Oxbow area,
- use of higher temporary fences at the working face, as needed to prevent litter from escaping when loads are emptied by the tipper, and
- increasing the staff of the daily clean-up crew to adequately police the additional areas proposed for composting.

RLI shall submit the updated litter control plan to the LEA for approval prior to project implementation.¹

Air Quality

Mitigation Measure 3.2.8b: Best management practices for the composting and co-composting operation, including ~~but not limited to scheduled pile turning and~~ managing piles to avoid excessively high temperatures, will reduce the emissions of TACs from composting and co-composting operations.

Mitigation Measure 3.2.9a: ~~Continuation of e~~ Current odor management practices shall be continued. These include but are not limited to: covering landfilled waste at the end of each day with either soil or mixed ADC and maintaining windrows or static piles in a manner that optimizes the composting process.

Mitigation Measure 3.2.9b: The project applicant shall formulate an Odor Impact Minimization Plan in accordance with the recently revised State composting regulations (Title 14 CCR § 17863.4.) This plan will be submitted to the LEA as part of the application for a solid waste facilities permit for the composting facility and implemented upon issuance of the revised SWFP. In accordance with the above-cited regulations, the plan shall contain, at a minimum:

- an odor monitoring protocol which describes the proximity of possible odor receptors and a method for assessing odor impacts at the locations of the possible odor receptors; and,
- a description of meteorological conditions effecting migration of odors and/or transport of odor-causing material off-site. Seasonal variations that effect wind velocity and direction shall also be described; and,
- a complaint response protocol that includes the verification and documentation upon receipt of any odor complaints and immediate notification of County LEA staff upon receipt of any odor complaints upon receipt of the call; and,
- a description of design considerations and/or projected ranges of optimal operation to be employed in minimizing odor, including method and degree of aeration, moisture content of materials, feedstock characteristics, airborne emission production, process water distribution, pad and site drainage and permeability, equipment reliability, personnel training, weather event impacts, utility service interruptions, and site specific concerns; and,

¹ An updated Litter Control Plan was submitted to the LEA in September, 2008 (Waste Management, 2008).

- a description of operating procedures for minimizing odor, including aeration, moisture management, feedstock quality, drainage controls, pad maintenance, wastewater pond controls, storage practices (e.g., storage time and pile geometry), contingency plans (i.e., equipment, water, power, and personnel), biofiltration, and tarping.
- The odor impact minimization plan shall be revised to reflect any changes, and a copy shall be provided to the LEA, within 30 days of those changes.
- The odor impact minimization plans shall be reviewed annually by the operator to determine if any revisions are necessary.

Hydrology and Water Quality

Mitigation Measure 3.5.1a: The applicant shall continue to implement Measures 3.4.1b (regarding RLI's Post Earthquake Inspection and Corrective Action Plan² and ensuring that costs to remediate groundwater or surface water degradation resulting from earthquake-caused damage to landfill or levee slopes or the LCRS are financially assured), and Measure 3.4.2a (regarding utilization of criteria developed by Geosyntec for monitoring the lateral and vertical deformation of Bay Mud to provide advance warning or potential landfill instability).

Mitigation Measure 3.5.1b: The applicant shall continue to implement Measures 3.4.1c (i.e., update the facility's Post Earthquake Inspection and Corrective Action Plan to address changes resulting from the project), and Measures 3.4.2b (regarding the conduct and reporting of the geotechnical monitoring program), 3.4.2c (regarding actions to take in response to indications of an increasing rate of deformation in the monitored slopes), 3.4.2d (regarding the modification of the fill sequencing plan, as needed, if the strength of the Bay Mud is less than anticipated), and Measure 3.4.3 (regarding regular inspection for cracks in cover material and regular monitoring of pressure and volume changes in the landfill gas collection system).

Mitigation Measure 3.5.4a: The applicant shall produce and present to the LEA and RWQCB for approval a report demonstrating that sufficient capacity exists to contain ~~contact water~~ wastewater from areas outside the landfill footprint, proposed to be used for composting, co-composting and sludge processing, that would result from a 100-year storm event. Approval of use of these areas for composting, co-composting, and sludge processing shall be conditioned upon submittal and approval that this standard has been met.

Because the amount of ~~contact water~~ wastewater generated at Redwood Landfill would increase as a result of the expanded composting area, RLI will have to demonstrate to the satisfaction of the LEA and the RWQCB where, within the landfill boundaries, ~~contact water~~ wastewater from this area would be directed, and that such ~~contact water~~ wastewater impoundment will have sufficient capacity to accommodate run-off from a 100-year storm event. Storage capacity shall be adequate to contain ~~contact water~~ wastewater generated from a storm occurring mid- or late-season, when the impoundment could have water in it from previous storms.

² The Post Earthquake Inspection and Corrective Action Plan was completed and provided to the LEA in October, 2008 (Geosyntec, 2008).

Mitigation Measure 3.5.4b: To ensure storm water discharges do not contaminate off-site receiving waters, all ~~contact water~~ wastewater shall continue to be managed separately from ~~non-contact storm~~ water and retained on site. Storm water and wastewater management shall include the following measures:

1. Composting operations areas outside of the landfill footprint, including areas used for active composting, stockpiling of feedstock, and other processing, shall be fitted with ~~contact water~~ wastewater collection systems, such as site grading and perimeter drain systems, that prevent pooling of liquids, that collect any free liquid, including leachate, excess quench water, and other ~~liquids~~ wastewater, and that convey the collected ~~liquid~~ wastewater to the leachate collection pond or other ~~leachate~~ wastewater treatment facility or utilization of other such measures as approved by RWQCB.
2. Areas used for wet season handling, storage, or stockpiling of dried sludge, materials to be used for ADC, or other materials capable of producing ~~contaminated runoff~~ wastewater shall be fitted with impermeable pads and ~~leachate~~ wastewater collections systems, or the materials themselves shall be protected from contact with rainwater or utilization of other such measures as approved by RWQCB.

Mitigation Measure 3.5.5a: The applicant ~~will~~ shall test leachate and wastewater to be used as quench water quarterly, consistent with current testing and use protocols applied to the use of leachate for dust control. The leachate or wastewater will be used for quench water as long as, and only if, it meets RWQCB-approved standards established for the use of leachate for dust control at the site. This measure will be reflected as a requirement in the Solid Waste Facilities Permit as well as the landfill's Waste Discharge Requirements.

The current program to reuse leachate for dust control, upon which the program to reuse leachate or wastewater for quench water will be based, requires RLI to sample the leachate pond on a quarterly basis prior to use for dust control to insure that levels of chemical constituents are at "clean" standards. Reporting of the leachate sampling is included with the Self Monitoring Program associated with Redwood Landfill's Waste Discharge Requirements. Written detection monitoring reports, which include compliance evaluation summaries, are filed by the 15th day of the month following the report period; an annual report also is required, by January 31 for the previous calendar year.

Mitigation Measure 3.5.6a: To ensure the site and project elements are protected from potential impacts of flooding, the applicant shall complete their planned increase in the height of the exterior levee that encompasses the entire landfill site (i.e., the approximately 380 acres of the 420-acre Southern Area currently located within levees) to 9 feet above msl and their planned increase in the width of the levee to 10 feet prior to implementation of project elements in the Oxbow or other areas outside the permitted ~~223~~ 222.5-acre landfill footprint.

The applicant's JTD (Geosyntec, 1998) states on page 4-21 that the levee is approximately four miles long and separates the site from adjacent sloughs. As part of the description of the existing facility (pages 5-1 and 5-2) the JTD states that the levee encompasses approximately 380 acres of the 420-acre Southern Area of the landfill property, and that the height of the levee will be increased to 9 feet above mean sea level around the entire landfill, and that the crest will be widened to 10 feet. These changes to the levee are not specified as project elements, and elsewhere in the JTD some ambiguity exists as to whether references to a levee refer to a levee around only the permitted landfill footprint

(~~approximately 223~~ 222.5 acres) or around the entire landfill site (approximately 380 acres of which are within existing levees). This analysis assumes that as part of the facility's existing operation, as stated on the aforementioned pages, RLI intends to increase the exterior levee that encompasses the entire 380 acres of the 420-acre Southern Area to 9 feet above msl and to widen its crest to 10 feet.

Because the base flood elevation for the 100-year storm is 6 to 7 feet above mean sea level (msl), increasing the levee to 9 feet would protect the landfill property from the 100-year flood. Increasing the width should contribute support to the levee's stability and ability to withstand the dynamic forces of the river at flood stage. The ~~223~~ 222.5-acre landfill footprint already is located outside the 100-year flood plain due to existing levees. The portion of the site outside the landfill footprint remains vulnerable to flooding until these planned changes to the exterior levee are completed.

The applicant shall prepare and adhere to a construction schedule for completion of the levee improvements specified above. The construction schedule must be prepared and submitted to the LEA prior to project approval and issuance of a revised SWFP.³ It is expected that the construction schedule will indicate that phased or sequenced construction is required, in order to allow consolidation and strengthening of the Bay Mud beneath the levee (see Mitigation Measure 3.5.6b and 3.5.6c, below). The construction schedule must show that all planned improvements of the entire levee system will be completed no later than December 31, 2011, or, if phased or sequenced construction is required, completion of the first phase or sequence by this date. The first phase or sequence must include improvements to any and all parts of the exterior levee that encompasses the entire 380 acres of the 420-acre Southern Area that are not yet at the design elevation of +9 feet msl and the design top width of 10 feet. The construction schedule shall further indicate that completion of all phases or sequences will be completed in the shortest feasible time, given the limitations of construction on Bay Mud. The construction schedule shall be peer reviewed, at the applicant's expense, by a Registered Geotechnical Engineer selected or approved by Marin County.

Land Use and Planning

Mitigation Measure 3.6.2a: The applicant ~~proposes to~~ shall continue their existing bird control program. Redwood Landfill's bird control program focuses on gulls, the predominant avian scavengers at the site, and consists of using pyrotechnic devices to discourage gulls from landing or circling overhead during refuse placement and compaction. The devices provide noise (bang or whistle), a flash of light, smoke, and the sound of the propellant. RLI focuses its deterrent efforts when the birds first begin to arrive in the morning (shortly after dawn) and the morning hours, having found that this results in fewer gulls approaching the site during the rest of the day. RLI also may use a gas-fired cannon, which emits a loud blast, in conjunction with the pyrotechnic devices. Redwood Landfill shall periodically re-evaluate and revises bird control techniques as necessary.

Mitigation Measure 3.6.2b: The applicant ~~proposes no change in the number or type of lights used for nighttime operations. There are no records that indicate that the existing use of lights at the landfill poses a hazard to operations at Gross Field.~~

³ The construction schedule was completed in 2008 (Miller Pacific, 2008b).

Mitigation Measure 3.6.2c: To ensure that nighttime activities do not interfere with operations at Gness Field, lights used during nighttime landfill operations will not be colored, will be shielded and directed downward to reduce glare, and will be placed in an irregular pattern in order not to appear to be a runway. The applicant shall notify the Gness Field Airport prior to any change in the way lighting is used for nighttime operations.

Noise

Mitigation Measure 3.7.3c: ~~As an alternative to Mitigation Measure 3.7.3b, Alternatively,~~ the landfill operator could construct an earthen berm (or other similar noise dissipating structures) between the grinder operations area and all parts of the eastern landfill boundary within 600 feet of the grinder location. If an earthen berm is used, it must be at least as high as the highest part of the grinder itself. Compost windrows or other similar structures could be substituted for the earthen berm, as long as they are as high as the highest part of the grinder, and located between the grinder operations area and the eastern landfill boundary.

Public Health and Safety

Mitigation Measure 3.8.2a: Redwood Landfill's existing composting operation includes dust control measures, such as the addition of water (using a water truck or portable sprinkler system) to composting windrows as needed to control dust and to maintain the appropriate moisture content for the composting process, all of which shall be continued (~~Geosyntec, 1998~~). Because bioaerosols and endotoxins are both carried on dust particles (particulate matter), measures to control dust at Redwood Landfill also will help limit the dispersal of *Aspergillus fumigatus* and endotoxins.

Public Services, Utilities, and Energy

While not previously adopted, the applicant has committed to implementing FEIR Mitigation Measure 3.9.2. The text of the measure, revised to reflect the current proposal, is as follows:

Mitigation Measure 3.9.2: During periods of drought RLI shall use only water from non-potable sources for ~~dust control and/or~~ quench water for the expanded composting operation.

APPENDIX A

Criteria Pollutant and GHG Emissions

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- CalEEMod CASP Construction – Summer and Annual
- CalEEMod MRF Construction – Summer and Annual
- Average Construction Emissions
- Composting Emissions
- Off-road Equipment – 2012
- Off-road Equipment – 2013
- OFFROAD2007 Factors
- Project New On-road Vehicle Emissions
- EMFAC2011 Factors
- Project Indirect Electricity GHGs

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CalEEMod CASP Construction – Summer and Annual

Redwood CASP Construction
Marin County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Other Non-Asphalt Surfaces	10.5	Acre

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.2	Utility Company	Pacific Gas & Electric Company
Climate Zone	5	Precipitation Freq (Days)	69		

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - Assumes additional gravel areas for composting would encompass an area of ~10.5 acres

Off-road Equipment - Updated load factors based on latest from ARB.

Off-road Equipment - Since just gravel would be laid rather than paving, took out paving equipment and replaced with tractors/loaders. Updated load factors based on latest from ARB.

Off-road Equipment -

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Trips and VMT - Included vendor truck trips to account for water trucks (grading) and gravel (paving) phases per the CalEEMod guidelines. Reduced truck trip length for paving since gravel will be from recycled material on-site. Left trip length for grading to conservatively account for water truck movement

Construction Off-road Equipment Mitigation -

Grading -

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2012	8.38	68.23	37.84	0.07	8.97	3.30	12.27	3.32	3.30	6.62	0.00	7,385.11	0.00	0.75	0.00	7,400.88
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2012	8.38	68.23	37.84	0.07	4.20	3.30	7.50	1.50	3.30	4.80	0.00	7,385.11	0.00	0.75	0.00	7,400.88
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00	0.00	0.00

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00	0.00	0.00

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.67	0.00	8.67	3.31	0.00	3.31						0.00
Off-Road	8.20	68.06	36.14	0.07		3.29	3.29		3.29	3.29		7,128.68		0.73		7,144.11
Total	8.20	68.06	36.14	0.07	8.67	3.29	11.96	3.31	3.29	6.60		7,128.68		0.73		7,144.11

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.18	0.16	1.70	0.00	0.30	0.01	0.31	0.01	0.01	0.02		256.42		0.02		256.77
Total	0.18	0.16	1.70	0.00	0.30	0.01	0.31	0.01	0.01	0.02		256.42		0.02		256.77

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3.2 Grading - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.90	0.00	3.90	1.49	0.00	1.49						0.00
Off-Road	8.20	68.06	36.14	0.07		3.29	3.29		3.29	3.29	0.00	7,128.68		0.73		7,144.11
Total	8.20	68.06	36.14	0.07	3.90	3.29	7.19	1.49	3.29	4.78	0.00	7,128.68		0.73		7,144.11

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.18	0.16	1.70	0.00	0.30	0.01	0.31	0.01	0.01	0.02		256.42		0.02		256.77
Total	0.18	0.16	1.70	0.00	0.30	0.01	0.31	0.01	0.01	0.02		256.42		0.02		256.77

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3.3 Paving - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.03	12.94	8.62	0.01		1.13	1.13		1.13	1.13		1,246.93		0.18		1,250.76
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	2.03	12.94	8.62	0.01		1.13	1.13		1.13	1.13		1,246.93		0.18		1,250.76

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.09	0.08	0.85	0.00	0.15	0.00	0.15	0.01	0.00	0.01		128.21		0.01		128.39
Total	0.09	0.08	0.85	0.00	0.15	0.00	0.15	0.01	0.00	0.01		128.21		0.01		128.39

3.3 Paving - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.03	12.94	8.62	0.01		1.13	1.13		1.13	1.13	0.00	1,246.93		0.18		1,250.76
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	2.03	12.94	8.62	0.01		1.13	1.13		1.13	1.13	0.00	1,246.93		0.18		1,250.76

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.09	0.08	0.85	0.00	0.15	0.00	0.15	0.01	0.00	0.01		128.21		0.01		128.39
Total	0.09	0.08	0.85	0.00	0.15	0.00	0.15	0.01	0.00	0.01		128.21		0.01		128.39

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4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00

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5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

**Redwood CASP Construction
Marin County, Annual**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Other Non-Asphalt Surfaces	10.5	Acre

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.2	Utility Company	Pacific Gas & Electric Company
Climate Zone	5	Precipitation Freq (Days)	69		

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - Assumes additional gravel areas for composting would encompass an area of ~10.5 acres

Off-road Equipment - Updated load factors based on latest from ARB.

Off-road Equipment - Since just gravel would be laid rather than paving, took out paving equipment and replaced with tractors/loaders. Updated load factors based on latest from ARB.

Off-road Equipment -

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Trips and VMT - Included vendor truck trips to account for water trucks (grading) and gravel (paving) phases per the CalEEMod guidelines. Reduced truck trip length for paving since gravel will be from recycled material on-site. Left trip length for grading to conservatively account for water truck movement

Construction Off-road Equipment Mitigation -

Grading -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2012	0.34	2.67	1.55	0.00	0.30	0.15	0.44	0.12	0.15	0.26	0.00	260.42	260.42	0.03	0.00	261.01
Total	0.34	2.67	1.55	0.00	0.30	0.15	0.44	0.12	0.15	0.26	0.00	260.42	260.42	0.03	0.00	261.01

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2012	0.34	2.67	1.55	0.00	0.14	0.15	0.29	0.05	0.15	0.20	0.00	260.42	260.42	0.03	0.00	261.01
Total	0.34	2.67	1.55	0.00	0.14	0.15	0.29	0.05	0.15	0.20	0.00	260.42	260.42	0.03	0.00	261.01

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Waste						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Waste						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.29	0.00	0.29	0.12	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.27	2.25	1.19	0.00		0.11	0.11		0.11	0.11	0.00	213.35	213.35	0.02	0.00	213.82
Total	0.27	2.25	1.19	0.00	0.29	0.11	0.40	0.12	0.11	0.23	0.00	213.35	213.35	0.02	0.00	213.82

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	6.91	6.91	0.00	0.00	6.92
Total	0.01	0.01	0.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	6.91	6.91	0.00	0.00	6.92

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3.2 Grading - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.13	0.00	0.13	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.27	2.25	1.19	0.00		0.11	0.11		0.11	0.11	0.00	213.35	213.35	0.02	0.00	213.82
Total	0.27	2.25	1.19	0.00	0.13	0.11	0.24	0.05	0.11	0.16	0.00	213.35	213.35	0.02	0.00	213.82

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	6.91	6.91	0.00	0.00	6.92
Total	0.01	0.01	0.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	6.91	6.91	0.00	0.00	6.92

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3.3 Paving - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.07	0.42	0.28	0.00		0.04	0.04		0.04	0.04	0.00	36.75	36.75	0.01	0.00	36.87
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.07	0.42	0.28	0.00		0.04	0.04		0.04	0.04	0.00	36.75	36.75	0.01	0.00	36.87

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.40	3.40	0.00	0.00	3.41
Total	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.40	3.40	0.00	0.00	3.41

3.3 Paving - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.07	0.42	0.28	0.00		0.04	0.04		0.04	0.04	0.00	36.75	36.75	0.01	0.00	36.87
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.07	0.42	0.28	0.00		0.04	0.04		0.04	0.04	0.00	36.75	36.75	0.01	0.00	36.87

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.40	3.40	0.00	0.00	3.41
Total	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.40	3.40	0.00	0.00	3.41

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4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr										MT/yr						
Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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5.2 Energy by Land Use - Natural Gas

Mitigated

	Natural Gas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0					0.00	0.00	0.00	0.00
Total						0.00	0.00	0.00	0.00

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0					0.00	0.00	0.00	0.00
Total						0.00	0.00	0.00	0.00

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					0.00	0.00	0.00	0.00
Unmitigated					0.00	0.00	0.00	0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0 / 0					0.00	0.00	0.00	0.00
Total						0.00	0.00	0.00	0.00

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0 / 0					0.00	0.00	0.00	0.00
Total						0.00	0.00	0.00	0.00

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					0.00	0.00	0.00	0.00
Unmitigated					0.00	0.00	0.00	0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0					0.00	0.00	0.00	0.00
Total						0.00	0.00	0.00	0.00

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0					0.00	0.00	0.00	0.00
Total						0.00	0.00	0.00	0.00

9.0 Vegetation

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CalEEMod MRF Construction – Summer and Annual

**Redwood MRF Construction
Marin County, Summer**

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Other Non-Asphalt Surfaces	3	Acre

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.2	Utility Company	Pacific Gas & Electric Company
Climate Zone	5	Precipitation Freq (Days)	69		

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - Assumes MRF would encompass an area of ~3acres, with "paving" to include the slab and gravel areas

Off-road Equipment - Updated load factors based on latest from ARB.

Off-road Equipment - Updated load factors based on latest from ARB.

Trips and VMT - Included vendor truck trips to account for water trucks (grading) and concrete/asphalt (paving) phases per the CalEEMod guidelines.
Increased triplength to match MHDT triplength

Construction Off-road Equipment Mitigation -

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2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2012	4.82	36.49	23.81	0.04	6.49	2.07	8.55	3.32	2.07	5.39	0.00	3,942.30	0.00	0.43	0.00	3,951.26
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2012	4.82	36.49	23.81	0.04	3.09	2.07	5.15	1.50	2.07	3.57	0.00	3,942.30	0.00	0.43	0.00	3,951.26
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00	0.00	0.00

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00	0.00	0.00

3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.18	0.00	6.18	3.31	0.00	3.31						0.00
Off-Road	4.55	35.03	21.48	0.03		2.02	2.02		2.02	2.02		3,530.20		0.41		3,538.75
Total	4.55	35.03	21.48	0.03	6.18	2.02	8.20	3.31	2.02	5.33		3,530.20		0.41		3,538.75

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.13	1.34	1.05	0.00	0.08	0.04	0.12	0.01	0.04	0.05		219.79		0.01		219.93
Worker	0.13	0.12	1.28	0.00	0.22	0.01	0.23	0.01	0.01	0.01		192.32		0.01		192.58
Total	0.26	1.46	2.33	0.00	0.30	0.05	0.35	0.02	0.05	0.06		412.11		0.02		412.51

3.2 Grading - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.78	0.00	2.78	1.49	0.00	1.49						0.00
Off-Road	4.55	35.03	21.48	0.03		2.02	2.02		2.02	2.02	0.00	3,530.20		0.41		3,538.75
Total	4.55	35.03	21.48	0.03	2.78	2.02	4.80	1.49	2.02	3.51	0.00	3,530.20		0.41		3,538.75

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.13	1.34	1.05	0.00	0.08	0.04	0.12	0.01	0.04	0.05		219.79		0.01		219.93
Worker	0.13	0.12	1.28	0.00	0.22	0.01	0.23	0.01	0.01	0.01		192.32		0.01		192.58
Total	0.26	1.46	2.33	0.00	0.30	0.05	0.35	0.02	0.05	0.06		412.11		0.02		412.51

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3.3 Paving - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.03	18.60	11.47	0.02		1.62	1.62		1.62	1.62		1,613.92		0.27		1,619.63
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	3.03	18.60	11.47	0.02		1.62	1.62		1.62	1.62		1,613.92		0.27		1,619.63

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.13	1.34	1.05	0.00	0.08	0.04	0.12	0.01	0.04	0.05		219.79		0.01		219.93
Worker	0.18	0.16	1.70	0.00	0.30	0.01	0.31	0.01	0.01	0.02		256.42		0.02		256.77
Total	0.31	1.50	2.75	0.00	0.38	0.05	0.43	0.02	0.05	0.07		476.21		0.03		476.70

3.3 Paving - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.03	18.60	11.47	0.02		1.62	1.62		1.62	1.62	0.00	1,613.92		0.27		1,619.63
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	3.03	18.60	11.47	0.02		1.62	1.62		1.62	1.62	0.00	1,613.92		0.27		1,619.63

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.13	1.34	1.05	0.00	0.08	0.04	0.12	0.01	0.04	0.05		219.79		0.01		219.93
Worker	0.18	0.16	1.70	0.00	0.30	0.01	0.31	0.01	0.01	0.02		256.42		0.02		256.77
Total	0.31	1.50	2.75	0.00	0.38	0.05	0.43	0.02	0.05	0.07		476.21		0.03		476.70

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4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00

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5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.00					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00
Total	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00		0.00

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Redwood MRF Construction Marin County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Other Non-Asphalt Surfaces	3	Acre

1.2 Other Project Characteristics

Urbanization	Rural	Wind Speed (m/s)	2.2	Utility Company	Pacific Gas & Electric Company
Climate Zone	5	Precipitation Freq (Days)	69		

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - Assumes MRF would encompass an area of ~3acres, with "paving" to include the slab and gravel areas

Off-road Equipment - Updated load factors based on latest from ARB.

Off-road Equipment - Updated load factors based on latest from ARB.

Trips and VMT - Included vendor truck trips to account for water trucks (grading) and concrete/asphalt (paving) phases per the CalEEMod guidelines.
Increased triplength to match MHDT triplength

Construction Off-road Equipment Mitigation -

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2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2012	0.12	0.82	0.56	0.00	0.07	0.06	0.13	0.03	0.06	0.09	0.00	77.71	77.71	0.01	0.00	77.91
Total	0.12	0.82	0.56	0.00	0.07	0.06	0.13	0.03	0.06	0.09	0.00	77.71	77.71	0.01	0.00	77.91

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2012	0.12	0.82	0.56	0.00	0.04	0.06	0.10	0.02	0.06	0.07	0.00	77.71	77.71	0.01	0.00	77.91
Total	0.12	0.82	0.56	0.00	0.04	0.06	0.10	0.02	0.06	0.07	0.00	77.71	77.71	0.01	0.00	77.91

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Waste						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Waste						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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3.0 Construction Detail

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Grading - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.06	0.00	0.06	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.35	0.21	0.00		0.02	0.02		0.02	0.02	0.00	32.02	32.02	0.00	0.00	32.09
Total	0.05	0.35	0.21	0.00	0.06	0.02	0.08	0.03	0.02	0.05	0.00	32.02	32.02	0.00	0.00	32.09

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.99	1.99	0.00	0.00	1.99
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.57	1.57	0.00	0.00	1.57
Total	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.56	3.56	0.00	0.00	3.56

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3.2 Grading - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.03	0.00	0.03	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Off-Road	0.05	0.35	0.21	0.00		0.02	0.02		0.02	0.02	0.00	32.02	32.02	0.00	0.00	32.09
Total	0.05	0.35	0.21	0.00	0.03	0.02	0.05	0.01	0.02	0.03	0.00	32.02	32.02	0.00	0.00	32.09

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.99	1.99	0.00	0.00	1.99
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.57	1.57	0.00	0.00	1.57
Total	0.00	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.56	3.56	0.00	0.00	3.56

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3.3 Paving - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.07	0.42	0.26	0.00		0.04	0.04		0.04	0.04	0.00	32.93	32.93	0.01	0.00	33.05
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.07	0.42	0.26	0.00		0.04	0.04		0.04	0.04	0.00	32.93	32.93	0.01	0.00	33.05

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.48	4.48	0.00	0.00	4.48
Worker	0.00	0.00	0.04	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	4.71	4.71	0.00	0.00	4.72
Total	0.00	0.03	0.07	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	9.19	9.19	0.00	0.00	9.20

3.3 Paving - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.07	0.42	0.26	0.00		0.04	0.04		0.04	0.04	0.00	32.93	32.93	0.01	0.00	33.05
Paving	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.07	0.42	0.26	0.00		0.04	0.04		0.04	0.04	0.00	32.93	32.93	0.01	0.00	33.05

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.48	4.48	0.00	0.00	4.48
Worker	0.00	0.00	0.04	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	4.71	4.71	0.00	0.00	4.72
Total	0.00	0.03	0.07	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	9.19	9.19	0.00	0.00	9.20

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	tons/yr										MT/yr						
Mitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

Land Use	Miles			Trip %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NaturalGas Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NaturalGas Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.2 Energy by Land Use - Natural Gas

Mitigated

	Natural Gas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0					0.00	0.00	0.00	0.00
Total						0.00	0.00	0.00	0.00

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0					0.00	0.00	0.00	0.00
Total						0.00	0.00	0.00	0.00

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unmitigated	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					0.00	0.00	0.00	0.00
Unmitigated					0.00	0.00	0.00	0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0 / 0					0.00	0.00	0.00	0.00
Total						0.00	0.00	0.00	0.00

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0 / 0					0.00	0.00	0.00	0.00
Total						0.00	0.00	0.00	0.00

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					0.00	0.00	0.00	0.00
Unmitigated					0.00	0.00	0.00	0.00
Total	NA	NA	NA	NA	NA	NA	NA	NA

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0					0.00	0.00	0.00	0.00
Total						0.00	0.00	0.00	0.00

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Other Non-Asphalt Surfaces	0					0.00	0.00	0.00	0.00
Total						0.00	0.00	0.00	0.00

9.0 Vegetation

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Average Construction Emissions

AVERAGE CONSTRUCTION EMISSIONS

MRF		Year 2012			
Grading	ROG	Nox	PM10	PM2.5	
Equip	4.55	35.03	2.02	2.02	
On-road	0.26	1.46	0.05	0.05	
Total	4.81	36.49	2.07	2.07	
Days	20				

CASP		Year 2012			
Grading	ROG	Nox	PM10	PM2.5	
Equip	8.2	68.06	3.29	3.29	
On-road	0.18	0.16	0.01	0.01	
Total	8.38	68.22	3.3	3.3	
Days	66				

MRF		Year 2012			
Paving	ROG	Nox	PM10	PM2.5	
Equip	3.03	18.6	1.62	1.62	
On-road	0.31	1.5	0.05	0.05	
Total	3.34	20.1	1.67	1.67	
Days	45				

CASP		Year 2012			
Paving	ROG	Nox	PM10	PM2.5	
Equip	2.03	12.94	1.13	1.13	
On-road	0.09	0.08	0	0	
Total	2.12	13.02	1.13	1.13	
Days	65				

Average Emissions for MRF Construction

ROG	Nox	PM10	PM2.5
4	25	2	2

Average Emissions for CASP Construction

ROG	Nox	PM10	PM2.5
5	41	2	2

Total Average Daily Construction for the Project

	ROG	Nox	PM10	PM2.5
Unmit	9	66	4	4
Mit	9	53	2	2

Composting Emissions

Composting Emissions Redwood Landfill

Tons

	<u>Proposed Project</u>		
	<u>Annual</u>	<u>Ave</u>	<u>Peak</u>
Green/wood waste	124,800	400	400
Biosolids	25,584	82	82
Food waste	<u>9,984</u>	<u>32</u>	<u>32</u>
Total:	160,368	514	514

a) Annual throughput assumes receipt of waste 312 days per year.

Cubic Yards

	<u>Ave</u>	<u>Peak</u>
Green/wood waste	1,600	1,600
Biosolids	93	93
Food waste	<u>36</u>	<u>36</u>
Total:	1,730	1,730

a) For the purposes of estimating volume of food waste, it was assumed that food waste had the same density factor as biosolids.

Composting/Co-Composting Split (cubic yards)

<u>Windrow Type</u>	<u>Proposed Project</u>		<u>Percent of Total</u>	
	<u>Ave</u>	<u>Peak</u>	<u>Ave</u>	<u>Peak</u>
Composting	1,470	1,470	85%	85%
Co-Composting	<u>260</u>	<u>260</u>	<u>15%</u>	<u>15%</u>
Total:	1,730	1,730	100%	100%

a) The composting/co-composting split assumes that co-composting is done at a 1:1 ratio for green/wood waste and biosolids (i.e., for every cubic yard of biosolids or foodwaste co-composted one cubic yard of green/wood waste is used).

Emissions from Composting at Redwood Landfill -- calculated using SCAQMD emission factors

	<u>Emission Factors (lbs/ton of material)</u>					
	<u>VOC</u>		<u>Ammonia</u>		<u>Composite Factor</u>	
	<u>Active Compost</u>	<u>Curing</u>	<u>Active Compost</u>	<u>Curing</u>	<u>VOC</u>	<u>Ammonia</u>
Composting	3.44	0.4	0.83	0.02	3.84	0.85
Co-Composting	1.42	0.36	1.47	1.47	1.78	2.94

	<u>Annual Throughput (tons)</u>	<u>Emissions (lbs/day)</u>	
	<u>Proposed Project</u>	<u>Proposed Project VOC</u>	<u>Proposed Project Ammonia</u>
Composting	136,273	1,434	317
Co-Composting	<u>24,095</u>	<u>118</u>	<u>194</u>
Total:	160,368	1,551	511
ASP Controlled Total:		233	77

a) Daily emissions calculated from annual emissions divided by 365 days.

Emissions Adjusted -- ROG is 39% of VOC.

	<u>Mitigated Project</u>
Composting	559
Co-Composting	<u>118</u>
Total:	677
ASP Controlled	101

- VOC emission factor for green/wood waste composting is adjusted to reflect 39% of the factor.

Off-road Equipment – 2012

Equipment Emission Factors Year 2012		Model Year	Age of Equip	Project Specific Equipment HP	Equip Prior Hours	Zero Hour (zh) Emissions and Deterioration Rate (dr) (grams/horsepower-hour)										Emission Factors (g/hp-hr)						
Equipment	Fuel					THCzh	THCdr	COzh	COdr	NOXzh	NOXdr	PMzh	PMdr	CO2zh	CO2dr	THC	ROG	CO	NOx	PM10	PM2.5	CO2
CAT D300 Articulated Dump Truck	diesel	2000	12	220	12000	3.20E-01	1.48E-05	9.20E-01	2.43E-05	6.25E+00	1.45E-04	1.50E-01	7.96E-06	5.68E+02	0.00E+00	0.498	0.417	1.212	7.990	0.246	0.227	568.300
CAT 980G Rubber Tired Loader	diesel	2002	10	346	12000	1.40E-01	2.22E-05	9.20E-01	1.82E-05	4.51E+00	6.32E-05	1.10E-01	6.03E-06	5.68E+02	0.00E+00	0.406	0.341	1.138	5.268	0.182	0.168	568.300
CAT D300 Articulated Dump Truck	diesel	1999	13	220	12000	3.20E-01	1.48E-05	9.20E-01	2.43E-05	6.25E+00	1.45E-04	1.50E-01	7.96E-06	5.68E+02	0.00E+00	0.498	0.417	1.212	7.990	0.246	0.227	568.300
CAT 966H Wheel Loader	diesel	2006	6	260	5191.0659	1.20E-01	2.40E-05	9.20E-01	2.43E-05	4.38E+00	6.33E-05	1.10E-01	5.79E-06	5.68E+02	0.00E+00	0.245	0.205	1.046	4.709	0.140	0.129	568.300
Volvo L120F Wheel Loader	diesel	2007	5	245	4564.4924	1.00E-01	2.50E-05	9.20E-01	2.43E-05	2.45E+00	3.18E-05	1.10E-01	5.59E-06	5.68E+02	0.00E+00	0.214	0.179	1.031	2.595	0.136	0.125	568.300
CAT 980G Rubber Tired Loader	diesel	2002	10	346	12000	1.40E-01	2.22E-05	9.20E-01	1.82E-05	4.51E+00	6.32E-05	1.10E-01	6.03E-06	5.68E+02	0.00E+00	0.406	0.341	1.138	5.268	0.182	0.168	568.300
Frontier Windrow Turner	diesel	2006	6	220	3785.8596	1.20E-01	2.40E-05	9.20E-01	2.43E-05	4.38E+00	6.33E-05	1.10E-01	5.79E-06	5.68E+02	0.00E+00	0.211	0.177	1.012	4.620	0.132	0.122	568.300
Re-Tech 723A Trommel Screen	diesel	2009	3	104	2297.8925	1.00E-01	2.50E-05	3.05E+00	8.10E-05	2.89E+00	3.80E-05	2.00E-01	8.58E-06	5.68E+02	0.00E+00	0.157	0.132	3.236	2.977	0.220	0.203	568.300
McCloskey 733 Trommel Screen	diesel	2010	2	225	1757.0554	1.00E-01	2.50E-05	9.20E-01	2.43E-05	2.45E+00	3.18E-05	1.10E-01	5.59E-06	5.68E+02	0.00E+00	0.144	0.121	0.963	2.506	0.120	0.111	568.300
Peterson Pacific HC5400 Grinder	diesel	2003	9	860	5072.0105	3.20E-01	1.12E-05	9.20E-01	1.82E-05	6.25E+00	1.04E-04	1.50E-01	7.96E-06	5.68E+02	0.00E+00	0.377	0.316	1.012	6.777	0.190	0.176	568.300

Year 2012		Model Year	Quantity of Equip	Project Specific Equipment HP	Load Factor	Equipment Usage - 2012	Equipment Usage - 2012	Equipment Emissions (lbs/day) - Year 2012							Annual Equipment Emissions (tons/yr) - Year 2012						
Equipment	Fuel					Hours/ day	Days/Year	THC	ROG	CO	NOx	PM10	PM2.5	CO2	THC	ROG	CO	NOx	PM10	PM2.5	CO2
CAT D300 Articulated Dump Truck	diesel	2000	1	220	0.3819	1.0	312	0.1	0.1	0.2	1.5	0.0	0.0	105.3	0.0	0.0	0.0	0.2	0.0	0.0	14.9
CAT 980G Rubber Tired Loader	diesel	2002	1	346	0.3618	4.0	312	0.4	0.4	1.3	5.8	0.2	0.2	627.4	0.1	0.1	0.2	0.9	0.0	0.0	88.8
CAT D300 Articulated Dump Truck	diesel	1999	1	220	0.3819	4.0	312	0.4	0.3	0.9	5.9	0.2	0.2	421.1	0.1	0.0	0.1	0.9	0.0	0.0	59.6
CAT 966H Wheel Loader	diesel	2006	1	260	0.3685	7	312	0.4	0.3	1.5	7.0	0.2	0.2	840.3	0.1	0.0	0.2	1.1	0.0	0.0	118.9
Volvo L120F Wheel Loader	diesel	2007	1	245	0.3685	4	312	0.2	0.1	0.8	2.1	0.1	0.1	452.5	0.0	0.0	0.1	0.3	0.0	0.0	64.0
CAT 980G Rubber Tired Loader	diesel	2002	1	346	0.3618	2	312	0.2	0.2	0.6	2.9	0.1	0.1	313.7	0.0	0.0	0.1	0.5	0.0	0.0	44.4
Frontier Windrow Turner	diesel	2006	1	220	0.4154	2.6	312	0.1	0.1	0.5	2.4	0.1	0.1	297.7	0.0	0.0	0.1	0.4	0.0	0.0	42.1
Re-Tech 723A Trommel Screen	diesel	2009	1	104	0.4154	13.2	312	0.2	0.2	4.1	3.7	0.3	0.3	714.5	0.0	0.0	0.6	0.6	0.0	0.0	101.1
McCloskey 733 Trommel Screen	diesel	2010	1	225	0.4154	20.5	312	0.6	0.5	4.1	10.6	0.5	0.5	2400.5	0.1	0.1	0.6	1.7	0.1	0.1	339.7
Peterson Pacific HC5400 Grinder	diesel	2003	1	860	0.4154	8	312	2.4	2.0	6.4	42.7	1.2	1.1	3580.7	0.4	0.3	1.0	6.7	0.2	0.2	506.7
						Total		5.0	4.2	20.4	84.6	2.9	2.7	9753.4	0.8	0.6	3.2	13.2	0.5	0.4	1380.3

Equipment Prior Hours: Based on updated OFFROAD Equipment information, with a maximum of 12,000 hours (ARB, 2011)

Load Factor: Based on updated OFFROAD Equipment information

For the summary of annual emissions, CO2 is reported in metric tons per year. All other pollutants reported in short tons.

Off-road Equipment – 2013

Equipment Emission Factors Year 2013		Model Year	Age of Equip	Project Specific Equipment HP	Equip Prior Hours	Zero Hour (zh) Emissions and Deterioration Rate (dr) (grams/horsepower-hour)										Emission Factors (g/hp-hr)						
Equipment	Fuel					THCzh	THCdr	COzh	COdr	NOXzh	NOXdr	PMzh	PMdr	CO2zh	CO2dr	THC	ROG	CO	NOx	PM10	PM2.5	CO2
CAT D300 Articulated Dump Truck	diesel	2000	13	220	12000	3.20E-01	1.48E-05	9.20E-01	2.43E-05	6.25E+00	1.45E-04	1.50E-01	7.96E-06	5.68E+02	0.00E+00	0.498	0.417	1.212	7.990	0.246	0.227	568.300
Volvo L120 Wheel Loader	diesel	2013	0	245	856.58812	7.00E-02	1.83E-05	9.20E-01	2.43E-05	1.36E+00	1.75E-05	1.00E-02	3.75E-07	5.68E+02	0.00E+00	0.086	0.072	0.941	1.375	0.010	0.010	568.300
CAT 980G Rubber Tired Loader	diesel	2002	11	346	12000	1.40E-01	2.22E-05	9.20E-01	1.82E-05	4.51E+00	6.32E-05	1.10E-01	6.03E-06	5.68E+02	0.00E+00	0.406	0.341	1.138	5.268	0.182	0.168	568.300
CAT D300 Articulated Dump Truck	diesel	1999	14	220	12000	3.20E-01	1.48E-05	9.20E-01	2.43E-05	6.25E+00	1.45E-04	1.50E-01	7.96E-06	5.68E+02	0.00E+00	0.498	0.417	1.212	7.990	0.246	0.227	568.300
CAT D300 Articulated Dump Truck	diesel	2010	3	220	6721.6007	1.00E-01	2.50E-05	9.20E-01	2.43E-05	2.45E+00	3.18E-05	1.10E-01	5.59E-06	5.68E+02	0.00E+00	0.268	0.225	1.083	2.664	0.148	0.136	568.300
CAT 966H Wheel Loader	diesel	2006	7	260	5779.3037	1.20E-01	2.40E-05	9.20E-01	2.43E-05	4.38E+00	6.33E-05	1.10E-01	5.79E-06	5.68E+02	0.00E+00	0.259	0.217	1.060	4.746	0.143	0.132	568.300
Volvo L120F Wheel Loader	diesel	2007	6	245	5191.0659	1.00E-01	2.50E-05	9.20E-01	2.43E-05	2.45E+00	3.18E-05	1.10E-01	5.59E-06	5.68E+02	0.00E+00	0.230	0.193	1.046	2.615	0.139	0.128	568.300
CAT 980G Rubber Tired Loader	diesel	2002	11	346	12000	1.40E-01	2.22E-05	9.20E-01	1.82E-05	4.51E+00	6.32E-05	1.10E-01	6.03E-06	5.68E+02	0.00E+00	0.406	0.341	1.138	5.268	0.182	0.168	568.300
Frontier Windrow Turner	diesel	2006	7	220	4237.0006	1.20E-01	2.40E-05	9.20E-01	2.43E-05	4.38E+00	6.33E-05	1.10E-01	5.79E-06	5.68E+02	0.00E+00	0.222	0.186	1.023	4.648	0.135	0.124	568.300
Re-Tech 723A Trommel Screen	diesel	2009	4	104	2816.3056	1.00E-01	2.50E-05	3.05E+00	8.10E-05	2.89E+00	3.80E-05	2.00E-01	8.58E-06	5.68E+02	0.00E+00	0.170	0.143	3.278	2.997	0.224	0.207	568.300
McCloskey 733 Trommel Screen	diesel	2010	3	225	2297.8925	1.00E-01	2.50E-05	9.20E-01	2.43E-05	2.45E+00	3.18E-05	1.10E-01	5.59E-06	5.68E+02	0.00E+00	0.157	0.132	0.976	2.523	0.123	0.113	568.300
Peterson Pacific HC5400 Grinder	diesel	2003	10	860	5455.8794	3.20E-01	1.12E-05	9.20E-01	1.82E-05	6.25E+00	1.04E-04	1.50E-01	7.96E-06	5.68E+02	0.00E+00	0.381	0.319	1.019	6.817	0.193	0.179	568.300

Year 2013		Model Year	Quantity of Equip	Project Specific Equipment HP	Load Factor	Equipment Usage - 2013		Equipment Emissions (lbs/day) - Year 2013							Annual Equipment Emissions (tons/yr) - Year 2013						
Equipment	Fuel					Hours/day	Days/Year	THC	ROG	CO	NOx	PM10	PM2.5	CO2	THC	ROG	CO	NOx	PM10	PM2.5	CO2
CAT D300 Articulated Dump Truck	diesel	2000	1	220	0.3819	1.0	312	0.1	0.1	0.2	1.5	0.0	0.0	105.3	0.0	0.0	0.0	0.2	0.0	0.0	14.9
Volvo L120 Wheel Loader	diesel	2013	2	245	0.3685	14.0	312	0.2	0.2	2.6	3.8	0.0	0.0	1583.6	0.0	0.0	0.4	0.6	0.0	0.0	224.1
CAT 980G Rubber Tired Loader	diesel	2002	1	346	0.3618	0.0	312	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
CAT D300 Articulated Dump Truck	diesel	1999	1	220	0.3819	2.0	312	0.2	0.2	0.4	3.0	0.1	0.1	210.5	0.0	0.0	0.1	0.5	0.0	0.0	29.8
CAT D300 Articulated Dump Truck	diesel	2010	1	220	0.3819	6.0	312	0.3	0.2	1.2	3.0	0.2	0.2	631.6	0.0	0.0	0.2	0.5	0.0	0.0	89.4
CAT 966H Wheel Loader	diesel	2006	1	260	0.3685	8	312	0.4	0.4	1.8	8.0	0.2	0.2	960.3	0.1	0.1	0.3	1.3	0.0	0.0	135.9
Volvo L120F Wheel Loader	diesel	2007	1	245	0.3685	8	312	0.4	0.3	1.7	4.2	0.2	0.2	904.9	0.1	0.0	0.3	0.6	0.0	0.0	128.1
CAT 980G Rubber Tired Loader	diesel	2002	1	346	0.3618	5	312	0.6	0.5	1.6	7.3	0.3	0.2	784.2	0.1	0.1	0.2	1.1	0.0	0.0	111.0
Frontier Windrow Turner	diesel	2006	1	220	0.4154	0	312	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Re-Tech 723A Trommel Screen	diesel	2009	1	104	0.4154	3	312	0.0	0.0	0.9	0.9	0.1	0.1	162.4	0.0	0.0	0.1	0.1	0.0	0.0	23.0
McCloskey 733 Trommel Screen	diesel	2010	1	225	0.4154	3.8	312	0.1	0.1	0.8	2.0	0.1	0.1	445.0	0.0	0.0	0.1	0.3	0.0	0.0	63.0
Peterson Pacific HC5400 Grinder	diesel	2003	1	860	0.4154	3.4	312	1.0	0.9	2.7	18.3	0.5	0.5	1521.8	0.2	0.1	0.4	2.8	0.1	0.1	215.4
Total								3.4	2.8	14.0	51.8	1.7	1.6	7309.5	0.5	0.4	2.2	8.1	0.3	0.2	1034.4

Equipment Prior Hours: Based on updated OFFROAD Equipment information, with a maximum of 12,000 hours (ARB, 2011)

Load Factor: Based on updated OFFROAD Equipment information

For the summary of annual emissions, CO2 is reported in metric tons per year. All other pollutants reported in short tons.

OFFROAD2007 Factors

<u>Fuel</u>	<u>Max HP</u>	<u>Max Year</u>	<u>THCzh</u>	<u>THCdr</u>	<u>COzh</u>	<u>COdr</u>	<u>NOXzh</u>	<u>NOXdr</u>	<u>PMzh</u>	<u>PMdr</u>	<u>CO2zh</u>	<u>CO2dr</u>	<u>Units</u>
D	15	1994	1.5	0.00E+00	5	0.00E+00	10	0.00E+00	1	0.00E+00	568.3	0.00E+00	G/HP-HR
D	15	1999	1.05	0.00E+00	5	0.00E+00	9.35	0.00E+00	0.57	0.00E+00	568.3	0.00E+00	G/HP-HR
D	15	2004	0.68	0.00E+00	3.47	0.00E+00	6.08	0.00E+00	0.47	0.00E+00	568.3	0.00E+00	G/HP-HR
D	15	2007	0.49	0.00E+00	3.47	0.00E+00	4.37	0.00E+00	0.38	0.00E+00	568.3	0.00E+00	G/HP-HR
D	15	2040	0.49	0.00E+00	3.47	0.00E+00	4.37	0.00E+00	0.19	0.00E+00	568.3	0.00E+00	G/HP-HR
D	25	1994	1.84	0.00E+00	5	0.00E+00	6.92	0.00E+00	0.76	0.00E+00	568.3	0.00E+00	G/HP-HR
D	25	1999	0.9	0.00E+00	5	0.00E+00	6.92	0.00E+00	0.57	0.00E+00	568.3	0.00E+00	G/HP-HR
D	25	2004	0.64	0.00E+00	2.34	0.00E+00	5.79	0.00E+00	0.38	0.00E+00	568.3	0.00E+00	G/HP-HR
D	25	2007	0.57	0.00E+00	2.34	0.00E+00	4.57	0.00E+00	0.38	0.00E+00	568.3	0.00E+00	G/HP-HR
D	25	2040	0.57	0.00E+00	2.34	0.00E+00	4.57	0.00E+00	0.19	0.00E+00	568.3	0.00E+00	G/HP-HR
D	50	1987	1.84	2.35E-04	5	5.13E-04	7	1.05E-04	0.76	5.89E-05	568.3	0.00E+00	G/HP-HR
D	50	1998	1.8	2.30E-04	5	5.13E-04	6.9	1.04E-04	0.76	5.89E-05	568.3	0.00E+00	G/HP-HR
D	50	2003	1.45	1.85E-04	4.1	4.20E-04	5.55	1.03E-04	0.6	4.65E-05	568.3	0.00E+00	G/HP-HR
D	50	2004	0.64	9.80E-05	3.27	3.34E-04	5.1	9.33E-05	0.43	3.36E-05	568.3	0.00E+00	G/HP-HR
D	50	2005	0.37	6.90E-05	3	3.05E-04	4.95	9.67E-05	0.38	2.93E-05	568.3	0.00E+00	G/HP-HR
D	50	2007	0.24	5.45E-05	2.86	2.90E-04	4.88	9.83E-05	0.35	2.72E-05	568.3	0.00E+00	G/HP-HR
D	50	2012	0.1	4.00E-05	2.72	2.76E-04	4.8	1.00E-04	0.16	1.20E-05	568.3	0.00E+00	G/HP-HR
D	50	2040	0.1	4.00E-05	2.72	2.76E-04	2.9	6.00E-05	0.01	1.20E-06	568.3	0.00E+00	G/HP-HR
D	120	1987	1.44	6.66E-05	4.8	1.27E-04	13	3.01E-04	0.84	6.11E-05	568.3	0.00E+00	G/HP-HR
D	120	1997	0.99	4.58E-05	3.49	9.23E-05	8.75	2.02E-04	0.69	5.02E-05	568.3	0.00E+00	G/HP-HR
D	120	2003	0.99	4.58E-05	3.49	9.23E-05	6.9	1.60E-04	0.69	5.02E-05	568.3	0.00E+00	G/HP-HR
D	120	2004	0.46	3.33E-05	3.23	8.55E-05	5.64	1.03E-04	0.39	2.85E-05	568.3	0.00E+00	G/HP-HR
D	120	2005	0.28	2.92E-05	3.14	8.33E-05	5.22	8.40E-05	0.29	2.12E-05	568.3	0.00E+00	G/HP-HR
D	120	2007	0.19	2.71E-05	3.09	8.21E-05	5.01	7.45E-05	0.24	1.76E-05	568.3	0.00E+00	G/HP-HR
D	120	2011	0.1	2.50E-05	3.05	8.10E-05	2.89	3.80E-05	0.2	8.58E-06	568.3	0.00E+00	G/HP-HR
D	120	2012	0.09	2.31E-05	3.05	8.10E-05	2.53	3.38E-05	0.07	4.30E-06	568.3	0.00E+00	G/HP-HR
D	120	2014	0.09	2.31E-05	3.05	8.10E-05	2.53	3.38E-05	0.01	1.04E-06	568.3	0.00E+00	G/HP-HR
D	120	2040	0.07	1.74E-05	3.05	8.10E-05	1.4	1.88E-05	0.01	1.04E-06	568.3	0.00E+00	G/HP-HR
D	175	1969	1.32	6.11E-05	4.4	1.16E-04	14	3.24E-04	0.77	5.60E-05	568.3	0.00E+00	G/HP-HR
D	175	1971	1.1	5.09E-05	4.4	1.16E-04	13	3.01E-04	0.66	4.80E-05	568.3	0.00E+00	G/HP-HR
D	175	1979	1	4.63E-05	4.4	1.16E-04	12	2.78E-04	0.55	4.00E-05	568.3	0.00E+00	G/HP-HR
D	175	1984	0.94	4.35E-05	4.3	1.14E-04	11	2.54E-04	0.55	4.00E-05	568.3	0.00E+00	G/HP-HR
D	175	1987	0.88	4.07E-05	4.2	1.11E-04	11	2.54E-04	0.55	4.00E-05	568.3	0.00E+00	G/HP-HR
D	175	1996	0.68	3.15E-05	2.7	7.14E-05	8.17	1.89E-04	0.38	2.76E-05	568.3	0.00E+00	G/HP-HR
D	175	2002	0.68	3.15E-05	2.7	7.14E-05	6.9	1.60E-04	0.38	2.76E-05	568.3	0.00E+00	G/HP-HR
D	175	2003	0.33	2.79E-05	2.7	7.14E-05	5.26	9.64E-05	0.24	1.70E-05	568.3	0.00E+00	G/HP-HR
D	175	2004	0.22	2.63E-05	2.7	7.14E-05	4.72	7.52E-05	0.19	1.35E-05	568.3	0.00E+00	G/HP-HR
D	175	2006	0.16	2.57E-05	2.7	7.14E-05	4.44	6.46E-05	0.16	1.18E-05	568.3	0.00E+00	G/HP-HR
D	175	2011	0.1	2.50E-05	2.7	7.14E-05	2.45	3.20E-05	0.14	1.00E-05	568.3	0.00E+00	G/HP-HR
D	175	2014	0.09	2.17E-05	2.7	7.14E-05	2.27	2.88E-05	0.01	5.00E-07	568.3	0.00E+00	G/HP-HR
D	175	2040	0.05	1.17E-05	2.7	7.14E-05	0.27	3.75E-06	0.01	5.00E-07	568.3	0.00E+00	G/HP-HR
D	250	1969	1.32	6.11E-05	4.4	1.16E-04	14	3.24E-04	0.77	5.60E-05	568.3	0.00E+00	G/HP-HR
D	250	1971	1.1	5.09E-05	4.4	1.16E-04	13	3.01E-04	0.66	4.80E-05	568.3	0.00E+00	G/HP-HR
D	250	1979	1	4.63E-05	4.4	1.16E-04	12	2.78E-04	0.55	4.00E-05	568.3	0.00E+00	G/HP-HR
D	250	1984	0.94	4.35E-05	4.3	1.14E-04	11	2.54E-04	0.55	4.00E-05	568.3	0.00E+00	G/HP-HR
D	250	1987	0.88	4.07E-05	4.2	1.11E-04	11	2.54E-04	0.55	4.00E-05	568.3	0.00E+00	G/HP-HR
D	250	1995	0.68	3.15E-05	2.7	7.14E-05	8.17	1.89E-04	0.38	2.76E-05	568.3	0.00E+00	G/HP-HR
D	250	2002	0.32	1.48E-05	0.92	2.43E-05	6.25	1.45E-04	0.15	7.96E-06	568.3	0.00E+00	G/HP-HR
D	250	2003	0.19	2.09E-05	0.92	2.43E-05	5	9.05E-05	0.12	6.51E-06	568.3	0.00E+00	G/HP-HR
D	250	2004	0.14	2.30E-05	0.92	2.43E-05	4.58	7.23E-05	0.11	6.03E-06	568.3	0.00E+00	G/HP-HR
D	250	2006	0.12	2.40E-05	0.92	2.43E-05	4.38	6.33E-05	0.11	5.79E-06	568.3	0.00E+00	G/HP-HR
D	250	2010	0.1	2.50E-05	0.92	2.43E-05	2.45	3.18E-05	0.11	5.59E-06	568.3	0.00E+00	G/HP-HR
D	250	2013	0.07	1.83E-05	0.92	2.43E-05	1.36	1.75E-05	0.01	3.75E-07	568.3	0.00E+00	G/HP-HR
D	250	2040	0.05	1.17E-05	0.92	2.43E-05	0.27	3.75E-06	0.01	3.75E-07	568.3	0.00E+00	G/HP-HR

D	500	1969	1.26	4.39E-05	4.2	8.32E-04	14	2.33E-04	0.74	3.93E-05	568.3	0.00E+00	G/HP-HR
D	500	1971	1.05	3.66E-05	4.2	8.32E-04	13	2.16E-04	0.63	3.34E-05	568.3	0.00E+00	G/HP-HR
D	500	1979	0.95	3.31E-05	4.2	8.32E-04	12	2.00E-04	0.53	2.81E-05	568.3	0.00E+00	G/HP-HR
D	500	1984	0.9	3.14E-05	4.2	8.32E-04	11	1.83E-04	0.53	2.81E-05	568.3	0.00E+00	G/HP-HR
D	500	1987	0.84	2.93E-05	4.1	8.12E-04	11	1.83E-04	0.53	2.81E-05	568.3	0.00E+00	G/HP-HR
D	500	1995	0.68	2.37E-05	2.7	5.35E-05	8.17	1.36E-04	0.38	2.02E-05	568.3	0.00E+00	G/HP-HR
D	500	2000	0.32	1.12E-05	0.92	1.82E-05	6.25	1.04E-04	0.15	7.96E-06	568.3	0.00E+00	G/HP-HR
D	500	2001	0.19	1.95E-05	0.92	1.82E-05	4.95	7.34E-05	0.12	6.51E-06	568.3	0.00E+00	G/HP-HR
D	500	2002	0.14	2.22E-05	0.92	1.82E-05	4.51	6.32E-05	0.11	6.03E-06	568.3	0.00E+00	G/HP-HR
D	500	2004	0.12	2.36E-05	0.92	1.82E-05	4.29	5.81E-05	0.11	5.79E-06	568.3	0.00E+00	G/HP-HR
D	500	2005	0.1	2.50E-05	0.92	1.82E-05	4	5.30E-05	0.11	5.55E-06	568.3	0.00E+00	G/HP-HR
D	500	2010	0.1	2.50E-05	0.92	1.82E-05	2.45	3.18E-05	0.11	5.55E-06	568.3	0.00E+00	G/HP-HR
D	500	2013	0.07	1.83E-05	0.92	1.82E-05	1.36	1.75E-05	0.01	3.75E-07	568.3	0.00E+00	G/HP-HR
D	500	2040	0.05	1.17E-05	0.92	1.82E-05	0.27	3.75E-06	0.01	3.75E-07	568.3	0.00E+00	G/HP-HR
D	750	1969	1.26	4.39E-05	4.2	8.32E-04	14	2.33E-04	0.74	3.93E-05	568.3	0.00E+00	G/HP-HR
D	750	1971	1.05	3.66E-05	4.2	8.32E-04	13	2.16E-04	0.63	3.34E-05	568.3	0.00E+00	G/HP-HR
D	750	1979	0.95	3.31E-05	4.2	8.32E-04	12	2.00E-04	0.53	2.81E-05	568.3	0.00E+00	G/HP-HR
D	750	1984	0.9	3.14E-05	4.2	8.32E-04	11	1.83E-04	0.53	2.81E-05	568.3	0.00E+00	G/HP-HR
D	750	1987	0.84	2.93E-05	4.1	8.12E-04	11	1.83E-04	0.53	2.81E-05	568.3	0.00E+00	G/HP-HR
D	750	1995	0.68	2.37E-05	2.7	5.35E-05	8.17	1.36E-04	0.38	2.02E-05	568.3	0.00E+00	G/HP-HR
D	750	2001	0.32	1.12E-05	0.92	1.82E-05	6.25	1.04E-04	0.15	7.96E-06	568.3	0.00E+00	G/HP-HR
D	750	2002	0.19	1.95E-05	0.92	1.82E-05	4.95	7.34E-05	0.12	6.51E-06	568.3	0.00E+00	G/HP-HR
D	750	2003	0.14	2.22E-05	0.92	1.82E-05	4.51	6.32E-05	0.11	6.03E-06	568.3	0.00E+00	G/HP-HR
D	750	2005	0.12	2.36E-05	0.92	1.82E-05	4.29	5.81E-05	0.11	5.79E-06	568.3	0.00E+00	G/HP-HR
D	750	2010	0.1	2.50E-05	0.92	1.82E-05	2.45	3.18E-05	0.11	5.55E-06	568.3	0.00E+00	G/HP-HR
D	750	2013	0.07	1.83E-05	0.92	1.82E-05	1.36	1.75E-05	0.01	3.75E-07	568.3	0.00E+00	G/HP-HR
D	750	2040	0.05	1.17E-05	0.92	1.82E-05	0.27	3.75E-06	0.01	3.75E-07	568.3	0.00E+00	G/HP-HR
D	1000	1969	1.26	4.39E-05	4.2	8.32E-04	14	2.33E-04	0.74	3.93E-05	568.3	0.00E+00	G/HP-HR
D	1000	1971	1.05	3.66E-05	4.2	8.32E-04	13	2.16E-04	0.63	3.34E-05	568.3	0.00E+00	G/HP-HR
D	1000	1979	0.95	3.31E-05	4.2	8.32E-04	12	2.00E-04	0.53	2.81E-05	568.3	0.00E+00	G/HP-HR
D	1000	1984	0.9	3.14E-05	4.2	8.32E-04	11	1.83E-04	0.53	2.81E-05	568.3	0.00E+00	G/HP-HR
D	1000	1987	0.84	2.93E-05	4.1	8.12E-04	11	1.83E-04	0.53	2.81E-05	568.3	0.00E+00	G/HP-HR
D	1000	1999	0.68	1.12E-05	2.7	5.35E-05	8.17	1.36E-04	0.38	2.02E-06	568.3	0.00E+00	G/HP-HR
D	1000	2005	0.32	1.12E-05	0.92	1.82E-05	6.25	1.04E-04	0.15	7.96E-06	568.3	0.00E+00	G/HP-HR
D	1000	2006	0.19	1.95E-05	0.92	1.82E-05	4.95	7.34E-05	0.12	6.51E-06	568.3	0.00E+00	G/HP-HR
D	1000	2007	0.14	2.22E-05	0.92	1.82E-05	4.51	6.32E-05	0.11	6.03E-06	568.3	0.00E+00	G/HP-HR
D	1000	2009	0.12	2.36E-05	0.92	1.82E-05	4.29	5.81E-05	0.11	5.79E-06	568.3	0.00E+00	G/HP-HR
D	1000	2010	0.1	2.50E-05	0.92	1.82E-05	4.08	5.30E-05	0.11	5.55E-06	568.3	0.00E+00	G/HP-HR
D	1000	2014	0.07	1.83E-05	0.92	1.82E-05	2.36	3.00E-05	0.06	2.50E-06	568.3	0.00E+00	G/HP-HR
D	1000	2040	0.05	1.17E-05	0.92	1.82E-05	2.36	3.00E-05	0.02	1.00E-06	568.3	0.00E+00	G/HP-HR
D	9999	1969	1.26	4.39E-05	4.2	8.32E-04	14	2.33E-04	0.74	3.93E-05	568.3	0.00E+00	G/HP-HR
D	9999	1971	1.05	3.66E-05	4.2	8.32E-04	13	2.16E-04	0.63	3.34E-05	568.3	0.00E+00	G/HP-HR
D	9999	1979	0.95	3.31E-05	4.2	8.32E-04	12	2.00E-04	0.53	2.81E-05	568.3	0.00E+00	G/HP-HR
D	9999	1984	0.9	3.14E-05	4.2	8.32E-04	11	1.83E-04	0.53	2.81E-05	568.3	0.00E+00	G/HP-HR
D	9999	1987	0.84	2.93E-05	4.1	8.12E-04	11	1.83E-04	0.53	2.81E-05	568.3	0.00E+00	G/HP-HR
D	9999	1999	0.68	1.12E-05	2.7	5.35E-05	8.17	1.36E-04	0.38	2.02E-06	568.3	0.00E+00	G/HP-HR
D	9999	2005	0.32	1.12E-05	0.92	1.82E-05	6.25	1.04E-04	0.15	7.96E-06	568.3	0.00E+00	G/HP-HR
D	9999	2006	0.19	1.95E-05	0.92	1.82E-05	4.95	7.34E-05	0.12	6.51E-06	568.3	0.00E+00	G/HP-HR
D	9999	2007	0.14	2.22E-05	0.92	1.82E-05	4.51	6.32E-05	0.11	6.03E-06	568.3	0.00E+00	G/HP-HR
D	9999	2009	0.12	2.36E-05	0.92	1.82E-05	4.29	5.81E-05	0.11	5.79E-06	568.3	0.00E+00	G/HP-HR
D	9999	2010	0.1	2.50E-05	0.92	1.82E-05	4.08	5.30E-05	0.11	5.55E-06	568.3	0.00E+00	G/HP-HR
D	9999	2014	0.1	2.50E-05	0.92	1.82E-05	2.36	3.00E-05	0.06	2.50E-06	568.3	0.00E+00	G/HP-HR
D	9999	2040	0.05	1.17E-05	0.92	1.82E-05	2.36	3.00E-05	0.02	1.00E-06	568.3	0.00E+00	G/HP-HR

Notes:

1. The above factors are derived from the Offroad2007 model, specifically data from emfac.csv file for equipment horsepower and model year specified by Redwood

Equipment Class	Equipment	Age	DOORS Adjusted Final	Cumulative Hours Final
Construction and Mining	Rubber Tired Loaders	-1	1327.625	1327.6246
Construction and Mining	Rubber Tired Loaders	0	1327.625	1327.6246
Construction and Mining	Rubber Tired Loaders	1	1284.161	2611.7852
Construction and Mining	Rubber Tired Loaders	2	1240.697	3852.482
Construction and Mining	Rubber Tired Loaders	3	1197.233	5049.7148
Construction and Mining	Rubber Tired Loaders	4	1153.769	6203.4838
Construction and Mining	Rubber Tired Loaders	5	1110.305	7313.7889
Construction and Mining	Rubber Tired Loaders	6	1066.841	8380.63
Construction and Mining	Rubber Tired Loaders	7	1023.377	9404.0073
Construction and Mining	Rubber Tired Loaders	8	979.9134	10383.921
Construction and Mining	Rubber Tired Loaders	9	936.4495	11320.37
Construction and Mining	Rubber Tired Loaders	10	892.9856	12000
Construction and Mining	Rubber Tired Loaders	11	849.5217	12000
Construction and Mining	Rubber Tired Loaders	12	806.0578	12000
Construction and Mining	Rubber Tired Loaders	13	762.5939	12000
Construction and Mining	Rubber Tired Loaders	14	719.13	12000
Construction and Mining	Rubber Tired Loaders	15	675.6661	12000
Construction and Mining	Rubber Tired Loaders	16	632.2022	12000
Construction and Mining	Rubber Tired Loaders	17	588.7383	12000
Construction and Mining	Rubber Tired Loaders	18	545.2744	12000
Construction and Mining	Rubber Tired Loaders	19	501.8105	12000
Construction and Mining	Rubber Tired Loaders	20	458.3466	12000
Construction and Mining	Rubber Tired Loaders	21	414.8827	12000
Construction and Mining	Rubber Tired Loaders	22	414.8827	12000
Construction and Mining	Rubber Tired Loaders	23	414.8827	12000
Construction and Mining	Rubber Tired Loaders	24	414.8827	12000
Construction and Mining	Rubber Tired Loaders	25	414.8827	12000
Construction and Mining	Rubber Tired Loaders	26	414.8827	12000
Construction and Mining	Rubber Tired Loaders	27	414.8827	12000
Construction and Mining	Rubber Tired Loaders	28	414.8827	12000
Construction and Mining	Rubber Tired Loaders	29	414.8827	12000
Construction and Mining	Rubber Tired Loaders	30	414.8827	12000
Construction and Mining	Rubber Tired Loaders	31	414.8827	12000
Construction and Mining	Rubber Tired Loaders	32	414.8827	12000
Construction and Mining	Rubber Tired Loaders	33	414.8827	12000
Construction and Mining	Rubber Tired Loaders	34	414.8827	12000
Construction and Mining	Rubber Tired Loaders	35	414.8827	12000
Construction and Mining	Rubber Tired Loaders	36	414.8827	12000
Construction and Mining	Rubber Tired Loaders	37	414.8827	12000
Construction and Mining	Rubber Tired Loaders	38	414.8827	12000
Construction and Mining	Rubber Tired Loaders	39	414.8827	12000

Construction and Mining	Rubber Tired Loaders	84	414.8827	12000
Construction and Mining	Rubber Tired Loaders	85	414.8827	12000
Construction and Mining	Rubber Tired Loaders	86	414.8827	12000
Construction and Mining	Rubber Tired Loaders	87	414.8827	12000
Construction and Mining	Rubber Tired Loaders	88	414.8827	12000
Construction and Mining	Rubber Tired Loaders	89	414.8827	12000
Construction and Mining	Excavators	-1	786.27512	786.275121
Construction and Mining	Excavators	0	786.27512	786.275121
Construction and Mining	Excavators	1	756.29173	1542.56685
Construction and Mining	Excavators	2	726.30833	2268.87518
Construction and Mining	Excavators	3	696.32493	2965.20011
Construction and Mining	Excavators	4	666.34154	3631.54165
Construction and Mining	Excavators	5	636.35814	4267.89979
Construction and Mining	Excavators	6	606.37475	4874.27453
Construction and Mining	Excavators	7	576.39135	5450.66588
Construction and Mining	Excavators	8	546.40795	5997.07384
Construction and Mining	Excavators	9	516.42456	6513.4984
Construction and Mining	Excavators	10	486.44116	6999.93956
Construction and Mining	Excavators	11	456.45777	7456.39733
Construction and Mining	Excavators	12	426.47437	7882.8717
Construction and Mining	Excavators	13	396.49097	8279.36267
Construction and Mining	Excavators	14	366.50758	8645.87025
Construction and Mining	Excavators	15	336.52418	8982.39443
Construction and Mining	Excavators	16	306.54079	9288.93522
Construction and Mining	Excavators	17	276.55739	9565.49261
Construction and Mining	Excavators	18	276.55739	9842.05
Construction and Mining	Excavators	19	276.55739	10118.6074
Construction and Mining	Excavators	20	276.55739	10395.1648
Construction and Mining	Excavators	21	276.55739	10671.7222
Construction and Mining	Excavators	22	276.55739	10948.2796
Construction and Mining	Excavators	23	276.55739	11224.837
Construction and Mining	Excavators	24	276.55739	11501.3943
Construction and Mining	Excavators	25	276.55739	11777.9517
Construction and Mining	Excavators	26	276.55739	12000
Construction and Mining	Excavators	27	276.55739	12000
Construction and Mining	Excavators	28	276.55739	12000
Construction and Mining	Excavators	29	276.55739	12000
Construction and Mining	Excavators	30	276.55739	12000
Construction and Mining	Excavators	31	276.55739	12000
Construction and Mining	Excavators	32	276.55739	12000
Construction and Mining	Excavators	33	276.55739	12000
Construction and Mining	Excavators	34	276.55739	12000
Construction and Mining	Excavators	35	276.55739	12000
Construction and Mining	Excavators	36	276.55739	12000
Construction and Mining	Excavators	37	276.55739	12000
Construction and Mining	Excavators	38	276.55739	12000
Construction and Mining	Excavators	39	276.55739	12000
Construction and Mining	Excavators	40	276.55739	12000
Construction and Mining	Excavators	41	276.55739	12000
Construction and Mining	Excavators	42	276.55739	12000
Construction and Mining	Excavators	43	276.55739	12000
Construction and Mining	Excavators	44	276.55739	12000
Construction and Mining	Excavators	45	276.55739	12000
Construction and Mining	Excavators	46	276.55739	12000

Construction and Mining	Excavators	47	276.55739	12000
Construction and Mining	Excavators	48	276.55739	12000
Construction and Mining	Excavators	49	276.55739	12000
Construction and Mining	Excavators	50	276.55739	12000
Construction and Mining	Excavators	51	276.55739	12000
Construction and Mining	Excavators	52	276.55739	12000
Construction and Mining	Excavators	53	276.55739	12000
Construction and Mining	Excavators	54	276.55739	12000
Construction and Mining	Excavators	55	276.55739	12000
Construction and Mining	Excavators	56	276.55739	12000
Construction and Mining	Excavators	57	276.55739	12000
Construction and Mining	Excavators	58	276.55739	12000
Construction and Mining	Excavators	59	276.55739	12000
Construction and Mining	Excavators	60	276.55739	12000
Construction and Mining	Excavators	61	276.55739	12000
Construction and Mining	Excavators	62	276.55739	12000
Construction and Mining	Excavators	63	276.55739	12000
Construction and Mining	Excavators	64	276.55739	12000
Construction and Mining	Excavators	65	276.55739	12000
Construction and Mining	Excavators	66	276.55739	12000
Construction and Mining	Excavators	67	276.55739	12000
Construction and Mining	Excavators	68	276.55739	12000
Construction and Mining	Excavators	69	276.55739	12000
Construction and Mining	Excavators	70	276.55739	12000
Construction and Mining	Excavators	71	276.55739	12000
Construction and Mining	Excavators	72	276.55739	12000
Construction and Mining	Excavators	73	276.55739	12000
Construction and Mining	Excavators	74	276.55739	12000
Construction and Mining	Excavators	75	276.55739	12000
Construction and Mining	Excavators	76	276.55739	12000
Construction and Mining	Excavators	77	276.55739	12000
Construction and Mining	Excavators	78	276.55739	12000
Construction and Mining	Excavators	79	276.55739	12000
Construction and Mining	Excavators	80	276.55739	12000
Construction and Mining	Excavators	81	276.55739	12000
Construction and Mining	Excavators	82	276.55739	12000
Construction and Mining	Excavators	83	276.55739	12000
Construction and Mining	Excavators	84	276.55739	12000
Construction and Mining	Excavators	85	276.55739	12000
Construction and Mining	Excavators	86	276.55739	12000
Construction and Mining	Excavators	87	276.55739	12000
Construction and Mining	Excavators	88	276.55739	12000
Construction and Mining	Excavators	89	276.55739	12000
Construction and Mining	Graders	-1	977.50526	977.505258
Construction and Mining	Graders	0	977.50526	977.505258
Construction and Mining	Graders	1	944.10202	1921.60728
Construction and Mining	Graders	2	910.69879	2832.30607
Construction and Mining	Graders	3	877.29555	3709.60162
Construction and Mining	Graders	4	843.89232	4553.49394
Construction and Mining	Graders	5	810.48908	5363.98302
Construction and Mining	Graders	6	777.08585	6141.06887
Construction and Mining	Graders	7	743.68261	6884.75148
Construction and Mining	Graders	8	710.27938	7595.03086
Construction and Mining	Graders	9	676.87614	8271.907
Construction and Mining	Graders	10	643.47291	8915.37991

Construction and Mining	Graders	11	610.06967	9525.44958
Construction and Mining	Graders	12	576.66644	10102.116
Construction and Mining	Graders	13	543.2632	10645.3792
Construction and Mining	Graders	14	509.85997	11155.2392
Construction and Mining	Graders	15	476.45673	11631.6959
Construction and Mining	Graders	16	443.0535	12000
Construction and Mining	Graders	17	409.65026	12000
Construction and Mining	Graders	18	376.24703	12000
Construction and Mining	Graders	19	342.84379	12000
Construction and Mining	Graders	20	309.44056	12000
Construction and Mining	Graders	21	276.03732	12000
Construction and Mining	Graders	22	242.63409	12000
Construction and Mining	Graders	23	209.23085	12000
Construction and Mining	Graders	24	209.23085	12000
Construction and Mining	Graders	25	209.23085	12000
Construction and Mining	Graders	26	209.23085	12000
Construction and Mining	Graders	27	209.23085	12000
Construction and Mining	Graders	28	209.23085	12000
Construction and Mining	Graders	29	209.23085	12000
Construction and Mining	Graders	30	209.23085	12000
Construction and Mining	Graders	31	209.23085	12000
Construction and Mining	Graders	32	209.23085	12000
Construction and Mining	Graders	33	209.23085	12000
Construction and Mining	Graders	34	209.23085	12000
Construction and Mining	Graders	35	209.23085	12000
Construction and Mining	Graders	36	209.23085	12000
Construction and Mining	Graders	37	209.23085	12000
Construction and Mining	Graders	38	209.23085	12000
Construction and Mining	Graders	39	209.23085	12000
Construction and Mining	Graders	40	209.23085	12000
Construction and Mining	Graders	41	209.23085	12000
Construction and Mining	Graders	42	209.23085	12000
Construction and Mining	Graders	43	209.23085	12000
Construction and Mining	Graders	44	209.23085	12000
Construction and Mining	Graders	45	209.23085	12000
Construction and Mining	Graders	46	209.23085	12000
Construction and Mining	Graders	47	209.23085	12000
Construction and Mining	Graders	48	209.23085	12000
Construction and Mining	Graders	49	209.23085	12000
Construction and Mining	Graders	50	209.23085	12000
Construction and Mining	Graders	51	209.23085	12000
Construction and Mining	Graders	52	209.23085	12000
Construction and Mining	Graders	53	209.23085	12000
Construction and Mining	Graders	54	209.23085	12000
Construction and Mining	Graders	55	209.23085	12000
Construction and Mining	Graders	56	209.23085	12000
Construction and Mining	Graders	57	209.23085	12000
Construction and Mining	Graders	58	209.23085	12000
Construction and Mining	Graders	59	209.23085	12000
Construction and Mining	Graders	60	209.23085	12000
Construction and Mining	Graders	61	209.23085	12000
Construction and Mining	Graders	62	209.23085	12000
Construction and Mining	Graders	63	209.23085	12000
Construction and Mining	Graders	64	209.23085	12000
Construction and Mining	Graders	65	209.23085	12000

Construction and Mining	Graders	66	209.23085	12000
Construction and Mining	Graders	67	209.23085	12000
Construction and Mining	Graders	68	209.23085	12000
Construction and Mining	Graders	69	209.23085	12000
Construction and Mining	Graders	70	209.23085	12000
Construction and Mining	Graders	71	209.23085	12000
Construction and Mining	Graders	72	209.23085	12000
Construction and Mining	Graders	73	209.23085	12000
Construction and Mining	Graders	74	209.23085	12000
Construction and Mining	Graders	75	209.23085	12000
Construction and Mining	Graders	76	209.23085	12000
Construction and Mining	Graders	77	209.23085	12000
Construction and Mining	Graders	78	209.23085	12000
Construction and Mining	Graders	79	209.23085	12000
Construction and Mining	Graders	80	209.23085	12000
Construction and Mining	Graders	81	209.23085	12000
Construction and Mining	Graders	82	209.23085	12000
Construction and Mining	Graders	83	209.23085	12000
Construction and Mining	Graders	84	209.23085	12000
Construction and Mining	Graders	85	209.23085	12000
Construction and Mining	Graders	86	209.23085	12000
Construction and Mining	Graders	87	209.23085	12000
Construction and Mining	Graders	88	209.23085	12000
Construction and Mining	Graders	89	209.23085	12000
Construction and Mining	Off-Highway Trucks	-1	1769.9092	1769.90919
Construction and Mining	Off-Highway Trucks	0	1769.9092	1769.90919
Construction and Mining	Off-Highway Trucks	1	1710.2365	3480.1457
Construction and Mining	Off-Highway Trucks	2	1650.5638	5130.70952
Construction and Mining	Off-Highway Trucks	3	1590.8911	6721.60066
Construction and Mining	Off-Highway Trucks	4	1531.2185	8252.81912
Construction and Mining	Off-Highway Trucks	5	1471.5458	9724.36489
Construction and Mining	Off-Highway Trucks	6	1411.8731	11136.238
Construction and Mining	Off-Highway Trucks	7	1352.2004	12000
Construction and Mining	Off-Highway Trucks	8	1292.5277	12000
Construction and Mining	Off-Highway Trucks	9	1232.855	12000
Construction and Mining	Off-Highway Trucks	10	1173.1824	12000
Construction and Mining	Off-Highway Trucks	11	1113.5097	12000
Construction and Mining	Off-Highway Trucks	12	1053.837	12000
Construction and Mining	Off-Highway Trucks	13	994.1643	12000
Construction and Mining	Off-Highway Trucks	14	934.49161	12000
Construction and Mining	Off-Highway Trucks	15	874.81893	12000
Construction and Mining	Off-Highway Trucks	16	815.14625	12000
Construction and Mining	Off-Highway Trucks	17	755.47356	12000
Construction and Mining	Off-Highway Trucks	18	755.47356	12000
Construction and Mining	Off-Highway Trucks	19	755.47356	12000
Construction and Mining	Off-Highway Trucks	20	755.47356	12000
Construction and Mining	Off-Highway Trucks	21	755.47356	12000
Construction and Mining	Off-Highway Trucks	22	755.47356	12000
Construction and Mining	Off-Highway Trucks	23	755.47356	12000
Construction and Mining	Off-Highway Trucks	24	755.47356	12000
Construction and Mining	Off-Highway Trucks	25	755.47356	12000
Construction and Mining	Off-Highway Trucks	26	755.47356	12000
Construction and Mining	Off-Highway Trucks	27	755.47356	12000
Construction and Mining	Off-Highway Trucks	28	755.47356	12000
Construction and Mining	Off-Highway Trucks	29	755.47356	12000

Construction and Mining	Off-Highway Trucks	85	755.47356	12000
Construction and Mining	Off-Highway Trucks	86	755.47356	12000
Construction and Mining	Off-Highway Trucks	87	755.47356	12000
Construction and Mining	Off-Highway Trucks	88	755.47356	12000
Construction and Mining	Off-Highway Trucks	89	755.47356	12000
Construction and Mining	Rubber Tired Dozers	-1	1088.4756	1088.47563
Construction and Mining	Rubber Tired Dozers	0	1088.4756	1088.47563
Construction and Mining	Rubber Tired Dozers	1	1068.4069	2156.88248
Construction and Mining	Rubber Tired Dozers	2	1048.3381	3205.22057
Construction and Mining	Rubber Tired Dozers	3	1028.2693	4233.48989
Construction and Mining	Rubber Tired Dozers	4	1008.2005	5241.69044
Construction and Mining	Rubber Tired Dozers	5	988.13178	6229.82221
Construction and Mining	Rubber Tired Dozers	6	968.06301	7197.88522
Construction and Mining	Rubber Tired Dozers	7	947.99424	8145.87946
Construction and Mining	Rubber Tired Dozers	8	927.92547	9073.80494
Construction and Mining	Rubber Tired Dozers	9	907.8567	9981.66164
Construction and Mining	Rubber Tired Dozers	10	887.78793	10869.4496
Construction and Mining	Rubber Tired Dozers	11	867.71916	11737.1687
Construction and Mining	Rubber Tired Dozers	12	847.65039	12000
Construction and Mining	Rubber Tired Dozers	13	827.58162	12000
Construction and Mining	Rubber Tired Dozers	14	807.51286	12000
Construction and Mining	Rubber Tired Dozers	15	787.44409	12000
Construction and Mining	Rubber Tired Dozers	16	767.37532	12000
Construction and Mining	Rubber Tired Dozers	17	747.30655	12000
Construction and Mining	Rubber Tired Dozers	18	727.23778	12000
Construction and Mining	Rubber Tired Dozers	19	707.16901	12000
Construction and Mining	Rubber Tired Dozers	20	687.10024	12000
Construction and Mining	Rubber Tired Dozers	21	667.03147	12000
Construction and Mining	Rubber Tired Dozers	22	646.9627	12000
Construction and Mining	Rubber Tired Dozers	23	626.89393	12000
Construction and Mining	Rubber Tired Dozers	24	606.82516	12000
Construction and Mining	Rubber Tired Dozers	25	586.75639	12000
Construction and Mining	Rubber Tired Dozers	26	566.68762	12000
Construction and Mining	Rubber Tired Dozers	27	546.61885	12000
Construction and Mining	Rubber Tired Dozers	28	526.55008	12000
Construction and Mining	Rubber Tired Dozers	29	506.48131	12000
Construction and Mining	Rubber Tired Dozers	30	486.41255	12000
Construction and Mining	Rubber Tired Dozers	31	466.34378	12000
Construction and Mining	Rubber Tired Dozers	32	446.27501	12000
Construction and Mining	Rubber Tired Dozers	33	446.27501	12000
Construction and Mining	Rubber Tired Dozers	34	446.27501	12000
Construction and Mining	Rubber Tired Dozers	35	446.27501	12000
Construction and Mining	Rubber Tired Dozers	36	446.27501	12000
Construction and Mining	Rubber Tired Dozers	37	446.27501	12000
Construction and Mining	Rubber Tired Dozers	38	446.27501	12000
Construction and Mining	Rubber Tired Dozers	39	446.27501	12000
Construction and Mining	Rubber Tired Dozers	40	446.27501	12000
Construction and Mining	Rubber Tired Dozers	41	446.27501	12000
Construction and Mining	Rubber Tired Dozers	42	446.27501	12000
Construction and Mining	Rubber Tired Dozers	43	446.27501	12000
Construction and Mining	Rubber Tired Dozers	44	446.27501	12000
Construction and Mining	Rubber Tired Dozers	45	446.27501	12000
Construction and Mining	Rubber Tired Dozers	46	446.27501	12000
Construction and Mining	Rubber Tired Dozers	47	446.27501	12000
Construction and Mining	Rubber Tired Dozers	48	446.27501	12000

Construction and Mining	Rubber Tired Dozers	49	446.27501	12000
Construction and Mining	Rubber Tired Dozers	50	446.27501	12000
Construction and Mining	Rubber Tired Dozers	51	446.27501	12000
Construction and Mining	Rubber Tired Dozers	52	446.27501	12000
Construction and Mining	Rubber Tired Dozers	53	446.27501	12000
Construction and Mining	Rubber Tired Dozers	54	446.27501	12000
Construction and Mining	Rubber Tired Dozers	55	446.27501	12000
Construction and Mining	Rubber Tired Dozers	56	446.27501	12000
Construction and Mining	Rubber Tired Dozers	57	446.27501	12000
Construction and Mining	Rubber Tired Dozers	58	446.27501	12000
Construction and Mining	Rubber Tired Dozers	59	446.27501	12000
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Construction and Mining	Rubber Tired Dozers	67	446.27501	12000
Construction and Mining	Rubber Tired Dozers	68	446.27501	12000
Construction and Mining	Rubber Tired Dozers	69	446.27501	12000
Construction and Mining	Rubber Tired Dozers	70	446.27501	12000
Construction and Mining	Rubber Tired Dozers	71	446.27501	12000
Construction and Mining	Rubber Tired Dozers	72	446.27501	12000
Construction and Mining	Rubber Tired Dozers	73	446.27501	12000
Construction and Mining	Rubber Tired Dozers	74	446.27501	12000
Construction and Mining	Rubber Tired Dozers	75	446.27501	12000
Construction and Mining	Rubber Tired Dozers	76	446.27501	12000
Construction and Mining	Rubber Tired Dozers	77	446.27501	12000
Construction and Mining	Rubber Tired Dozers	78	446.27501	12000
Construction and Mining	Rubber Tired Dozers	79	446.27501	12000
Construction and Mining	Rubber Tired Dozers	80	446.27501	12000
Construction and Mining	Rubber Tired Dozers	81	446.27501	12000
Construction and Mining	Rubber Tired Dozers	82	446.27501	12000
Construction and Mining	Rubber Tired Dozers	83	446.27501	12000
Construction and Mining	Rubber Tired Dozers	84	446.27501	12000
Construction and Mining	Rubber Tired Dozers	85	446.27501	12000
Construction and Mining	Rubber Tired Dozers	86	446.27501	12000
Construction and Mining	Rubber Tired Dozers	87	446.27501	12000
Construction and Mining	Rubber Tired Dozers	88	446.27501	12000
Construction and Mining	Rubber Tired Dozers	89	446.27501	12000
Construction and Mining	Tractors/Loaders/Backhoes	-1	856.58812	856.588117
Construction and Mining	Tractors/Loaders/Backhoes	0	856.58812	856.588117
Construction and Mining	Tractors/Loaders/Backhoes	1	818.25236	1674.84048
Construction and Mining	Tractors/Loaders/Backhoes	2	779.9166	2454.75708
Construction and Mining	Tractors/Loaders/Backhoes	3	741.58085	3196.33793
Construction and Mining	Tractors/Loaders/Backhoes	4	703.24509	3899.58302
Construction and Mining	Tractors/Loaders/Backhoes	5	664.90933	4564.49235
Construction and Mining	Tractors/Loaders/Backhoes	6	626.57358	5191.06593
Construction and Mining	Tractors/Loaders/Backhoes	7	588.23782	5779.30375
Construction and Mining	Tractors/Loaders/Backhoes	8	549.90206	6329.20581
Construction and Mining	Tractors/Loaders/Backhoes	9	511.56631	6840.77212
Construction and Mining	Tractors/Loaders/Backhoes	10	473.23055	7314.00267
Construction and Mining	Tractors/Loaders/Backhoes	11	434.89479	7748.89746
Construction and Mining	Tractors/Loaders/Backhoes	12	396.55904	8145.4565

Construction and Mining	Tractors/Loaders/Backhoes	68	166.5445	12000
Construction and Mining	Tractors/Loaders/Backhoes	69	166.5445	12000
Construction and Mining	Tractors/Loaders/Backhoes	70	166.5445	12000
Construction and Mining	Tractors/Loaders/Backhoes	71	166.5445	12000
Construction and Mining	Tractors/Loaders/Backhoes	72	166.5445	12000
Construction and Mining	Tractors/Loaders/Backhoes	73	166.5445	12000
Construction and Mining	Tractors/Loaders/Backhoes	74	166.5445	12000
Construction and Mining	Tractors/Loaders/Backhoes	75	166.5445	12000
Construction and Mining	Tractors/Loaders/Backhoes	76	166.5445	12000
Construction and Mining	Tractors/Loaders/Backhoes	77	166.5445	12000
Construction and Mining	Tractors/Loaders/Backhoes	78	166.5445	12000
Construction and Mining	Tractors/Loaders/Backhoes	79	166.5445	12000
Construction and Mining	Tractors/Loaders/Backhoes	80	166.5445	12000
Construction and Mining	Tractors/Loaders/Backhoes	81	166.5445	12000
Construction and Mining	Tractors/Loaders/Backhoes	82	166.5445	12000
Construction and Mining	Tractors/Loaders/Backhoes	83	166.5445	12000
Construction and Mining	Tractors/Loaders/Backhoes	84	166.5445	12000
Construction and Mining	Tractors/Loaders/Backhoes	85	166.5445	12000
Construction and Mining	Tractors/Loaders/Backhoes	86	166.5445	12000
Construction and Mining	Tractors/Loaders/Backhoes	87	166.5445	12000
Construction and Mining	Tractors/Loaders/Backhoes	88	166.5445	12000
Construction and Mining	Tractors/Loaders/Backhoes	89	166.5445	12000
Construction and Mining	Other Construction Equip	-1	608.10917	608.109168
Construction and Mining	Other Construction Equip	0	608.10917	608.109168
Construction and Mining	Other Construction Equip	1	585.68514	1193.79431
Construction and Mining	Other Construction Equip	2	563.26112	1757.05543
Construction and Mining	Other Construction Equip	3	540.83709	2297.89252
Construction and Mining	Other Construction Equip	4	518.41307	2816.30558
Construction and Mining	Other Construction Equip	5	495.98904	3312.29462
Construction and Mining	Other Construction Equip	6	473.56501	3785.85964
Construction and Mining	Other Construction Equip	7	451.14099	4237.00063
Construction and Mining	Other Construction Equip	8	428.71696	4665.71759
Construction and Mining	Other Construction Equip	9	406.29294	5072.01053
Construction and Mining	Other Construction Equip	10	383.86891	5455.87944
Construction and Mining	Other Construction Equip	11	361.44489	5817.32433
Construction and Mining	Other Construction Equip	12	339.02086	6156.34519
Construction and Mining	Other Construction Equip	13	316.59684	6472.94203
Construction and Mining	Other Construction Equip	14	294.17281	6767.11484
Construction and Mining	Other Construction Equip	15	271.74878	7038.86362
Construction and Mining	Other Construction Equip	16	249.32476	7288.18838
Construction and Mining	Other Construction Equip	17	249.32476	7537.51314
Construction and Mining	Other Construction Equip	18	249.32476	7786.8379
Construction and Mining	Other Construction Equip	19	249.32476	8036.16266
Construction and Mining	Other Construction Equip	20	249.32476	8285.48742
Construction and Mining	Other Construction Equip	21	249.32476	8534.81217
Construction and Mining	Other Construction Equip	22	249.32476	8784.13693
Construction and Mining	Other Construction Equip	23	249.32476	9033.46169
Construction and Mining	Other Construction Equip	24	249.32476	9282.78645
Construction and Mining	Other Construction Equip	25	249.32476	9532.11121
Construction and Mining	Other Construction Equip	26	249.32476	9781.43597
Construction and Mining	Other Construction Equip	27	249.32476	10030.7607
Construction and Mining	Other Construction Equip	28	249.32476	10280.0855
Construction and Mining	Other Construction Equip	29	249.32476	10529.4102
Construction and Mining	Other Construction Equip	30	249.32476	10778.735
Construction and Mining	Other Construction Equip	31	249.32476	11028.0598

Construction and Mining	Other Construction Equip	87	249.32476	12000
Construction and Mining	Other Construction Equip	88	249.32476	12000
Construction and Mining	Other Construction Equip	89	249.32476	12000
Construction and Mining	Other Construction Equip	89	166.5445	12000

EquipmentTypeID	Adj ARB LF
Crawler Tractors	0.4288
Excavators	0.3819
Graders	0.4087
Off-Highway Tractors	0.4355
Off-Highway Trucks	0.3819
Other Construction Equipment	0.4154
Pavers	0.4154
Paving Equipment	0.3551
Rollers	0.3752
Rough Terrain Forklifts	0.402
Rubber Tired Dozers	0.3953
Rubber Tired Loaders	0.3618
Scrapers	0.4824
Skid Steer Loaders	0.3685
Surfacing Equipment	0.3015
Tractors/Loaders/Backhoes	0.3685

Project New On-road Vehicle Emissions

Project New On-Road Vehicle Emissions (2013)
Redwood LF Addendum 2012

revised

9-Apr-12 revised

9-Apr-12

	0.5 tons/payload Light Duty Auto <u>(All)</u>	7 tons/payload Medium Heavy Trucks <u>(Diesel)</u>	23 tons/payload Heavy Heavy Trucks <u>(Diesel)</u>	
<u>Trip Characteristics /a/</u>				
# of Daily Vehicles		2	16	10
# of Daily Trips		4	32	20
Avg. Daily Trip Length (miles)		12.7	12.7	28
Vehicle Miles Travelled (per day)		51	406	560

/a/ Based on Trip % Assumptions in 2005 FEIR for the Mitigated Alternative (55% LDA, 27% MHT, 18% HHT) plus 28 additional vehicles (primarily MHT and HHT)

<u>Pollutant</u>	<u>Running Exhaust Emissions Factor at 30 mph (grams/mile)</u>		
ROG	0.066165841	0.305280249	0.117426847
CO	1.077467062	1.208994686	0.540383994
NOX	0.352538152	6.405201882	11.98086497
CO2 (non-pavley or LCFS)	347.5335973	1220.106739	1909.120382
CO2 (w/ Pavley and LCFS)	318.2862149	1207.905672	1890.029179
PM10	0.027533685	0.190580669	0.058948139
PM2.5	0.02531143	0.175334216	0.054232288

Total for 2013

<u>Pollutant</u>	<u>Running Exhaust Emissions (grams/day)</u>			<u>(grams/day)</u>	<u>(lbs/day)</u>	<u>(tons/year)</u>
ROG	3	124	66	193	0	0.0664397
CO	55	491	303	849	2	0.2918761
NOX	18	2,603	6,709	9,330	21	3.2088221
CO2 (non-pavley or LCFS)	17,655	495,851	1,069,107	1,582,613	3,489	493.76702
CO2 (w/ Pavley and LCFS)	16,169	490,893	1,058,416	1,565,478	3,451	488.42088
PM10	1	77	33	112	0	0.0384709
PM2.5	1	71	30	103	0	0.0353929

0.002204586

g to lbs conversion

<http://www.onlineconversion.com/weight.htm>

Notes

- 1 - Emission factors derived using EMFAC2011
- 2 - All emission factors are for summer except for CO, which is for winter
- 3 - Annual emissions assume 312 days operation/year. CO2 is only pollutant listed in metric tons.

EMFAC2011 Factors

EMFAC 2011
 2013 Estimated Seasonal Emission Rates
 EMFAC 2011 Vehicle Categories
 Summer Season
 Marin COUNTY
 San Francisco Bay Area AIR BASIN
 Bay Area AQMD

Area	CalYr	Season	Veh	Fuel	MdlYr	Speed (Miles/hr)	Pop (Vehicles)	VMT (Miles/day)	Trips (Trips/day)	ROG_RUN (gms/mile)	TOG_RUN (gms/mile)	CO_RUNE (gms/mile)	NOX_RUN (gms/mile)	CO2_RUN (gms/mile)	CO2_RUN (gms/mile)	PM10_RUI (gms/mile)	PM2_5_RUNEX (gms/mile)	
Marin (SF)	2013	Summer	LDA	GAS	AllMYr	30	0	599710.2	0	0.061873	0.083065	2.037292	0.141124	382.3801	350.8213	0.002722	0.002465	
Marin (SF)	2013	Summer	LDA	DSL	AllMYr	30	0	4291.212	0	0.070458	0.080212	0.336515	0.563952	312.687	285.7512	0.052346	0.048158	
Marin (SF)	2013	Summer	T6 instate	DSL	AllMYr	30	0	969.8589	0	0.341753	0.38906	1.389402	7.492527	1222.668	1210.441	0.219868	0.202279	
Marin (SF)	2013	Summer	T6 instate	DSL	AllMYr	30	0	2642.74	0	0.268807	0.306016	1.028587	5.317877	1217.546	1205.37	0.161293	0.14839	
Marin (SF)	2013	Summer	T7 SWCV	DSL	AllMYr	30	0	111.6127	0	0.117427	0.133682	0.540384	11.98086	1909.12	1890.029	0.058948	0.054232	
										AVG LDA	0.066166	0.081639	1.186904	0.352538	347.5336	318.2862	0.027534	0.025311
										AVG MHD	0.30528	0.347538	1.208995	6.405202	1220.107	1207.906	0.190581	0.175334

EMFAC 2011
 2013 Estimated Seasonal Emission Rates
 EMFAC 2011 Vehicle Categories
 Winter Season
 Marin COUNTY
 San Francisco Bay Area AIR BASIN
 Bay Area AQMD

Area	CalYr	Season	Veh	Fuel	MdlYr	Speed (Miles/hr)	Pop (Vehicles)	VMT (Miles/day)	Trips (Trips/day)	ROG_RUN (gms/mile)	TOG_RUN (gms/mile)	CO_RUNE (gms/mile)	NOX_RUN (gms/mile)	CO2_RUN (gms/mile)	CO2_RUN (gms/mile)	PM10_RUI (gms/mile)	PM2_5_RUNEX (gms/mile)	
Marin (SF)	2013	Winter	LDA	GAS	AllMYr	30	0	599710.2	0	0.063122	0.082639	1.818419	0.172928	350.734	321.9437	0.002722	0.002465	
Marin (SF)	2013	Winter	LDA	DSL	AllMYr	30	0	4291.212	0	0.070458	0.080212	0.336515	0.596225	312.687	285.7512	0.052346	0.048158	
Marin (SF)	2013	Winter	T6 instate	DSL	AllMYr	30	0	969.8589	0	0.341753	0.38906	1.389402	7.917158	1222.668	1210.441	0.219868	0.202279	
Marin (SF)	2013	Winter	T6 instate	DSL	AllMYr	30	0	2642.74	0	0.268807	0.306016	1.028587	5.619263	1217.546	1205.37	0.161293	0.14839	
Marin (SF)	2013	Winter	T7 SWCV	DSL	AllMYr	30	0	111.6127	0	0.117427	0.133682	0.540384	12.6465	1909.12	1890.029	0.058948	0.054232	
										AVG LDA	0.06679	0.081426	1.077467	0.384577	331.7105	303.8474	0.027534	0.025311
										AVG MHD	0.30528	0.347538	1.208995	6.76821	1220.107	1207.906	0.190581	0.175334

Project Indirect Electricity GHGs

Indirect Greenhouse Gas (GHG) Emissions from Project use of Electricity (Power Plant Emissions)

Estimated Project Annual Electrical Use:

880 kWh/day MRF operations, 312 days per year
 1613 kWh/day CASP blower operations, 365 days per year
 863,305 kWh (kilowatt hours)/year annual average
 863 mWh (megawatt hours)/year

Indirect GHG gases	Emission Factor lb/mWh	Annual		CO2 Equivalent Factor	Annual
		Project Electricity mWh	GHGs metric tons		CO2 Equivalent Emissions (metric tons)
Carbon Dioxide (CO2)	641.35	863	251	1	251
Nitrous Oxide (N2O)	0.011	863	0.0	296	1
Methane (CH4)	0.029	863	0.0	23	0
Total Indirect GHG Emissions from Project Electricity Use=					253

APPENDIX B

Revised Mitigation Monitoring and Reporting Program

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REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION
REVISED MITIGATION MONITORING AND REPORTING PROGRAM
 May 7, 2013

All revisions to the MMRP dated November 17, 2008, are shown with ~~strikethrough~~ and underline text.

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION MEASURE/CONDITION OF APPROVAL	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
Aesthetics					
<p>3.1.6: Use of a waste tipper could result in increased litter on and near the project site, causing adverse aesthetic impacts in the site vicinity. (LTS)</p>	<p>3.1.6a: RLI will continue its current litter-control program, which includes the following elements (GeoSyntec, 1998):</p> <ul style="list-style-type: none"> • compaction of the waste, • application of daily cover, • placement of fixed and portable litter fences around the active working face, • construction of a semi-permanent litter fence on the east and north sides of the landfill adjacent to San Antonio Creek, • daily use of a clean-up crews to collect litter from the site and surrounding area, and • use of signage to advise haulers that incoming loads must be properly covered and that tarps are to <u>must</u> be removed only in designated areas. 	Applicant	The project applicant shall implement this measure upon issuance of the revised SWFP.	Marin County EHS	Marin County EHS and CIWMB, both of whom conduct periodic inspections of the site.
	<p>3.1.6b: The tipper is <u>shall not be</u> operated in winds exceeding 50 mph.</p>	Applicant	The project applicant shall implement this measure upon issuance of the revised SWFP.	Marin County EHS	Marin County EHS and CIWMB, both of whom conduct periodic inspections of the site.
	<p>3.1.6c: RLI shall update as necessary and implement its current litter-control program to ensure compliance with 27 CCR §20830. The updated program will take into account the use of the waste tipper and will <u>shall</u> indicate the means to prevent litter from escaping the Oxbow area proposed for composting. Measures may include, but are not limited to, the following:</p> <ul style="list-style-type: none"> • use of additional portable litter fencing in the Oxbow area, • use of higher temporary fences at the working face, as needed to prevent litter from escaping when loads are emptied by the tipper, and • increasing the staff of the daily clean-up crew to adequately police the additional areas proposed for composting. 	Applicant	The project applicant shall submit the updated litter control plan to the LEA prior to project approval. The project applicant shall implement the litter control program upon issuance of the revised SWFP.	Marin County EHS	CIWMB, prior to issuance of revised SWFP; periodic inspections to ensure implementation.

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REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION
REVISED MITIGATION MONITORING AND REPORTING PROGRAM
 May 7, 2013

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION MEASURE/CONDITION OF APPROVAL	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
Aesthetics (cont.)					
3.1.6 (cont.)	RLI shall submit the updated litter control plan to the LEA for approval prior to project implementation.				
	3.1.6e: Any changes to procedures or practices in the approved project must be reported to and approved (with conditions of approval, as appropriate) by the appropriate oversight agency.	Applicant	The project applicant shall implement this measure upon issuance of the revised SWFP.	Marin County EHS	Marin County EHS, continuing periodic inspections.
Air Quality					
3.2.1: Construction activities would generate substantial amounts of dust, which would result in potential health and nuisance impacts in the immediate project vicinity. (LTS)	3.2.1a: As described under existing facilities in the Joint Technical Document (JTD) (GeoSyntec, 1998), the applicant controls dust by frequent application of water spray on soil-covered work areas and the use of a dust palliative on the access road and main haul roads, if necessary, to supplement watering. The JTD indicates that the same practices would be continued under the project.	Applicant	The project applicant shall continue to implement this measure upon issuance of the revised SWFP.	Marin County EHS, BAAQMD	Marin County EHS and BAAQMD, continuing periodic inspections.
	3.2.1b: The applicant shall implement good construction practices to minimize fugitive dust. Such practices shall include general watering of exposed areas, the use of palliatives or other dust suppressants on any unpaved haul roads, and periodic cleaning of paved roads.	Applicant	The project applicant shall implement this measure upon issuance of the revised SWFP.	Marin County EHS, BAAQMD	Marin County EHS and BAAQMD, continuing periodic inspections.
	3.2.1c: The applicant shall implement a Construction Dust Abatement Program. Construction contractors and landfill staff involved in construction activities at the site shall implement a Construction Dust Abatement Program to reduce the contribution of project construction-related dust emissions to local respirable particulate matter concentrations. Some of these measures are similar to those identified under Measures 3.2.1a and 3.2.1b, but with additional specificity. This program shall include the following elements as needed to reduce fugitive dust to acceptable levels, using the BAAQMD Regulation 6 visible emissions standards as a guide: <ul style="list-style-type: none"> • Water all active construction areas at least twice daily. • Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least 2 feet of 	Applicant	The project applicant shall submit a written description of Construction Dust Abatement Program to the Marin County EHS and BAAQMD prior to project approval. The project applicant shall implement the Program upon issuance of revised SWFP.	Marin County EHS, BAAQMD	Marin County EHS and BAAQMD, continuing periodic inspections.

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REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION
REVISED MITIGATION MONITORING AND REPORTING PROGRAM
 May 7, 2013

IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION MEASURE/CONDITION OF APPROVAL	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
Air Quality (cont.)					
<p>3.2.1 (cont.)</p>	<p>freeboard (i.e., the minimum required space between the load and the top of the trailer).</p> <ul style="list-style-type: none"> • Pave, apply water three times daily, or apply nontoxic soil stabilizers on all unpaved access roads, parking areas, and construction staging areas. • Sweep daily with water sweepers all paved access roads, parking areas, and staging areas at construction sites. • Sweep streets daily with water sweepers, if visible soil material is carried onto adjacent public streets. • Hydroseed or apply nontoxic soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more). • Enclose, cover, water twice daily, or apply nontoxic soil binders to exposed stockpiles (dirt, sand, etc.). • Limit traffic speeds on unpaved roads to 15 miles per hour. • Install silt fences or other erosion-control measures to prevent silt runoff to public roadways. • Replant vegetation in disturbed areas as quickly as possible. • Designate a person or persons to oversee the implementation of a comprehensive dust control program and to increase watering, as necessary. 				
<p>3.2.2: Equipment and truck operations associated with an increase in incoming materials at the landfill would generate additional criteria air pollutant emissions. (SU)</p>	<p>3.2.2a: The project applicant shall keep all off-road equipment well-tuned and regularly serviced to minimize exhaust emissions, and shall establish a regular and frequent check-up and service/maintenance program for all operating equipment at the landfill.</p>	<p>Applicant</p>	<p>The project applicant shall submit a written description of the equipment check-up and service/maintenance program, including document keeping and reporting requirements, to Marin EHS and BAAQMD prior to project approval. The project applicant shall implement the program upon issuance of the revised SWFP.</p>	<p>Marin County EHS, BAAQMD</p>	<p>Marin County EHS and BAAQMD, continuing periodic inspections.</p>

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IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION MEASURE/CONDITION OF APPROVAL	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
Air Quality (cont.)					
3.2.2 (cont.)	<p>3.2.2b: The project applicant shall comply with CARB requirements for equipment and truck operations, including but not limited to use of ultra-low sulfur fuel (with low sulfur and low aromatic content) in combination with a fuel additive (such as Puri-NO_x) in all diesel-powered off-road equipment to minimize NO_x emissions to the extent that these materials are available to Bay Area transit agencies and may be purchased by the Redwood Landfill as well. Products such as this can reduce NO_x emissions by roughly 14 percent.</p>	Applicant	The project applicant shall implement this measure upon issuance of the revised SWFP.	Marin County EHS, BAAQMD	Marin County EHS and BAAQMD, continuing periodic inspections.
	<p>3.2.2c: As off-road equipment ages and requires replacement, the project applicant can be expected to purchase new equipment that incorporates technology that meets more stringent emission standards mandated by CARB. Alternatively, the project applicant may purchase electrically-powered equipment, or equipment fueled by an alternative, less-emitting fuel (e.g., liquefied natural gas [LNG] or compressed natural gas [CNG]). Use of alternative fuel engines can be expected to achieve a reduction in NO_x emissions of at least 37 percent. At the time of replacement, the applicant shall purchase new equipment that meets then-current emission and pollution control standards. Older equipment still in use at the site that does not meet new CARB standards shall be fitted with diesel particulate traps and fueled with a biodiesel blend to reduce particulates and other pollutants.</p>	Applicant	The project applicant shall implement this measure consistent with CARB requirements.	BAAQMD, Marin County EHS,	BAAQMD and Marin County EHS, continuing periodic inspections.
	<p>3.2.2d: As collection vehicles are replaced, the project applicant, including other Waste Management affiliates that regularly haul materials to Redwood Landfill, shall comply with CARB's Solid Waste Collection Vehicle Fleet Rule (contained in Title 13, California Code of Regulations, Sections 2020, 2021, 2021.1, and 2021.2) adopted in September 2003 to address diesel particulate matter. The project applicant shall give preference to add-on technologies or control measures (such as fleet conversions) that also reduce NO_x emissions, while meeting necessary BACT requirements. The types of control measures that may be implemented include such measures as converting their</p>	Applicant	The project applicant shall implement this measure upon issuance of the revised SWFP.	BAAQMD, Marin County EHS	BAAQMD and Marin County EHS, continuing periodic inspections.

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REDWOOD LANDFILL SOLID WASTE FACILITIES PERMIT REVISION
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IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION MEASURE/CONDITION OF APPROVAL	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
Air Quality (cont.)					
3.2.2 (cont.)	collection fleets to vehicles that operate on alternative, low-emission fuels (such as CNG, LNG, or biodiesel) use of particulate traps, or modification or replacement of diesel engines to reduce NO _x emissions, by such measures as incorporating exhaust gas recirculation (ERG) systems and/or stratified combustion chambers, and/or by using ultra-low sulfur fuel and fuel additives.				
	3.2.2e: The project applicant shall require all diesel trucks and equipment on-site under the applicant's control to limit engine idling to three minutes or less and post a sign at the scale house advising other diesel trucks and equipment on the site to also limit engine idling to three minutes or less.	Applicant	The project applicant shall implement this measure upon issuance of the revised SWFP.	BAAQMD, Marin County EHS	BAAQMD and Marin County EHS, continuing periodic inspections.
B-7 3.2.4: Landfill operations, including vehicle and equipment travel on unpaved surfaces, would generate fugitive dust. (SU)	3.2.4: The project applicant shall develop and implement an Operational Dust Mitigation Plan/Program, in conjunction with the BAAQMD and the LEA that would achieve at a minimum a dust control efficiency of about 75 percent. Upon completion, the Plan shall be subject to BAAQMD review and approval. As an example components of the Plan may include: <ul style="list-style-type: none"> • A watering program consistent with applicable BAAQMD requirements. On dry days, apply water to unpaved driving surfaces at least once every three hours, and to parking areas and infrequently used unpaved surfaces, the active landfill face, active stockpile areas, or other dust prone areas at least twice daily. Apply water to composting operations areas once or twice daily, as needed. On rainy days, apply water to these areas as necessary to reduce visible emissions. • Use of a chemical palliative or dust suppressant as needed to reduce fugitive dust emissions from vehicle travel surfaces. Some chemical stabilizers can contain a considerable fraction of hydrocarbons, and should be selected judiciously. The choice of chemical palliative shall be made with the approval of the RWQCB, BAAQMD, and the LEA. • Posting signs at the site that limit traffic speeds on unpaved roads to 15 miles per hour. 	Applicant	The project applicant shall submit a written description of the Operational Dust Mitigation Plan/Program, including document keeping and reporting requirements, to the Marin County EHS and BAAQMD prior to project approval. The project applicant shall implement the Plan/Program upon issuance of revised SWFP.	BAAQMD, RWQCB, and Marin County EHS,	BAAQMD, RWQCB, and Marin County EHS continuing periodic inspections.

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IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION MEASURE/CONDITION OF APPROVAL	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
Air Quality (cont.)					
3.2.4 (cont.)	<ul style="list-style-type: none"> • Sweeping daily with water sweepers all paved access roads and parking areas. • Appoint a designated person to oversee implementation of the Operational Dust Mitigation Plan, and make them responsible for ensuring that the Plan is fully implemented. 				
B-8 3.2.5: The project would increase the amount of landfill gas generated and could exceed the capacity of the landfill gas collection and treatment system. In addition, emissions of air pollutants from the landfill gas treatment system, as well as fugitive landfill gas emissions, would increase. (SU)	3.2.5a: The applicant has installed a landfill gas flare capable of accommodating a landfill gas flow rate of up to 4,250 cfm. The flare currently is permitted to operate at a maximum flow rate of 4,000 cfm.	Applicant	The project applicant shall implement this measure, consistent with Measures 3.2.5c and 3.2.5d, upon issuance of revised SWFP.	BAAQMD, Marin County EHS	BAAQMD and Marin County EHS, continuing periodic inspections.
	3.2.5c: The project applicant shall apply to the BAAQMD for authority to construct power generation engines to be fueled by landfill gas capable of producing 4 to 5 megawatts of power within two years of concurrence on its revised SWFP by the CIWMB. This will increase the overall capacity available to treat landfill gas, and will also result in the beneficial use of some portion of the landfill gas generated. Operation of the landfill-gas-powered generators will make the project consistent with Policy 4.2 of the Marin Countywide Plan Community Development element (refer to Applicable Plans and Policies in Section 3.9, Public Services, Utilities, and Energy), which calls for exploration and implementation, where possible, of opportunities for cost-effective energy savings that are compatible with other countywide and community goals.	Applicant	The project Applicant shall apply within the time specified in this measure for Authority to Construct, which authorizes operation for 90 days; after this a Permit to Operate is required. The applicant shall pursue a Permit to Operate as specified in Mitigation Measure 3.2.5e.	BAAQMD	BAAQMD
	3.2.5d: The applicant shall apply to the BAAQMD to revise limits in the current Permit to Operate the flare, as needed to accommodate increased LFG generation. The flare system will be operated/equipped as necessary to ensure BAAQMD emission limits specified in the PTO are maintained. The project applicant shall provide background test data and/or other supporting data as necessary to document to the BAAQMD and LEA that the system would accommodate worst case peak gas emissions.	Applicant	The applicant shall implement this measure prior to project approval. The project applicant shall submit specified test data and/or supporting data to the BAAQMD and LEA prior to project approval and in annual reporting documents thereafter.	BAAQMD, Marin County EHS	BAAQMD according to terms of permit

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IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION MEASURE/CONDITION OF APPROVAL	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
Air Quality (cont.)					
3.2.5 (cont.)	<p>3.2.5e: The applicant shall apply for a Permit to Operate the power generation engines within the time frame specified in the Authority to Construct and shall operate the power generation engines in compliance with all BAAQMD regulations and conditions specified in the Permit to Operate. The applicant shall continue to maintain records of all compliance demonstration test results as specified in the Authority to Construct.</p>	Applicant	The project applicant shall implement this measure within 90 days of commencement of operation of engines under an Authority to Construct.	BAAQMD	BAAQMD according to terms of permit
	<p>3.2.5f: Prior to project approval, the applicant will develop a Greenhouse Gas Reduction plan that demonstrates how the landfill will achieve by 2020 a reduction in annual GHG emissions such that emissions are no greater than 15 percent below 1990 levels. This will include but is not limited to development of alternative energy, including additional landfill gas-to-energy production capacity and solar generation capacity; use of alternative fuels in on-site equipment and in truck fleets; increased recycling, development of other on-site renewable energy generation capacity. Measures may also include practices discussed in the CIWMB Guidance document entitled: <i>CWWMB, Technologies and Management Options for Reducing Greenhouse Gas Emissions From Landfills</i>, April 2008, available at: http://www.ciwmb.ca.gov/Publications/Facilities/20008001.pdf. For emission reductions that cannot feasibly be achieved through on-site measures, the plan may specify purchase of off-site carbon credits that are verified and listed with the California Climate Action Registry; available from the Chicago Climate Exchange or the Regional Greenhouse Gas Initiative (RGGI); or otherwise deemed acceptable by the Marin County Marin County Community Development Agency /BAAQMD. The plan will include specific measures and a timeline for reducing the landfilling and use as landfill cover material of putrescible organic material. This will include, but is not limited to, phasing out the use of raw greenwaste and sewage sludge as alternative daily cover material, reducing the landfilling of sewage sludge, food waste, and other materials with a potential for high methane generation, and cooperative programs with waste collectors,</p>	Applicant	The project applicant shall submit the GHG Reduction plan prior to project approval and shall implement the plan, including demonstrating compliance with interim targets, as specified in the text of the measure.	BAAQMD, Marin County CDA, Marin County EHS	Marin County CDA (timing of milestones)

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IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION MEASURE/CONDITION OF APPROVAL	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
Air Quality (cont.)					
<p>3.2.5 (cont.)</p>	<p>individual municipalities, and joint powers authorities to increase source separation of organic materials for composting. The plan will include cost estimates for plan implementation GHG reduction measures and will identify funding sources, including but not limited to tip fee increases. The plan shall include an implementation schedule that demonstrates compliance with the following interim and final targets:</p> <p>By 2015: Greenhouse gas emissions reduced by 25% below annual baseline;</p> <p>By 2020: Greenhouse gas emissions reduced to 15% below 1990 levels;</p> <p>Beyond 2020: Greenhouse gas emissions not to exceed 15% below 1990 levels.</p> <p>The plan will include an updated inventory of lifecycle GHG emissions including and an updated estimate of GHG emissions in 1990. The updated inventory shall constitute the annual baseline for the purpose of determining the above-stated targets. The plan will be updated and submitted for review at least every 5 years. The plan will be subject to review and approval by Marin County Community Development Agency and the BAAQMD.</p> <p>Because the release of GHG emissions has been identified as a potentially significant impact associated with the expansion of landfill capacity, the increase in the permitted capacity, as part of the project, will be contingent upon meeting the above GHG reduction requirements. The total additional capacity granted under the Mitigated Alternative is 5.9 million cubic yards (without final cover), and will be granted contingent upon other project conditions.</p>				
	<p>3.2.5g: Following closure of the landfill, the applicant shall continue to operate, maintain, and monitor the landfill gas collection and treatment system as long as the landfill continues to produce landfill gas, or until it is determined by the BAAQMD that emissions no longer constitute a considerable contribution to greenhouse gas emissions,</p>	<p>Applicant</p>	<p>The project applicant shall submit the revised Preliminary Post-Closure Maintenance Plan prior to project approval. The project applicant shall</p>	<p>Marin County EHS, CIWMB, BAAQMD</p>	<p>Marin County EHS, BAAQMD, periodic inspections during post-closure period</p>

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IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION MEASURE/CONDITION OF APPROVAL	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
Air Quality (cont.)					
3.2.5 (cont.)	whichever comes first. Because the landfill could continue to produce substantial quantities of landfill gas well beyond the 30-year post-closure maintenance period specified in the JTD, BAAQMD approval must be obtained prior to shutdown of the LFG system. The applicant shall prepare a revised Preliminary Post-Closure Maintenance Plan that plans for and provides financial assurances for operation, maintenance, and monitoring of the landfill gas collection and treatment system that is consistent with the requirements of California Code of Regulations Title 27, Chapter 6, and shall be sufficient for the entire cost of closure and post-closure maintenance.		implement this measure following closure of the landfill and shall continue to implement it as specified in the text of the mitigation measure.		
B-11 3.2.6: The project could increase the amount of ROG emissions from composting/co-composting activities. (LTS)	3.2.6a: The project applicant shall maintain records of all materials composted (in terms of volume or weight by material type) and shall comply with all applicable rules, regulations and permit conditions.	Applicant	The project applicant shall implement this measure upon issuance of the revised SWFP.	Marin County EHS	Marin County EHS, CIWMB; periodic inspections
	3.2.6b: The applicant shall prepare an Emissions Monitoring Plan that includes source testing of windrows used for composting and co-composting to obtain site-specific ROG emissions data. The Monitoring Plan shall require analysis of the effect of various feedstock materials on composting emissions, and a comparison of emissions during wet and dry season periods. The Monitoring Plan shall be subject to BAAQMD review and approval.	Applicant	The project applicant shall submit the Emissions Monitoring Plan to BAAQMD within one year of issuance of revised SWFP.	Marin County EHS and BAAQMD	Marin County EHS and BAAQMD will review and approve Plan within 3 months of submission by applicant
3.2.8: Emissions of toxic air contaminants could pose a risk to human health. (LTS)	3.2.8a: The landfill gas collection and flare system will substantially reduce the rate of emission of TACs from the landfill.	Applicant	The project applicant has already implemented this measure and shall continue to do so upon issuance of the revised SWFP.	BAAQMD, Marin County EHS	BAAQMD and Marin County EHS periodically and continuing
	3.2.8b: Best management practices for the composting and co-composting operation, including <u>but not limited to</u> scheduled pile turning and managing piles to avoid excessively high temperatures, will reduce the emissions of TACs from composting and co-composting operations.	Applicant	The project applicant shall implement this measure upon issuance of the revised SWFP	Marin County EHS and BAAQMD	Marin County EHS and BAAQMD, periodically and continuing

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IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION MEASURE/CONDITION OF APPROVAL	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
Air Quality (cont.)					
<p>3.2.8 (cont.)</p>	<p>3.2.8c: New federal regulations for offroad diesel equipment were promulgated in May 2004. These regulations require that, starting in 2010, new equipment will have to reduce emissions of NOx and diesel PM by about 90%. However, any equipment already in use at the time of the new regulation would be grandfathered and would not have to meet the new emissions limits. Since this equipment can operate for many years before needing replacement, future emissions would be at a higher rate. If Mitigation Measures 3.2.2a-d are adopted on the existing equipment, diesel PM emissions from off-road equipment can be reduced to levels that are less than significant. Some of the measures specified to reduce NOx emissions, such as the use of natural gas as an alternative fuel, would also reduce diesel PM emissions. Use of alternative fuels can reduce fine PM emissions by as much as 90 percent, and electrically-powered equipment does not emit any diesel PM. Alternatively, all off-road diesel equipment at the site could be retrofitted with diesel particulate traps that are capable of removing over 85 percent of the diesel PM emissions, and since diesel equipment with diesel PM traps must use ultra low sulfur fuel, this would also reduce NOx emissions. Therefore, the incremental health risk associated with offroad diesel equipment would be reduced from 18 in a million to 2.7 (with diesel PM traps) or less (with electric or natural gas fueled engines) new cancer cases for every million people exposed.</p>	See referenced mitigation measures.			
	<p>3.2.8d: Although diesel PM emissions from new on-road trucks after 2007 will be reduced because the trucks will have to comply with the Federal regulations, trucks that were purchased before 2007 would not be subject to the new regulations. Diesel PM emissions from the older truck fleet shall be reduced by retrofitting the trucks with particulate traps, or by implementing other such measures as may be required by CARB.</p>	Applicant	The applicant shall implement this measure upon issuance of the SWFP.	BAAQMD	Continuing periodic inspections.
<p>3.2.9: Project operations could result in nuisance odor emissions. (LTS)</p>	<p>3.2.9a: Continuation of e Current odor management practices shall be continued. These include but are not limited to: covering landfilled waste at the end of each day with either soil or mixed ADC and maintaining windrows or static piles in a manner that optimizes the composting process.</p>	Applicant	The applicant shall continue to implement this measure upon issuance of the revised SWFP.	Marin County EHS and BAAQMD	Marin County EHS and BAAQMD, periodically and continuing

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Air Quality (cont.)					
3.2.9 (cont.)	<p>3.2.9b: The project applicant shall formulate an Odor Impact Minimization Plan in accordance with the recently revised State composting regulations (Title 14 CCR § 17863.4.) This plan will be submitted to the LEA as part of the application for a solid waste facilities permit for the composting facility and implemented upon issuance of the revised SWFP. In accordance with the above-cited regulations, the plan shall contain, at a minimum:</p> <ul style="list-style-type: none"> • an odor monitoring protocol which describes the proximity of possible odor receptors and a method for assessing odor impacts at the locations of the possible odor receptors; and, • a description of meteorological conditions effecting migration of odors and/or transport of odor-causing material off-site. Seasonal variations that effect wind velocity and direction shall also be described; and, • a complaint response protocol that includes the verification and documentation upon receipt of any odor complaints and immediate notification of County LEA staff upon receipt of any odor complaints upon receipt of the call; and, • a description of design considerations and/or projected ranges of optimal operation to be employed in minimizing odor, including method and degree of aeration, moisture content of materials, feedstock characteristics, airborne emission production, process water distribution, pad and site drainage and permeability, equipment reliability, personnel training, weather event impacts, utility service interruptions, and site specific concerns; and, • a description of operating procedures for minimizing odor, including aeration, moisture management, feedstock quality, drainage controls, pad maintenance, wastewater pond controls, storage practices (e.g., storage time and pile geometry), contingency plans (i.e., equipment, water, power, and personnel), biofiltration, and tarping. 	Applicant, Marin County EHS, BAAQMD	The applicant shall submit the Plan prior to project approval. The project applicant shall implement provisions of the Plan as specified upon issuance of the revised SWFP.	Marin County EHS, BAAQMD	Marin County EHS and BAAQMD, continuing periodic inspections.

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Air Quality (cont.)					
3.2.9 (cont.)	<ul style="list-style-type: none"> • <u>The odor impact minimization plan shall be revised to reflect any changes, and a copy shall be provided to the LEA, within 30 days of those changes.</u> • <u>The odor impact minimization plans shall be reviewed annually by the operator to determine if any revisions are necessary.</u> 				
3.2.11: The combined emissions from project operations would exceed BAAQMD significance criteria for ROG, NO _x and PM-10. (SU)	3.2.11: Implementation of Mitigation Measures 3.2.2 (a-d), 3.2.4, 3.2.5(d-e), and 3.2.6(a-b) would help to mitigate the combined project operational emissions.	See referenced mitigation measures.			
Biological Resources					
3.3.2: Project activities may disturb habitat for special status plant species. (LTS)	3.3.2: No project actions shall be permitted which result in removal of vegetation above the toe of the slope on the marsh side of landfill levees unless preceded by a survey to establish that no sensitive plant species are present.	Applicant	The project applicant shall implement this measure prior to commencement of work on levees	Marin County EHS	Marin County EHS, CDFG, USFWS, as needed
3.3.3: Project activities may disturb jurisdictional wetlands. (LTS)	3.3.3: When working near brackish marsh areas, the edge of the marsh shall be clearly marked with orange mesh fencing or equivalent to indicate limits of disturbance.	Applicant	The project applicant shall implement this measure prior to commencement of work near brackish marsh areas	Marin County EHS	Marin County EHS, CDFG, USFWS, as needed
3.3.4: Project activities may have a deleterious effect on special status bird and mammal species. (LTS)	3.3.4a: Levee reconstruction work during the California clapper rail nesting season (February 1 – August 31) shall be avoided, unless surveys by a qualified biologist with a current federal scientific take permit for California clapper rail indicate that California clapper rails are not nesting within-750 feet of the work area, or another distance determined in informal consultation with the U.S. Fish and Wildlife Service. The surveys shall be conducted consistent with the current U.S. Fish and Wildlife Service survey protocol for California clapper rail. Furthermore, the surveys shall be conducted to determine the pair status of any observed individuals, local habitat use, and location of nests	Applicant	The project applicant shall implement this measure prior to commencement of work on levee reconstruction	Marin County EHS	Marin County EHS, CDFG, USFWS, as needed

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Biological Resources (cont.)					
<p>3.3.4 (cont.)</p>	<p>(if any) to within at least 30 feet If nesting California clapper rails are found or suspected, one of the following measures shall be implemented:</p> <p>(a) No construction activities shall be conducted within 750 feet of a known or suspected California clapper rail nest or within another distance determined in informal consultation with the U.S. Fish and Wildlife Service; or</p> <p>(b) Construction activities that must occur within 750 feet (or another distance determined in informal consultation with the U.S. Fish and Wildlife Service) of a known or suspected California clapper rail nest shall be conducted only between September 1 and January 31.</p>				
	<p>3.3.4b: Levee reconstruction work throughout the year (regardless of time) should be conducted consistent with the following provisions to address potential impacts to California clapper rail and salt marsh harvest mouse:</p> <p>(a) No construction activities should be conducted any earlier than 1.5 hours after sunrise and any later than 1.5 hours prior to sunset (to address the crepuscular activity peaks of this taxon);</p> <p>(b) No construction activities should be conducted 1.5 hours prior to or 1.5 hours after high tides that are of sufficient elevation to flood the adjacent middle intertidal marsh (when clapper rails and salt marsh harvest mice may need to seek refuge in high intertidal marsh or upland from rising tidal waters); and</p> <p>(c) Upon completion of the construction activities all disturbed soils in marsh habitat shall be winter stabilized to prevent erosion and allow for passive restoration of brackish marsh vegetation.</p>	Applicant	The project applicant shall implement this measure prior to commencement of work on levee reconstruction	Marin County EHS	Marin County EHS, CDFG, USFWS, as needed
<p>3.3.5: High noise levels from composting operations in the Oxbow area and in Field 1, and from landfill activities in Areas A and B may disturb California clapper rail nesting. (LTS)</p>	<p>3.3.5a: Bird deterrent practices and compost machinery, including grinders, trammel screens, and windrow turners, and other composting equipment capable of generating high noise levels shall be operated to assure that noise levels do not exceed 76 dBA at the marsh boundary east of the levee during the California clapper rail nesting season (February 1 – August 31). Furthermore, the existing screening between the</p>	Applicant	The project applicant shall submit detailed facility design, including location of machinery, prior to issuance of the revised SWFP.	Marin County EHS	Marin County EHS, CDFG, USFWS, periodic inspections

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Biological Resources (cont.)					
<p>3.3.5 (cont.)</p>	<p>composting area and the marsh shall be maintained in place to minimize line-of-sight views of composting activities from the adjacent low intertidal marsh. See also Mitigation Measure 3.7.3.</p> <p>3.3.5b: If landfill activities, including but not limited to bird deterrent practices, are to take place in Areas A or B during the California clapper rail nesting season (February 1 – August 31), they must be preceded by either (1) a biological survey to determine presence or absence of California clapper rail nests in the marsh area adjacent to the landfill (consistent with Mitigation Measure 3.3.4) or (2) a noise study to determine noise levels from landfill operations at the marsh boundary. Landfill activities may proceed in these areas during the nesting season only if it is determined that nests are not present, or that sound levels at the marsh boundary are below 76 dBA. Furthermore, if landfill activities are to take place in these areas during the nesting season, and surveys do not support a finding of absence of California clapper rail in the intertidal marsh adjacent to the landfill, visual screening shall be implemented at the top-of-slope of the active fill area (i.e., at the edge of the fill plateau) to minimize line-of-sight views from the adjacent intertidal marsh. It should be noted that this fence will need to be continually moved to the new edge of the fill plateau as the active fill area increases in height.</p>	<p>Applicant</p>	<p>The project applicant shall implement this measure prior to commencement of activities in Areas A or B during specified season.</p>	<p>Marin County EHS</p>	<p>Marin County EHS, CDFG, USFWS, as needed</p>
<p>3.3.6: Project activities in the vicinity of the 18-acre storm water impoundment could affect California red-legged frogs or western pond turtle. (LTS)</p>	<p>3.3.6: It is understood that the project involves changes in landfill capacity, design, operations, environmental controls, and infrastructure, and that these changes constitute a system of continuous operational actions as opposed to a discrete project timeframe. To avoid the possibility of “taking” (harming or harassing) red-legged frogs or pond turtles, surveys for their presence will be performed following approved protocols for season and intensity of surveys. For red-legged frogs these are four discrete surveys within a one-week period between May and November; pond turtle surveys could be done concurrently. If no frogs or pond turtles were found, the landfill would be considered operating adjacent to</p>	<p>Applicant</p>	<p>The applicant shall complete specified surveys during the specified timeframe, any time before or after issuance of the revised SWFP.</p> <p>The project applicant shall implement the specified alternatives to the specified surveys as follows:</p>	<p>Marin County EHS, USFWS</p>	<p>Marin County EHS, CDFG, USFWS, as needed</p>

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Biological Resources (cont.)					
3.3.6 (cont.)	unoccupied habitat and no additional mitigation would be necessary. If frogs or pond turtles are found, the provisions described below will be followed. As an alternative to conducting the above surveys, the following measures will be followed without the surveys.				
	<ul style="list-style-type: none"> A 50 ft construction buffer zone will be established between work sites and the storm water pond. The storm water impoundment will be separated from the work areas with “frog-proof” staked fabric silt fencing at the border of the 50 ft buffer zone. The fencing will essentially extend along all areas bordering this impoundment from other landfill areas. The purpose of the fence is to limit site access by construction equipment and limit accidental wildlife movement onto the work sites. The fence shall be buried to a depth of at least 4 inches and be a minimum of 3 feet tall. 	Applicant	The project applicant shall implement this measure within 30 days of confirmation of presence of red-legged frogs or pond turtles.	Marin County EHS and USFWS	Marin County EHS, CDFG, USFWS, as needed
	<ul style="list-style-type: none"> An employee education program shall be conducted to explain red-legged frog concerns to landfill employees and contractors. The program shall consist of a brief presentation by persons knowledgeable in species biology and legislative protection and shall include the following: a description of the species and its habitat needs; the occurrence of the species in the project area; status of the species and its protection under the Federal Endangered Species Act, including fines and penalties; and measures being taken to reduce impacts to the species during active landfill or construction operations near sensitive areas. 	Applicant	The project applicant shall implement this measure within 30 days of confirmation of presence of red-legged frogs or pond turtles, and annually thereafter.	Marin County EHS and USFWS	Marin County EHS, CDFG, USFWS, annually
	<ul style="list-style-type: none"> If a California red-legged frog is identified in the project operational zone, all work in the immediate area shall immediately cease and the USFWS shall be contacted immediately. 	Applicant	The project applicant shall implement this measure Immediately upon identification of red-legged frogs or pond turtles.	Marin County EHS and USFWS	Marin County EHS, CDFG, USFWS, as needed

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Biological Resources (cont.)					
<p>3.3.7: Removal or remodeling of structures could result in the loss of individuals of special status bat species. (LTS)</p>	<p>3.3.7: Prior to removal of the buildings, they will be inspected for the presence of bats during the spring or summer of the year preceding construction by a qualified wildlife biologist. Should any bats be found, a qualified wildlife biologist holding the appropriate permits will remove and relocate the bats.</p>	Applicant	The project applicant shall implement this measure during the spring or summer of the year preceding demolition, removal, or remodeling.	Marin County EHS, CDFG, USFWS	Marin County EHS, CDFG, USFWS, prior to removal or remodeling of buildings
Geology, Soils, and Seismicity					
<p>3.4.1: A seismic event on one of the active or potentially active Bay Area faults could generate seismic ground motion capable of causing failure of landfill slopes, displacement of perimeter levee slopes, damage to the LCRS, and/or damage to the proposed Area G liner. (LTS)</p>	<p>3.4.1b: Costs to remediate degradation of groundwater or surface water due to earthquake-related landfill and perimeter levee slope displacement, and/or breaching of the leachate collection and removal system will be financially assured by the applicant's Pollution Legal Liability Insurance or an applicant-sponsored trust fund for closure/post-closure activities.</p>	Applicant	The project applicant shall submit current documentation demonstrating acceptable funding levels for Financial Assurance Mechanism and current documentation of compliance with operating liability requirements prior to project approval.	Marin County EHS	Marin County EHS and CIWMB, periodically
	<p>3.4.1c: The applicant shall update the existing Post Earthquake Inspection and Corrective Action Plan to reflect current understanding of ground motion and seismicity in the Bay Area, to address changes to the landfill site resulting from the proposed project, and to reflect geotechnical analyses conducted for the proposed project. The understanding of earthquake probabilities, predicted ground motion, the attenuation of seismic waves, and other aspects of seismology has advanced since the facility's current plan was written in 1995, and the plan shall be revised to reflect this new understanding. Consistent with the current plan, the revised plan shall require immediate inspection and repair of earthquake damage to the landfill slopes, perimeter levees, groundwater wells, and the LCRS. The measures to repair earthquake damage as developed in the revised Post</p>	Applicant	The project applicant shall update and submit the specified Plan prior to project approval.	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, upon submission of updated Plan

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Geology, Soils, and Seismicity (cont.)					
3.4.1 (cont.)	Earthquake Inspection and Corrective Action Plan shall be submitted to the RWQCB for approval and become part of the project. The updated plan also will specify contingency measures in the event that Redwood Landfill is unusable or inaccessible as a result of a major earthquake in the vicinity.				
B-19 3.4.2: Static forces acting on native materials underlying the landfill or on the refuse and cover materials could cause displacement of landfill slopes and the perimeter levee, damage to the LCRS, or differential settlement. (LTS)	3.4.2a: The applicant has developed and will utilize criteria for monitoring the lateral and vertical deformation of Bay Mud during fill placement to provide advance warning of potential instability. If the geotechnical monitoring program indicates an increasing rate of deformation in the monitored slopes, filling activity will stop at impacted areas. The applicant also has developed and will utilize criterion for monitoring pore pressures following fill placement to confirm that sufficient consolidation is achieved prior to placement of the next fill lift (GeoSyntec, 1997b). GeoSyntec recommends staged placement of refuse due to the low strength of the underlying Bay Mud. Based upon results of analyses, GeoSyntec developed an observational approach to monitor the stability of the waste fill at the site (GeoSyntec, 1997b). Geotechnical monitoring consists of installing, monitoring, and collecting data from inclinometers and piezometers. Currently there are 10 inclinometers (numbered I-6 through I-15) and 14 piezometers (numbered P-7 through P-10, P-13 through P-17, P-20, P-21, P-23, and P-24) at the site. Based on the results of collected field data, modification to the fill-sequencing plan may be needed. The modification may consist of limiting refuse placement in certain areas to restrict slope deformations, or taking advantage of stronger foundation conditions by increasing fill in these areas. Such modifications shall not in any case alter the overall approved landfill capacity and any modification that includes changes to final grades shall be subject to approval from the LEA and/or RWQCB. GeoSyntec provides quantitative criteria to evaluate when the results of the inclinometers and piezometers indicate a slope failure may occur and filling should stop. These	Applicant	The project applicant shall implement this measure upon issuance of the revised SWFP.	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, periodically

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Geology, Soils, and Seismicity (cont.)					
3.4.2 (cont.)	<p>criteria, shown in Table 3.4-4, are based on the ratio of vertical and lateral deformations as provided by inclinometer readings and the rate of excess pore pressure generation for refuse placed as provided by piezometers.</p> <p>The monitoring and reporting that is included in the geotechnical monitoring program shall occur quarterly, unless the RWQCB or the LEA determines that more frequent monitoring is needed, and will follow the frequency indicated in the WDRs and/or the SWFP.</p>				
	<p>3.4.2b: The geotechnical monitoring program developed by GeoSyntec to monitor fill placement shall be conducted under supervision of a geotechnical engineer familiar with landfill operations and the behavior of the underlying Bay Mud. Recommendations of the supervising engineer and activities conducted as part of the monitoring plan shall be documented and included in periodic reports submitted to the County of Marin and, if appropriate, the RWQCB.</p>	Applicant	The project applicant shall implement this measure upon issuance of the revised SWFP.	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, periodically
	<p>3.4.2c: If refuse placement activities have stopped, due to indications of an increasing rate of deformation in the monitored slopes, as provided under Mitigation Measure 3.4.2a, and geotechnical monitoring continues to indicate exceedance of the threshold values, the supervising engineer shall implement one or more of the following measures to increase the factor of safety of the slope and be within the geotechnical monitoring criteria described above:</p> <ul style="list-style-type: none"> • remove refuse in critical areas to reduce the driving force of the slope; • construct a berm or install piles at the toe of the slope to provide resistance to slope movement; and/or • implement other engineering measure(s) to reduce the rate of deformation and prevent slope instability. <p>The appropriate measure or measures to be undertaken shall be assessed by the geotechnical engineer supervising the geotechnical monitoring program, as specified under 3.4.2b.</p>	Applicant	The project applicant shall implement this measure upon occurrence of conditions specified in the test of the mitigation measure.	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, as needed

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Geology, Soils, and Seismicity (cont.)					
3.4.2 (cont.)	<p>3.4.2d: Depending on findings of the geotechnical monitoring program, the fill sequencing plan shall be modified, as needed, to slow the rate of fill if Bay Mud strength is less than anticipated. The change in rate of fill shall be determined by quantitative threshold values that shall be incorporated into the geotechnical monitoring program. Any modifications to the fill sequencing plan shall be reported to the LEA and the RWQCB.</p>	Applicant	The project applicant shall implement this measure upon occurrence of specified conditions.	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, as needed
	<p>3.4.2e: The geotechnical monitoring program shall include monitoring the rate of Bay Mud consolidation due to the weight of the overlying waste by the following method. The elevation of the bottom of LCRS riser LS1 located in Area G shall be recorded immediately before, and then periodically after, each lift of waste is placed in Area G. The observed rate of settlement will be compared with the predicted rate of settlement. The supervision, reporting, and remedial action elements of Mitigation Measures 3.4.2b through 3.4.2d shall also apply to this consolidation monitoring.</p>	Applicant	The project applicant shall implement this measure upon occurrence of specified conditions.	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, as needed
3.4.3: Differential settlement of the refuse and the underlying Bay Mud, causing cracks in the levee or final cover and damage to the LCRS, could occur as additional refuse is placed on the landfill. (LTS)	<p>3.4.3: As part of the geotechnical monitoring program, the applicant will inspect quarterly for cracks in cover material and monitor pressure and volume changes in the landfill gas collection system. If measured settlement or deformation rates begin to increase, the inspection frequency will be increased to weekly. If monitoring reveals evidence of differential settlement, the following measures will be implemented, as needed:</p> <ul style="list-style-type: none"> • if settlement cracks are observed in the levee or final cover, the cracks shall be re-graded to seal them; and • if the LCRS or landfill gas collection system is damaged, pipes shall be repaired and/or replaced. 	Applicant	The project applicant shall implement this measure upon issuance of the revised SWFP and quarterly or more frequently (as described) thereafter.	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, periodically

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Geology, Soils, and Seismicity (cont.)					
<p>3.4.4: Precipitation contacting the landfill cover and other unpaved areas of the landfill could generate storm water runoff with sufficient velocity to dislodge and transport soil and sediment, resulting in the formation of erosion features that could damage portions of the landfill. (LTS)</p>	<p>3.4.4a: RLI will maintain and implement a Storm Water Pollution Prevention Plan (SWPPP) as required under their storm water discharge permit. The SWPPP will provide necessary Best Management Practices that shall be implemented at the site to control storm water runoff and reduce erosion.</p> <p>RLI prepared a SWPPP (RLI, 2003) for compliance with Provision C.2 of the General Industrial Storm Water Discharge Permit issued by the State Water Resources Control Board (SWRCB) and enforced by the Regional Water Quality Control Board (RWQCB), San Francisco Bay Region. In addition, the landfill was designed in accordance with CCR Title 27, §20365, which (as outlined above) specifies requirements and performance standards for precipitation and drainage control for active Class III landfills (GeoSyntec, 1998).</p>	Applicant	The project applicant has prepared an updated SWPPP in 2003, and shall continue to implement its provisions consistent with the specified regulations upon issuance of the revised SWFP.	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, periodically
	<p>3.4.4b: According to the applicant's SWPPP (RLI, 2000), sediment and erosion control features implemented include:</p> <ul style="list-style-type: none"> • placement of yard waste and grass seeds on slopes to promote vegetation of slopes; • top deck berms; • collection inlets; • downdrain pipes; • hay bales; • silt fences; and • directing storm water flows to the main storm water impoundment in the southern part of the site or a 1/2 acre pond in the western-central portion of the site for settlement of suspended sediments prior to discharging offsite. <p>RLI has stated that the SWPPP will be amended whenever a change in design, construction, operation, or maintenance occurs that has a significant potential for pollutants to discharge to the adjacent waterways.</p>	Applicant	<p>The project applicant shall implement this measure upon issuance of the revised SWFP.</p> <p>The project applicant shall amend the SWPPP as specified.</p>	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, periodic inspections; verification of amended SWPPP upon its submission

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Geology, Soils, and Seismicity (cont.)					
<p>3.4.4 (cont.)</p>	<p>3.4.4c: A final landfill closure and post-closure maintenance and monitoring plan, as per federal and state regulations, will need to be implemented (GeoSyntec, 1998). Preliminary closure and post-closure plans were provided in the JTD (GeoSyntec, 1998). Preliminary closure and post-closure maintenance activities proposed to reduce the effects of surface water runoff and erosion were detailed in the JTD's Sections 8 and 9 and included:</p> <ul style="list-style-type: none"> • Applicable final cover design to reduce infiltration and reduce surface water runoff velocity • Minimum grading requirements for the final cover • Environmental monitoring and control systems including final cover, surface water, and leachate management. • According to GeoSyntec (1998), reporting requirements and schedule will be further defined in Final Closure and Post-Closure Maintenance Plans. 	Applicant	The project applicant shall submit the final landfill closure and post-closure maintenance and monitoring plan by the deadline required in State regulations for submission of Final Closure and Post-Closure Maintenance Plans.	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, upon submission of Plans
	<p>3.4.4e: To ensure that raw yardwaste used for erosion control on landfill side slopes does not become a source for the spread of invasive weed species into the adjoining marsh, Redwood Landfill shall undertake an invasive weed monitoring and control program. At the least, this program will consist of the following:</p> <ol style="list-style-type: none"> 1. Prior to project approval, the applicant shall conduct a baseline survey of areas of the landfill where yardwaste has been applied for erosion control, and of the perimeter of the landfill, to determine the presence and extent of invasive weed species already established, if any; 2. As outlined in the plan, the applicant shall remove any invasive weeds that become established on the landfill property that could become established within the marsh. 3. The applicant shall continue to monitor annually for presence of invasive weeds, and continue removal as necessary; 4. In addition, Redwood Landfill could substitute composted or heat-sterilized yardwaste that does not contain viable weed seeds for raw yardwaste. 	Applicant	The project applicant shall implement the baseline survey prior to project approval and shall implement other provisions as specified in the text of the mitigation measure.	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, prior to issuance of revised SWFP and periodically thereafter

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Geology, Soils, and Seismicity (cont.)					
3.4.5: The existing surface drainage system may be inadequate for a Class III landfill. (Significant)	3.4.5: Implement Mitigation Measure 3.5.9 (i.e., the applicant shall produce and present to the RWQCB for approval a report demonstrating that precipitation and drainage control facilities meet Title 27 requirements, and provide a copy of the report to the LEA).	See referenced mitigation measure.			
3.4.7: If not properly designed, the proposed Leachate Collection and Recovery System (LCRS) could allow leachate to migrate off-site and potentially contaminate off-site groundwater and surface water. (LTS)	<p>3.4.7a: According to the applicant, leachate is managed at the existing facility in accordance with the RWQCB-approved Leachate Management Plan prepared by CH2MHill (1992) (GeoSyntec, 1998). The Joint Technical Document (GeoSyntec, 1998) description of existing leachate management includes the following activities to minimize the production of leachate and promote the reuse of collected leachate. Although not explicitly stated in Chapter 6 (Proposed Facility Modifications) of the Joint Technical document, this analysis assumes these practices will be continued.</p> <ul style="list-style-type: none"> • placement of well-compacted, vegetation-free intermediate cover (defined in 27 CCR §20164 as cover material placed on all fill surfaces where additional cells are not to be constructed for 180 days or more, to control vectors, fires, odors, blowing litter, scavenging, and drainage) over the refuse; • grading of daily, intermediate, and final cover to minimum 3 percent slopes to promote surface-water runoff from the landfill; • installation and continuous operation of a perimeter LCRS around the landfill; • placement of final cover in phases throughout the life of the landfill as final grades are reached; and • use of collected leachate for dust control on access roads and intermediate covers as approved by regulatory agencies. 	Applicant	The project applicant has already implemented this measure as part of existing operations and shall continue to implement this measure upon issuance of the revised SWFP.	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, periodic inspections

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Geology, Soils, and Seismicity (cont.)					
3.4.7 (cont.)	<p>3.4.7b: To address the issue of leachate leakage from the leachate pond, RLI prepared a Leachate Facilities Leak or Spill Contingency Plan (RLI, 1995b). RLI site operations personnel routinely monitor the leachate pond in association with daily activities and the site operations supervisor performs weekly formal monitoring/inspection.</p>	Applicant	The project applicant prepared a Leachate Facilities Leak and Spill Contingency Plan in 1995 and shall continue to implement specified monitoring and inspection upon issuance of the revised SWFP, consistent with Measure 3.4.7f requirements to update the Plan.	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, periodic inspections
	<p>3.4.7c: Following a significant seismic or rare rainfall event, RLI will initiate an immediate inspection of the leachate pond containment facilities as part of their contingency measures. If any noticeable damage is observed during these inspections, landfill or contracted equipment will be used to repair and control all minor leaks. If a major leak is evident, Redwood will take the following immediate measures to ensure control of the leachate release (RLI, 1995b):</p> <ul style="list-style-type: none"> • construction of a dike using available soil; • construction of temporary berms; • excavation of additional channels; • construction of a temporary leachate storage pond in the Oxbow area (the Leachate Facilities Leak or Spill Contingency Plan identifies Fields 2 and 3 and the narrow strip between the eastern edge of the existing leachate pond and Field 5 as the location of the contingent leachate pond); and • pump water into onsite ponds as emergency disposal of “clean” leachate in heavy rainfall. 	Applicant	The project applicant shall implement this measure as needed, as specified in the text of this mitigation measure.	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, as needed
	<p>3.4.7d: If groundwater monitoring performed as part of the self-monitoring program detects leachate outside the perimeter levee, RLI shall follow Title 27 CCR regulations (e.g., Section 20385 et seq.) and work with the RWQCB in the development of an Evaluation Monitoring Plan and/or an Engineering Feasibility Study to determine the appropriate</p>	Applicant	The project applicant shall implement this measure as specified upon issuance of revised SWFP. Any corrective action needed as	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, periodic inspections and as needed

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Geology, Soils, and Seismicity (cont.)					
<p>3.4.7 (cont.)</p>	<p>site specific methods for evaluating the scope of a release, its mitigation, and subsequent monitoring program or corrective action program pursuant to 27 CCR Section 20385 and Section 20430. The following contingency measures may be appropriate and would be implemented if needed and in coordination with RWQCB requirements:</p> <ul style="list-style-type: none"> • Installation of a geosynthetic membrane across the length of a trench constructed in the targeted zone along the site perimeter to contain the release. The geosynthetic barrier would reduce the rate of off-site migration of the release while also reducing groundwater inflow to the collection system. • Collection of the leachate by installing a French drain in the trench. A sump in the trench would be pumped to prevent hydraulic head buildup up-gradient of the containment barrier. <p>Mitigation monitoring locations in Bay Mud, refuse, and surface water will determine the necessity for implementing the mitigation measures outlined for this impact (i.e., increase in leachate extraction rate, contingency measures for capture of leachate migration). Financial assurance for the system to capture and/or contain leachate release beyond the perimeter levee would be provided for by applicant insurance.</p>		<p>indicated by the monitoring shall be implemented as required. The applicant shall implement the measures as specified in 27 CCR 20385 et seq.</p>		
	<p>3.4.7e: The applicant has completed installation of the LCRS at Areas E and F, thus completing the perimeter LCRS. To further limit the potential for significant leachate accumulation in the landfill, RLI shall undertake a leachate pumping program in coordination with the RWQCB whereby leachate is initially extracted from up to 13 existing landfill gas wells in the interior of the landfill. The pumping shall be selectively monitored for pumping times, rates and recovery to determine well productivity and effectiveness for use in future additions to the pumping program. Chemistry tests on pumped liquids will be selectively conducted to determine the source of gas well liquid in order to differentiate between leachate and groundwater.</p>	<p>Applicant</p>	<p>The applicant has completed installation of the perimeter LCRS as indicated. The project applicant has initiated the program of pumping from the interior of the landfill and shall continue to implement this measure as specified, upon issuance of the revised SWFP.</p>	<p>RWQCB and Marin County EHS</p>	<p>RWQCB and Marin County EHS, CIWMB; Efficiencies to be demonstrated within 5 years</p>

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Geology, Soils, and Seismicity (cont.)					
<p>3.4.7 (cont.)</p>	<p>When additional gas collection wells are constructed for the purpose of LFG collection, they shall be installed to the base of the landfill or to sea level (or elevation +5 feet MSL), whichever is higher. If appropriate and sufficient leachate is present, the gas wells shall be equipped with leachate extraction pumps. The number and spacing of leachate extraction wells shall be evaluated each year until a consistent decrease in leachate volume can be empirically verified and is sufficient to achieve the long-term objective of removing leachate.</p> <p>Empirical verification of initial leachate volume reduction and verification that an appropriate number of wells and pumps have been installed shall be provided to the RWQCB and shall include the satisfaction of the following performance criteria:</p> <ol style="list-style-type: none"> 1) Demonstrate, using a refined water balance model approved by the RWQCB, that the leachate extraction rate exceeds the leachate generation rate; and 2) Demonstrate a measurable and quantifiable decrease in leachate volume within the landfill using leachate elevation measurements from either monitoring wells or landfill gas extraction wells located in the interior of the landfill. <p>Once it has been established that the leachate collection and removal system size and pumping rate is sufficient to reduce the leachate volume, the system shall be maintained and operated such that leachate volume is steadily reduced. Leachate levels shall be reduced to a sustainable level over a period of 5 years. The achievement of the sustainable level shall be empirically verified by the achievement of at least one of the following three performance criteria:</p> <ol style="list-style-type: none"> 1) Demonstrate that the piezometric head in the basal (laterally continuous) leachate is no greater than 1 ft MSL; 2) Demonstrate that the extracted leachate is chemically indistinguishable from the groundwater in the vicinity of the landfill; or 				

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Geology, Soils, and Seismicity (cont.)					
3.4.7 (cont.)	3) Demonstrate that an inward gradient has been achieved such that leachate flows from the perimeter of the landfill towards the center of the landfill The performance criteria evaluations shall account for seasonal fluctuations and be capable of demonstrating performance achievement on a year-to-year basis.				
	<p>3.4.7f: RLI shall update its Leachate Facilities Leak or Spill Contingency Plan to accommodate proposed project changes. At a minimum, the revised plan shall address the following issues:</p> <p>(1) Areas in the Oxbow shown in the existing plan (RLI, 1995b) as the location of the contingent leachate pond (Fields 2 and 3 and the narrow strip between the eastern edge of the existing leachate pond and Field 5) are proposed under the project to be used for composting and co-composting, and Fields 3, 4, and 5 are proposed under the project to be used for composting, co-composting, and are “also available for Class II leachate impoundments.” The revised leachate contingency plan shall identify which area or areas will be used for contingent leachate storage or, alternatively, explain/clarify how composting operations and emergency leachate storage will be accommodated in the same area. The updated leachate contingency plan shall demonstrate that the compost operation shall be isolated from and not affected by use of any area as a contingency/emergency leachate impoundment. (Refer to Mitigation Measures 3.5.5b, 3.5.5c, and 3.5.4b regarding leachate potentially generated at these new composting areas.)</p> <p>(2) Because an additional leachate storage/evaporation pond that, according to the 1995 Leachate Facilities Leak and Spill Contingency Plan (RLI, 1995b), was to have been constructed in the summer of 1996 to provide additional pond storage capacity, has not been constructed, yet additional capacity has been shown to be needed to</p>	Applicant	The applicant shall prepare and submit the updated Leachate Facilities Leak or Spill Contingency Plan to the Marin EHS and RWQCB, prior to project approval and complete all necessary improvements as specified.	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, upon submission of updated Plan

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Geology, Soils, and Seismicity (cont.)					
3.4.7 (cont.)	<p>prevent overflow during especially wet months, the revised plan shall indicate RLI's plans to provide additional leachate storage capacity. To address revisions to the estimates of the depth and capacity of the existing pond reflected in each of the last three annual monitoring reports, the plan shall also include an updated calculation of the capacity of the existing pond based on a survey of the pond area and depth, conducted by a licensed surveyor.</p> <p>(3) With regard to potential overtopping of the leachate pond during periods of extreme rainfall, the 1995 plan indicated that pumping directly into San Antonio Creek, if leachate water was confirmed to be clean, was the most effective contingency measure to quickly evacuate the leachate pond. The updated leachate contingency plans shall not rely on such a measure for leak or spill contingencies, but shall include other contingency measures as discussed under item (1), above (i.e., identification of the location of on-site contingent impoundments), that prevent the off-site release of leachate. Any such on-site impoundment(s) designated to receive leachate shall be constructed to meet applicable state standards for leachate impoundments.</p> <p>(4) The updated Leachate Facilities Leak or Spill Contingency Plan shall specify that the landfill shall notify the LEA and the RWQCB immediately upon detection of a leachate leak or spill.</p> <p>The updated Leachate Facilities Leak or Spill Contingency Plan shall be submitted to the LEA and the RWQCB prior to project approval. Approval of use of Oxbow areas for composting, other than Field 2, where the applicant commenced composting on a new pad in 2005, shall be conditioned upon approval of the updated leachate contingency plan, in addition to other relevant approvals required as mitigations in this report. All necessary improvements identified in the updated Leachate Facilities Leak or Spill Contingency Plan, including but not limited</p>				

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Geology, Soils, and Seismicity (cont.)					
3.4.7 (cont.)	to the construction of additional Class II leachate impoundments, measures to isolate the composting facility from leachate impoundments, and any other facilities required to ensure adequate leachate storage capacity under both normal and extreme weather circumstances, shall be completed within one year of issuance of the revised Solid Waste Facility Permit. Construction of such facilities will be subject to Construction Quality Assurance monitoring and reporting. Upon completion of all facilities, the applicant shall submit a report of completion to the RWQCB and the LEA.				
	<p>3.4.7g: RLI shall implement a hydraulic gradient monitoring program consistent with RWQCB-issued WDRs. RLI shall compile monitoring data according to the requirements of the WDRs and notify the LEA and RWQCB within 14 days in the event that monitoring indicates a gradient away from the trench. If monitoring indicates a consistent gradient toward the trench, monitoring results shall be reported as part of the facility's annual Leachate Management and Monitoring Report. If monitoring reveals evidence of a gradient away from the trench, RLI shall evaluate the potential cause(s) of the reversed gradient and implement measures to remediate the problem and provide a consistent gradient toward the LCRS trench. RLI and its geotechnical consultant, GeoSyntec, have proposed the following remedial measures if monitoring indicates a gradient away from the trench (RLI and GeoSyntec, 2006). Remediation measures may include, but would not be limited to, the following:</p> <ul style="list-style-type: none"> • Grading and surface water control features shall be observed to assess the possibility that surface water infiltration has occurred. RLI shall implement additional grading, piping, or other surface water control features if deemed necessary. • Pump inlets shall be lowered at the two nearest sump locations to increase the gradient and associated discharge within the trench. 	Applicant	The project applicant shall implement this measure in accordance with the timelines provided the revised WDR for the site.	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB as specified

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Geology, Soils, and Seismicity (cont.)					
B-31 3.4.7 (cont.)	<ul style="list-style-type: none"> • If the two preceding measures do not result in resumption of a demonstrated inward gradient (toward the LCRS trench), RLI shall install and connect to the existing system an additional trench sump and discharge system. • If none of the above measures result in a resumption of demonstrated inward gradient toward the LCRS trench, RLI shall seek approval from the RWQCB to address the situation through an engineered solution such as deepening the extraction trench or constructing a subsurface cut-off wall. <p>In addition, if an outward gradient is detected, RLI shall seek direction from the RWQCB to determine whether additional water quality or water level monitoring locations or methods are required.</p>				
	<p>3.4.7h: Equipment capable of maintaining fluids levels in the LCRS to ensure its continuing effectiveness during power outages shall be maintained at the landfill site. To the extent backup generators and/or portable pumps are used, adequate fuel to power this equipment shall be maintained at the site consistent with all applicable regulations and permit requirements.</p>	Applicant	The project applicant shall implement this measure prior to project approval.	Marin County EHS, RWQCB	Marin County EHS, RWQCB, periodically
	<p>3.4.7i: The applicant shall, through historical research and site investigations, map the location and dimensions (including depth) of all trench fills located at the site. The applicant shall undertake any necessary subsurface investigations to ascertain whether any trench fills were excavated into the Pleistocene Alluvium underlying the Bay Mud. If not, no further action is required. If so, the applicant shall develop and implement a plan to correct this condition. The plan shall be reviewed and approved by the RWQCB. The plan may entail: a. installation of leachate extraction wells at sufficient frequency and depth within the old trenches to prevent downward migration of leachate into the underlying alluvium; b. excavation of all waste from the trench and replacement with a liner that meets current regulatory standards; or c. another engineered solution.</p>	Applicant	The project applicant shall conduct the initial site investigation and submit a report summarizing the investigation to the Marin County EHS and RWQCB within two years of issuance of revised SWFP. If corrective action is required, the applicant shall develop and submit the specified corrective action plan to the	Marin County EHS, RWQCB	Marin County EHS, RWQCB

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Geology, Soils, and Seismicity (cont.)					
3.4.7 (cont.)			RWQCB consistent with provisions of state regulations and implement the plan upon RWQCB approval.		
	<p>3.4.7j: After completion of the study required by Mitigation Measure 3.4.7i, the RWQCB shall make a determination as to whether an improved program to monitor groundwater within the Pleistocene Alluvium that underlies the Bay Mud is warranted to ensure that localized inconsistencies in the hydrogeologic system are considered, and that monitoring data characterize the quality of groundwater under both reference conditions and that which could be contaminated by leachate from the landfill. The applicant shall consult with the RWQCB regarding the need to, locate and install additional wells, screened in the alluvium, to augment the existing wells (currently there are 4 wells in the alluvium – P-10, P-6B, P-5B, MWH-25R). Since the gradient within the alluvium is tidally influenced, the alluvial well network will be evaluated to define upgradient and downgradient locations (with consideration of tidal influence) in order to properly locate wells. Should additional monitoring be required by RWQCB, a sampling and analysis plan, including schedule, shall be developed in consultation with the RWQCB, and monitoring results will be added to the facility’s semi-annual and annual monitoring reports to the RWQCB. If monitoring reveals that contamination is occurring in the alluvium, the applicant shall develop a remediation plan. The remediation plan shall be reviewed and approved by the RWQCB. Remediation may entail pump and treat methods, treat-in-place methods, or other methods approved by the RWQCB. Treatment shall continue as long as contamination is present or until a water quality objective established by the RWQCB is met.</p>	Applicant	<p>The project applicant shall implement the groundwater monitoring requirements of this measure within one year of issuance of revised WDR.</p> <p>If monitoring indicates that corrective action is required, the applicant shall develop a corrective action plan and submit it to the RWQCB as specified in state regulations. The applicant shall implement corrective actions upon RWQCB approval.</p>	Marin County EHS, RWQCB	Marin County EHS, RWQCB

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Geology, Soils, and Seismicity (cont.)					
<p>3.4.7 (cont.)</p>	<p>3.4.7k: Following closure of the landfill, the applicant shall continue to operate and maintain the LCRS, including extraction of fluid from the LCRS trench and from interior wells. To demonstrate the effectiveness of the LCRS post-closure, the applicant shall verify that one of the following conditions is met:</p> <ol style="list-style-type: none"> 1) Demonstrate that the piezometric head in the basal (laterally continuous) leachate is no greater than 1 ft MSL; or 2) Demonstrate that the extracted leachate is chemically indistinguishable from the groundwater in the vicinity of the landfill. <p>Until it can be demonstrated that condition 2 is met consistently over a 3-year period, the applicant shall continue to operate and maintain the LCRS, and to maintain and monitor the sand channel and Pleistocene Alluvium monitoring wells at the site. It may be necessary to continue to operate and maintain the LCRS, and to monitor wells beyond the 30-year post-closure period specified in the JTD; the applicant shall prepare a revised Preliminary Post-Closure Maintenance Plan that plans for and provides financial assurances for maintenance of these environmental control and monitoring systems. Financial assurances shall meet the requirements of California Code of Regulations Title 27, Chapter 6, and shall be sufficient for the entire cost of closure and post-closure maintenance.</p>	Applicant	The applicant shall implement this measure during the post-closure period as specified.	Marin County EHS, RWQCB	Marin County EHS, CIWMB, and RWQCB, as specified
<p>3.4.8: The increased generation of leachate that would result from the project could surpass the capacity of the LCRS, resulting in the off-site release of leachate and the contamination of off-site groundwater. (LTS)</p>	<p>3.4.8a: The applicant proposes to use leachate that tests “clean,” according to standards established by the RWQCB, for composting quench water, if approved.</p>	Applicant	The applicant shall implement this measure only upon issuance of revised WDRs specifically approving this practice.	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, approval prior to issuance of revised SWFP and WDRs; periodic inspections thereafter

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Geology, Soils, and Seismicity (cont.)					
<p>3.4.8 (cont.)</p>	<p>3.4.8c: RLI shall update their Leachate Management Plan so that, at a minimum, a single Leachate Management Plan serves as the current plan for the landfill. The plan shall be consistent with all aspects of the applicant’s proposed project and with mitigation measures identified in this SEIR, including the currently-proposed LCRS design; management practices to limit leachate production and manage the leachate that is generated; and the most current leachate flow rates based on the proposed LCRS design, the most recent and comprehensive leachate generation studies, and empirical data of actual leachate flow rates since installation of the LCRS. The Plan shall demonstrate that the LCRS components and leachate impoundment(s) provide adequate capacity as required under 27 CCR §20340 (i.e., twice the maximum daily volume anticipated), including adequate conveyance and storage capacity during the wettest months of the year. (The MET/Sanifill analysis [1995a] indicated that seasonal flow rates may be as much as 4 to 5 times the calculated values for long-term and short-term flows, for one or two months each year.)</p> <p>The updated plan shall address and remedy the current situation in which a 1992 study and plan is cited for leachate management practices and the LCRS design (but not for the leachate flow rates it presents), a 1995 study is cited for leachate flow rates, although these rates are inconsistent with reported actual use, and estimates of the quantity of leachate expected to be utilized or consumed by various landfill facilities and activities are not provided in a discussion of system capacity, if at all. In demonstrating that adequate leachate capacity exists to prevent the off-site discharge of leachate, the updated plan shall include a complete water balance model that shows quantitatively (using both actual flow rates from operation of the LCRS to date, as well as estimated projections) the amount of leachate that is expected to be generated and how it is managed to prevent any off-site discharges. The water balance model shall include any elements that are expected by the applicant to be considered by permitting agencies in their assessment of the leachate</p>	Applicant	The project applicant shall submit the updated Leachate Management Plan prior to project approval. The project applicant shall review the Plan annually and revise and update it as specified; results of the annual review and any proposed revisions shall be submitted to the RWQCB for approval upon completion of the review. The project applicant shall concurrently submit a copy of the RWQCB submittal to the Marin EHS.	RWQCB, Marin County EHS	RWQCB, Marin County EHS, CIWMB, upon submission of updated Plan and prior to project approval; Annual updates to the Leachate Management Plan; Monitoring results submitted quarterly to RWQCB and Marin County EHS

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Geology, Soils, and Seismicity (cont.)					
<p>3.4.8 (cont.)</p>	<p>system's capacity (e.g., the anticipated quantities of leachate to be used for dust control and quench water [if approved], and the basis for such estimates, if these are to be considered in the assessment of system capacity).</p> <p>The Leachate Management Plan shall incorporate elements of the report required by Mitigation Measure 3.5.4a (concerning composting contact water) to ensure that the plan also addresses leachate generated by composting operations.</p> <p>The updated Leachate Management Plan shall be submitted to the LEA and RWQCB prior to project approval.</p> <p>RLI shall review annually and if necessary revise the updated Leachate Management Plan, including the water balance model, taking into consideration monitoring results that RLI collects and presents quarterly to the RWQCB and the LEA. These monitoring data shall include the amount of leachate extracted from the landfill, the elevation of leachate within monitoring and extraction wells, and the disposition of collected leachate. RLI shall present the results of the annual review and any revisions to the RWQCB for approval, with a copy sent to the LEA.</p> <p>In addition, the implementation of Mitigation Measure 3.4.7f, updating the landfill's Leachate Facilities Leak and Spill Contingency Plan, will help ensure that adequate capacity exists in the event of a leak in the existing pond.</p>				
<p>3.4.9: Proposed modifications to the final cover design could adversely impact landfill stability or result in the degradation of groundwater or surface water quality. (LTS)</p>	<p>3.4.9a: To ensure the adequacy of cover materials to resist sliding (failure) under static or dynamic conditions, RLI's geotechnical consultants established the degree of shear strength (resistance to shear, or deformation in a direction parallel to planes of contact) any material used for the cover would need to possess (GeoSyntec, 1998). The required shear strength of a cover material (expressed as the angle of friction, where the lower the angle of friction the weaker is the material and vice versa) varies depending on whether or not seepage would be present, the cohesion of the materials within each layer, and the degree of adhesion between layers in contact. Materials used for the final cover would require the following specified degrees of shear strength.</p>	Applicant	The project applicant shall implement this measure following issuance of a revised SWFP.	Marin County EHS, RWQCB	Marin County EHS, CIWMB, and RWQCB, during and after construction

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Geology, Soils, and Seismicity (cont.)					
<p>3.4.9 (cont.)</p>	<p>To maintain a static factor of safety against sliding, assuming no seepage, each of the cover materials must have shear strengths of friction angle ϕ greater than 34°, if no cohesion is present, or friction angle ϕ greater than 9°, if 50 lb/ft^2 of cohesion is present. Intermediate values of friction angle ϕ are required for cohesion between 0 and 50 lb/ft^2. Each material interface must have similar shear strength requirements for friction angle δ and adhesion. If seepage is encountered through the entire thickness of the vegetative cover, the required shear strengths become more restrictive. Without cohesion/adhesion, friction angles in excess of 49° would be required, while 50 lb/ft^2 of cohesion/adhesion reduces the requirement to 3°.</p> <p>Because it is unlikely that a 49° friction angle could be achieved with conventional cover materials, only materials that have sufficient cohesion and interfaces with sufficient adhesion will be used. The drainage layer will be properly designed to prevent seepage forces through the entire depth of the vegetative layer and will reduce the shear strength requirement for the long term seepage condition.</p> <p>To prevent permanent seismic displacement in excess of 12 inches, the cover shear strength friction angles must exceed 34° in the absence of cohesion/adhesion and must exceed 9° when coupled with 50 lb/ft^2 cohesion/ adhesion (GeoSyntec, 1998).</p>				
	<p>3.4.9b: Preconstruction testing will be conducted to ensure that the minimum material strength is achieved.</p>	Applicant	The project applicant shall implement this measure and submit test results to the Marin EHS and RWQCB in conjunction with related cover material tests as indicated for Measure 3.4.9b.	Marin County EHS, RWQCB	Marin County EHS, CIWMB, and RWQCB, to review results of testing prior to construction

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Geology, Soils, and Seismicity (cont.)					
<p>3.4.11: The proposed management of the buried waste in the southwest corner could result in soil or groundwater contamination. (LTS)</p>	<p>3.4.11a: Prior to landfill closure, the applicant shall prepare and submit for approval to the RWQCB and the LEA a final Closure and Post-Closure Maintenance plan for this waste unit as required under Title 27, Chapter 3, Subchapter 5, Closure and Post Closure Maintenance. The Closure and Post-Closure plan shall demonstrate that the proposed alternative final cover design and existing base underlying the waste unit, in conjunction with post-closure monitoring, will continue to isolate the waste in the 11.5-acre unit and prevent the degradation of groundwater.</p> <p>The closure and post-closure plan shall demonstrate that the proposed alternative final cover will continue to isolate the waste in this unit from precipitation and irrigation waters at least as well as would a final cover built in accordance with applicable prescriptive standards. This measure is consistent with Title 27 § 21090, which provides that the RWQCB can allow any alternative final cover design that it finds will continue to isolate the waste in the unit from precipitation and irrigation waters at least as well as would a final cover built in accordance with applicable prescriptive standards.</p> <p>The closure and post-closure plan also shall demonstrate that the proposed alternative liner (i.e., the materials underlying the waste unit) will meet the performance criteria for containing waste and preventing the degradation of waters of the state required under Title 27 Section 20310. The description of the proposed alternative liner will include information on the geologic unit(s) (including thicknesses thereof) underlying the refuse across the 11.5-acre unit. Technical data from extensive groundwater monitoring and Hydrologic Evaluation of Landfill Performance (HELP) model results may be necessary to demonstrate to the RWQCB that no significant groundwater impact will result from the proposed alternative final cover and liner.</p> <p>Pursuant to CEQA Guidelines, the revised Closure and Post-Closure Maintenance Plan may be subject to additional review under CEQA prior to approval.</p>	Applicant	The project applicant shall prepare and submit the specified plan according to the regulatory timeline for the landfill's Final Closure and Post-closure Maintenance Plan, prior to landfill closure.	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, prior to landfill closure

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Geology, Soils, and Seismicity (cont.)					
3.4.11 (cont.)	<p>3.4.11b: The applicant shall continue to implement the existing groundwater monitoring program for this area. If leachate is detected by the monitoring program, the applicant will implement appropriate measures to prevent the off-site release of such leachate. Such measures may include installation of an extraction well, pumping the detected leachate plume at a rate sufficient to prevent its release off-site, and disposing of the collected leachate at the 11-acre leachate pond. (Because this 11.5-acre waste unit does not have an LCRS trench system, remedial actions here would necessarily be different from those identified for the permitted landfill footprint under 3.4.7d, above.)</p>	Applicant	The project applicant shall continue to implement this measure upon issuance of a revised SWRP.	Marin County EHS and RWQCB	Marin County EHS, CIWMB, RWQCB, ongoing
	<p>3.4.11c: If the RWQCB or LEA determine that the applicant's revised Closure and Post-Closure Maintenance Plan for this waste unit is inadequate to protect groundwater quality, then the applicant shall excavate the refuse as previously proposed and dispose of it within the permitted landfill footprint. The estimated 65,000 cubic yards of refuse is equivalent to approximately 5 percent of the air space consumed annually, assuming the waste acceptance rate proposed under the project, or about 15 days' worth of landfill space (refer to Appendix A, Site Life Calculations).</p>	Applicant	The applicant shall implement this measure upon the determination by the RWQCB or Marin County EHS following the agencies' review of Closure Post-Closure Maintenance Plan. If required, the project applicant shall complete the excavation within two years of the determination.	Marin County EHS and RWQCB	Marin County EHS, CIWMB, RWQCB, upon completion of review of Closure Post-Closure Maintenance Plan
	<p>3.4.11d: Without mitigation, excavation of 65,000 cubic yards of refuse would have adverse impacts on air quality due to dust and equipment emissions. If Mitigation Measure 3.4.11c is required, it shall be implemented in conjunction with Mitigation Measures 3.2.1a-c, identified in this EIR, to reduce impacts of construction activities on air quality, and in conjunction with Mitigation Measures 3.2.2a-e, to reduce impacts associated with equipment and truck emissions of criteria air pollutants.</p>	See referenced mitigation measures.			

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Geology, Soils, and Seismicity (cont.)					
<p>3.4.12: Due to the increase of load pressure by waste placement and the decrease of pore water velocity during Bay Mud consolidation, a leachate mound could be created that will create sufficient uplift pressure on the landfill to trigger slope failure. (LTS)\</p>	<p>3.4.12a: As described under Impacts 3.4.6 and 3.4.7, the applicant has installed a LCRS around the perimeter of the landfill footprint and will continue to manage leachate in accordance with the facility's RWQCB-approved Leachate Management Plan. The LCRS includes a gravel-filled trench that is lined with a collection pipe and graded to sumps that are spaced along the trench alignment. The sumps are fitted with automatic level control pumping systems that are set to maintain an elevation of -1 feet MSL (or as otherwise determined by the RWQCB), to promote the flow of leachate and outboard groundwater toward the LCRS trench (GeoSyntec, 1998). The LCRS will help to prevent leachate mounding within the landfill.</p>	Applicant	The project applicant has completed installation of the LCRS and is implementing specified provisions. The project applicant shall continue to implement this measure upon issuance of the revised SWFP.	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, periodically
	<p>3.4.12b: If quarterly measurements of leachate elevations in leachate/landfill gas extraction wells indicate that buildup is occurring, the results of geotechnical monitoring required under Impact 3.4.2 shall be evaluated to assess the effect of the leachate mound on slope stability. The assessment shall be conducted under the supervision of the geotechnical engineer familiar with landfill operations and the behavior of the underlying Bay Mud, as specified in Mitigation Measure 3.4.2b. If the geotechnical assessment determines that the leachate elevation needs to be reduced to maintain landfill stability, RLI will immediately undertake steps to reduce the height of the leachate mound. Measures that could be taken to reduce the height of the mound include (1) increasing the rate of leachate removal by adjusting the settings on the automatic pumps in the perimeter sumps and in the landfill gas/leachate extraction wells to commence operation at lower leachate levels, and (2) implementation of Mitigation Measure 3.4.7e.</p>	Applicant	The project applicant shall implement monitoring as specified for Measure 3.4.2 and shall implement measures to reduce leachate levels immediately upon detection of a problem as specified.	Marin County EHS and RWQCB	Marin County EHS, CIWMB, and RWQCB, as needed

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Hydrology and Water Quality					
<p>3.5.1: Displacement of landfill slopes, the perimeter levee, or damage to the LCRS due to static or dynamic forces could allow leachate or refuse to reach and potentially contaminate surrounding surface water bodies, block adjacent drainages, or allow surrounding floodwaters to flood the landfill. (LTS)</p>	<p>3.5.1a: The applicant shall continue to implement Measures 3.4.1b (regarding RLI's Post Earthquake Inspection and Corrective Action Plan¹ and ensuring that costs to remediate groundwater or surface water degradation resulting from earthquake-caused damage to landfill or levee slopes or the LCRS are financially assured), and Measure 3.4.2a (regarding utilization of criteria developed by Geosyntec for monitoring the lateral and vertical deformation of Bay Mud to provide advance warning or potential landfill instability).</p>	See referenced mitigation measures.			
	<p>3.5.1b: The applicant shall continue to implement Measures 3.4.1c (i.e., update the facility's Post Earthquake Inspection and Corrective Action Plan to address changes resulting from the project), and Measures 3.4.2b (regarding the conduct and reporting of the geotechnical monitoring program), 3.4.2c (regarding actions to take in response to indications of an increasing rate of deformation in the monitored slopes), 3.4.2d (regarding the modification of the fill sequencing plan, as needed, if the strength of the Bay Mud is less than anticipated), and Measure 3.4.3 (regarding regular inspection for cracks in cover material and regular monitoring of pressure and volume changes in the landfill gas collection system).</p>	See referenced mitigation measures.			
<p>3.5.2: The off-site migration of landfill leachate could contaminate nearby surface waters. (LTS)</p>	<p>3.5.2a: Implement Mitigation Measures 3.4.7a (regarding the continued management of leachate in accordance with the landfill's RWQCB-approved leachate management plan), 3.4.7b (regarding RLI's preparation of a leachate facilities leak and spill contingency plan and regular monitoring of the leachate pond), 3.4.7c (regarding the immediate inspection of leachate pond containment facilities after any significant seismic or rainfall event, and actions to take if a major leak is evident), and 3.4.7d (regarding evaluation and development of a monitoring and corrective action program if the groundwater monitoring program detects leachate outside the perimeter levee).</p>	See referenced mitigation measures.			

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¹ The Post Earthquake Inspection and Corrective Action Plan was completed and provided to the LEA in October, 2008 (Geosyntec, 2008).

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Hydrology and Water Quality (cont.)					
3.5.2 (cont.)	3.5.2b: Implement Mitigation Measure 3.4.7e (regarding the installation of a LCRS at Areas E and F and implementation of a pumping program in the interior of the landfill), Mitigation Measure 3.5.5b (to ensure that composting occurs on appropriate pads that are sufficiently impermeable), Mitigation Measure 3.5.4b (to ensure that contact water [leachate] from the proposed composting, co-composting, and sludge processing areas continues to be managed separately from non-contact runoff), and Mitigation Measure 3.4.7f (regarding the landfill's Leachate Facilities Leak or Spill Contingency Plan).	See referenced mitigation measures.			
<p>3.5.4: Insufficient capacity to contain contact-water runoff from new areas proposed to be used for composting and co-composting would result in the off-site release of contact water and the potential degradation of nearby surface waters. (LTS)</p>	<p>3.5.4a: The applicant shall produce and present to the LEA and RWQCB for approval a report demonstrating that sufficient capacity exists to contain contact water <u>wastewater</u> from areas outside the landfill footprint, proposed to be used for composting, co-composting and sludge processing, that would result from a 100-year storm event. Approval of use of these areas for composting, co-composting, and sludge processing shall be conditioned upon submittal and approval that this standard has been met.</p> <p>Because the amount of contact water <u>wastewater</u> generated at Redwood Landfill would increase as a result of the expanded composting area, RLI will have to demonstrate to the satisfaction of the LEA and the RWQCB where, within the landfill boundaries, contact water <u>wastewater</u> from this area would be directed, and that such contact water <u>wastewater</u> impoundment will have sufficient capacity to accommodate run-off from a 100-year storm event. Storage capacity shall be adequate to contain contact water <u>wastewater</u> generated from a storm occurring mid- or late-season, when the impoundment could have water in it from previous storms.</p>	Applicant	The project applicant shall implement this measure as specified in Mitigation Measure 3.4.7f.	Marin County EHS, RWQCB	Marin County EHS and RWQCB, prior to issuance of revised permits; continuing periodic inspections of drainage facilities
	<p>3.5.4b: To ensure storm water discharges do not contaminate off-site receiving waters, all contact water <u>wastewater</u> shall continue to be managed separately from non-contact storm water and retained on site. Storm water <u>and wastewater</u> management shall include the following measures:</p> <ol style="list-style-type: none"> Composting operations areas outside of the landfill footprint, including areas used for active composting, 	Applicant	The project applicant shall continue to implement this measure upon issuance of a revised SWRP.	Marin County EHS, RWQCB	Marin County EHS and RWQCB

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Hydrology and Water Quality (cont.)					
3.5.4 (cont.)	<p>stockpiling of feedstock, and other processing, shall be fitted with contact water wastewater collection systems, such as site grading and perimeter drain systems, that prevent pooling of liquids, that collect any free liquid, including leachate, excess quench water, and other liquids wastewater, and that convey the collected liquid wastewater to the leachate collection pond or other leachate wastewater treatment facility or utilization of other such measures as approved by RWQCB.</p> <p>2. Areas used for wet season handling, storage, or stockpiling of dried sludge, materials to be used for ADC, or other materials capable of producing contaminated runoff wastewater shall be fitted with impermeable pads and leachate wastewater collections systems, or the materials themselves shall be protected from contact with rainwater or utilization of other such measures as approved by RWQCB.</p>				
3.5.5: The use of leachate as quench water could contaminate groundwater and surface water. (LTS)	<p>3.5.5a: The applicant will <u>shall</u> test leachate <u>and wastewater</u> to be used as quench water quarterly, consistent with current testing and use protocols applied to the use of leachate for dust control. The leachate <u>or wastewater</u> will be used for quench water as long as, and only if, it meets RWQCB-approved standards established for the use of leachate for dust control at the site. This measure will be reflected as a requirement in the Solid Waste Facilities Permit as well as the landfill's Waste Discharge Requirements.</p> <p>The current program to reuse leachate for dust control, upon which the program to reuse leachate <u>or wastewater</u> for quench water will be based, requires RLI to sample the leachate pond on a quarterly basis prior to use for dust control to insure that levels of chemical constituents are at "clean" standards. Reporting of the leachate sampling is included with the Self Monitoring Program associated with Redwood Landfill's Waste Discharge Requirements. Written detection monitoring reports, which include compliance evaluation summaries, are filed by the 15th day of the month following the report period; an annual report also is required, by January 31 for the previous calendar year.</p>	Applicant	The project applicant shall implement this measure consistent with all RWQCB and WDR requirements upon issuance of the revised SWFP and/or revised WDRs. The project applicant shall submit reporting documentation as specified.	Marin County EHS, RWQCB	Marin County EHS and RWQCB, continuing periodic inspections

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Hydrology and Water Quality (cont.)					
3.5.5 (cont.)	<p>3.5.5b: Outside of areas with a LCRS, future composting/co-composting activities will be conducted on appropriate composting pads to limit infiltration and to control run-off (GeoSyntec, 1998). Based on the applicant’s “Comments and Project Clarification Discussion [on the project]” (RLI/WM, 2000), wet-weather composting will not take place in unlined areas. Thus, year-round composting will take place only on lined pads (i.e., lined with 2 feet of clay, as in Fields 1 and 2). Pads will be designed and constructed to promote surface drainage and prevent ponding. Portions of the composting pads may be surfaced with 6 to 12 inches of gravel, asphalt, or other suitable material to provide for all weather access (GeoSyntec, 1998). Dry-weather composting will be conducted on pads comprised of a minimum of either 1 foot of native soils or recompact imported soils possessing a maximum saturated hydraulic conductivity of 1×10^{-6} centimeters per second.</p>	Applicant	The project applicant shall implement this measure prior to issuance of a revised Composting Facilities Permit and revised WDRs.	Marin County EHS, RWQCB	EHS and RWQCB prior to issuance of revised permits
	<p>3.5.5c: For composting operations outside the landfill footprint, including any operations in the area currently known as the main sludge impoundment, pads used for both wet weather and dry weather operations must meet permeability specifications established by the RWQCB. Although Bay Mud is generally a low-permeability soil, lenses of more permeable sand or organic material are known to occur within it. The applicant shall provide documentation to the RWQCB of site-specific studies documenting that areas proposed to be used for composting meet RWQCB specifications throughout the proposed area.</p>	Applicant	The project applicant shall implement this measure prior to issuance of a revised Composting Facilities Permit and revised WDRs.	Marin County EHS, RWQCB	RWQCB prior to issuance of revised WDRs; periodic inspections
3.5.6: Areas outside the 223-acre landfill footprint, including areas proposed for composting and co-composting operations and the relocated administration facilities, are within the 100-year flood plain. (LTS)	<p>3.5.6a: To ensure the site and project elements are protected from potential impacts of flooding, the applicant shall complete their planned increase in the height of the exterior levee that encompasses the entire landfill site (i.e., the approximately 380 acres of the 420-acre Southern Area currently located within levees) to 9 feet above msl and their planned increase in the width of the levee to 10 feet prior to implementation of project elements in the Oxbow or other areas outside the permitted 223 222.5-acre landfill footprint.</p>	Applicant	The project applicant shall commence implementation of this measure, consistent with other measures pertaining to adequate stability analyses, upon issuance of the revised SWFP. However, as	Marin County EHS	Marin County EHS and RWQCB prior to issuance of revised permits; continuing periodic inspections

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Hydrology and Water Quality (cont.)					
<p>3.5.6 (cont.)</p>	<p>The applicant's JTD (Geosyntec, 1998) states on page 4-21 that the levee is approximately four miles long and separates the site from adjacent sloughs. As part of the description of the existing facility (pages 5-1 and 5-2) the JTD states that the levee encompasses approximately 380 acres of the 420-acre Southern Area of the landfill property, and that the height of the levee will be increased to 9 feet above mean sea level around the entire landfill, and that the crest will be widened to 10 feet. These changes to the levee are not specified as project elements, and elsewhere in the JTD some ambiguity exists as to whether references to a levee refer to a levee around only the permitted landfill footprint (approximately 223 <u>222.5</u> acres) or around the entire landfill site (approximately 380 acres of which are within existing levees). This analysis assumes that as part of the facility's existing operation, as stated on the aforementioned pages, RLI intends to increase the exterior levee that encompasses the entire 380 acres of the 420-acre Southern Area to 9 feet above msl and to widen its crest to 10 feet.</p> <p>Because the base flood elevation for the 100-year storm is 6 to 7 feet above mean sea level (msl), increasing the levee to 9 feet would protect the landfill property from the 100-year flood. Increasing the width should contribute support to the levee's stability and ability to withstand the dynamic forces of the river at flood stage. The 223 <u>222.5</u>-acre landfill footprint already is located outside the 100-year flood plain due to existing levees. The portion of the site outside the landfill footprint remains vulnerable to flooding until these planned changes to the exterior levee are completed.</p> <p>The applicant shall prepare and adhere to a construction schedule for completion of the levee improvements specified above. The construction schedule must be prepared and submitted to the LEA prior to project approval and issuance of a revised SWFP. It is expected that the construction schedule will indicate that phased or sequenced construction is required, in order to allow consolidation and strengthening of the Bay Mud beneath the levee (see Mitigation Measure 3.5.6b and 3.5.6c, below). The construction schedule must show that all planned improvements of the entire levee system</p>		<p>specified in the mitigation measure, the first phase of levee improvements must be completed by December 31, 2011.</p>		

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Hydrology and Water Quality (cont.)					
3.5.6 (cont.)	will be completed no later than December 31, 2011, or, if phased or sequenced construction is required, completion of the first phase or sequence by this date. The first phase or sequence must include improvements to any and all parts of the exterior levee that encompasses the entire 380 acres of the 420-acre Southern Area that are not yet at the design elevation of +9 feet msl and the design top width of 10 feet. The construction schedule shall further indicate that completion of all phases or sequences will be completed in the shortest feasible time, given the limitations of construction on Bay Mud. The construction schedule shall be peer reviewed, at the applicant's expense, by a Registered Geotechnical Engineer selected or approved by Marin County.				
	3.5.6b: The applicant shall conduct slope stability analyses of the recently completed levee upgrades to determine whether the factor of safety is adequate for static and dynamic stability. The slope stability analyses shall utilize the methods and factors recommended by GeoSyntec (2007d), and shall take into account site-specific differences in surface and subsurface conditions. The same analyses shall be applied to designs for future levee upgrades. All analyses shall be independently peer reviewed by a Registered Geotechnical Engineer at the Applicant's expense and subject to approval by the LEA or, if subsequent work requires a Grading Permit, by the Marin County Department of Public Works, or, if a building permit is required, by the Community Development Agency Building and Safety Division. If analysis of the recently-completed levee sections reveals that they do not meet minimum static factor of safety and seismic performance standards, the applicant shall develop a remedial action plan for further levee improvements. Any such plan shall be independently peer reviewed by a Registered Geotechnical Engineer at the applicant's expense and subject to approval by the LEA or the Marin County Department of Public Works or Community Development Agency Building and Safety Division. The schedule for implementation of the remedial action plan shall be included in the construction schedule and subject to the same requirements specified in Mitigation Measure 3.5.6a, above.	Applicant	The project applicant shall complete and submit initial specified analysis prior to project approval. The project applicant shall implement the remedial action plan, if required, within 2 months of completion of stability analyses making the determination specified standards are not met.	Marin County EHS, RWQCB	Marin County EHS, RWQCB, and Marin CoDPW or Marin County CDA as applicable

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Hydrology and Water Quality (cont.)					
3.5.6 (cont.)	<p>3.5.6c: The applicant shall re-analyze the stability analysis contained in the remedial action plan for the failed levee segment, per the recommendations of Treadwell and Rollo’s peer review (Appendix F). All analyses shall be independently peer reviewed by a Registered Geotechnical Engineer at the applicant’s expense and subject to approval by the LEA, or, if a Grading Permit or a Building Permit is required, by the Marin County Department of Public Works or Community Development Agency Building and Safety Division, respectively. If the new analysis reveals that the design contained in the remedial action plan does not achieve an acceptable static factor of safety and seismic performance standard, the applicant shall develop a new design for the levee repair. This may require, for example, use of higher sheet piles as a parapet wall along the creek to provide flood protection, with the earthen fill and roadway placed at a lower elevation to reduce the static load on the Bay Mud. Any new design shall be independently peer reviewed by a Registered Geotechnical Engineer and subject to approval by the Marin County Department of Public Works. The schedule for implementation of the new design shall be included in the construction schedule and subject to the same requirements specified in Mitigation Measure 3.5.6a, above.</p>	Applicant	The project applicant shall implement this measure prior to project approval.	Marin County EHS, RWQCB	Marin County EHS, CIWMB, RWQCB
	<p>3.5.6d: Prior to project approval, the applicant shall prepare and submit to the LEA and the San Francisco Bay Regional Water Quality Control Board a plan for long-term flood protection of the site. The plan will include a consideration of feasible options for achieving protection from the 100-year flood in the face of rising sea level and increased flood frequency and intensity. The plan shall include selection of the preferred method or methods for achieving flood protection, and both a schedule and financial assurances for their implementation. The engineering basis for the plan shall be independently peer reviewed by a Registered Geotechnical Engineer prior to submittal for approval. The plan will be drafted and then updated every 5 years during the remaining operational life of the landfill and the post-closure maintenance period to ensure that it is current with the most</p>	Applicant	The project applicant shall implement this measure as specified.	Marin County EHS, RWQCB	Marin County EHS, RWQCB, upon receipt of plan and periodically as specified

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IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION MEASURE/CONDITION OF APPROVAL	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
Hydrology and Water Quality (cont.)					
3.5.6 (cont.)	recent and broadly-accepted predictions for flood levels, following consultation with the U.S. Geological Survey, the San Francisco Bay Conservation and Development Commission, and other monitoring agencies that track bay and ocean levels and that may provide estimates of mean sea level rise and areas subject to future inundation.				
3.5.7: If surface water drainage systems are not properly managed, storm water contacting the landfill surface could erode landfill cover materials and cause the sedimentation of onsite drainage systems, and potentially, the sedimentation and/or contamination of off-site receiving surface waters. (LTS)	3.5.7: Implement Mitigation Measures 3.4.4a, 4b, 4c, and 4d (to implement an updated SWPPP and prepare and eventually implement a final closure and post-closure maintenance plan). As discussed under Impact 3.4.4 in Section 3.4, Geology, Soils, and Seismicity, implementation of these measures would reduce the potential impacts of storm-generated erosion and help ensure the proper management of the site's drainage system. Implementation of these measure, combined with requirements specified in Title 27 for precipitation and drainage controls as well as the existing drainage facilities and management practices at the landfill would reduce this impact to a less-than-significant level.	See referenced mitigation measures.			
3.5.8: Construction activities, including grading and related activities at the proposed composting areas could increase soil erosion and result in the transport of sediments and other contaminants to off-site surface waters. (LTS)	3.5.8: Prior to construction, the applicant will prepare a construction Storm Water Pollution Prevention Plan (SWPPP) to minimize impacts to storm water runoff quality from construction activities. The construction SWPPP will be kept on site and available to RWQCB and LEA staff upon request.	Applicant	The project applicant shall implement this measure prior to issuance of revised WDRs and prior to construction activities at the site.	RWQCB	RWQCB; periodically
3.5.9: The existing drainage system may be insufficient to accommodate the 100-year, 24-hour precipitation event required of Class III landfills. (Significant)	3.5.9: The applicant shall produce and present to the RWQCB for approval a report demonstrating that sufficient capacity exists in the precipitation and drainage control facilities to accommodate the 100-year 24-hour precipitation event as required by Title 27. A copy of the report shall also be provided to the LEA. The report shall include information about the anticipated elevation of flows in San Antonio Creek during the 100-year flood; if existing and any new discharge outlets to San Antonio Creek are below this elevation, such	Applicant	The project applicant shall implement this measure prior to issuance of a revised SWFP or revised WDRs.	RWQCB	CIWMB, Marin County EHS and RWQCB

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IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION MEASURE/CONDITION OF APPROVAL	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
Hydrology and Water Quality (cont.)					
3.5.9 (cont.)	drains shall be equipped with flap gates to existing drains are equipped to prevent flood tides from prevent flood waters from entering the outlets, as two entering. The final engineering design specifications for the permanent and major temporary drainage facilities capable of meeting the requirements specified in Title 27, Table 4.1 shall be developed by a registered engineer and shall include drainage facilities for all areas of the landfill property. These specifications shall become part of the project.				
3.5.10: The proposed use of various alternative daily cover (ADC) materials could have an adverse impact on water quality. (LTS)	3.5.10a: As described under “working face operations in wet weather” in Redwood Landfill’s current Storm Water Pollution Prevention Plan (Redwood Landfill, 2000), when rain occurs or is forecast or imminent, RLI shall cover the ADC applied that day with impermeable tarps to prevent rainwater contact with ADC.	Applicant	The project applicant shall continue to implement this measure upon issuance of the revised SWFP.	Marin County EHS, RWQCB	Marin County EHS and RWQCB, continuing periodic inspections
	3.5.10b: Soil shall continue to be used as the cover material on any day preceding closed days (e.g., Saturdays); ADC may continue to be used as the daily cover the rest of the week (i.e., Monday through Friday; the landfill is closed on Sunday).	Applicant	The project applicant shall implement this measure upon issuance of the revised SWFP.	Marin County EHS, RWQCB	Marin County EHS and RWQCB, continuing periodic inspections
	3.5.10c: In conjunction with implementing Mitigation Measure 3.5.5a and 3.5.5b, above, water contacting ADC shall be considered, and managed as, contact water. Thus water contacting ADC shall be managed separately from non-contact water and retained on site.	Applicant	The project applicant shall implement this measure upon issuance of the revised SWFP.	Marin County EHS, RWQCB	Marin County EHS and RWQCB, continuing periodic inspections
Land Use					
3.6.2: Development of the proposed project could result in conflicts with operations at Gness Field. (LTS)	3.6.2a: The applicant proposes to shall continue their existing bird control program. Redwood Landfill’s bird control program focuses on gulls, the predominant avian scavengers at the site, and consists of using pyrotechnic devices to discourage gulls from landing or circling overhead during refuse placement and compaction. The devices provide noise (bang or whistle), a flash of light, smoke, and the sound of the propellant. RLI focuses its deterrent efforts when the birds	Applicant	The project applicant shall continue to implement this measure, consistent with other applicable mitigation measures, upon issuance of the revised SWFP.	Marin County EHS	Marin County EHS, continuing periodic inspections

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IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION MEASURE/CONDITION OF APPROVAL	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
Land Use (cont.)					
3.6.2 (cont.)	first begin to arrive in the morning (shortly after dawn) and the morning hours, having found that this results in fewer gulls approaching the site during the rest of the day. RLI also may use a gas-fired cannon, which emits a loud blast, in conjunction with the pyrotechnic devices. Redwood Landfill shall periodically re-evaluates and revises bird control techniques as necessary.				
	Mitigation Measure 3.6.2b: The applicant proposes no change in the number or type of lights used for nighttime operations. There are no records that indicate that the existing use of lights at the landfill poses a hazard to operations at Gness Field.	Applicant	The project applicant shall implement this measure, consistent with other applicable mitigation measures, upon issuance of the revised SWFP.	Marin County EHS, Marin County ALUC	Marin County CDA Planning, EHS and ALUC; periodically by EHS
	3.6.2c: To ensure that nighttime activities do not interfere with operations at Gness Field, lights used during nighttime landfill operations will not be colored, will be shielded and directed downward to reduce glare, and will be placed in an irregular pattern in order not to appear to be a runway. The applicant shall notify the Gness Field Airport prior to any change in the way lighting is used for nighttime operations.	Applicant	The project applicant shall implement this measure upon issuance of the revised SWFP. The project applicant shall notify Gness Field of changes to lighting prior to implementation of such changes.	Marin County EHS, Marin County ALUC	Marin County EHS, periodic inspections; and Marin County ALUC following notification of plan to revise use of lighting
	3.6.2d: If bird activity at the landfill, including the areas outside the permitted landfill footprint proposed for composting, increases as a result of the project, as determined by the LEA during regular site inspections, RLI shall adjust its existing bird control program as necessary to ensure that the facility does not pose a bird hazard to aircraft. RLI shall modify as necessary the demonstration required in 40 CFR Part 258, §258.10 (a) and 27 CCR, §20270(a) (that the landfill does not pose a bird hazard to aircraft).	Applicant	The project applicant shall implement this measure immediately upon notification of a determination by the EHS that such revision is necessary.	Marin County EHS, Marin County ALUC	Marin County EHS, Marin County ALUC, as needed

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IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION MEASURE/CONDITION OF APPROVAL	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
Land Use (cont.)					
<p>3.6.4: The project would conflict with Goals 1, 6, and 9 of the Source Reduction and Recycling Element of the Integrated Waste Management Plan for Marin County and its Cities. (S)</p>	<p>3.6.4b: The following measures will be required as conditions of a revised Solid Waste Facilities Permit, or through other actions, as noted.</p> <ul style="list-style-type: none"> • RLI will be required upon issuance of the revised Solid Waste Facilities Permit (SWFP) to implement additional diversion programs at the landfill, such as construction and demolition debris recovery, recovery of materials from self-haul and debris box loads, salvage of building materials and other reusable items, increased opportunity for drop-off of source-separated materials, and other measures as detailed in the Mitigated Alternative, consistent with the goals of the County’s Source Reduction and Recycling Element as well as Goal PFS-4 and its associated policies and implementing programs in the Countywide Plan Update (see Table 1.2 in the FEIR RTC Amendment). Prior to project approval, the applicant shall prepare an implementation schedule for these programs that includes a timeline whereby these new and improved facilities would be operational within 3 years of issuance of the revised SWFP. The applicant shall apply for any additional permits needed to implement these diversion programs within 2 years of concurrence on its revised SWFP by the CIWMB. • The County will consider the enactment of an ordinance that would impose a mitigation fee or similar strategy on waste imported to Redwood Landfill from areas of California outside Marin County. The mitigation fee will be used to develop additional landfill capacity in another location, and to develop new or expanded waste diversion programs. 	<p>Applicant, Marin County Board of Supervisors</p>	<p>The project applicant shall implement the specified diversion programs upon issuance of the revised SWFP. The Marin County Board of Supervisors will consider the enactment of a mitigation fee ordinance in conjunction with the LEA’s issuance of the revised SWFP.</p>	<p>Marin County EHS and Board of Supervisors</p>	<p>Marin County EHS and Board of Supervisors, ongoing</p>
<p>3.6.5: The project would conflict with Summary Plan Goal 12, which is to insure that all residents of Marin County have access to a program that safely and</p>	<p>3.6.5a: RLI currently accepts used motor oil at the landfill, and does not plan to discontinue this service.</p>	<p>Applicant</p>	<p>The project applicant shall continue to implement this measure upon issuance of the revised SWFP.</p>	<p>Marin County EHS</p>	<p>Marin County EHS, continuing periodic inspections</p>

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IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION MEASURE/CONDITION OF APPROVAL	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
Land Use (cont.)					
effectively manages household hazardous waste, and Summary Plan Policy 14, to develop an effective program for managing household hazardous waste generated in the county. (LTS)					
Noise					
3.7.3: Use of equipment for composting operations in the Oxbow area and other areas proposed for composting operations could cause an increase in the ambient noise level for adjacent land uses. (LTS)	3.7.3a: Operating hours for the grinder shall be restricted to 7 a.m. to 7 p.m.	Applicant	The project applicant shall implement this measure, consistent with other applicable measures, upon issuance of the revised SWFP.	Marin County EHS	Marin County EHS, continuing periodic inspections
	3.7.3b: The grinder shall be operated at least 600 feet from the outer edge (creek side) of the road along the perimeter levee.	Applicant	The project applicant shall implement this measure upon issuance of the revised SWFP.	Marin County EHS	Marin County EHS, continuing periodic inspections
	3.7.3c: <u>As an alternative to Mitigation Measure 3.7.3b,</u> Alternatively, the landfill operator could construct an earthen berm (or other similar noise dissipating structures) between the grinder operations area and all parts of the eastern landfill boundary within 600 feet of the grinder location. If an earthen berm is used, it must be at least as high as the highest part of the grinder itself. Compost windrows or other similar structures could be substituted for the earthen berm, as long as they are as high as the highest part of the grinder, and located between the grinder operations area and the eastern landfill boundary.	Applicant	The project applicant shall implement this measure prior to use of the grinder less than 600 feet from the outer edge (creek side) of the road along the exterior levee.	Marin County EHS	Marin County EHS, continuing periodic inspections

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IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION MEASURE/CONDITION OF APPROVAL	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
Public Health and Safety					
3.8.1: Receipt of designated wastes, in particular, spill or upset conditions resulting from the receipt and handling of designated wastes, could expose site workers or the general public to unacceptable contaminant levels. (LTS)	3.8.1a: The project applicant has prepared and implements a worker health and safety program.	Applicant	The project applicant shall continue to implement this measure upon issuance of the revised SWFP.	Marin County EHS	Marin County EHS, continuing periodic inspections
	3.8.1b: Implement Mitigation Measure 3.2.10b (limit acceptance of designated wastes currently accepted at the landfill to the currently permitted level of 20 TPD) which would reduce to a less-than-significant level the potential for workers or members of the public using the facility to be exposed to unacceptable contaminant levels associated with the landfill's receipt of designated wastes.	See referenced mitigation measures.			
3.8.2: Expanding the composting operations could increase the health threat to workers from exposure to <i>Aspergillus fumigatus</i> and endotoxins. (LTS)	3.8.2a: Redwood Landfill's existing composting operation includes dust control measures, such as the addition of water (using a water truck or portable sprinkler system) to composting windrows as needed to control dust and to maintain the appropriate moisture content for the composting process, <u>all of which shall be continued</u> (Geosyntec, 1998). Because bioaerosols and endotoxins are both carried on dust particles (particulate matter), measures to control dust at Redwood Landfill also will help limit the dispersal of <i>Aspergillus fumigatus</i> and endotoxins.	Applicant	The project applicant shall continue to implement this measure upon issuance of the revised SWFP.	Marin County EHS	Marin County EHS, continuing periodic inspections
	3.8.2b: Implement Mitigation Measure 3.2.4 (development and implementation of a Dust Mitigation Plan/Program).	See referenced mitigation measures.			
	3.8.2c: The project applicant shall follow sound composting management practices, including maintaining moisture, temperature and pH levels, and properly aerating, turning and mixing the composting materials. Specifically, the following practices will help minimize the generation and dispersal of dust and fungus spores during composting operations and thus limit exposure: <ul style="list-style-type: none"> • Refrain from turning, screening, or loading activities on windy days; • Use water sprays or mists during grinding, screening, and pile turning activities; 	Applicant	The project applicant shall implement this measure upon issuance of the revised SWFP.	Marin County EHS	Marin County EHS, continuing periodic inspections

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IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION MEASURE/CONDITION OF APPROVAL	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
Public Health and Safety (cont.)					
3.8.2 (cont.)	<ul style="list-style-type: none"> • Maintain proper moisture levels in active composting piles; • Maintain good housekeeping practices, including site cleanliness; and • Provide employee training and the use of personal protective equipment. 				
3.8.3: The proposed changes to the management of water that has contacted sludge and composting and co-composting materials could degrade water quality and impact public health. (LTS)	3.8.3: Implement Mitigation Measures 3.5.5b, 3.5.5c, and 3.5.4b regarding the conduct of composting outside and within the permitted landfill footprint and the management of contact water and storm water.	See referenced mitigation measures.			
3.8.4: Landfill gas migrating from the 11.5-acre waste unit in the southwest corner of the site could become trapped beneath the nearby relocated administration building and accumulate to explosive levels. (LTS)	3.8.4: The project applicant shall continue to implement the monitoring of landfill gas levels in the relocated administration building in accordance with BAAQMD requirements., as is currently the practice at the existing administration building. In addition, the other existing gas monitoring programs at the landfill site shall be reviewed and modified if necessary to include monitoring of the 11.5-acre waste unit. The other monitoring shall be conducted in accordance with the terms of the landfill's Permit to Operate from BAAQMD.	Applicant	The project applicant shall continue to implement this measure upon issuance of the revised SWFP.	Marin County EHS and BAAQMD	Marin County EHS, continuing periodic inspections
Public Services, Utilities and Energy					
3.9.2: The proposed increase in composting operations could place burdensome demands on public water supplies, exceeding available capacity, especially during periods of drought. (LTS).	3.9.2: During periods of drought RLI shall use only water from non-potable sources for dust control and/or quench water for the expanded composting operation.	Applicant	Upon issuance of a new or revised SWFP for the expanded composting facility.	Marin County EHS	Marin County EHS, continuing periodic inspections

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IMPACT AND SIGNIFICANCE AFTER MITIGATION	MITIGATION MEASURE/CONDITION OF APPROVAL	IMPLEMENTED BY	WHEN IMPLEMENTED	MONITORED BY	VERIFIED BY AND DATE
Public Services, Utilities and Energy					
3.9.3: On-site activities, primarily the increased use of landfill equipment and vehicles, would increase energy consumption. (S)	3.9.3a: RLI shall apply to the BAAQMD for Authority to Construct power generation engines capable of producing four to five megawatts of power within two years of concurrence on the revised SWFP by the CIWMB.	Applicant	The project applicant shall implement this measure within two years of concurrence on the revised SWFP by the CIWMB.	Marin County EHS and BAAQMD	Marin County EHS and BAAQMD, upon notification by applicant of implementation
3.9.3 (cont.)	3.9.3b: Implement Mitigation Measures 3.2.5c and 3.2.5e (apply for an authority to construct power generation engines with a capacity to produce four to five megawatts of power within two years of concurrence on the revised SWFP by the CIWMB, and apply for a Permit to Operate the engines.) Consistent with County policies regarding best energy management practices, RLI shall commence operation of these engines as soon as allowed by the Bay Area Air Quality Management District. The experience of other landfills indicates that electricity generated by the landfill gas could replace (partly or entirely) electricity currently provided by PG&E, and eventually (if not immediately) provide sufficient power to be sold to offsite users. The use of landfill gas to provide for the facility's electricity needs would offset energy produced from fossil fuel sources.	See referenced mitigation measures.			
	The applicant also shall install additional power generation engines in order to offset some use of the LFG flare. Currently, use of the flare is required to abate the emission of all collected LFG. The flare also could potentially be used to destroy exhaust emissions from power generation engines. However, rather than using the flare at full capacity as the generation of LFG increases, an increasing share of LFG shall be diverted to generate additional electrical power if additional generation engines were installed. Even with the additional power generation engines installed, some use of the flare may continue to be required. However, operation of additional power generation engines would provide a more productive use of much of the collected LFG than simply flaring it. Prior to project approval, the applicant shall prepare a schedule, based on projected landfill gas generation rates, for the installation of additional power generation capacity.	Applicant	The project applicant shall install additional power general engines upon issuance of the required permits by BAAQMD (an Authority to Construct followed by a Permit to Operate). The project applicant shall apply to the BAAQMD for such permits as soon as LFG generation rates approach, or, at the latest, reach the capacity of the power generation engines specified in	Marin County EHS, BAAQMD	Marin County EHS and BAAQMD, upon notification by applicant of implementation

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Public Services, Utilities and Energy (cont.)					
3.9.3 (cont.)			Measures 3.2.5c and 3.2.5e. Installation of additional power generation capacity shall be accomplished according to the schedule specified in the mitigation measure; the schedule shall be prepared and submitted prior to project approval.		
Cumulative Impacts					
B-55 CU-2: The project would incrementally add to cumulative air pollutant emissions. (S)	CU-2a: Implement Mitigation Measure 3.2.1a.	See referenced mitigation measures.			
	CU-2b: Implementation of the following mitigation measures, identified in Section 3.2, Air Quality, to mitigate project impacts concerning air pollutant emissions, also would help to mitigate the project's contribution to the cumulative impact: Mitigation Measure 3.2.2 (a-d) to reduce impacts from the increased equipment and truck operations associated with the proposed increase in incoming materials, Mitigation Measure 3.2.4 to reduce levels of project-generated fugitive dust, Mitigation Measure 3.2.5 (a-e) to address landfill gas emissions, and Mitigation Measure 3.2.6 (a-d) to address ROG emissions from the proposed composting operation.	See referenced mitigation measures.			

KEY:

Significance After Mitigation

LTS = Mitigated to a less-than-significant level
 SU = Significant and unavoidable

Monitored By:

ALUC = Airport Land Use Commission
 BAAQMD = Bay Area Air Quality Management District
 CDA-Planning = Marin Community Development Agency – Planning Division
 CDFG = California Department of Fish and Game
 CIWMB = California Integrated Waste Management Board (note that the CIWMB has been succeeded by the California Department of Resources Recycling and Recovery (CalRecycle))
 DTSC = California Department of Toxic Substances Control
 EHS = Marin County Environmental Health Services Division/Local Enforcement Agency
 RWQCB = Regional Water Quality Control Board, San Francisco Bay Region
 USFWS = U.S. Fish and Wildlife Service

APPENDIX C

Draft General Waste Discharge Requirements for the Discharge of Wastes at Compost Management Units, and Monitoring and Reporting Program for the General Waste Discharge Requirements

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DRAFT
STATE WATER RESOURCES CONTROL BOARD
WATER QUALITY ORDER NO. DWQ-2012-XXXX

**GENERAL WASTE DISCHARGE REQUIREMENTS FOR THE
DISCHARGE OF WASTES AT COMPOST MANAGEMENT UNITS**

The following Dischargers, as described in Table A below, may apply for coverage under these General Waste Discharge Requirements (Order), and are subject to the provisions, prohibitions, and discharge specifications set forth in the Order.

Table A: Discharger Information

Discharger	Any person responsible for discharging, or proposing to discharge waste to a Compost Management Unit (CMU); or any person who owns and/or operates a CMU; or any person responsible for ensuring compliance with the maintenance and monitoring operations at the CMU, as required under this Order.
The Discharger is required to pay an annual fee (i.e., waste discharge permit fee) as determined by the State Water Resources Control Board, and pursuant to California Water Code (Water Code) section 13260 <i>et seq.</i> The filing fee accompanying the Notice of Intent is the first year's annual fee. The annual fee is based on the threat to water quality and complexity of the discharge in accordance with California Code of Regulations (Cal. Code Regs.) title 23 section 2200. Dischargers enrolled under this Order will be assigned a threat to water quality and complexity rating of 3-C and will be assessed the corresponding fee for Discharge to Land sites, plus any applicable surcharges.	

Discharges of wastes by persons identified in Table A above from CMUs identified in Table B below are subject to the waste discharge requirements set forth in this Order. Administrative information regarding this Order is contained in Table C below.

Table B: Discharge Location

Discharge Point(s)	Discharge Description	Discharge Point Latitude(s)	Discharge Point Longitude(s)	Receiving Water(s)
Various locations throughout the State	Non-hazardous waste	Various	Various	Various groundwater basins in the State

Table C: Administrative Information

This Order was adopted by the State Water Resources Control Board on:	
This Order shall become effective on the date of adoption	

I, Thomas Howard, Executive Director, do hereby certify that this Order with all attachments is a full and correct copy of an Order adopted by the State Water Resources Control Board, on October 16, 2012.

Thomas Howard
Executive Director

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A. FINDINGS

The State Water Resources Control Board (State Water Board) finds that:

1. **DISCHARGER.** A Discharger, as the term applies under these *Statewide General Waste Discharge Requirements (WDRs) for the Discharge of Wastes at Compost Management Units, Order No. DWQ-2012-XXXX* (Order) is any person responsible for discharging, or proposing to discharge waste to a Compost Management Unit (CMU); or any person who owns or operates a CMU; or any person responsible for ensuring compliance with the maintenance and monitoring operations at the CMU, as required under this Order.
2. **COMPOST MANAGEMENT FACILITIES AND UNITS.** As defined in Attachment A of this Order, a Compost Management Facility (Compost Facility) refers to the entire parcel or parcels of property at which feedstocks, additives, amendments, compost (active or stabilized) and wastewaters are discharged for the production of compost. Compost Facilities may include one or more CMU. CMUs refer to an area of land, or portion of a Compost Facility, at which feedstocks, additive, amendments, compost (active or stabilized) and/or wastewaters are discharged for treatment or storage.
3. **COMPOST MANAGEMENT UNIT LOCATIONS.** The scope of this Order includes all CMUs, as defined herein, which are located within the State of California.
4. **MATERIAL DISCHARGE.** The following discharges to land and associated composting activities are not expected to pose a significant threat to the waters of the state, so long as the discharges are carried out in accordance with this Order.
 - a. **Feedstocks:** The following types of feedstocks (as defined in Attachment A), or combination of feedstocks (also known as in-process or active compost) may be discharged to land at a CMU, provided the Discharger maintains compliance with the requirements of this Order:
 - i. Agricultural materials;
 - ii. Anaerobic digestate;
 - iii. Biosolids (Class EQ, A, and/or B);
 - iv. Food materials;
 - v. Green materials;
 - vi. Manure;
 - vii. Paper materials; and/or
 - viii. Vegetative food materials.

Feedstocks – other than those specified under Prohibitions, section D of this Order – listed in a Notice of Intent (NOI) approved by the Regional Water Quality Control Board (Regional Water Board) Executive Officer upon issuance of a Notice of Applicability (NOA), may also be discharged to land at a CMU, provided the Discharger maintains compliance with the requirements of this Order.

- b. **Exempt Composting Activities:** The following composting-related activities, as defined in Attachment A of this Order, are considered unlikely to produce an adverse

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effect in waters of the state, provided that the discharge of wastewaters (i.e., runoff to surface waters and/or percolation to groundwater) from these activities does not occur. Therefore, these activities are conditionally exempt from the requirements of this Order, but may be subject to other federal, state, or local regulations:

- i. Agricultural Composting;
 - ii. Chipping and Grinding Facilities and Operations;
 - iii. Chipping and Grinding Areas at CMUs;
 - iv. Composting conducted at facilities (e.g., Publicly Owned Treatment Works [POTWs], landfills) issued a State Water Board permit (e.g., WDRs, Industrial General Permit) addressing potential impacts to groundwater quality;
 - v. Lot Clearing for Fire Protection;
 - vi. Non-Commercial Composting; and
 - vii. Stabilized Compost Areas at CMUs, provided the Discharger maintains these areas to comply with the requirements contained in Design Specifications, section E.1.
 - viii. Within-Vessel and Fully-Enclosed Composting (e.g., anaerobic digesters).
- c. **Additives and Amendments:** The use of additives and amendments, as defined and limited by this Order, is not expected to pose a significant threat to water quality as long as the Discharger maintains compliance with the requirements and prohibitions of this Order.
- d. **Threshold Volume:** To be consistent with the numeric thresholds used by the California Department of Resources Recycling and Recovery (CalRecycle) for notification and registration tiers, the State Water Board will use a value of 12,500 cubic yards (cy) for the total volume, on site at any time, of any combination of feedstocks, additives, amendments, active or stabilized compost as the numeric threshold used as part of the tier assessment under this Order.
5. **DIVERSION OF WASTE.** The diversion of compostable wastes from disposal in landfills is desirable, but only if such diversion does not result in degradation, contamination, or pollution of surface water or groundwater. The purpose of adopting WDRs for discharges at CMUs of those feedstocks specified in Finding No. A.4.a of this Order is to provide an efficient and cost effective means of allowing properly managed CMUs in the state to process these diverted materials into a beneficially useful compost product in a manner that protects water quality.

Pursuant to Water Code section 13263(i), the State Water Board may prescribe general WDRs for a category of discharges, such as those specified in this Order – provided the general standards are appropriate. In accordance with Water Code section 13263(i), the State Water Board finds the discharges regulated by this Order:

- a. Are produced by the same or similar operations;
- b. Involve the same or similar types of feedstocks, additives, and/or amendments;
- c. Require the same or similar treatment standards; and

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- d. Are more appropriately regulated under general discharge requirements than individual discharge requirements.

It is therefore in the public interest for the State Water Board to adopt these general WDRs for CMUs.

6. **THREAT TO WATER QUALITY.** When conducted outdoors, operations at CMUs are exposed to precipitation, which can cause piles of feedstocks, additives, amendments, and compost (active or stabilized) to generate wastewaters (i.e., mixtures of process storm water and leachate). Wastewaters can then percolate to groundwater, or mix with surface water, if not properly managed. For the purposes of this Order, wastewaters refers collectively to, but may not be limited to any compost leachate, washwater, process storm water, process water runoff, or any storm water coming into contact with: any pile containing feedstocks, additives, amendments, compost (active or stabilized), or combinations thereof; any residual materials derived from feedstocks, additives, amendments, or compost (active or stabilized); or any other wastewaters at the CMU, because such liquids have the potential to percolate to groundwater, or come into contact with surface water, if not properly managed.

If not mitigated and managed in accordance with the requirements and prohibitions of this Order, these activities have the potential to cause adverse groundwater quality impacts characterized by elevated concentrations of nutritive salts (e.g., nitrate), non-nutritive salts (e.g., sodium chloride) and other pollutants. Potential surface water impacts can include these constituents of concern, in addition to sediment, oxygen-reducing materials, pathogens, pesticides and herbicides. The threat to water quality from outdoor composting activities can be mitigated through the incorporation of design specifications, water quality monitoring, and best management practices to prevent either the formation of wastewaters or by preventing the wastewaters from percolating to groundwater or flowing off-site to surface water bodies.

7. **WASTE CLASSIFICATION.** Cal. Code Regs. title 27, sections 20200 to 20230 establish a waste classification system. Wastes are classified as either inert waste, nonhazardous solid waste, or designated waste. Inert wastes pose minimal risk to water quality, nonhazardous solid wastes present a greater risk than inert wastes, and designated wastes pose the greatest risk to water quality. Wastes specified in Finding No. A.4.a meet the definition of nonhazardous solid waste.

Cal. Code Regs. title 27 section 20200(a)(1) allows a finding to be made that, "...a particular waste constituent or combination of constituents presents a lower risk of water quality degradation than indicated by classification according to this article." Therefore, to the extent that a particular compostable waste type, as specified in Finding No. A.4.a, could be characterized as designated waste, such waste types shall be regulated as a nonhazardous solid waste under this Order pursuant to Cal. Code Regs. title 27 section 20200(a)(1) because the wastes specified in Finding No. A.4.a present a lower risk to water quality than typical designated wastes when managed as required by this Order.

The only Cal. Code Regs. title 27 regulations that apply to nonhazardous solid waste apply to such wastes that are disposed of in a landfill. As specified in Finding No. A.5, the purpose of adopting this Order is to provide an efficient and cost effective means of allowing properly managed CMUs in the state to process diverted compostable wastes

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(i.e., feedstocks) from landfills into a compost product, in a manner that protects water quality. Therefore, for compost operations eligible for coverage under this Order, the Cal. Code Regs. title 27 regulations shall not apply so long as the Discharger continues to meet the requirements of this Order.

8. **DESIGN SPECIFICATIONS.** The implementation and compliance with the Design Specifications contained within this Order will be protective of water quality. The Discharger's eligibility for enrollment under one of the three Design Specification tiers established under this Order is based on the following three considerations:
 - a. Which of the feedstocks specified in Finding No. A.4.a are discharged, or proposed to be discharged, at the CMU;
 - b. The total volume of feedstocks, additives, amendments, and compost (active or stabilized) discharged (i.e., stored and treated), or proposed to be discharged at the CMU at any time; and
 - c. The ability to conduct composting in a manner such that leachate will not percolate to groundwater, or runoff to surface waters.
9. **LEGAL AUTHORITY.** In accordance with Water Code section 13000 *et seq.*, this Order: implements the regulations and policies adopted by the State Water Board, including that agency's regulations under Cal. Code Regs. title 23; implements applicable provisions of the California Health and Safety Code; and is consistent with CalRecycle's regulations in Cal. Code Regs. title 14, section 17850 *et seq.*
10. **CLASSIFICATION OF A COMPOST MANAGEMENT UNIT.** CMUs are any area of land or portion of a Compost Facility, at which feedstocks, additives, amendments, compost (active or stabilized) and/or wastewaters are discharged for treatment or storage. CMUs also include containment structures and ancillary features for precipitation, drainage control, and monitoring. CMUs that qualify for being included under this Order are limited to the following classifications:
 - a. **Existing Permitted Compost Management Units.** CMUs, for the purposes of this Order, are considered to be existing CMUs if they received all permits and WDRs necessary from the Regional Water Board for construction and operation, on or before the initial effective date of this Order.
 - b. **New Compost Management Units.** CMUs, for the purposes of this Order, are considered to be new CMUs if the Discharger either:
 - i. Proposes to construct and operate a CMU after the initial effective date of this Order; or
 - ii. Began operating a CMU on or before the initial effective date of this Order, and for which the discharge of waste to land is not currently regulated by an order (i.e. a conditional waiver, individual or general WDRs that remain in effect), adopted by either the State Water Board or Regional Water Boards (collectively referred to as the Water Boards). This absence of an effective order includes, but is not limited to, those CMUs that were previously regulated pursuant to the requirements of a Conditional Waiver of Waste Discharge Requirements for

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Composting Operations (Green Waste Composting Waiver) adopted by a Regional Water Board prior to 1999 and that have continued to operate in accordance with that waiver, after it was rescinded, but for which the Regional Water Board has not adopted individual WDRs.

11. **STORM WATER DISCHARGES.** For CMUs where storm water discharges off site, the Discharger may be required to enroll under State Water Board Order No. 97-09-DWQ, National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000001, Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activities Excluding Construction Activities (General Storm Water Permit) – or any future revision of this permit – if applicable to the CMU.
12. **STORM WATER MANAGEMENT.** The General Storm Water Permit requires the Discharger to prepare a Storm Water Pollution Prevention Plan (SWPPP) describing the best management practices (BMPs) that will be implemented to meet its requirements, reducing pollutant discharges to waters of the state. If CMUs are required to obtain coverage under both this Order and the General Storm Water Permit, the SWPPP must describe the BMPs that will be implemented to meet the requirements of the General Storm Water Permit and this Order as appropriate.
13. **MONITORING.** A release of waste, or waste constituents derived from a CMU may create, threaten to cause, or contribute to conditions of pollution, contamination or nuisance as defined under Water Code section 13050. Pursuant to Water Code section 13263, conditions of this Order must include, but are not limited to, the conductance of individual, group, or watershed-based monitoring, unless the Regional Water Board waives monitoring for a specific CMU, pursuant to Water Code section 13269(a)(23). Furthermore, Water Code section 13267(b) provides that: “In conducting an investigations specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposed to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of the state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including cost, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports.”

Technical reports on operation, maintenance, and performance relate directly to the Regional Water Board’s need to know in a timely manner whether the Discharger is effectively operating and maintaining the CMU. Wastewater and/or groundwater, as required pursuant to the requirements of this Order, are necessary to measure whether effective operation mitigates impact on groundwater quality. This necessitates a comparison of constituents of concern in samples collected at the CMU. The cost burden of regularly obtaining information about potential impacts on water quality and submitting the required reports is reasonable given the costs of remediation in the event of failure. The technical reports required by this Order and the attached Monitoring and Reporting Program No. DWQ-2012-XXXX for Discharges Enrolled under General Waste Discharge Requirements for Discharges of Waste at Compost Management Units (hereinafter the MRP) are necessary to assure compliance with these WDRs.

14. **WATER QUALITY CONTROL PLAN.** The Regional Water Boards have each adopted a Water Quality Control Plan for their respective Regions (Basin Plan), which have subsequently been approved by the State Water Board. Revisions to each Basin Plan have also been adopted by each individual Regional Water Board and approved by the State Water Board. The Basin Plans designate beneficial uses, establish water quality objectives, and contain implementation programs and policies to achieve those objectives in all receiving waters identified in the Basin Plans. This Order implements the Basin Plans.
15. **ANTI-DEGRADATION.** In regulating the discharge of waste, pursuant to State Water Board Resolution No. 68-16, the State Water Board is required to maintain high quality waters of the state (i.e., background water quality) until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the state, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in a Regional Water Board's policies (e.g., quality that exceeds water quality objectives). Further, any activity that produces a waste must be required to meet WDRs that will result in the best practicable treatment or control to assure that (1) pollution or nuisance will not occur, and (2) the highest water quality consistent with maximum benefit to the people of the state will be maintained.

The State Water Board has considered the requirements of State Water Board Resolution No. 68-16 and finds that the degradation of groundwater or surface water by the select group of Dischargers described in this Order is not consistent with maximum benefit of the people of the state. Therefore, this Order includes requirements that will result in the best practicable treatment or control of the discharge to prevent degradation of groundwater and surface water.

16. **APPLICATION.** Water Code section 13260(a) requires any person discharging waste or proposing to discharge waste that could affect the quality of the waters of the state, other than into a community sewer system, to file a Report of Waste Discharge. Nothing in this Order is intended to require coverage under this Order if a Regional Water Board, through its Executive Officer, determines that a project could not affect the quality of the waters of the State in its region. Each Regional Water Board may regulate compost management units or other composting operations in any appropriate manner. This Order is one option available to the Regional Boards to regulate composting operations. For the purposes of this Order, a NOI and accompanying technical report (as described in Attachments B and C of this Order, respectively) is equivalent to the aforementioned Report of Waste Discharge. After the Regional Water Board determines that the NOI is complete and that the CMU can be appropriately regulated under this Order, a NOA will be issued by the Regional Water Boards' Executive Officer.

Upon issuance of a NOA for coverage under this Order, the Discharger's' approved NOI becomes incorporated by reference into this Order, as it applied to the CMU. The Discharger is responsible for carrying out all operations at the CMU in a manner that complies with this Order, including the site specific manner of compliance indicated in the Discharger's approved NOI.

17. **ENFORCEMENT ACTIONS.** Pursuant to Water Code section 13350, any person who discharges waste, or causes or permits waste to be deposited where it is discharged into

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the waters of the state is in violation of this Order and will be liable civilly. Remedies for such illegal actions may be proposed in accordance with Water Code sections 13350(d) and 13350(e).

Water Code section 13304(a) requires any person who has discharged or discharges waste into the waters of the state in violation of any WDR or other order or prohibition issued by the Water Boards or who has caused or permitted, causes or permits, or threatens to cause or permit any waste to be discharged or deposited where it is, or probably will be, discharged into the water of the state and creates, or threatens to create, a condition of pollution or nuisance, shall upon order of the Regional Water Board, clean up the waste or abate the effects of the waste, or, in the case of threatened pollution or nuisance, take other necessary remedial action, including but not limited to overseeing cleanup and abatement efforts.

In overseeing all cleanup and abatement efforts, the Regional Water Board is a governmental agency that must expend limited staff resources to assure compliance with the law. Water Code section 13304(c) provides that the person or persons who discharged the waste, discharges waste, or threatened to cause or permit the discharge of the waste within the meaning of Water Code section 13304(a), are liable to that governmental agency to the extent of the reasonable cost actually incurred in cleaning up the waste, abating the effects of the waste, supervising cleanup or abatement activities, or taking other remedial action.

Any Discharger who violates any of the requirements of this Order or the MRP, or conditions for enrollment will be subject to permit modification, revocation and reissuance, or termination.

18. **SITE RESTORATION.** The release of wastes or waste constituents derived therefrom, at an unmanaged, inactive, or abandoned CMU may cause, threaten to cause, or contribute to the degradation of the waters of the state. Prior to terminating any waste discharge activity, rendering an unmanaged, inactive, or abandoned CMU formally closed, the Discharger shall fulfill the requirements for site restoration as specified in this Order, for the protection of the waters of the state.
19. **CALIFORNIA ENVIRONMENTAL QUALITY ACT.** The State Water Board circulated a Mitigated Negative Declaration for general WDRs, in support of this Order, for those material discharges specified in Finding No. A.4 of this Order for composting, in accordance with the California Environmental Quality Act (CEQA) and with the terms and conditions of this Order contained therein. The State Water Board has assessed the potential impact on the physical environment of such discharges and has considered all of the comments received. The State Water Board adopted the Mitigated Negative Declaration in Resolution No. (number to be determined).
20. **RESPONSIBILITY FOR MONITORING AND MAINTENANCE.** The Discharger, as a condition of this Order, may be required to conduct regular maintenance and monitoring to ensure the protection of water quality and beneficial uses. Dischargers are financially responsible for covering the costs associated with these activities pursuant to this Order, until the Regional Water Board, on behalf of the State Water Board, has determined that the CMU no longer poses a threat to water quality.

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21. **ANNUAL FEES.** The Discharger is required to pay an annual fee (i.e., waste discharge permit fee) as determined by the State Water Board, and pursuant to Water Code section 13260 *et seq.* The filing fee accompanying the NOI is the first year's annual fee. The annual fee is based on the threat to water quality and complexity of the discharge in accordance with Cal. Code Regs. title 23 section 2200. Dischargers enrolled under this Order will be assigned a threat to water quality and complexity rating of 3-C and will be assessed the corresponding fee for Discharge to Land sites, plus any applicable surcharges.
22. **WATER RESOURCES FACTORS.** The State Water Board, pursuant to Water Code section 13241, has considered all water resource-related environmental and economic factors related to discharges of wastes associated with CMUs.
23. **PUBLIC PARTICIPATION.** All of the findings contained within this Order, supplemental information and details in the Information Sheet, and incorporated references were considered in establishing the following General WDRs for CMUs.
- All applicable Discharges and other interested parties and persons were notified of the intent to adopt Statewide General WDRs for Discharges of Waste at CMUs, and were provided with an opportunity for a public hearing and an opportunity to submit written comments.
- In a public meeting, all comments pertaining to this Order were heard and considered.
24. **STRATEGIC PLAN.** The issuance of this Order establishing General WDRs for CMUs is consistent with the goal to provide water resources protection, while considering economic and environmental impacts as stated in the Strategic Plan of the Water Boards.
25. **DELEGATION OF AUTHORITY.** The State Water Board delegates to the nine Regional Water Board Executive Officers by adoption of this Order, all the powers and authority that may be delegated pursuant to Water Code section 13223. The State Water Board intends for the Executive Officers to make modification or revisions in appropriate cases to the maintenance and monitoring requirements contained within the MRP; and to grant a Discharger's enrollment or termination under this Order and MRP pursuant to the eligibility and termination criteria established in this Order.
26. **DEFINITIONS.** In order to improve clarity, the definitions for terms and phrases having special meaning under this Order (e.g., "additives") are listed in Attachment A to this Order, which is hereby incorporated by reference and made a part of this Order.
27. **APPLICABILITY.** All materials and CMUs described in Finding Nos. A.4 and A.10 respectively, will be subject to the requirements herein upon the initial effective date of this Order, with exception of: (1) those CMUs described in Finding No. A.10.a for which the existing requirements, as determined by the Regional Water Board, are more protective of water quality, and (2) those CMUs or other composting operations described in Finding No. A.16 for which a Regional Water Board, through its Executive Officer determines that a project could not affect the quality of the waters of the State in its region..

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IT IS HEREBY ORDERED, pursuant to Water Code, Division 7, and regulations adopted thereunder; any Discharger subject to the provisions of this Order shall comply with the following:

B. ENROLLMENT PROCEDURE

1. **New Compost Management Units.** Dischargers at new CMUs (as defined in Finding No. A.10.b of this Order) must seek enrollment under this Order, and submit to the appropriate Regional Water Board Executive Officer a complete *Notice of Intent to Comply with the Terms of General Waste Discharge Requirements for Discharges of Waste at a Compost Management Unit* (Attachment B), including the appropriate filing fee – pursuant to Cal. Code Regs. title 23 section 2200 – and a technical report including, but not limited to the information requested in Attachment C of this Order. Dischargers at new CMUs – as defined in Finding No. A.10.b.ii – must seek enrollment under this Order within six months upon its adoption by the State Water Board. Dischargers of new CMUs – as defined in Finding No. A.10.b.i – must seek enrollment under this Order six months prior to the anticipated receipt of materials for composting, and must receive a NOA from the Regional Water Board Executive Officer prior to receiving materials for the production of compost. Any Discharger of a new CMU must enroll under this Order, or individual WDRs.
2. **Existing Permitted Compost Management Units.** At any time, the Discharger of an existing permitted CMU, as defined in Finding No. A.10.a, may seek rescission of individual WDRs, and seek enrollment and authorization to discharge under this Order by submitting to the appropriate Regional Water Board a complete NOI (Attachment B). The NOI must be filed with an appropriate filing fee – pursuant to Cal. Code Regs. title 23 section 2200 –and a technical report including, but not limited to the information requested in Attachment C of this Order. Dischargers of CMUs subject to individual WDRs issued by the Regional Water Boards are not required to enroll under this Order if the requirements of the individual WDRs are more protective than those prescribed in this Order.
3. **Notice of Applicability.** Coverage under this Order will be extended to the Discharger by a Regional Water Board Executive Officer on behalf of the State Water Board, upon receipt of a NOA.
4. **Notice of Intent Updates.** The Discharger must submit an updated NOI to be accepted by a Regional Water Board's Executive Officer for those instances specified in Reporting Requirements, section I.2 of this Order. For the submittal of an updated NOI, a filing fee is not required.
5. **Termination of Enrollment.** At any time, enrollment under this Order may be terminated if any of the following occur:
 - a. The Regional Water Board Executive Officer determines, based on site-specific conditions or management practices at the CMU, that the requirements of this Order are not adequate for the protection of the waters of the state, and thereby requires the Discharger to apply for individual WDRs. The applicability of this Order to such Dischargers will immediately terminate on the date of adoption of individual WDRs pursuant to Finding No. A.10.a; or

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- b. The Discharger, for reasons expressed to the Regional Water Board Executive Officer, through the submission of a Notice of Termination (NOT) and a Report of Waste Discharge, applies for issuance of individual WDRs pursuant to Finding No. A.10.a. The filing of a request by the Discharger for modification, revocation and reissuance, or termination of this Order does not stay any requirement of this Order; or
- c. After terminating all waste discharge activities at the CMU, the Discharger, for reasons expressed to the Regional Water Board Executive Officer, must submit a NOT as an attachment to the Site Restoration Notification (submitted pursuant to Reporting Requirements, section I.11 of this Order). The filing of a request by the Discharger for termination of this Order does not stay any requirements of this Order; or
- d. The Discharger may propose in a NOT submitted to the Regional Water Board Executive Officer, that composting activities at the CMU have changed, allowing for the CMU to meet the criteria for exemption, pursuant to Finding No. A.4.b of this Order. The filing of a request by the Discharger for modification, revocation and reissuance, or termination of this Order does not stay any requirement of this Order.

C. GENERAL DISCHARGE SPECIFICATIONS

- 1. The use of additives, defined in this Order and reported in an approved NOI, is allowed provided that the additives (other than water) total no more than 30% – on a dry-weight basis – of the total feedstocks for any given batch of compost. Approved additives consist of:
 - a. Fertilizing material (as defined in Attachment A of this Order) applied at rates that will be consumed or fixed/immobilized during active composting;
 - b. Liquid food material (as defined in Attachment A of this Order) specified in a NOI approved by the Regional Water Board Executive Officer, and applied at a rate that minimizes leachate production;
 - c. Manures (as defined in Attachment A of this Order);
 - d. Water, when applied at a rate that minimizes leachate production; or
 - e. Other material listed in an NOI approved by the Regional Water Board Executive Officers.
- 2. The use of any amendments, as defined in this Order and reported in the approved NOI, is allowed provided these are handled, stored, and processed in a manner only as proposed in the approved NOI and that the use of these amendments does not pose a threat to water quality.
- 3. All feedstocks, additives, amendments, and compost (active or stabilized) exposed to precipitation or run-on having the potential to either produce process storm water or leachate that would otherwise be in direct contact with the ground surface must be

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located on containment structures constructed as required by this Order, or as approved by the Regional Water Board Executive Officer upon approving the NOI.

4. All CMUs must be constructed to allow all necessary equipment to operate on them during all times of the year that feedstocks, additives, amendments, and/or compost (active or stabilized) is present without damage to the CMU or containment structures or incapacitation of the equipment. In the event that any damage occurs to the containment structure, the Discharger must repair any damaged areas immediately and report each such incident to the Regional Water Board within 24-hours of the damaging event, pursuant to the Reporting Requirements, section I.9 of this Order.
5. The Discharger must design, construct, and maintain any containment structure, or CMU to prevent to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, and washout, notwithstanding precipitation events, equipment movement, and other aspects of CMU operation.
6. The Discharger must, to the satisfaction of the Regional Water Boards, reuse the liquids captured in any wastewater or storm water detention pond at the CMU, in an effort to: maintain capacity in the ponds; prevent overflow; prevent potential violation of an NPDES permit; and/or prevent evapoconcentration of constituents during the dry season. In the event the Discharger finds, to the satisfaction of the Regional Water Board, that it is infeasible to reuse of the liquids captured in any wastewater detention pond at the CMU, the Regional Water Board Executive Officer may approve, as proposed by the Discharger in an NOI, an alternative disposal method to land for wastewaters.
7. All wastewater detention ponds must be monitored in accordance with the Monitoring Requirements, section F of this Order. The results of that sampling must be reported to the appropriate Regional Water Board in accordance with the Reporting Requirements, section I.3 of this Order.
8. To minimize the potential impacts to the waters of the state, the Discharger, to the satisfaction of the Regional Water Boards, must minimize the potential for piles of feedstocks, additives, amendments, or compost (active or stabilized) to become over saturated and generate leachate.
9. The Discharger must maintain all containment structures and monitoring systems in good working order whenever feedstocks, additives, amendments, compost (active or stabilized), and/or wastewaters are present at the CMU;

D. PROHIBITIONS

1. Discharges of the following wastes to new or existing CMUs pose a significant threat to the quality of the waters of the state, and are therefore prohibited from being discharged to any CMU regulated under this Order. Dischargers proposing to compost any of the following wastes must contact the Regional Water Board for individual WDRs.
 - a. Animal carcasses as defined in this Order;

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- b. Any feedstock, additive, or amendment other than those specifically named in Finding Nos. A.4.a and C.1 of this Order, or listed in an approved NOI;
 - c. Liquid wastes other than those defined in Attachment A of this Order as leachate, liquid food material, wastewater, process storm water, or washwater;
 - d. Medical wastes as defined in the California Health and Safety Code, section 117690;
 - e. Municipal Solid Waste, other than those wastes, additives, and amendments specified in Finding Nos. A.4.a and A.4.c of this Order;
 - f. Septage;
 - g. Sludges (including untreated sewage sludge, water treatment sludge, and industrial sludge);
 - h. Wastes classified as “hazardous” as defined in the Cal. Code Regs. title 22, section 66261.3; and
 - i. Wood containing lead-based paint or wood preservatives, or ash from such wood.
2. The following activities conducted at CMUs pose a significant threat to the quality of the waters of the state, and are therefore prohibited from being performed at any CMU regulated under this Order.
- a. Any feedstock, additive, amendments, or compost (active or stabilized) stored, processed, or composted outside of the designated storage, processing, and composting area, as those boundaries are defined in an approved NOI;
 - b. Any volume or weight percentage of any feedstock, additive, or amendment, exceeding those specified in this Order;
 - c. Concentration of constituents in any wastewater or storm water detention pond, through evapoconcentration, to reach hazardous levels as defined in Cal. Code Regs. title 22 section 66261.3;
 - d. Discharges of feedstocks, additives, amendments, compost (active or stabilized) or wastewaters to lands not owned or controlled by the Discharger, for the purposes of storage or composting;
 - e. Discharges of feedstocks, additives, amendments, compost (active or stabilized) or wastewaters that cause, threaten to cause, or contribute to the degradation of the waters of the state, pursuant to the Regional Board’s Basin Plan;
 - f. Discharges of feedstocks, additives, amendments, or compost (active or stabilized) that cause spontaneous combustion;
 - g. Feedstocks, additives, amendments, compost (active or stabilized), or wastewaters discharged to surface waters or surface water drainage courses, except as specifically allowed under an NPDES permit applicable to the discharge;

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- h. Liquids other than ambient precipitation, process water, liquid food materials, or wastewaters (as defined in this Order) discharged to any runoff detention basin, as defined in Attachment A of this Order;
 - i. Wastewaters discharged directly onto the ground surface at CMUs, unless used for dust control or controlled irrigation.
 - 3. Dischargers of existing CMUs located on, or proposing to site a new CMU on a property placed on the Cortese List, maintained by the Department of Toxic Substances Control, providing information about the location of hazardous materials release sites are prohibited.
- E. **DESIGN SPECIFICATIONS.** Dischargers must implement one of the following design specification tiers based on the feedstock types discharged to the CMU.
 - 1. **Tier 1:** This tier is applicable to any CMU to which the Discharger proposes to discharge, or is actively discharging, no more than 12,500 cy of feedstock at any given time, so long as the discharge meets the following additional limitations. For the purposes of this tier, the feedstocks discharged are restricted to those defined in this Order as “agricultural material”, “green material”, “paper material”, “vegetative food material”, or a combination of these feedstocks, and must only be discharged to a storage or composting area at a CMU described in an approved NOI. If at any time, either the volume or types of feedstocks discharged at a Tier 1 CMU are exceeded, the operation is no longer eligible for enrollment as a Tier 1 CMU, and the Discharger must submit a revised NOI to the appropriate Regional Water Board, within 30 days of the triggering event, proposing reclassification to either Tier 2 or Tier 3, as appropriate, or if not, then within 90 days of the triggering event, submitting a Report of Waste Discharge for regulating the discharge under individual WDRs.
 - a. The Dischargers must, to the satisfaction of the Regional Water Board, ensure and certify under penalty of perjury that at the Tier 1 CMU:
 - i. The discharge of feedstock, as specified in the preceding paragraph, will not contribute to, cause, or threaten to cause a condition of contamination, pollution or nuisance;
 - ii. Containment structures are properly designed, constructed, and maintained to prevent conditions of contamination, pollution, or nuisance resulting from the discharge of waste;
 - iii. Areas used for the storage and/or treatment of feedstocks, additives, amendments, compost (active or stabilized), or wastewaters are:
 - (1) Designed, constructed, and maintained to control and manage all run-on, runoff, and precipitation which falls onto or within the boundaries of these areas, under conditions of a 25-year, 24-hour storm event. In the event precipitation exceeds the 25-year, 24-hour storm event, runoff from the CMU must be discharged in a manner consistent with the General NPDES Storm Water Permit and must not contribute to, cause, or threaten to cause contamination, pollution, or nuisance;

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- (2) Protected from inundation by surface flows associated with the site-specific maximum peak flow from the 25-year, 24-hour storm event that may occur during the period of processing, storage or treatment of materials; and
 - (3) Capable of preventing degradation of waters of the state as a result of waste discharge, processing, storage, and treatment. Such structures are designed, constructed, and maintained to (1) prevent ponding and impede vertical movement of liquid phase constituents of concern, and (2) reliably transmit any free liquid present during storage, treatment, and processing of materials (such as the act of composting as a treatment of feedstocks) laterally to a containment structure (e.g., pond, storage tank, etc.), to prevent liquids from entering ground or surface waters over the lifetime of the CMU and prevent conditions that could contribute to, cause, or threaten to cause a condition of contamination, pollution, or nuisance.
- iv. Wastewater detention ponds, if used at the CMU, must be designed, constructed, and maintained to prevent conditions contributing to, causing, or threatening to cause contamination, pollution, or nuisance, and must be capable of containing, without overflow or overtopping (taking into consideration evaporation, the crest of wind-driven wastes, and water reused in the compost), all runoff from the CMU in addition to the ambient precipitation that falls into the wastewater detention pond, under conditions of a 25-year, 24-hour storm event. In the event precipitation exceeds the volume of the 25-year, 24-hour storm event, wastewater and storm water must only be discharged in a manner consistent with the General NPDES Storm Water Permit and must not contribute to, cause, or threaten to cause contamination, pollution, or nuisance;
 - v. Berms, if used on or around the CMU, must be designed, constructed, and maintained (unless superseded by more stringent NPDES permit requirements) to prevent run-on to and runoff from the CMU without overflow, resulting from a 25-year, 24-hour peak flow storm event. Berms must be adequately protected from erosion, and must not cause, threaten to cause, or contribute to conditions resulting in the infiltration of wastewaters, contamination, pollution, or nuisance; and
 - vi. Drainage conveyance systems, if used on or around the CMU, must be designed, constructed, and maintained for the conveyance of wastewaters from all composting and storage areas to a wastewater detention pond. Ditches must be lined and appropriately located and sized to capture and transmit, without overflow or infiltration, all wastewaters of the CMU in addition to all storm water that falls on the CMU as a result of a 25-year, 24-hour storm event. Ditches must be adequately protected from erosion, and must not cause, threaten to cause, or contribute to conditions resulting in the infiltration of wastewaters, contamination, pollution, or nuisance.

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- b. The Discharger must, to the satisfaction of the Regional Water Board, comply with all applicable monitoring requirements in accordance with Monitoring Specifications, section F of this Order.
2. **Tier 2:** This tier is applicable to any CMU for which the Discharger proposes to discharge or is actively discharging either (1) Tier 1 feedstocks (limited to “agricultural material”, “green material”, “paper material”, “vegetative food material”, or any combination of these feedstocks) in volumes greater than 12,500 cy; or (2) any feedstocks or combination of feedstocks specified in Finding No. A.4.a of this Order in any volume, to any storage or composting area at a CMU.
- a. The Discharger must, to the satisfaction of the Regional Water Board, and certify under penalty of perjury, ensure that at the CMU:
 - i. The discharge of feedstock as specified in the preceding paragraph, will not contribute to, cause, or threaten to cause a condition of contamination, pollution or nuisance;
 - ii. The working surface for all composting and storage areas must be designed, constructed, and maintained to prevent conditions of contamination, pollution, or nuisance. All working surfaces must meet the following specifications:
 - (1) All working surfaces must have a hydraulic conductivity of 1×10^{-6} cm/s or less, and meet one the following construction and material specifications:
 - (a) Asphalt concrete or Portland cement concrete designed to minimize the potential for cracking and to allow equipment to operate without damage;
 - (b) Compacted clay, with a minimum thickness of one foot and protected from desiccation and installed in a manner such that the integrity will not be impaired by the operation of heavy equipment used at the CMU; or
 - (c) An equivalent engineered alternative as proposed in an approved NOI.
 - (2) The slope of the containment structure and working surface area are designed, constructed, and maintained to (1) prevent ponding and impede vertical movement of liquid phase constituents of concern; (2) reliably transmit any free liquid present during the storage, treatment, and processing of materials laterally to a containment structure to prevent liquids from entering surface water or groundwater over the lifetime of the CMU; and (3) prevent conditions that could contribute to, cause, or threaten to cause a conditions of contamination, pollution or nuisance; and
 - (3) Wastewaters are conveyed to a wastewater detention pond, or other containment structure, approved by the Regional Water Board Executive Officer. The conveyance of liquids resulting from a site-specific maximum peak volume from at least a 25-year, 24-hour storm, will not cause damage to the collection and conveyance structures, and will cause neither the erosion nor inundation of the working surface. In the event that rainfall exceeds the volume of the 25-year, 24-hour storm event, runoff must only be discharged in a manner consistent with the General ND PES Storm Water Permit and must not contribute to, cause, or threaten to cause contamination, pollution, or nuisance.

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- iii. All wastewater detention ponds are designed, constructed, and maintained to prevent conditions contributing to, causing, or threatening to cause contamination, pollution, or nuisance, and must meet the following specifications:
 - (1) The wastewater detention pond must have, and maintain, a hydraulic conductivity of 1×10^{-6} cm/s or less, and may be constructed of the following materials:
 - (a) A liner system that includes a single composite liner system consisting of a 40-mil synthetic geomembrane (60-mil if high-density polyethylene) underlain by either one foot of compacted clay, or a geosynthetic clay liner that is installed over a prepared base;
 - (b) A liner system that includes Portland cement concrete – designed to minimize cracking and infiltration – underlain by a 40-mil synthetic geomembrane (60-mil if high-density polyethylene); or
 - (c) An equivalent engineered alternative as proposed in an approved NOI.
 - (2) The wastewater detention pond must be capable of containing, without overflow or overtopping (taking into consideration evaporation, the crest of wind-driven waves, and water reused in the compost), all runoff from the CMU in addition to the ambient rainwater that falls into the wastewater detention pond, under conditions of a 25-year, 24-hour storm event. In the event that rainfall exceeds the volume of the 25-year, 24-hour storm event, wastewater and storm water must only be discharged in a manner consistent with the General NPDES Storm Water Permit and must not contribute to, cause, or threaten to cause contamination, pollution, or nuisance;
- iv. Berms on or around all CMUs, including storage areas. Such berms must be designed, constructed, and maintained (unless superseded by more stringent NPDES permit requirements) to prevent run-on to and runoff from the CMU without overflow, resulting from a 25-year, 24-hour peak flow storm event, including at all points of ingress and egress by heavy equipment or vehicles (e.g., for cleanout and other maintenance purposes). Berms must be adequately protected from erosion, and must not cause, threaten to cause, or contribute to conditions that result in contamination, pollution, or nuisance, or the infiltration of wastewaters.
- v. Drainage ditches are designed, constructed, and maintained for the conveyance of wastewaters from all composting and storage areas to a wastewater detention pond, and to prevent conditions contributing to, causing, or threatening to cause contamination, pollution, or nuisance, and must meet the following specifications:
 - (1) Drainage ditches must have, and maintain, a hydraulic conductivity of 1×10^{-6} cm/s or less, and may be constructed of the following materials:

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- (a) A liner system that includes Portland cement concrete – designed to minimize cracking and infiltration – underlain by a 40-mil synthetic geomembrane (60-mil if high-density polyethylene); or
 - (b) An equivalent engineered alternative as propose in an approved NOI.
 - (2) Ditches must be appropriately located and sized to capture and transmit, without overflow, erosion, or infiltration, all wastewaters of the CMU in addition to all storm water that falls on the CMU as a result of a 25-year, 24-hour storm event. Any precipitation volume in excess of the 25-year, 24-hour storm event must be handled in accordance with the General Storm Water Permit.
 - vi. All composting and storage areas are designed, constructed, and maintained as part of the entire storm water and wastewater management system to control and manage all wastewater, in addition to all run-on, runoff, and precipitation which fall onto or within the boundaries of these areas.
- b. The Discharger must, to the satisfaction of the Regional Water Board, comply with all applicable monitoring requirements in accordance with Monitoring Specifications, section F of this Order.
3. **Tier 3:** This tier is applicable to any CMU for which the Discharger proposes to discharge or is actively discharging either (1) Tier 1 feedstocks (limited to “agricultural material”, “green material”, “paper material”, “vegetative food material”, or any combination of these feedstocks) in volumes greater than 12,500 cy; or (2) any feedstocks or combination of feedstocks specified in Finding No. A.4.a of this Order in any volume, to any storage or composting area at a CMU, and advocating that: (1) existing containment structures and/or current management practices at the CMU are equally protective of the waters of the state, as those specified for Tier 2 CMUs (Design Specifications, section E.2 of this Order); and (2) current management practices at the CMU minimize the potential emergence of leachate from any feedstock, additive, amendment, or compost (active or stabilized) pile.
- a. The Discharger must, to the satisfaction of the Regional Water Board and certifying under penalty of perjury, ensure that at the CMU:
 - i. The discharge of feedstocks specified in Finding No. A.4.a of this Order, will not contribute to, cause, or threaten to cause a condition of contamination, pollution or nuisance;
 - ii. Discharges of feedstocks, additives, amendments, and compost (active or stabilized) must be managed to minimize leachate production;
 - iii. Liquids (i.e., leachate, liquid food material, wastewater, process storm water, or washwater), applied to feedstocks, additives, amendments, or compost (active or stabilized) must be managed to minimize exceeding the material’s holding capacity (i.e., the amount of moisture it can hold without producing free liquids);
 - iv. Containment structures (including, but not limited to, pads, wastewater detention ponds, berms) are properly designed, constructed, and maintained to prevent

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- conditions of contamination, pollution, or nuisance resulting from the discharge of waste;
- v. Areas used for the storage and/or treatment of feedstocks, additives, amendments, compost (active or stabilized), or wastewaters are:
 - (1) Designed, constructed, and maintained to control and manage all run-on, runoff, and precipitation which falls onto or within the boundaries of these areas, under conditions of a 25-year, 24-hour storm event, runoff from the CMU must be discharged in a manner consistent with the General NPDES Storm Water Permit and must not contribute to, cause, or threaten to cause contamination, pollution, or nuisance;
 - (2) Protected from inundation by surface flows associated with the site-specific maximum peak flow from the 25-year storm event that may occur during the period of processing, storage, or treatment of materials; and
 - (3) Capable of preventing degradation of waters of the state as a result of waste discharge, processing, storage and treatment. Such surfaces must be designed, constructed, and maintained to (1) prevent ponding and impede vertical movement of liquid phase constituents of concern, and (2) reliably transmit any liquid present during storage, treatment, and processing of materials (such as the act of composting as a treatment of feedstocks) laterally to a containment structure to prevent liquids from entering ground or surface waters over the lifetime of the CMU and prevent conditions that could contribute to, cause, or threaten to cause a condition of contamination, pollution, or nuisance.
 - vi. Wastewater detention ponds, if used at the CMU, must be designed, constructed, and maintained to prevent conditions contributing to, causing, or threatening to cause contamination, pollution, or nuisance, and must be capable of containing, without overflow or overtopping (taking into consideration evaporation, the crest of wind-driven wastes, and water reused in the compost), all runoff from the CMU in addition to the ambient precipitation that falls into the wastewater detention pond, under conditions of a 25-year, 24-hour storm event. In the event precipitation exceeds the volume of the 25-year, 24-hour storm event, wastewater and storm water must only be discharged in a manner consistent with the General NPDES Storm Water Permit and must not contribute to, cause, or threaten to cause contamination, pollution, or nuisance;
 - vii. Berms, if used on or around the CMU, must be designed, constructed, and maintained (unless superseded by more stringent NPDES permit requirements) to prevent run-on to and runoff from the CMU without overflow, resulting from a 25-year, 24-hour peak flow storm event. Berms must be adequately protected from erosion, and must not cause, threaten to cause, or contribute to conditions resulting in the infiltration of wastewaters, contamination, pollution, or nuisance; and
 - viii. Drainage conveyance systems, if used on or around the CMU, must be designed, constructed, and maintained for the conveyance of wastewaters from all composting and storage areas to a wastewater detention pond. Ditches must be lined and appropriately located and sized to capture and transmit, without overflow or infiltration, all wastewaters of the CMU in addition to all storm water that falls on the CMU as a result of a 25-year, 24-hour storm event. Ditches must be adequately protected from erosion, and must not cause, threaten to cause, or

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contribute to conditions resulting in the infiltration of wastewaters, contamination, pollution, or nuisance.

- b. The Discharger must, to the satisfaction of the Regional Water Board, comply with all applicable monitoring requirements in accordance with Monitoring Specifications, section F of this Order, including conducting either groundwater or vadose zone monitoring in accordance with the requirements specified in the MRP.

F. MONITORING SPECIFICATIONS. All Dischargers subject to this Order must implement, to the satisfaction of the Regional Water Board, the applicable requirements specified in the MRP, which is hereby incorporated by reference as part of this Order.

G. SITE CONDITIONS AND MAINTENANCE REQUIREMENTS.

1. The Discharger must regularly inspect and maintain all containment structures at the CMU, and report those conditions pursuant to Reporting Requirements, sections I.3 and I.7 of this Order. The frequency of inspections must be sufficient to prevent discharges of feedstocks, additives, amendments, compost (active or stabilized), or wastewaters from creating threatening to create, or contribute to conditions of contamination, pollution, or nuisance.
2. The Discharger must, by **August 31** of each year, conduct an annual survey of the CMU to confirm and certify under penalty of perjury, that all containment structures are prepared for the pending rainy season to (1) prevent ponding and impede vertical movement of liquid phase constituents of concern, and (2) reliably transmit any free liquid phase storage, treatment, and processing of materials (such as the act of composting as a treatment of feedstocks) laterally to a containment structure, to prevent liquids from entering ground or surface waters over the lifetime of the CMU and prevent a condition that could contribute to, cause, or threaten to cause a condition of contamination, pollution, or nuisance. Wet weather preparations must be completed by **October 1** of each year.
3. The Discharger must report annually on the then-current condition of, and maintenance activities conducted on all berms, ditches, working surfaces, detention ponds, and monitoring systems at the CMU. The report must address all maintenance conducted, and adverse conditions noted, since the prior reporting period (as specified in Reporting Schedule D.4, Table No. 2 of the MRP) with respect to all berms, ditches, working surfaces, detention ponds, and monitoring systems at the CMU. As part of the Working Surface Conditions and Maintenance Report, the Discharger must certify under penalty of perjury, that the CMU is in compliance with the requirements of the Order and applicable portions of its MRP. The Working Surface Conditions and Maintenance Report must include, but may not be limited to the information specified in Reporting Requirements, section D.2.b of the MRP.
4. The Discharger must provide the Regional Water Board with a Re-Certification Report, containing the information specified in Reporting Requirements, section I.8 of this Order, should the Discharger become aware of any area of non-compliance with the requirements of this Order or the MRP, either through the Discharger's inspection, or an inspection report provided by the Local Enforcement Agency (LEA) or Regional Water

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Board. The Discharger must take immediate steps to implement temporary measures to mitigate these areas.

5. The Discharger must, for the purposes of dust control, limit the volume of water used and the rate of water applied, to a minimum necessary to reduce immediate dust hazards.

H. **SITE RESTORATION SPECIFICATIONS.** Any Discharger (1) no longer discharging feedstocks, additives, amendments, or compost (active or stabilized) at a CMU; and (2) permanently terminating operations, must implement the following requirements, unless the Discharger demonstrates to the satisfaction of the Regional Water Board, that it is infeasible to attempt site restoration:

1. The Discharger must remove and legally (pursuant to federal and state regulations) recycle, reuse, or appropriately dispose of all remaining storm water or wastewaters from the CMU, which includes, but may not be limited to sludges, precipitates, and settled solids;
2. The Discharger must remove and legally (pursuant to federal and state regulations) recycle, reuse, or dispose of all piles, soils, or other residuals (i.e., dust, particulates) containing feedstocks, additives, amendments, compost (active or stabilized) at the CMU;
3. The Discharger must jointly notify the appropriate Regional Water Board and LEA, in writing, at the conclusion of the site restoration activities, or portion thereof, in the case of incremental site restoration, certifying under penalty of perjury that all site restoration activities were performed in accordance with the site restoration requirements of this Order, and all other applicable federal, state, and local regulations. This notification must be incorporated as an attachment to the Dischargers' NOT.

I. **REPORTING REQUIREMENTS**

1. **General Reporting Requirements.** The Discharger must furnish:

a. To the appropriate Regional Water Board, within a reasonable timeframe:

- i. Any information which the Regional Water Board may request to determine whether cause exists for modifying, revoking and reissuing, or terminating enrollment under this Order, or to determine compliance with this Order;
- ii. Upon request by the Regional Water Board, copies of records required to be kept by this Order; and
- iii. Any information submitted to another regulatory agency, which may be of interest to the Regional Water Board;

b. To the appropriate LEA or other regulatory agency, within a reasonable timeframe, any information submitted to the Regional Water Board, which may be of interest to that agency.

2. **Updated Notice of Intent.** The Discharger must submit an updated NOI at least 140 days prior to (1) any significant changes at the CMU (e.g., change in feedstock

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types on site etc.); (2) any proposed change to the Design Specification contained in this Order (e.g., working surface construction materials); (3) any proposed change to the monitoring program at the CMU; or (4) any change in activities at the CMU that may affect compliance with the terms and conditions of this Order or the MRP. Receipt of an updated NOI will initiate the 30-day Regional Water Board review period.

3. **Design Report and CQA Plan.** The Discharger must submit a Design Report and a Construction Quality Assurance (CQA) Plan at least 30 days prior to any new construction of any working surfaces, wastewater detention ponds, berms, ditches, or any other water quality protection containment structure (as proposed in a Regional Water Board approved NOI) for Regional Water Board approval prior to construction prior to constructing these containment structures at a CMU. The Design Report must include water balance calculations for basins, design of stormwater conveyance features for run-on and runoff control, liner materials and thicknesses, rationale for liner system design for all working surfaces and wastewater detention ponds, and design of any other pertinent CMU containment features. The CQA Plan must ensure testing and quality assurance of liner materials and compacted soils in accordance with commonly accepted engineering practices, American Society for Testing and Materials (ASTM) test methods, and/or other appropriate material standards. The Design Report and CQA Plan must be prepared under the direction of a California-registered civil engineer or certified engineering geologist who must sign and provide their registration number(s) on the report/plan.
4. **CQA Report.** The Discharger must submit a CQA Report within 30 days after completion of construction of any working surface, wastewater detention pond, or approved engineered alternative (as proposed in the Dischargers NOI) under an approved CQA Plan, the Discharger must submit a *CQA Report* documenting that the containment structures at the CMU were properly constructed and tested as outlined in Reporting Requirements, section I.3 of this Order, The CQA Report must be prepared under the direction of a California-registered civil engineer or certified engineering geologist who must sign and provide their registration number(s) on the report.
5. **Wastewater Detention Pond Monitoring and Maintenance Report Requirements.** The Discharger must furnish to the appropriate Regional Water Board, a Wastewater Detention Pond Monitoring and Maintenance Report on an annual basis. The Wastewater Detention Pond Monitoring and Maintenance Report must be received by the appropriate Regional Water Board no later than 5:00 pm on February 1st of each year (or next subsequent immediate business day, if falling on a weekend or state-observed holiday), and may be submitted as part of the Annual Monitoring and Maintenance Report, and must contain the information specified in Reporting Requirements, section D.2.b of the MRP.
6. **Tier 3 - Specific Monitoring Report Requirements.** If operating pursuant to the Tier 3 Design Specifications of this Order, the Discharger must furnish to the appropriate Regional Water Board, a *Tier 3 - Specific Monitoring Report* on an annual basis. The Tier 3 - Specific Monitoring Report must be received by the appropriate Regional Water Board no later than 5:00 pm on February 1st of each year (or next subsequent immediate business day, if falling on a weekend, or state-observed holiday), and may be submitted as part of the Annual Monitoring and Maintenance Report, and must contain the information specified in Reporting Requirements, section D.2.b of the MRP.

7. **Working Surface Conditions and Maintenance Report Requirements.** The Discharger must furnish to the appropriate Regional Water Board, a Working Surface Conditions and Maintenance Report on an annual basis. The Working Surface Conditions and Maintenance Report must be received by the appropriate Regional Water Board no later than 5:00 pm on February 1st of each year (or next subsequent immediate business day, if falling on a weekend, or state-observed holiday), and may be submitted as part of the Annual Monitoring and Maintenance Report, and must contain the information specified under the Reporting Requirements, section D.2.d of the MRP.
8. **Re-Certification Report Requirements.** The Discharger must furnish a Re-Certification Report to the appropriate Regional Water Board, should the Discharger become aware of any area of non-compliance with this Order or the MRP, either through the Discharger's inspection, and or inspection report provided by the LEA or Regional Water Board, the Discharger must take immediate steps to implement temporary measures to mitigate these areas. The Discharger must provide the appropriate Regional Water Board with a Re-Certification Report no later than 30 days after completing all mitigation measures, or **June 30** of that year, whichever is earliest. The Re-Certification Report must contain the information specified under the Reporting Requirements, section D.2.b of the MRP.
9. **Violations Notification Requirements.** If the Discharger determines a violation of the requirements of this Order or the MRP occurred at the CMU, must notify the appropriate Regional Water Board by telephone within 48-hours once the Discharger has knowledge of the violation. This notification must include a description of the noncompliance and its cause, the period of noncompliance (providing exact dates and times); and if the noncompliance has not been corrected: the anticipated time the noncompliance it is expected to continue. Also included in the notification must be steps taken or planned to reduce, eliminate, or prevent recurrence of the noncompliance. Depending on the severity of the violation, the Regional Water Board may require the Discharger to submit a separate technical report regarding the violation within 10 working days of the initial notification.
10. **Change in Ownership Notification Requirements.** The Discharger must notify the appropriate Regional Water Board and LEA, in writing, at least 45 days in advance of any transfer of the Order's responsibility and coverage from the current owner to a new owner for maintenance and monitoring of the CMU. This notification will consists of the current owners NOT (Attachment D of this Order), and include:
 - a. A statement of acknowledgment that the current owner is liable for violations occurring up to the transfer date and that the new owner is liable for violations occurring after the date that ownership of the property transfers.
 - b. A statement of acknowledgement that the new owners must accept responsibility for compliance with this Order, including financial assurances that the state may require, for implementation of monitoring and maintenance of the CMU.
 - c. The new owners NOI and technical report (if applicable), as an attachment to the NOT; and

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- d. A copy of notification for change in ownership submitted to the LEA, as an attachment to the NOT.
11. **Site Restoration Notification Requirements.** The Discharger must jointly notify the appropriate Regional Water Board and the LEA, in writing, at least 30 days in advance of any intent to comply with the Site Restoration Specifications, section H in this Order. The Discharger must include a statement that all site restoration activities will conform to the requirements of this Order, and all other applicable federal, state, and local regulations.
12. **Significant Maintenance Activities Notification Requirements.** The Discharger must notify the appropriate Regional Water Board, either in writing, email, facsimile, or telephone, at least two working days prior to any significant maintenance as specified under the Reporting Requirements, section D.3.c of the MRP.
13. **Release Notification Requirements.** The Discharger must notify the appropriate Regional Water Board, by telephone, email, or mail within 24-hours of concluding a potential occurrence of a release from the CMU as specified under the Reporting Requirements, section D.3.c of the MRP.
14. **Incomplete Reports and Notifications.** Where the Discharger becomes aware that they failed to submit any relevant facts in a NOI or submitted incorrect information in a NOI; or in any report or notification to the Regional Water Board, the Discharger must promptly submit such facts or information within 24-hours.
15. **Endangerment of Health and Environment.** In addition to providing the LEA with notification of any areas of noncompliance which may endanger human health or the environment – pursuant to Cal. Code Regs. title 14, section 17850 *et seq.*, – the Discharger must also notify the appropriate Regional Water Board by telephone or email within 24-hours. For the purposes of the Regional Water Board, this notification must contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected; the anticipated time it is expected to continue, and steps taken or planned to reduce, eliminate, or prevent recurrence of the noncompliance.
16. **Monitoring and Reporting Program.** Pursuant to Water Code section 13267, the Discharger must comply with the MRP. In the event that a site specific MRP becomes necessary, the Discharger must comply with the requirements specified in an individual MRP issued to the Discharger by the Regional Water Board Executive Officer, pursuant to the delegated authority specified in Provisions, section J.18 of this Order. Failure to comply with the MRP or a site-specific MRP issued by the Regional Water Board Executive Officer, may subject the Discharger to civil liability pursuant to Water Code section 13268.
17. **Monitoring Wells.** The Discharger must comply with all notice and reporting requirements of the California Department of Water Resources and with any local agency well permitting requirements with regard to the construction, alternation, destruction, or abandonment of all monitoring wells used for compliance with this Order and the MRP, as required under Water Code sections 13750 through 13755, and local agency requirements.

18. Reporting Declaration. All application, reports, or information submitted to the Regional Water Boards must be signed and certified as follows:

- a. The NOI must be signed as follows:
 - i. *For a corporation* – by a principal executive officer of at least the level of vice president.
 - ii. *For a partnership or sole proprietorship* – by a general partner or the proprietor, respectively.
 - iii. *For a municipality, state, federal, or other public agency* – by either a principal executive officer or ranking elected official.
 - iv. *For a military facility* – by the base commander or the person with overall responsibility for environmental matters in that branch of the military.
- b. All other reports required by this Order and other information required by either the State Water Board or Regional Water Boards must be signed by a person designated in paragraph (a) of the Reporting Requirements, section I.18 of this Order, or by a duly authorized representative of that person. An individual is a duly authorized representative only if:
 - i. The authorization is made in writing by a person described in paragraph (a) of the Reporting Requirements, section I.18 of this Order;
 - ii. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity; and
 - iii. The written authorization is submitted to the Regional Water Board.
- c. Any person signing a document under this section must make the following certification:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

19. Use of Licensed Professionals. Any plan or report submitted in compliance with the requirements of this Order, which requires technical interpretation, or proposes either a design, or a design change that might affect the CMUs containment features, wastewater detention ponds, or monitoring systems must be prepared by, or under the direction of, appropriately qualified professionals (e.g., registered civil engineer, professional geologist, or other registered certified specialty geologist) licensed by the State of California. In addition, the lead qualified professional must sign and provide his or her registration number, or stamp the submitted plan or report.

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*General Waste Discharge Requirements for the
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The Discharger must provide documentation that plans and reports required under this Order are prepared by or under the direction of, appropriately qualified professionals. The California Business and Professions Code sections 6735, 7835, and 7835.1 require that engineering and geologic evaluations and judgments be performed by or under the direction of registered professionals. A statement of qualifications and registration numbers of the responsible lead professionals must be included in all plans and reports submitted by the Discharger. The lead professional must sign and provide his or her registration number, or stamp the submitted plan or report.

20. **Report Submittals.** Pursuant to Cal. Code Regs. title 23 sections 3892(d) and 3893, the Discharger must:
- a. Submit all reports and notifications required under this Order, and other information requested by the State or Regional Water Boards to determine compliance with the requirements of this Order, electronically over the Internet to the State Water Board's GeoTracker system in conformance with data dictionaries found in Cal. Code Regs. title 27, division 2, subdivision 2 (Monitoring and Release Information) and specifications contained in the State Water Resources Control Board EDF Guidelines and Restrictions (version 1.2i) and Survey XYZ Guidelines and Restrictions (version 6). These data dictionaries and documents are available through links provided at <http://www.waterboards.ca/gov/ust>;
 - b. Upload to GeoTracker all water quality analytical data in Electronic Deliverable Format (EDF) and in accordance with the specification provided in Cal. Code Regs. title 23 section 3893; and
 - c. Upload all reports and notifications in a searchable Portable Document Format (PDF), which includes the signed transmittal letter and professional certification.
- J. **PROVISIONS.** Materials discharged at any CMU must not cause, threaten to cause, or contribute to conditions of pollution, contamination, or nuisance. These discharges must at all times conform with all applicable water quality standards including but not limited to, all applicable provisions and prohibitions contained in the applicable Basin Plan, including beneficial uses, water quality objectives, and implementation plans.
1. **Duty to Comply.** Any noncompliance with this Order constitutes a violation of the Water Code and is grounds for enforcement action, and/or termination of enrollment under this Order.
 2. **Corrective Action.** The Discharger must take all reasonable steps to minimize or correct any adverse impact to the environment resulting from noncompliance with this Order, including accelerated or additional monitoring necessary to determine the nature and impact of the noncompliance.
 3. **Responsibility for Monitoring and Maintenance.** Dischargers must be responsible for covering the costs associated with the activities necessary to maintain compliance with this Order until the Regional Water Board has determined that the CMU or site activities no longer poses a threat to water quality.

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4. **Proper Maintenance.** The Discharger must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the specification of this Order. Proper maintenance includes assuring effective performance, and, for laboratory and process controls, includes adequate and appropriate quality assurance procedures.
5. **Maintenance Period.** The CMU maintenance period must continue until the Regional Water Board finds that any feedstocks, additives, amendments, compost (active or stabilized), wastewaters, or other waste constituents or degradation products will not threaten the waters of the state, pursuant to Site Restoration Specifications, section H of this Order.
6. **Revision of Waste Discharge Requirements.** This Order may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:
 - a. Violation of any terms or conditions of this Order;
 - b. Obtaining this Order by misrepresentation or failure to disclose fully relevant facts; or
 - c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

The filing of a request by the Discharger for the modification, revocation and re-issuance, or termination of this Order or notification of planned changes or anticipated noncompliance does not stay any condition of this Order.

7. **Change in Ownership.** This Order is not transferable to any person except after notice to the appropriate Regional Water Board. The Discharger must submit a Change in Ownership Notification, pursuant to the Reporting Requirements, section I.10 of this Order.
8. **Property Rights.** This Order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, nor protect the Discharger from liability under federal, state, or local laws, nor create a vested right for the owner and operator to continue the regulated activity.
9. **Entry and Inspection.** Under the authority of Water Code section 13267, the Discharger must allow the State Water Board and/or Regional Water Board, or an authorized representative, upon the presentation of credentials and other documents as may be required by law to:
 - a. Enter premises where a regulated facility or activity is located or conducted, or where records must be kept under the specification of this Order;
 - b. Have access to a copy, at reasonable times, any records that must be kept under the specification of this Order;
 - c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or specified under this Order;

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- d. Sample or monitor at reasonable times, for the purposes of assuring compliance with this Order, or as otherwise authorized by the Water Code, any substances or parameters at any location; and
 - e. To photograph or videotape any structures, facilities, activities, or other conditions that could result in adverse impacts to water quality and that are pertinent to compliance with this Order.
10. **Repository for Waste Discharge Requirements.** A complete and correct copy of this Order must be maintained at the local offices of the Discharger, and must be available to maintenance personnel at all times.
11. **Severability.** The provisions of this Order are severable, and if any provision of this Order, or the application of any provision of this Order to any circumstance, is held invalid, the application of such provisions to other circumstances, and the remainder of this Order, must not be affected thereby.
12. **Effective Date.** This Order becomes effective on October 16, 2012.
13. **Penalties for Investigations, Monitoring, or Inspection Violations.** The State Water Board and Regional Water Boards reserve the right to take any enforcement action authorized by law for violations of the terms and conditions of this Order.
14. **Civil Monetary Remedies.** The Water Code section 13550 *et seq.* provides that any person who intentionally or negligently violates any conditions issued or amended by the State Water Board, is subject to administrative civil liability of up to 10 dollars per gallon of waste discharged, or if no discharge occurs, up to 100 dollars per day of violation. The Superior Court may impose civil liability of up to 10,000 dollars per day of violation or, if a cleanup and abatement order had been issued, up to 15,000 dollars per day of violation.
15. **Other Regulations.** Dischargers enrolled under this Order may be subject to additional federal, state, or local regulations.
16. **Requesting Reconsideration or Judicial Review.** Pursuant to Water Code section 13330 *et seq.*, any person aggrieved by the Order may, not later than 30 days from the date of adoption, file a petition for a writ of mandate for reconsideration by the State Water Board or judicial review. Petitions which are not received within 30 days of the State Water Boards adoption of the Order will not be subject to review by any court.
17. **Definitions.** Definitions of terms used in this Order must be as set forth in the Water Code section 13050; Health and Safety Code section 117690; California Code of Regulations title 22 section 66261.3; Code of Federal Regulations title 40 Part 258.2; and Attachment A of this Order.
18. **Delegation of Authority.** The State Water Board delegates to the nine Regional Water Board Executive Officers by adoption of this Order, all the powers and authority that may be delegated pursuant to Water Code section 13223. The State Water Board intends for the Executive Officers to make modification or revisions in appropriate cases, to the

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maintenance and monitoring requirements contained within the Monitoring and Reporting Program No. DWQ-2012-XXXX for Discharges Enrolled under General Waste Discharge Requirements for Discharges of Waste at Compost Management Units; and to grant Discharges enrollment or termination under this Order and the MRP pursuant to the eligibility and termination criteria established in this Order.

**DRAFT STATE WATER RESOURCES CONTROL BOARD
WATER QUALITY ORDER NO. DWQ-2012-XXXX**

STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR THE
DISCHARGE OF WASTES AT COMPOST MANAGEMENT UNITS
(ATTACHMENT A)

DEFINITIONS

For the purpose of the *General Waste Discharge Requirements for Discharges of Wastes at Compost Management Units*, Order No. DWQ-2102-XXXX (hereafter referred to as the Order), the following terms, phrases, or abbreviations have a narrow scope of meaning, and are as follows:

“active compost” means any feedstock, additive, or amendment, or combination thereof, in the process of being rapidly decomposed and is unstable. “Active compost” is generating temperatures of at least 50 degrees Celsius (122 degrees Fahrenheit) during decomposition; or is releasing carbon dioxide at a rate of at least 15 milligrams per gram of active compost per day, or the equivalent of oxygen uptake.

“additive” means materials or products that are listed either in General Discharger Specifications, section C.1 of this Order, or in the Dischargers’ approved Notice of Intent. Additive materials are stockpiled at the Compost Management Unit and mixed with feedstocks to adjust the moisture level, carbon-to-nitrogen ratio or other nutrient balance, or to increase porosity, or to create condition favorable to composting. Additives allowed under this Order include chemical fertilizers (when applied at rates that will be consumed or fixed/immobilized during active composting), manures (as defined in this Attachment), water, or any other material listed for that purpose in the Discharger’s approve Notice of Intent under this Order. Additives, other than water, may not exceed 30 percent – on a dry-weight basis – of the total feedstocks to be treated for any given batch of compost. Additives do not include any substance listed in Prohibitions, section D of this Order, and shall not be considered as either feedstocks or amendments.

“agricultural composting” refers to composting conducted in agricultural settings where (1) the feedstock consists of materials generated on-site by the production and processing of farm, ranch, agricultural, horticultural, silvicultural, floricultural, vermicultural, or viticultural products, including manures, orchard and vineyard prunings, and crop residues; and (2) the resulting compost is returned in a similar amount to that same agricultural site, or an agricultural site owned or leased by the owner, parent, or subsidiary of the composting activity.

“agricultural material” consists of pre-consumer plant materials coming directly from lands used in the production of farm, agricultural, horticultural, aquacultures, silvicultural, floricultural, vermicultural, or viticultural products, including orchard and vineyard prunings, and crop residues. Agricultural materials must not contain any substance included in Prohibitions, section D of the Order.

“amendments” means materials added to stabilized compost to provide attributes for certain compost products, such as product bulk, product nutrient value, product pH, and soils blend. Amendments do not include substance listed in Prohibitions, section D of this Order, and shall not be considered as either feedstocks or additives.

“anaerobic digestate” is the solid material remaining after the anaerobic digestion of any combination of agricultural materials, biosolids, food materials, green materials, manure, paper materials, or vegetative food materials – as defined in this Attachment.

“animal carcasses” refers to any whole or part (including, but may not be limited to the flesh, organs, blood, bones, and marrow) of a carcass of a bird, fish, or mammal, which cannot meet the definition of “food material” as defined in this Attachment.

“background water quality” means the measured concentration of constituents or indicator parameters in water or soil that has not been affected by waste constituents or leachate from a Compost Management Unit. Concern arises from liquids whose concentrations are in excess of the established background water quality concentration and/or basin plan objectives established by the individual Regional Water Quality Control Boards.

“beneficial uses” is as defined in Division 7, section 13020(f) of the California Water Code.

“biosolids” means sewage sludge that has been treated and tested and shown to be capable of being beneficially and legally used as a soil amendment for agriculture, silvicultural, horticulture, and land reclamation activities as specified under title 40 Code of Federal Regulations Part 503, and are as described in the State Water Resources Control Board Water Quality Order No. 2004-0012-DWQ, *“General Waste Discharge Requirements for the Discharge of Biosolids to Land for the Use as a Soil Amendment in Agricultural, Silvicultural, Horticultural, and Land Reclamation Activities”* as applicable for coverage under that general order.

“brine” means water saturated or strongly impregnated with common salt; or a strong saline solution (e.g., calcium chloride, sodium chloride).

“California Environmental Quality Act (CEQA)” refers to statute, promulgated in the Public Resources Code, beginning with Section 21000, and regulations, promulgated in California Code of Regulations, title 14, beginning with section 15000, requiring state and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible.

“California Water Code (Water Code)” refers to Division 7, Section 13000 *et seq.*, also known as the Porter-Cologne Water Quality Act, entrusting the State Water Resources Control Board and nine Regional Water Quality Control Boards with broad duties and powers to preserve and enhance all water quality and beneficial uses of the state’s immensely complex waterscape.

“chipping and grinding facilities and operations” refers to those sites that do not produce compost, but mechanically reduce the size, or otherwise engages in the handling of “green material”, and for which each load of “green material” is removed from the site within 48-hours from receipt, unless the Discharger has received written permission from the Local Enforcement Agency allowing the “green material” to remain onsite for up to 7 days.

“chipping and grinding areas at Compost Management Units” refers to a designated area at a Compost Management Unit used specifically for mechanically reducing the size of incoming feedstocks, additives, amendments, and for which each load of feedstock, additive, or amendment is removed from the designated chipping and grinding area at

the Compost Management Unit within 48-hours from receipt, unless the Discharger has received written permission from the Regional Water Quality Control Board Executive Officer allowing the “green material” to remain onsite for up to 7 days. Other than as specified in this definition, the stockpiling of feedstocks, additives, amendments, and/or compost (active or stabilized) in the chipping and grinding areas at a Compost Management Unit is prohibited.

“**composting**” refers to the process in which solid materials are decomposed in the presence of oxygen under controlled conditions through the action of bacteria and other microorganisms.

“**composting conducted at a publicly owned treatment works**” refers to the composting of treated biosolids at a publicly owned treatment works, currently operating pursuant to permit or waste discharge requirements issued by a Regional Water Quality Control Board or State Water Resources Control Board.

“**Compost Management Facility (Compost Facility)**” means the entire parcel of property at which feedstock, additive, amendments, compost (active or stabilized), and/or wastewaters are discharged for the production of compost. Such a facility may include one or more Compost Management Units.

“**Compost Management Unit (CMU)**” means an area of land, or a portion of a Compost Facility, at which feedstocks, additives, amendments, compost (active or stabilized), and/or wastewaters are discharged for treatment or storage. The term includes containment structures and ancillary features for precipitation, drainage control, and monitoring.

“**containment structures**” refers to any berm, ditch, working surface, wastewater detention pond, or other mechanism – approved by the Regional Water Quality Control Board Executive Officer on behalf of the State Water Resources Control Board – at a Compost Management Unit designed, constructed, and maintained to limit feedstock, additives, amendments, and/or compost (active or stabilized) from threatening to cause, causing, or contributing to conditions of contamination, pollution, or nuisance.

“**contamination**” is as defined in Division 7, section 13020(k) of the California Water Code.

“**depth to groundwater**” is the vertical distance measured, in feet, from the native ground surface to the first encountered groundwater.

“**distance to domestic drinking water supply wells**” is the horizontal distance measured, in feet, from the nearest edge of the Compost Management Unit to the center of the domestic well head.

“**Electronic Deliverable Format (EDF)**” is as defined in California Code of Regulations title 23, division 3, chapter 30, article 1, section 3891.

“**evapoconcentration**” is the process by which the ratio of solute to water solvent is increased by the removal of the solvent and retention of the solute.

“feedstock” refers to those materials specified in Finding No. A.4.a of the Order used in the production of compost. Feedstocks shall not be considered as either additives or amendments.

“fertilizing material” is as defined in Division 7, section 14533 of the Food and Agriculture Code.

“food material” means solid, and/or semi-solid materials resulting from the production or processing of food for animal or human consumption, but is no longer intended for such consumption, that is separated from the municipal solid waste stream. Food material includes, without limitation, food waste from food facilities (as defined in Health and Safety Code section 113789), food processing establishments (as defined in Health and Safety Code section 111955), grocery stores, institutional cafeterias (such as prisons, schools, and hospitals), restaurants, and residential food scrap collection. Food material must not contain any substance included in Prohibitions, section D of the Order.

“geocomposite liner” means a manufactured material using geotextiles, geogrids, geonets, and/or geomembranes in laminated or composite form.

“geomembrane” means flexible materials in planar form manufactured to meet specific engineering purposes. Commonly, they are used as a barrier to waste solids and fluids. The term “geomembrane” is synonymous with “synthetic liner” and “flexible membrane liner”.

“GeoTracker” is as defined in California Code of Regulations title 23, division 3, chapter 30, article 1, section 3891.

“Green Composting Waiver” refers to the *“Conditional Waiver of Waste Discharge Requirements For Composting Operation”*. Adopted by most Regional Water Boards in 1996, this waiver covered the composting of green waste, and some food processing waste, agricultural waste, and paper waste (as defined in the Green Composting Waiver), discharged to land with a volume in excess of 500 cubic yards.

“green material” consists of, or contains, materials from plants, including leaves, clippings, cuttings, trimmings of grass, weeds, shrubbery, bushes, or trees, residential or community garden waste, and untreated wood waste, and does not include any substance included in Prohibitions, section D of the Order.

“groundwater” means water below the land surface that is at or above atmospheric pressure (i.e., perched, unconfined, or confined water).

“groundwater elevation” is the vertical distance measured, in feet, from mean sea level to the water table of the first encountered groundwater below the ground surface.

“hydraulic conductivity” means the ability of natural and artificial materials to transmit fluid. For water, including aqueous solutions, the term is expressed as a measure of the rate of flow (e.g., cubic centimeters per second) one can expect through a unit-area (e.g., one square centimeter) cross section of the material when the hydraulic gradient is unity (e.g., one centimeter of head loss per centimeter of travel through the material). The resulting numerical value is expressed in velocity units (e.g., centimeters per second).

“in-progress compost” refers to, and is synonymous with “active compost”.

“leachate” means any liquid formed by the drainage of liquids from, or percolation/flow of liquids through any feedstock, additive, amendment, or active compost pile.

“liquid food material” means liquid materials resulting from the production or processing of food for animal or human consumption, but is no longer intended for such consumption, that is separated from the municipal waste stream (i.e., cheese whey, brewery waste, etc.). Liquid food material must not contain either: any waste included in Prohibitions, section D of the Order, or brines – as defined in this Attachment.

“liner” means a material or combination of materials designed, constructed, and maintained to contain any wastewater, storm water, feedstock, additive, amendment, compost (active or stabilized) discharged at a Compost Management Unit. Liners must meet the requirements specified in the Order.

“lot clearing for fire protection” refers to the storage of yard trimmings at a publicly designated site for the collection of lot clearing necessary for fire protection provided that the public agency designating the site has notified the fire protection agency.

“mammalian tissue” means materials consisting of, but may not be limited to, mammalian flesh, organs, hide, blood, bone, and/or marrow.

“manure” means accumulated herbivore or avian excrement (e.g., horse manure, cattle manure), which includes feces and urine, and any bedding material, spilled feed, or soil that is mixed with feces or urine.

“National Pollutant Discharge Elimination System (NPDES)” refers to the national program under the Clean Water Act section 402, for regulation of discharges of pollutant from point sources to waters of the United States. Discharges are illegal unless authorized by a National Pollutant Discharge Elimination System permit.

“non-commercial composting” is synonymous with backyard composting and community composting, whereby composting is conducted by a household, including, but not limited to, single family residences, duplexes, apartment buildings, or neighborhood, provided the feedstock does not contain greater than one cubic yard of food material, and that all feedstocks are generated and used onsite or within the residential neighborhood.

“nuisance” is as defined in Division 7, section 13020(m) of the California Water Code.

“pad” see definition for “working surface.”

“paper material” means nonhazardous paper and paper by-products, and does not include any substance identified in Prohibitions, section D of the Order.

“point of compliance (POC)” means a vertical surface located along the hydraulically downgradient limit of a Compost Management Unit and that extends down through the upper most aquifer underlying the Compost Management Unit.

“pollution” is as defined in Division 7, section 13020(l) of the California Water Code.

“Portable Document Format (PDF)” is as defined in California Code of Regulations title 23, division 3, chapter 30, article 1, section 3891.

“precipitation” is any condensate of atmospheric water vapor deposited onto any Compost Management Unit, and includes hail, mist, rain, sleet, or snow.

“process storm water” refers to any form of precipitation which either: (1) falls onto, or otherwise comes into contact with any feedstock, additive, amendment, and/or active compost pile, and runs off the aforementioned piles without flowing through the pile; or (2) comes into contact with either leachate or washwater.

“process water” means liquid that is generated during (e.g., leachate) or used in (e.g., water) the production of compost.

“publicly owned treatment works (POTW)” is as defined in Part 403, section 403.3(q) of title 40 Code of Federal Regulations.

“Regional Water Quality Control Board (Regional Water Board)” is as defined in Division 7, section 13020(b) of the California Water Code.

“run-off” means any precipitation, wastewater, or other liquids that drain from any part of a Compost Management Unit.

“run-on” means any precipitation, wastewater, or other liquids that drain onto any part of the Compost Management Unit.

“septage” means any waste removed from a septic tank, cesspool, portable toilet, Type III marine sanitation device, or similar wastewater handling device that has not passed through a municipal wastewater treatment facility.

“sewage sludge” means any solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a municipal wastewater treatment facility. It includes solids removed or used during primary, secondary, or advanced wastewater treatment processes. It does not include grit or screening material generated during preliminary treatment of domestic sewage at a municipal wastewater treatment facility.

“sludge” refers to the solid, semi-solid, or liquid residue produced by water, wastewater, or sewage treatment processes.

“stabilized compost” means any feedstock, additive, or amendment, or combination thereof, discharged to land for treatment by composting, which have undergone the “Process to further Reduce Pathogens (PFRP), as described in California Code of Regulations title 14, sections 17868.3, and that has reached a stage of reduced biological activity as indicated by reduced temperatures and rate of respiration below that of active compost.

“storm water” refers to any form of precipitation which does not either: (1) fall onto, or otherwise come into contact with any feedstock, additive, amendment, and/or active compost pile, and runs off the aforementioned poles without flowing through the pile; or (2) come into contact with any wastewater, as defined in this Attachment.

“Title 14 California Code of Regulations (Cal. Code Regs. title 14)” refers to that body of regulations, promulgated by the Department of Resources Recycling and Recovery, beginning with section 17850 of Division 7, Chapter 3.1, establishing standards and regulatory requirements for intentional and inadvertent composting resulting from the handling of compostable materials.

“Title 23 California Code of Regulations (Cal. Code Regs. title 23)” refers to that body of regulations, promulgated by the State Water Resources Control Board, under Division 3, establishing standards and regulatory requirements for the assessment of annual fees associated with waste discharge requirements.

“Title 27 California Code Regulations (Cal. Code Regs. title 27)” refers to the body of consolidated regulations, jointly promulgated by the State Water Resources Control Board and the Department of Resources Recycling, under Division 2, establishing standards and regulatory requirements for the treatment, storage, processing, or disposal of waste discharged to land.

“vegetative food material” means food material resulting from the production or processing of food for animal or human consumption, but is no longer intended for such consumption, that is derived solely from plants and is separated from the municipal solid waste stream. Vegetative food material may be processed or cooked but must otherwise remain in its essentially natural state and no salts, preservatives, fats or oils, or other adulterants shall have been added. Vegetative food material must not contain any substance included in Prohibitions, section D of the Order.

“water quality control plan (Basin Plan)” is as defined in Division 7, section 13020(j) of the California Water Code.

“washwater” refers to a type of wastewater generated from the washing of vehicles and/or equipment at any Compost Management Unit.

“wastewater” refers collectively to leachate, washwater, and/or process storm water.

“wastewater detention pond” means a lined basin designed to capture any process storm water, leachate, or washwater that otherwise runoff to surface waters or surface water drainage course or percolate to groundwater in violation of the Order. Wastewater detention ponds may also include other containment vessels (i.e., above or below ground tanks) approved for use at a Compost Management Unit, by the Regional Water Quality Control Board Executive Officer for the collect and potential reuse of the wastewaters.

“Water Boards” refers collectively to the State Water Resources Control Board and the nine Regional Water Quality Control Boards.

“Waste” is as defined in California Water code section 13020(d).

“Water Quality Objectives” is as defined in California Water Code section 13050(h).

“waters of the state” is as defined in California Water Code section 13050(f).

“working surface” means any area at a Compost Management Unit used for the storage and/or treatment of feedstocks, additives, amendments, or compost (active or stabilized).

“within-vessel composting” refers to the action of storing and composting any allowable feedstock under this Order, within a fully enclosed vessel or container (e.g., drum, silo, bin, tunnel, reactor, building) where by all wastewaters are retained and managed such that the potential to affect the waters of the state are eliminated.

**DRAFT STATE WATER RESOURCES CONTROL BOARD
WATER QUALITY CONTROL BOARD ORDER NO. DWQ-2012-XXXX**

NOTICE OF INTENT

TO COMPLY WITH THE STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS
FOR THE DISCHARGE OF WASTES AT COMPOST MANAGEMENT UNITS
(ATTACHMENT B)

1. DISCHARGER INFORMATION

Owner Name:				
Mailing Address:				
City/Locale:	County:	State:	Zip:	Telephone Number:
Facsimile Number:		Email Address:		
Owner Type (check one):	<input type="checkbox"/> Individual	<input type="checkbox"/> Corporation	<input type="checkbox"/> Partnership	<input type="checkbox"/> Other:
Operator Name (if different than above):				
Mailing Address:				
City/Locale:	County:	State:	Zip:	Telephone Number:
Facsimile Number:		Email Address:		

2. COMPOST MANAGEMENT UNIT INFORMATION

Compost Facility or Management Unit Name:				
Physical Address:				
City/Locale:	County:	State:	Zip:	Telephone Number:
Type (check one):		Compost Management Unit Size (acres):		
<input type="checkbox"/> Existing Permitted Compost Management Unit Regional Water Board Order No.: _____		Input Capacity of Feedstock (cubic yards):		
<input type="checkbox"/> New Compost Management Unit		Throughput Capacity (cubic yards):		
Assessor Parcel Number(s):		Hydrologic Basin:		
Township/Range/Section: T____R____S____ B&M		Closest named surface water: (e.g. Sacramento River):		

3. REASONS FOR FILING

<input type="checkbox"/> New Discharge or Unit	<input type="checkbox"/> Existing Discharge or Unit	<input type="checkbox"/> Expansion or Change in Operations
<input type="checkbox"/> Changes in Ownership/Operator		<input type="checkbox"/> Other:

4. STORM WATER PERMIT

<p>Is there an Industrial Storm Water Permit for this facility? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, what is the WDID Number: Related to storm water, have you received a “No Exposure Certification”, “Notice of Termination”, or “Notice of Exemption” for this facility? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, please provide a copy</p> <p>The Notice of Intent for coverage under the Industrial Storm water Permit may be obtained over the internet at: http://www.waterboards.ca.gov/water_issues/programs/stormwater/industrial.shtml</p>

5. OTHER PERMITS

<p>Has another agency issued permits or other entitlements (e.g., solid waste facility permit, notification permit, conditional use permit, building permit, grading permit) for the unit? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>For each permit or entitlement, list the type, issuing agency, and date of issuance:</p>

6. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

<p>Has a CEQA determination been made by an agency? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	<p>Name of agency:</p>
<p>Type of determination:</p>	<p>Date of determination:</p>
<p>If the CEQA determination was made after the date of adoption of this General WDR, then include a copy of the CEQA determination with this NOI.</p>	

7. EXEMPT COMPOSTING ACTIVITIES

<p>As defined in this General WDR (Finding No. A.4.b) are the composting activities conducted at the Unit exempt? <input type="checkbox"/> No or <input type="checkbox"/> Yes (indicate which by checking one of the following boxes)</p> <p><input type="checkbox"/> Chipping and grinding <input type="checkbox"/> Onsite composting of agricultural materials <input type="checkbox"/> In-Vessel Composting</p> <p><input type="checkbox"/> Temporary collection and storage <input type="checkbox"/> Non-commercial composting <input type="checkbox"/> POTW onsite composting of treated biosolids</p>
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8. PROCESS

<p>Allowable Materials (check all that apply, and specify the quantity onsite at any time):</p>	
<p><input type="checkbox"/> agricultural material cu. yds.:</p>	<p><input type="checkbox"/> anaerobic digestate cu. yds.:</p>
<p><input type="checkbox"/> biosolids cu. yds.:</p>	<p><input type="checkbox"/> food material cu. yds.:</p>
<p><input type="checkbox"/> green material cu. yds.:</p>	<p><input type="checkbox"/> manure cu. yds.:</p>
<p><input type="checkbox"/> paper material cu. yds.:</p>	<p><input type="checkbox"/> vegetative food material cu. yds.:</p>
<p>Maximum total permitted volume (cubic yards):</p>	
<p>Months during which compostable materials will be on-site:</p>	
<p>Additives/Amendments and maximum dry weight percentage used (list):</p>	

9. SITE CONDITIONS

Highest anticipated depth to groundwater (feet below ground surface):
Average ground surface material hydraulic conductivity (centimeters per second):
Annual average precipitation (inches per year):
Distance to nearest domestic drinking water supply well (feet):

10. DESIGN SPECIFICATION TIERS

(check one)		
<input type="checkbox"/> Tier 1 (Design Specifications, section E.1)	<input type="checkbox"/> Tier 2 (Design Specifications, section E.2)	<input type="checkbox"/> Tier 3 (Design Specifications, section E.3)

11. TIER 3 - SPECIFIC MONITORING

If the box for Tier 3 Design Specification has been marked, indicate the type of Tier 3 - Specific Monitoring to be implemented at the Unit	
<input type="checkbox"/> Vadose zone monitoring	<input type="checkbox"/> Groundwater monitoring

12. TECHNICAL REPORT

Provide a complete technical report with all the information required in Attachment C of this Order

13. FILING FEE

Pursuant to California Water Code section 13260 <i>et seq.</i> , Dischargers enrolled under this Order are required to pay an annual fee, as determined by the State Water Resources Control Board. The filing fee accompanying this NOI is the first year's annual fee. The annual fee is based on the threat to water quality and complexity of the discharge in accordance with Cal. Code Regs. title 23 section 2200. Dischargers enrolled under this Order will be assigned a threat to water quality and complexity rating of 3-C and will be assessed the corresponding fee, plus any applicable surcharges. The NOI is to be accompanied by a check, made out to the <i>State Water Resources Control Board</i> for the payment of the filing fee.
--

14. CERTIFICATION

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.	
_____ Signature (Owner or Authorized Representative)	_____ Date
_____ Print Name	_____ Title
_____ Telephone Number	_____ Email

**DRAFT STATE WATER RESOURCES CONTROL BOARD
WATER QUALITY CONTROL BOARD ORDER NO. DWQ-2012-XXXX**

REQUIREMENTS FOR A TECHNICAL REPORT IN SUPPORT OF A NOTICE OF INTENT TO
COMPLY WITH THE STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR
THE
DISCHARGE OF WASTES AT COMPOST MANAGEMENT UNITS
(ATTACHMENT C)

The technical report required as part of the Notice of Intent (NOI), must be organized such that each item listed below is addressed in the same format, including the numbering scheme. The entire *General Waste Discharge Requirements for the Discharge of Wastes at a Compost Management Unit*, Order No. DWQ-2012-XXXX (Order) should be thoroughly reviewed for its requirements prior to preparation of this technical report. The minimum information needed to provide a complete review by the appropriate Regional Water Board staff is listed below. This list may not reference all information needed for every Compost Management Unit (CMU).

The technical report must be prepared under the direction of a California-registered professional Civil Engineer or Certified Engineering Geologist and signed (including registration number) by that professional.

A. GENERAL INFORMATION (also include on the NOI form where applicable).

1. Property owner. Include the name, address, telephone number, facsimile number, email address, and type of ownership (i.e., individual, corporation, etc.)
2. Compost Management Unit (CMU) operator. Include the name, address, telephone number, facsimile number, email address.
3. Address where legal notices may be served (if different than above).
4. Name and location of the CMU. Use the most accurate location, which may include: address; nearest town; cross streets.
5. Type of CMU (i.e., new or existing permit), as defined in Finding No. A.10 of the Order.
 - a. Existing Permitted CMUs. CMUs which have received all permits and WDRs necessary from the Regional Water Board for construction and operation, on or before the initial effective date of this Order. Dischargers must identify any known Regional Water Board orders on the property.
 - b. New CMUs. CMUs which have received all permits and WDRs necessary from the Regional Water Board for construction and operation, after the initial effective date of this Order. Dischargers must identify if the CMU was formerly covered under the *Conditional Waiver of Waste Discharge Requirements for Compost Operations* (Green Water Composting Waiver).
6. Size of the CMU (in acres).
7. Assessor's parcel number(s) (APN).
8. Section, township and range with base and meridian.
9. Regional Water Quality Control Board office

http://www.waterboards.ca.gov/waterboards_map.shtml

10. Any plans for CMU expansion.
11. Input capacity of the feedstock (in cubic yards)
12. Amount of stabilized compost produced (in cubic yards), and foreseeable uses.

B. DESIGN INFORMATION

1. Provide the current and/or proposed design of all working surfaces, berms, and conveyance ditches for the storage and/or treatment of feedstocks (as defined in Attachment A of this Order), additives, amendments, and compost (active or stabilized), along with information demonstrating that these containment structures comply with the appropriate tiered Design Specification, as specified in Design Specifications, section E of the Order. Dischargers proposing that feedstocks, additives, amendments, and/or compost (active or stabilized) will remain unsaturated, the technical report must include a discussion of the methods and monitoring to ensure that the material remains unsaturated, including contingency plan.
2. Provide information on how wastewaters (as defined in Attachment A of the Order) will be managed in accordance with this Order, and if applicable the Industrial Storm water Permit. The SWPPP for the CMU may be incorporated and referenced to supply this information. The information must include a description of and/or plan illustrating all precipitation controls, containment structures, (i.e., conveyance systems for storm water and/or wastewaters, wastewater detention ponds), and Best Management Practices (BMPs), including:
 - a. A storm water conveyance system for controlling of run-on and runoff.
 - b. Grading and conveyance of wastewaters to a detention pond, or sanitary sewer systems.
 - c. A water balance showing that all wastewater detention ponds will have the capacity to hold all liquids that flow to them, and all ambient rainwater that falls into them, under conditions of a 25-year, 24-hour storm event, while taking into consideration evaporation and water that is reused in the compost.
 - d. Recirculation of wastewaters for reuse during the composting process.
 - e. Those to prevent contaminants from impacting runoff, such that runoff may be discharged under the Industrial Storm water Permit. Examples include, but may not be limited to covering of piles of feedstocks, additives, amendments, or compost (active or stabilized).
3. If applicable, provide the current and/or proposed design of any containment structures used in the Order, showing that they meet the appropriate tiered Design Specifications, as specified in Design Specifications, section E of the Order. The Discharger must provide an explanation in the technical report as to how the proposed liner system will protect groundwater from contamination, or pollution based on site-specific factors.

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ATTACHMENT C – NOI TECHNICAL REPORT

4. Include a grading plan for a proposed CMU, or an as-built grading plan for an existing permitted CMU, or if applicable a proposed grading plan for an existing permitted CMU.
5. For Dischargers enrolling under Tier 3 Design Specifications, provide:
 - a. Information as to how piles of feedstock, additives, amendments, and compost (active or stabilized) will be managed such that the formation leachate will be minimized not form; and
 - b. The design of the proposed groundwater or vadose zone monitoring system for the site. Include the proposed design and location of monitoring wells or vadose zone monitoring structures pursuant to the conditions in Design Specifications, section E.3 of the Order for Tier 3 CMUs.
6. Provide information regarding coverage under the General Permit for Storm Water Discharges Associated with Industrial Activities (Industrial Storm water Permit); a copy of the NOI to comply with the Industrial Storm water Permit or WDID number; and a copy of the Storm Water Pollution Prevention Plan (SWPPP) for the CMU (if applicable).
7. If any new construction is proposed, provide information regarding the need for coverage under the General Permit for Storm Water Discharges Associated with Construction Activities, whether an NOI to comply with the permit will be or has been submitted to the State Water Board and whether a SWPPP has been or will be prepared.

C. SITE CONDITION INFORMATION

1. Describe the climate, including:
 - a. Maximum, minimum, average annual precipitation at the nearest climatological station (measurements in inches/year). Include the name of the station; and
 - b. Mean pan evaporation at the nearest climatologic station (measurements in inches/year) and the name of the station.
 - c. Provide the 25-year, 24 hour precipitation event precipitation in inches, based on Department of Water Resources, Bulletin 195: *Rainfall Depth-Duration-Frequency for California*, revised November 1982, updated August 1986 (or other cited reference).
2. Discuss the average hydraulic conductivity (in centimeters per second) and thickness (in feet) of the existing or proposed working surface.
3. Discuss the groundwater conditions underlying the CMU, including:
 - a. Maximum, and average depth to the first encountered groundwater below the native ground surface – in feet – and identify the source of the information;
 - b. Maximum, and average groundwater elevation of the first encountered groundwater – in feet – relative to mean sea level;
 - c. Identification of the direction of groundwater flow and the source of the information;

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ATTACHMENT C – NOI TECHNICAL REPORT

- d. An estimate of the maximum anticipated depth to groundwater (in feet below ground surface) and groundwater elevation (in feet above mean sea level) below the native ground surface for the first encountered groundwater, and identify the source of the information; and
 - e. If available, water quality data from groundwater wells at or near the CMU, and the source of the information.
4. Describe the land uses within one-mile from the perimeter of the CMU.
 5. Discuss the location and distance (in feet) to the nearest domestic drinking water supply well from the nearest property boundary of the CMU.
 6. Discuss whether the CMU is located within a 100-year flood plain based on the federal Emergency Management Agency's (FEMA) designation and any design features to prevent inundation of the feedstocks, additives, amendments, and/or compost (active or stabilized). Include a reference to the appropriate Flood Insurance Rate Map and Community-panel number. CMUs located within a 100-year floodplain may be subject to state and/or local land use restrictions and permits.
 7. Identify all nearby groundwater recharge areas and surface water bodies, including streams, ditches, canals, and other natural drainage courses.
 8. Identify if the CMU is located on a property listed on the Cortese List maintained by the Department of Toxic Substances Control, for hazardous materials release sites (http://www.dtsc.ca.gov/SiteCleanup/Cortese_List.cfm). In the event the CMU is located on a hazardous materials release site, specify the site name and EnviroStor identification number.
- D. SITE MAP.** Provide a detailed site map showing the following:
1. Location and size (in acres) of the working surface used for the storage of feedstocks, additives, and amendments;
 2. Locations and size (in acres) of the working surface used for active composting;
 3. Location and size (in acres) of the area used for the storage of stabilized compost;
 4. Location and size/capacity of all berms and ditches for the conveyance of wastewaters;
 5. Location, size (in acres), and capacity (in acre feet) of all wastewater detention ponds (if applicable or proposed);
 6. Location (if applicable) of all sampling points for the monitoring of wastewaters detained within ponds pursuant to the requirements of the Order. The Discharger must submit this information to the State Water Board's Internet GeoTracker system in accordance with Cal. Code Regs. title 23 section 3890 *et. seq.*;
 7. Location (if applicable) of all sampling points for the monitoring of storm water runoff from the CMU under the Industrial Storm water Permit. The Discharger must submit this

information to the State Water Board's Internet GeoTracker system in accordance with Cal. Code Regs. title 23 section 3890 *et. seq.*; and

8. Location, or proposed location of all Tier 3 CMU groundwater monitoring wells or vadose zone monitoring structures pursuant to the conditions in Design Specifications, section E.3 of the Order for Tier 3 CMUs, specifying the:
 - a. Total depth of the well of existing monitoring wells or estimated depth of proposed monitoring wells (in feet below ground surface);
 - b. The existing or estimated screened interval of each well (in feet below ground surface); and
 - c. Depth, location, and design of vadose zone monitoring structures.

The Discharger, pursuant to Cal. Code Regs. title 23 section 3893(b) must additionally submit this information, in PDF format, to the State Water Board's Internet GeoTracker system in accordance with Cal. Code Regs. title 23 section 3890 *et. seq.*

E. COMPOSTING METHOD

1. Identify the compost feedstock types, volumes, sources, and suppliers.
2. Identify the additives, sources, suppliers and the maximum dry weight percentage used in the active compost.
3. Identify the amendments, sources, suppliers and the maximum dry weight percentage used in the stabilized compost.
4. Describe the method of composting (i.e., windrow, static, forced air, or mechanical)
5. Discuss the typical operation cycle and process time.

F. OPERATIONS AND MONITORING SPECIFICATIONS

1. Include a proposal for an annual survey of the operation prior to the rainy season to assure that the site has been graded and prepared for the rainy season to eliminate and prevent erosions and to prevent ponding, in compliance with requirements of the Order.
2. Describe the inspection and maintenance program that will be undertaken regularly during storage and treatment operations, such as inspection of the containment structures for emergence of leachate, ponding, or surface failures such as cracking or subsidence, in compliance with specification of the Order.
3. Describe the means by which composting and storage aspect of the operation will be conducted in a manner that does not cause, threaten to cause, or contribute to conditions of contamination, pollution, or nuisance.
4. Describe the method(s) to immediately correct conditions that would violate Prohibitions, section D of this Order.

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ATTACHMENT C – NOI TECHNICAL REPORT

5. Describe and provide information demonstrating the equipment (e.g. “Scarabs”, loaders, and trucks) necessary to correct conditions that would violate Prohibitions, section D of this Order, can be operated in the working surface areas during wet conditions.
 6. Provide information on how the working surfaces will be, or have been, compacted in compliance with, and meet the permeability requirements as specified in Design Specification, section E of the Order.
 7. Describe and provide all necessary information demonstrating how leachate seeps will be prevented from occurring at Tier 3 CMUs.
 8. For Dischargers enrolled under Tier 3 Design Specifications, include a proposal for establishing, operating, and monitoring either a groundwater or vadose zone monitoring network (pursuant to Design Specifications, section E.3.b of this Order) capable of meeting the applicable Tier 3 CMU monitoring requirements specified in this Order and the MRP.
 9. For Dischargers enrolling under Tier 3 Design Specifications, provide and justify the statistical methods to determine background concentration limits for each naturally occurring constituent specified in Monitoring Requirements, section B.1.h, Table No. 1 of the MRP, or otherwise proposed in an approved NOI.
- G. **SITE RESTORATION.** The technical report shall include a plan for site restoration of the CMU upon completion of operations under this Order. The site restoration plan, in addition to all activities required under Cal. Code Regs. title 14 section 17870, shall address returning the surface soils and drainage patterns to their pre-project state, to the extent feasible, and establishing soil erosion control by planting a suitable mixture of vegetation.

**DRAFT STATE WATER RESOURCES CONTROL BOARD
WATER QUALITY CONTROL BOARD ORDER NO. DWQ-2012-XXXX**

**NOTICE OF TERMINATION
OF COVERAGE UNDER THE STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR THE
DISCHARGE OF WASTES AT COMPOST MANAGEMENT UNITS
(ATTACHMENT D)**

This document is only to be used for compost facilities/management units that have been issued a Notice of Applicability by the Regional Water Quality Control Board Executive Officer. Submission of this Notice of Termination constitutes official notification that the facility/management unit identified below no longer wishes to be covered under the General Order.

1. DISCHARGER INFORMATION

Owner Name:				
Mailing Address:				
City/Locale:	County:	State:	Zip:	Telephone Number:
Owner Type (check one):	<input type="checkbox"/> Individual	<input type="checkbox"/> Corporation	<input type="checkbox"/> Partnership	<input type="checkbox"/> Other:
Operator Name (if different than above):				
Mailing Address:				
City/Locale:	County:	State:	Zip:	Telephone Number:

2. COMPOST FACILITY/MANAGEMENT UNIT INFORMATION

Name:				
Physical Address:				
City/Locale:	County:	State:	Zip:	Telephone Number:
Type (check one):			Assessor Parcel Number(s):	
<input type="checkbox"/> Existing Permitted Compost Management Facility/Unit Regional Water Board Order No.: _____				
<input type="checkbox"/> New Compost Management Facility/Unit				
Township/Range/Section: T ____ R ____ S ____ B&M			Hydrologic Basin:	
Closest named surface water: (e.g. Sacramento River):				

3. REASONS FOR FILING

<input type="checkbox"/> Change in Ownership (Provision, section J.7 of this Order)	<input type="checkbox"/> Applying for Individual Waste Discharge Requirements (Enrollment Procedure, section B.5.b of this Order)
<input type="checkbox"/> Completion of Site Restoration Activities (Enrollment Procedure, section B.5.c of this Order)	<input type="checkbox"/> CMU meets Criteria for Exemption (Enrollment Procedure, section B.5.d of this Order)
<input type="checkbox"/> Other:	

Please briefly explain the reason for termination in the space below.

4. SITE RESTORATION

Provide a technical report demonstrating that the entire Compost Facility/Management Unit has met the requirements for site restoration in accordance with Site Restoration Specifications, section H of this Order, and provide certification of that site restoration by signing this form where indicated.

5. CERTIFICATION

I certify under penalty of perjury that 1) I am not required to be covered under the statewide General Waste Discharge Requirements for the Discharge of Waste to a Compost Management Unit, Order No. DWQ-2012-XXXX (**Order**), 2) that the above referenced Compost Facility/Management Unit has met the requirements for Site Restorations in accordance with Site Restoration Specifications, section H of this Order, and 3) this documents and all attachments were prepared under my direction or supervision in accordance with a systems designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I am understand that submittal of this Notice of Termination does not release the Discharger from liability for any violations of the Order.

Signature (Owner or Authorized Representative)

Date

Print Name

Title

Telephone Number

Email

**DRAFT STATE WATER RESOURCES CONTROL BOARD
MONITORING AND REPORTING PROGRAM NO. DWQ-2012-XXXX**

**FOR ORDER NO. DWQ-2012-XXXX: STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS
FOR THE DISCHARGE OF WASTES AT COMPOST MANAGEMENT UNITS**

A. FINDINGS

The State Water Resources Control Board (State Water Board) finds that:

1. **LEGAL AUTHORITY.** In accordance with California Water Code (Water Code) section 13000 *et seq.*, this *Monitoring and Reporting Program for the General Waste Discharge Requirements for the Discharge of Wastes at Compost Management Units, Order No. DWQ-2012-XXXX* (MRP) implements the regulations and policies adopted by the State Water Board, including that agency's regulations under California Code of Regulations (Cal. Code Regs.) titles 23 and 27; implements applicable Regional Water Quality Control Plan (Basin Plan) provisions adopted for each respective Regional Water Quality Control Board (Regional Water Board); implements applicable provisions of the California Health and Safety Code; and is consistent with CalRecycle's regulations in Cal. Code Regs. title 14, section 17850 *et seq.*
2. **PURPOSE.** This MRP is necessary to determine compliance with *General Waste Discharge Requirements for the Discharge of Wastes at Compost Management Units, Order No. DWQ-2012-XXXX* (Order). This MRP also prescribes a monitoring program, pursuant to Monitoring Specifications, section F of the Order, to ensure the protection of water quality and beneficial uses of groundwater and surface waters throughout the state.
3. **DISCHARGER.** A "Discharger", as the term applies under the Order and this MRP, is any person responsible for discharging, or proposing to discharge waste to a Compost Management Unit (CMU); or any person who owns and/or operated a CMU; or any person responsible for ensuring compliance with the maintenance and monitoring operations at the CMU, as required under the Order and this MRP.
4. **BASIS FOR MONITORING.** Dischargers enrolled under the Order are automatically subject to the requirements and provisions of this MRP, unless the Regional Water Board Executive Officer issues a replacement or updated MRP to address site-specific conditions at an enrolled CMU. If operating outdoors, CMUs are exposed to precipitation, and the potential exists to saturate piles of feedstocks, additives, amendments, and compost (active or stabilized), which can generate wastewaters (e.g., process storm water, leachate, etc.). Wastewaters can then percolate to groundwater, or enter surface waters if not properly managed. A release of wastes, waste constituents, or waste degradation products derived from these sites may create, threaten to create, or contribute to a condition of contamination, pollution, or nuisance as defined in Water Code section 13050. As a condition of enrollment under the Order, the Discharger is required to implement a monitoring and reporting program in order to determine at the earliest feasible time whether a release of waste has occurred or is threatening to occur in an effort to protect water quality. The requirements of this MRP constitute the minimum monitoring program standards required for CMUs located within the state.
5. **BASIS FOR REQUIRING TECHNICAL AND MONITORING REPORTS.** Water Code section 13267 provides that the State Water Board may require the Discharger, past Dischargers, or suspected Dischargers, to furnish technical and monitoring reports provided that the burden, including costs, of these reports must bear a reasonable relationship to the need for, and the benefits to be obtained from, the required reports. In requiring those reports, the State Water Board must provide the Discharger with a written explanation with regard to the need for the reports, and must identify the evidence that supports requiring the person to provide the reports.

The technical and monitoring reports required by this MRP are needed to ensure that Dischargers – enrolled under Order – conduct their composting operations in a manner that does not result in an adverse impact to surface or groundwater resources. The burden of providing the required reports bears a reasonable relationship to the need for the reports and the benefits to be obtained from the reports.

6. **BASIS FOR SITE MAINTENANCE.** Inadequate maintenance at CMUs may create conditions whereby waste constituents or solid materials may be discharged in a manner that creates, threatens to create or contribute to a condition of contamination, pollution, or nuisance, adversely affecting the quality of waters of the state.

Regular monitoring and reporting of conditions at CMUs is essential for the Discharger, the Regional Water Board, and/or the State Water Board (collectively referred to as the Water Boards) to intervene as early as possible, to correct problems where releases of wastes or waste constituents threaten to create, or contribute to a condition of contamination, pollution, or nuisance.

7. **APPLICABILITY.** All CMUs, as described in Finding No. A.10 of the Order will be subject to the requirements herein upon the initial effective date of this Order, with exception to existing permitted CMUs (Finding No. A.10 of the Order) for which more stringent waste discharge requirements (WDRs) have been issued by a Regional Water Board.

IT IS HEREBY ORDERED that pursuant to Water Code section 13267, the Discharger shall comply with the following MRP requirements. Failure to comply with requirements of this MRP can result in the imposition of civil monetary liability.

B. MONITORING REQUIREMENTS

1. STANDARD MONITORING PROVISIONS

- a. Pursuant to Monitoring Specifications, section F of the Order, any Discharger subject to the specification of the Order must implement, to the satisfaction of the Regional Water Boards, the requirements specified in this MRP.
- b. The Discharger, in accordance with the Order, must monitor and sample all liquids (e.g., groundwater, wastewaters) as directed in this MRP, for those analytes specified in Monitoring Requirements, section B.1.h, Table No. 1 of this MRP, or as proposed in an approved Notice of Intent (NOI). Sample collection must follow standard United States Environmental Protection Agency (USEPA) methods, and must be analyzed at a laboratory accredited by the California Department of Public Health.
- c. All monitoring instruments and equipment must be properly calibrated and maintained as necessary to ensure accuracy of measurements.
- d. The Discharger must retain records of all monitoring information, including all calibration and maintenance records, and copies of all reports required by this MRP, for a minimum of **5 years** from the date of sample, measurement, report, or application. This period may be extended during the course of any unresolved litigation regarding the discharge or when requested by the Regional Water Board. Records of monitoring information must include at a minimum:
 - i. The date, identity of sample, monitoring point from which the sample was collected, and time of sampling or measurement;

- ii. The name of the individual(s) who performed the sampling or measurements;
 - iii. Date and time that analyses were started and completed;
 - iv. The analytical techniques or method used, including method of preserving the sample and the identity and volume of reagents used;
 - v. Calculation of results;
 - vi. Results of analyses performed and method used (as proposed in an approved NOI) for calculating the concentration limits for each naturally occurring constituents, based on background water quality monitoring data;
 - vii. Results of analyses and the method detection limit (MDL) for each non-naturally occurring constituents;
 - viii. Laboratory quality assurance results (e.g., percent recovery, response factor, etc.); and
 - ix. Chain of Custody forms.
- e. The Discharger must, to the satisfaction of the Regional Water Boards, collect all analytical samples required under this MRP, in a manner that assures sample integrity.
- f. The Discharger must certify under penalty of perjury that all monitoring systems at the CMU are designed and certified by a qualified professional (e.g., registered civil engineer, professional geologist, or other registered certified specialty geologist) licensed by the State of California.
- g. The Discharger must certify under penalty of perjury that all monitoring wells and other borings drilled to satisfy the requirements of the Order and this MRP must be drilled by a licensed drilling contractor, pursuant to California Water Code section 13750.5, and must be logged during drilling under the direct supervisions of a person who is an appropriately qualified professional, licensed by the State of California, pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1, and who has expertise in stratigraphic well logging. These logs must be submitted to the appropriate Regional Water Board upon completion of the drilling as part of the *Annual Monitoring and Maintenance Report*.
- i. Soils must be described in the geologic log in accordance with current industry-wide practices.
 - ii. Rock must be described in the geologic log in a manner appropriate for the purpose of the investigation.
 - iii. Where possible, the depth and thickness of saturated zones must be recorded in the geologic log.
- h. Dischargers enrolled under the Order and subject to the requirements specified in this MRP must, as part of any wastewater detention pond, leachate seep, groundwater, and/or vadose zone monitoring, collect and analyze samples for the constituents of concern specified in Table No. 1 below. For those monitoring parameters specified below as field parameters are Constituents of Concern (COCs) that are tested for verifying produced-water-reading stability during the pre-sampling purge, prior to taking test samples, and as such, field parameters are not subject to compliance testing. All other COCs listed in Table No. 1 below are subject to compliance testing during each reporting period for each monitoring point (i.e., wastewater detention ponds, lysimeters, groundwater monitoring wells).

Table No. 1 – Constituents of Concern

MONITORING PARAMETERS	UNITS	SAMPLING FREQUENCY	REPORTING FREQUENCY
Field Parameters			
pH ¹	pH Units	Semi-annually	Annually
Specific Conductance ¹	µmhos/cm or µS/cm	Semi-annually	Annually
Turbidity ¹	NTU	Semi-annually	Annually
Monitoring Parameters			
Ammonia as Nitrogen	mg/L	Semi-annually	Annually
Arsenic	mg/L	Semi-annually	Annually
Biological Oxygen Demand (BOD)	mg/L	Semi-annually	Annually
Cadmium	mg/L	Semi-annually	Annually
Calcium	mg/L	Semi-annually	Annually
Chemical Oxygen Demand (COD)	mg/L	Semi-annually	Annually
Chloride	mg/L	Semi-annually	Annually
Chlorophenoxy Herbicides	µg/L	Semi-annually	Annually
Chromium	mg/L	Semi-annually	Annually
Fluoride	mg/L	Semi-annually	Annually
Lead	µg/L	Semi-annually	Annually
Magnesium	mg/L	Semi-annually	Annually
Mercury	mg/L	Semi-annually	Annually
Nickel	mg/L	Semi-annually	Annually
Nitrate + Nitrite as Nitrogen	mg/L	Semi-annually	Annually
Nitrate as (NO ₃)	mg/L	Semi-annually	Annually
Nitrite as Nitrogen	mg/L	Semi-annually	Annually
pH	pH Units	Semi-annually	Annually
Potassium	mg/L	Semi-annually	Annually
Selenium	mg/L	Semi-annually	Annually
Sodium	mg/L	Semi-annually	Annually
Specific Conductance	µmhos/cm or µS/cm	Semi-annually	Annually
Sulfate	mg/L	Semi-annually	Annually
Thallium	mg/L	Semi-annually	Annually
Total Dissolved Solids	mg/L	Semi-annually	Annually
Total and Fecal Coliform	MPN/100 mL	Semi-annually	Annually
Total Kjeldahl Nitrogen (TKN)	mg/L	Semi-annually	Annually
Total Phosphorous	mg/L	Semi-annually	Annually

¹ These constituents of concern are field parameters measured during each sampling event. Note: mg/L = milligrams/liter; µg/L = micrograms/liter; NTU = nephelometric turbidity units; µS/cm = microsiemens per centimeter; µmhos/cm = micromhos per centimeter; MPN/100 mL = Most Probable Number per 100 milliliters

- i. The point of compliance for any water standard at any CMU enrolled under the Order, and subsequently this MRP, is a vertical surface located at the hydraulically down-gradient limit of the CMU that extends down through the uppermost aquifer underlying the CMU.

2. WASTEWATER DETENTION POND MONITORING

- a. Any Discharger enrolled under the Order, and having a wastewater detention pond onsite (e.g., as required for Tier 2 CMUs, Design Specifications, section E.2 of the Order), must:

- i. Perform quarterly inspections of the wastewater detention pond whereby the Discharger:
 - (1) Evaluates the condition of the liner system;
 - (2) Estimates the available capacity, and the current volume of wastewaters (gallons) or solids (cubic yards) contained in the pond; and
 - (3) Evaluated the general conditions of the ancillary containment structures (i.e., ditches, berms, working surfaces) associated with the conveyance of wastewaters to the detention pond.
- ii. Conduct semi-annual monitoring consisting of, but may not be limited to, the collection of wastewater samples from the wastewater detention pond, and analysis of those samples for the constituents specified in Monitoring Requirements, section B.1.h, Table No. 1 of this MRP, in accordance with Monitoring Requirements, section B of this MRP, whereby the Discharger:
 - (1) Makes an accurate determination of the field parameters specified in Monitoring Requirements, section B.1.h, Table No. 1 of this MRP;
 - (2) Sample each wastewater detention pond as consistently in the reporting period as feasible, considering the time needed to collect and analyze the samples, review the analytical data, and to prepare this information for submittal to the appropriate Regional Water Board.
- b. Pursuant to Reporting Requirements, section I.5 of the Order, the Discharger must submit a *Wastewater Detention Pond Monitoring Report* to the appropriate Regional Water Board. The report shall contain the information required under Reporting Requirements, section D.2.c of this MRP.

3. TIER 3 – SPECIFIC MONITORING

- a. **General.** Pursuant to Design Specifications, section E.3.b of the Order, Dischargers of Tier 3 CMUs must conduct routine leachate monitoring, and either groundwater or vadose zone monitoring, in accordance with Monitoring Requirements, section B.3 of this MRP. The resulting monitoring information must be submitted to the appropriate Regional Water Board, in accordance with Reporting Requirements, section B of this MRP, as part of the *Tier 3 – Specific Monitoring Report*.
- b. **Leachate Monitoring.** Dischargers enrolled under the Order who are implementing the requirements for Tier 3 CMUs, and who observe leachate at any time seeping from any feedstock, additive, amendment, or compost (active or stabilized) pile at the CMU must:
 - i. Notify the appropriate Regional Water Board pursuant to Reporting Requirements, section D.3.b of this MRP;
 - ii. To the greatest extent feasible:
 - (1) Make an accurate determination of the field parameters specified in Monitoring Requirements, section B.1.h, Table No. 1 of this MRP; and
 - (2) Collect and analyze samples for the analytes specified in Monitoring Requirements, section B.1.h, Table No. 1 of this MRP and in accordance with Standard Monitoring Provisions, section B.1 of this MRP;
 - iii. Return the leachate to either the source pile, or otherwise managed as approved in an NOI as appropriate under the requirements of the Order and this MRP; and

- iv. Determine and report, in accordance with Reporting Requirements sections I.6 and I.9 of the Order, the cause of the leachate seep; and the measures taken to successfully mitigate, and minimize leachate seeps from occurring in the future. Dischargers may be subject to modification, revocation and reissuance, or termination under this Order, pursuant to Finding No. A.17 of the Order.
- c. **Groundwater Monitoring.** Unless a Regional Water Board determines, based on site specific conditions, that either groundwater or vadose zone monitoring is unwarranted, Dischargers enrolled under the Order who are implementing the requirements for Tier 3 CMUs must semi-annually monitor either the groundwater or vadose zone underlying the CMU, as follows:
 - i. Dischargers of CMUs having site conditions such that the highest anticipated depth to groundwater is equal to, or less than 150 feet below ground surface (bgs) must:
 - (1) Install and maintain a sufficient number of groundwater monitoring, as proposed in an approved NOI, adequate to monitor the groundwater beneath the CMU. This system of monitoring wells, at a minimum, must consist of one background well located at the hydraulically up gradient limit of the CMU, and two compliance wells located along the point of compliance at the CMU, as specified in Monitoring Requirements, section B.1.i of this MRP;
 - (2) Install and maintain each groundwater monitoring well to a depth sufficient to yield groundwater samples from the uppermost water-bearing unit and provide the best assurance of the earliest possible detection of a release from the CMU;
 - (3) During the first year of operation under the Order, implement a groundwater monitoring program, whereby:
 - (a) Quarterly groundwater samples will be collected from the CMUs background monitoring well(s), and analyzed for those naturally occurring constituents specified in Monitoring Requirements, section B.1.h, Table No. 1 of this MRP, unless otherwise proposed in an NOI approved by the Executive Office of the Regional Water Board;
 - (b) Concurrently, groundwater samples will be collected from the CMUs background and compliance monitoring wells semi-annually, and be analyzed for those non-naturally occurring constituents specified in Monitoring Requirements, section B.1.h, Table No. 1 of this MRP;
 - (c) Static groundwater elevations in all groundwater monitoring wells will be measured to the nearest 0.01 foot prior to pumping, for each groundwater sampling event;
 - (d) Groundwater, prior to purging and sampling of any groundwater monitoring well, will be assessed to identify the presence of a floating immiscible layer. If an immiscible layer is found, the Discharger must notify the Regional Water Board within **24 hours** of the discovery;
 - (e) An accurate determination of the field parameters specified in Monitoring Requirements, section B.1.h, Table No. 1 of this MRP, will be made for each groundwater monitoring well prior to collecting samples;
 - (f) Groundwater samples should be collected as consistently in the reporting period as feasible, considering the time needed to collect and analyze the samples, review the analytical data, potentially retests and evaluation, and to prepare this information for submittal to the appropriate Regional Water Board.
 - (4) Implement a semi-annual groundwater monitoring program, whereby:

- (a) Groundwater samples will be collected from the CMUs background and compliance monitoring wells semi-annually, and be analyzed for both naturally and non-naturally occurring constituents specified in Monitoring Requirements, section B.1.h, Table No. 1 of this MRP;
 - (b) Static groundwater elevations in all groundwater monitoring wells will be measured to the nearest 0.01 foot prior to pumping, for each groundwater sampling event;
 - (c) Groundwater, prior to purging and sampling of any groundwater monitoring well, will be assessed to identify the presence of a floating immiscible layer. If an immiscible layer is found, the Discharger must notify the Regional Water Board within **24 hours** of the discovery;
 - (d) An accurate determination of field parameters specified in Monitoring Requirements, section B.1.h, Table No. 1 of this MRP, will be made for each groundwater monitoring well prior to collecting samples;
 - (e) Groundwater samples should be collected as consistently in the reporting period as feasible, considering the time needed to collect and analyze the samples, review the analytical data, potentially retests and evaluation, and to prepare this information for submittal to the appropriate Regional Water Board.
- ii. All groundwater monitoring activities conducted at the CMU in accordance with Monitoring Requirements, section B.3.c of this MRP, must coincide with the timing specified in Reporting Requirements, section D.4, Table No. 2 of this MRP.
- d. **Vadose Zone Monitoring.** Dischargers of CMUS having site conditions such that the highest anticipated depth to groundwater is greater than 150 feet bgs must:
- i. Install and maintain a pan lysimeter sufficiently sized and constructed, as proposed in an approved NOI, to:
 - (1) Provide the best assurance of the earliest possible detection of a release from the CMU;
 - (2) Make an accurate determination of the field parameters specified in Monitoring Requirements, section B.1.h, Table No. 1 of this MRP;
 - (3) Monitor for wastewaters through the collection and analysis of samples for the analytes specified in Monitoring Requirements, section B.1.h, Table No. 1 of this MRP and in accordance with which Standard Monitoring Provisions, section B.1 of this MRP; and
 - (4) Allow for the return of wastewaters either to the material piles onsite, or be otherwise managed as approved in an NOI.

The Discharge, in an approved NOI, may propose an alternative type of vadose zone monitoring to provide the best assurance of the earliest possible detection of a release from the CMU.
 - ii. Implement a semi-annual vadose zone monitoring program, whereby:
 - (1) The conditions of the pan lysimeter, or approved alternative, will be evaluated;
 - (2) The volume of wastewaters, if present, will be estimated in gallons;
 - (3) The field parameters, specified in Monitoring Requirements, section B.1.h, Table No. 1 of this MRP, will be accurately determined in the event wastewaters are present;
 - (4) Wastewater, if present, will be collected in a manner that assures sample integrity, and analyzed for those constituents shown in Monitoring Requirements, section B.1.h, Table No. 1 of this MRP;

- (5) Wastewater, if present, should be collected and sampled as consistently in the reporting period as feasible, considering the time needed to collect and analyze the samples, review the analytical data, and to prepare this information for submittal to the appropriate Regional Water Board.

C. DATA ANALYSIS

1. The Discharger must ensure, to the satisfaction of the Regional Water Boards, that the method of analysis for each of the constituents specified in Monitoring Requirements, section B.1.h, Table No. 1 of this MRP, is appropriate for the expected concentration.
2. The Discharger, for the analytical results produced from each monitoring point (i.e., wastewater detention pond, leachate seep, groundwater monitoring well) sampled during the respective reporting period (Reporting Requirements, section D.4 of this MRP) must:
 - a. Tabulate the cumulative (current and historical) data for at least the previous five years (if available);
 - b. Flag the analytical results that:
 - i. For those naturally occurring constituents specified in Monitoring Requirements, section B.1.h, Table No. 1 of this MRP, falling at or above the established background water quality concentrations;
 - ii. For those non-naturally occurring constituents specified in Monitoring Requirements, section B.1.h, Table No. 1 of this MRP, falling between the MDL and the practical quantitation limit (PQL); or
 - (1) MDLs and PQLs must be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. In a relative interference-free laboratory derived MDLs and PQLs are expected to closely agree with published USEPA MDLs and PQLs;
 - (2) If the laboratory suspect that, due to a change in matrix or other effects, the MDL and PWL for a particular analytical run differs significantly from historic MDL and PQL values, the results must be flagged and reported in the QA/QC report;
 - (3) The MDL must always be calculated such that it represents a concentration associated with a 99 percent reliability of a non-zero results;
 - (4) The PQL must represent the lowest concentration at which a numerical value can be assigned with reasonable certainty.
 - iii. For any of the constituents specified in Monitoring Requirements, section B.1.h, Table No. 1 of this MRP, falling at or above applicable Basin Plan water quality objectives (including background values).
 - c. For each applicable monitoring point, generate a time-series graph (e.g., semi-log plot), presenting the current and historical (at least the previous five years) analytical monitoring data for those constituents specified in Monitoring Requirements, section B.1.h, Table No. 1 of this MRP.
3. Dischargers enrolled under the Order, who are implementing the requirements for groundwater monitoring at a Tier 3 CMU, pursuant to Monitoring Requirements, section B.3 of this MRP, whereby the Regional Water Board Executive Officer, through review of the analytical data, suspects there is physical evidence of a release at the CMU, may be required to:

- a. Perform statistical analysis of the data to determine there is a measurably significant evidence of a release from the CMU, at any monitoring point; and/or
- b. In the event the Discharger cannot determine there is measurably significant evidence of a release from the CMU, as a result of limited historical groundwater analytical data at the CMU, increase the groundwater sampling and analysis at the CMU from semi-annually to quarterly.

The statistical method, by which the Discharger must review the analytical data, will be specified by the Regional Water Board Executive Officer.

4. If the Discharger determines, pursuant to the evaluation requirements above, that there is measurably significant evidence of a release from the CMU at any groundwater monitoring well, the Discharger may demonstrate, to the satisfaction of the Regional Water Board, that a source other than the CMU caused the evidence of a release or that the evidence is an artifact caused by an error in sampling, analysis, evaluation, or by natural variation in the groundwater. The Discharger, however, must not be relieved of the requirements specified in this MRP, until such time as the Regional Water Board informs the Discharger that a successful demonstration has been made. The Discharger's enrollment under the Order and this MRP, pending review by the Regional Water Board Executive Officer may be subject to modification, revocation and reissuance, or termination.

D. REPORTING REQUIREMENTS

1. STANDARD REPORTING REQUIREMENTS

- a. **General.** The Discharger must furnish to the appropriate Regional Water Board, within a reasonable time, any information which the Water Boards may request to determine whether cause exists for modifying, revoking and reissuing, or terminating enrollments under the Order or this MRP. The Discharger must also furnish, upon request by the Water Boards, copies of records required to be kept by the Order.
- b. **Report Submittals.** In accordance with Reporting Requirements, section I.20 of the Order, the Discharger must submit all reports required under this MRP in a searchable, electronic format (i.e., Portable Document Format (PDF) and Electronic Deliverable Format (EDF) via the State Water Board's Internet GeoTracker system at <http://geotracker.waterboards.ca.gov/>. The electronic data must be uploaded on or prior to the regulatory due dates set forth in Reporting Schedule, section D.4 of this MRP. The Discharger must upload to the Geotracker system the following information (if applicable):
 - i. **Laboratory Analytical Data.** Analytical data (including geochemical data) for all water samples in EDF format. Water and wastewater data includes analytical results of samples collected from monitoring wells, lysimeters, or other approved monitoring systems at the CMU.
 - ii. **Location Data.** The latitude and longitude of any permanent monitoring points for which data is accurate to within one meter and referenced to a minimum of two reference points from the California Spatial Reference System (CSRS-H), if available.
 - iii. **Monitoring Well Elevation Data.** The surveyed elevation relative to a geodetic datum of any permanent monitoring well. Elevation information must be provided for the top of groundwater well casings, the bottom of the screened interval, and the bottom of the groundwater monitoring well (if a sump exists) for all groundwater monitoring wells.

- iv. **Depth to Water Data.** The depth to groundwater and elevation of groundwater surface must be provided in monitoring wells even if groundwater samples are not actually collected during the sampling event.
 - v. **Monitoring Well Screen Intervals.** The depth to the top of the screened interval and the length of screened interval for any permanent monitoring well.
 - vi. **Compost Management Unit Map.** A map or maps which display discharge locations, streets bordering the Compost Facility, and sampling locations for all soil, water, and vapor samples. The sample map is a stand-alone document that may be submitted in various electronic formats. An updated map may be submitted at any time.
 - vii. **Boring Logs.** Boring logs prepared by an appropriate licensed professional.
 - viii. **Electronic Report.** A complete copy (as searchable PDF document) of all maintenance and monitoring reports, including the signed transmittal letter, professional certifications, and all data presented in the reports.
 - ix. **Report Submittal Format.** Larger documents must be divided into separate files at logical places in the report to keep the file size manageable. All correspondence and documents submitted to the appropriate Regional Water Board must include a reference code in the header or subject line identifying the Regional Water Board office name and, if applicable, the first initial of the branch name (e.g., "Central Valley Region – F").
- c. **Use of Licensed Professionals.** Any plan or report submitted in compliance with the requirements of this MRP, which required technical interpretation, or proposes either a design, or a design change (or which notes occurrences) that might affect the CMUs containment and/or monitoring systems structures must be prepared by, or under the direction of, appropriately qualified professionals (e.g., registered civil engineer, professional geologist, or other registered certified specialty geologist). In addition, the lead qualified professional must sign and provide his or her registration number, or stamp the submitted plan or report.

The Discharger must provide documentation that plans and reports required under this MRP are prepared by, or under the direction of, appropriately qualified professional pursuant to Reporting Requirements, section D.1.f of this MRP. The California Business and Professions Code sections 6735, 7835, and 7835.1 require that engineering and geologic evaluations and judgments be performed by or under the direction of licensed professionals. The lead professional must sign and provide his or her registration number, or stamp the submitted plan or report.

- d. **Transmittal Letter.** A letter summarizing the significant findings must be submitted with each report. The transmittal letter must include the following minimum information:
- i. A summary of any area of non-compliance with this MRP which incurred during the reporting period. The summary may include verbal and written notices of violations from state and local regulatory agencies regarding monitoring and/or maintenance deficiencies or violations noted by the Discharger, such as the exceedance of water quality protection standards (pursuant to the Regional Water Boards' Water Quality Control Plan [Basin Plan]), failure to conduct monitoring as required by this MRP, failure to implement adequate BMPs, or any other violation of this MRP.
 - ii. A discussion of any condition identified since the last report was submitted, that does not comply with the requirements of this MRP or the Order, and a description of all actions taken or planned to achieve compliance. If areas of non-compliance have not occurred since the previous submittal, this must be stated in the transmittal letter.
 - iii. The person signing the transmittal letter must make the declaration certification provided in Reporting Requirements, section D.1.f of this MRP.

- e. **Incomplete Reports.** In the event the Discharger becomes aware that it failed to submit any relevant facts in an NOI or in any report to the Regional Water Board, the Discharger must promptly submit such facts or information.
- f. **Reporting Declaration.** All application, reports, or information submitted to the Regional Water Boards must be signed and certified as follows:
 - i. The NOI must be signed as follows:
 - (1) *For a corporation* – by a principal executive officer of at least the level of vice president.
 - (2) *For a partnership or sole proprietorship* – by a general partner or the proprietor, respectively.
 - (3) *For a municipality, state, federal, or other public agency* – by either a principal executive officer or ranking elected official.
 - (4) *For a military facility* – by the base commander or the person with overall responsibility for environmental matters in that branch of the military.
 - ii. In addition to those persons designated in Reporting Requirements, section D.1.f.i of this MRP, applications, reports, or other information submitted to the appropriate Regional Water Board may signed and certified by a duly authorized representative of that person. An individual is a duly authorized representative only if:
 - (1) The authorization is made in writing by a person described in Reporting Requirements, section D.1.f.i of this MRP;
 - (2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity; and
 - (3) The written authorization is submitted to the Regional Water Board.
 - iii. Any person signing a document under this section must make the following certification:

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

2. ANNUAL MONITORING AND MAINTENANCE REPORT

a. General.

- i. The Discharger may submit all applicable annual reports specified in Reporting Requirements, sections D.2.b-d of this MRP, to the appropriate Regional Water Board under one cover in accordance with Reporting Schedule, section D.4 of this MRP.
- ii. The Discharger, when presenting new analytical data as part of any applicable annual report specified in Reporting Requirements, sections D.2.b-d of this MRP, to the appropriate Regional Water Board, must include a copy of the complete laboratory analytical report(s), signed by the laboratory director, and at a minimum contain:

- (1) Complete sample analytical reports;
- (2) Complete laboratory quality assurance/quality control (QA/QC) reports;
- (3) A discussion of the sample and QA/QC data;
- (4) A properly completed "chain of custody" from the analyzed samples; and
- (5) A transmittal letter stating whether or not all of the analytical work was supervised by the director of the laboratory, and contain the following statement:

"All analyses were conducted at a laboratory certified for such analyses by the California Department of Health Services in accordance with current United States Environmental Protection Agency (USEPA) procedures."

- iii. The Discharger, when presenting new analytical data as part of any applicable annual report specified in Reporting Requirements, sections D.2.b-d of this MRP, to the appropriate Regional Water Board, must specify in the test methods used to analyze any water or wastewaters collected pursuant to the Monitoring Requirements, section B of this MRP. Dischargers proposing to use a test procedure or method other than those included in the most current version of "Test Methods for Evaluations of Solid Waste, Physical/Chemical Methods, SW-846" or 40 CFR, Part 136, "Guidelines Establishing Test Procedures for the Analysis of Pollutants; Procedures for Detection and Quantification," must submit a *Sampling and Analysis Plan* containing the rationale for the change, to the appropriate Regional Water Board for review and approval by the appropriate Regional Water Board Executive Officer prior to implementing the requested change.
- iv. The Discharger observing any deficiencies or non-compliance associated with any applicable monitoring requirements specified in the Order or this MRP, must incorporate a discussion of the observed deficiency/non-compliance as part of any applicable annual report.

(1) The Discharger must include as part of the discussion:

- (a) The observation date and time;
- (b) The type of deficiency/non-compliance observed at the CMU;
- (c) The cause for the deficiency/non-compliance;
- (d) The corrective actions undertaken, or planned to resolve the deficiency/non-compliance, including the date and time of repairs; and
- (e) The measures undertaken by the Discharger to prevent the reoccurrence of this observed deficiency/non-compliance; and
- (f) Photographs of the observed deficiencies/non-compliance.

- (2) The Discharger must maintain a permanent log, kept at the office of the Discharger, recording all deficiencies/non-compliances observed at the CMU. The Discharger must make the permanent log available for review upon request. The permanent log must:
 - (a) Document the action undertaken to correct each deficiency, including a photograph showing the area after corrective action; and
 - (b) List all state and local agencies contacted, the results of the inspections, and any actions taken to correct all noted deficiencies.
- b. **Working Surface Conditions and Maintenance Report.** All Dischargers enrolled under the Order must, at a minimum, perform quarterly inspections of the working surface, berms, ditches, erosion control best management practices (BMPs), or other containment structures (as proposed in the Discharger approved NOI), and report the resulting observations annually to the appropriate Regional Water Board. The Discharger must, as part of the Working Surface Conditions and Maintenance Report, include the following information to the appropriate Regional Water Board:
 - i. A discussion of any significant findings, including any deficiencies with regards to:
 - (1) The date and time of inspections;
 - (2) The condition of the working surface, including, but not limited to berms and ditches;
 - (3) The effectiveness of erosion control BMPs;
 - (4) Maintenance activities associated with, but not limited to, the working surface, berms, ditches, and erosion control BMPs.
 - ii. All observed deficiencies must be photographed and recorded in the *Working Surface Conditions and Maintenance Report* and in a permanent log that is kept at the office of the Discharger. The permanent log must be made available for review upon request. Documentation of the action to correct each deficiency and a photograph showing the area after corrective action must be included in the *Working Surface Conditions and Maintenance Report* and the permanent log. The permanent log must list all state and local agencies, the results of the inspections, and any actions taken to correct all noted deficiencies.
 - iii. As part of the *Working Surface Conditions and Maintenance Report* the Discharger must certify, under penalty of perjury, that the working surface, berms, ditches, erosion control BMPs, and all other approved containment structures are constructed, maintained, and functioning properly, and are protective of the waters of the state. In the event maintenance activities are undertaken as part of a corrective action to mitigate deficiencies with effectiveness of the wastewater detention pond, the Discharger, following the completion of corrective measures, must submit to the appropriate Regional Water Board, a *Re-Certification Report* as specified in Reporting Requirements, section D.3.a of this MRP.
- c. **Wastewater Detention Pond Monitoring and Maintenance Report.** Any Discharger enrolled under the Order, and having a wastewater detention pond onsite (e.g., Tier 2 CMUs), or as proposed in the Dischargers' approved NOI, must conduct wastewater detention pond monitoring (specified in Monitoring Requirements, section B.2 of this MRP), and report on the resulting information annually to the appropriate Regional Water Board.
 - i. The Discharger, at a minimum, must include the following information in the Wastewater Detention Pond Monitoring and Maintenance Report:
 - (1) The date and time of inspection;

- (2) An evaluation of the general condition of the wastewater detention pond liner system, including, but not limited to an estimate of the available capacity, and the current volume of volume of wastewaters (gallons) and solids (cubic yards) contained in the detention pond;
 - (3) An evaluation of the general conditions of the ancillary containment structures (i.e., ditches, berms, working surface) associated with the conveyance of wastewaters to the detention pond; and
 - (4) A discussion of the general maintenance activities undertaken associated with the wastewater detention pond;
 - (5) A discussion of any observed deficiencies or non-compliance associated with the wastewater detention pond during the reporting period
- ii. The Discharger, as part of the *Wastewater Detention Pond Maintenance and Monitoring Report*, must certify, under penalty of perjury, that the wastewater detention pond is constructed, maintained, and functioning properly, and is protective of the waters of the state. In the event maintenance activities are undertaken as part of a corrective measure to mitigate deficiencies with effectiveness of the wastewater detention pond, the Discharger, following the completion of corrective measures, must submit to the appropriate Regional Water Board, a *Re-Certification Report*, as specified in Reporting Requirements, section D.3.a of this MRP.
- d. **Tier 3 – Specific Monitoring Report.** Applicable solely to those Dischargers owning and/or operating, and implementing the design specification for a Tier 3 CMU as proposed in an approved NOI. The Discharger operating a Tier 3 CMU must conduct leachate monitoring and either groundwater or vadose zone monitoring in accordance with Monitoring Requirements, section B.3 of this MRP, and report on the resulting information pursuant to the requirements specified in Reporting Requirements, section D.4 of this MRP. At a minimum, *Tier 3 - Specific Monitoring Reports* must include all analytical data and graphical representations of that data, as specified in Monitoring Requirements, section B.3 of the MRP, as well as the following information:
- i. A discussion of any significant findings, including any deficiencies with regards to:
 - (1) The date and time of inspections;
 - (2) The condition of all groundwater and/or vadose zone monitoring structures; and
 - (3) Maintenance activities associated with any groundwater or vadose zone monitoring structure.
 - ii. All observed deficiencies must be photographed and recorded in the *Tier 3 - Specific Monitoring Report* and in a permanent log that is kept at the office of the Discharger. The permanent log must be made available for review upon request. Documentation of the action to correct each deficiency and a photograph showing the area after corrective action must be included in the *Tier 3 - Specific Monitoring Report* and the permanent log. The permanent log must list all state and local agencies, the results of the inspections, and any actions taken to correct all noted deficiencies.
 - iii. As part of the *Tier 3 - Specific Monitoring Report* the Discharger must certify, under penalty of perjury, that all of the groundwater and/or vadose zone monitoring structures are constructed, maintained, and functioning properly. In the event maintenance activities are undertaken as part of a corrective action to mitigate deficiencies with effectiveness of any groundwater or vadose zone monitoring structure, the Discharger, following the completion of corrective measures, must submit to the appropriate Regional Water Board, a *Re-Certification Report* as specified in Reporting Requirements, section D.3.a of this MRP.
 - iv. Initial *Tier 3 – Specific Monitoring Report* must be submitted in accordance with Reporting Requirements, section D.2.d of this MRP, and at a minimum provide:

- (1) All analytical data collected in accordance Monitoring Requirements, section B.3 of this MRP;
 - (2) The method of analysis for calculating the concentration limits for the naturally occurring constituents (as proposed in an approved NOI), and non-naturally occurring constituents specified in Monitoring Requirements, section B.1.h, Table No.1 of this MRP; and
 - (3) The concentration limits for the constituents specified in Monitoring Requirements, section B.1.h, Table No.1 of this MRP.
- v. In the event leachate, at any time, is observed seeping from any feedstock, additive, amendment, or compost (active or stabilized) pile at a Tier 3 CMU, the Discharger must conduct leachate monitoring (specified in Monitoring Requirements, section B.3.b of this MRP), and report on the resulting information annually to the appropriate Regional Water Board. As part of the *Tier 3 Specific Monitoring Report*, the Discharger must report the following minimum information to the appropriate Regional Water Board:
- (1) A discussion of any significant findings, including any deficiencies with regards to:
 - (a) The date and time of observed seep;
 - (b) The pile type (i.e., feedstock, additive, amendment, compost (active or stabilized) or composition thereof;
 - (c) The cause for the leachate seep (i.e., overwatering, precipitation, etc.);
 - (d) To the satisfaction of the Regional Water Boards, the estimated volume (in gallons) and/or rate (gallons per day) of leachate being generated; and
 - (e) Maintenance activities associated with release of leachate.
 - (2) All observed leachate seeps must be photographed and recorded in the *Tier 3 – Specific Monitoring Report*, and in a permanent log that is kept at the office of the Discharger. The permanent log must be made available for review upon request. Documentation of the action to correct each deficiency and a photograph showing the area after corrective action must be included in the *Tier 3 – Specific Monitoring Report* and the permanent log. The permanent log must list all state and local agencies, the results of the inspections, and any actions taken to correct all noted deficiencies.

3. OTHER REPORTS AND NOTIFICATIONS

- a. **Re-Certification Report.** Any Discharger enrolled under the Order, and subject to the requirements of the MRP, must submit to the appropriate Regional Water Board a *Re-Certification Report* within 30-days of completing of all corrective actions associated with mitigating any deficiencies observed at the CMU. The *Re-Certification Report* must include:
 - i. A description of the deficiency, including, but not limited to, the date and time the deficiency was observed, the location of the deficiency, and type of deficiency; and
 - ii. A description of the mitigating measures completed to correct the deficiency, including, but not limited to, the date and time of the corrective measures, the work activities performed,
 - iii. A statement certifying, under penalty of perjury, that the affected containment structures are again constructed, maintained, and functioning properly, and if applicable, protective of the waters of the state.
- b. **Violations Notification.** If the Discharger determines there has been a violation of the requirements specified in either the Order or this MRP, the Discharger must notify the Regional

Water Board office by telephone as soon as practicable, within 24-hours or no later than the following business day, once the Discharger has knowledge of the violation. The Regional Water Board may, depending on the severity of the violation, require the Discharger to submit a separate technical report regarding the violation within **10 working days** of the initial notification. Pursuant to Finding No. A.17 of the Order, the Discharger's permit may also be subject to modification, revocation and reissuance, or termination.

- c. **Significant Maintenance Activities Notification.** The Discharger must notify the appropriate Regional Water Board, either in writing, email, facsimile, or telephone, at least **2 working days** prior to any significant maintenance activities at the CMU. Significant maintenance activities might include, but are limited to:
 - i. Activities which could alter existing surface drainage patterns;
 - ii. Activities which could change the existing slope configuration; or
 - iii. Activities resulting in the installation or destruction of any monitoring system at the CMU (e.g., groundwater monitoring wells, lysimeter, etc.)

4. REPORTING SCHEDULE.

- a. All reports submitted on an annual basis, in accordance with the requirements of the Order and this MRP, must be received by the appropriate Regional Water Board at or before 5:00 pm on or before the due date specified in Reporting Schedule, section D.4.d, Table No. 2 of this MRP.
- b. All applicable reports submitted on an annual basis, to the appropriate Regional Water Board, may be combined under one cover in accordance with Reporting Schedule, section D.4 of this MRP.
- c. All other applicable reports must be submitted to the appropriate Regional Water Board as specified in Reporting Requirements, section D.3 of this MRP.
- d. Reporting Schedule.

Table No. 2: Reporting Schedule

Report Type	Report Frequency	Report Period	Report Due close of business
Annual Monitoring and Maintenance Report	Annually	1 January – 31 December	1 February ¹

¹ In the event February 1 falls on a weekend, the Discharger may submit the applicable report on the next immediate subsequent business week day.

E. PROVISIONS.

- 1. **ENFORCEMENT DISCRETION.** Pursuant to Water Code section 13350, the State Water Board and Regional Water Boards reserve their right to take any enforcement action authorized by law for violations of the terms and conditions of this MRP.
- 2. **ENFORCEMENT NOTIFICATION.** Failure to comply with the requirements of this MRP may subject the Discharger to enforcement action, including but not limited to: imposition of administrative civil liability in an amount not to exceed \$1,000 for each day the violation occurs under Water Code section 13268; not to exceed \$5,000 for each day in which the violation occurs under Water Code section 13350; and not to exceed \$10,000 for each day in which the violation occurs under Water Code section 13308; or referral to the Attorney General for injunctive relief or civil or criminal liability.

3. **REQUESTING RECONSIDERATION OR JUDICIAL REVIEW.** Pursuant to Water Code section 13330 *et seq.*, any person aggrieved by this MRP may, not later than **30 days** from the date of adoption, file a petition for a writ of mandate for reconsideration by the State Water Board, or judicial review. Petitions which are not received within **30 days** of the State Water Boards adoption of the MRP will not be subject to review by any court.
4. **DELEGATION OF AUTHORITY.** The State Water Board has delegated to the nine Regional Water Board Executive Officers, all the powers and authority that may be delegated pursuant to Water Code section 13223. The State Water Board intends for the Executive Officers to make modification or revisions in appropriate cases, to this MRP; and to grant Discharges enrollment or termination under the Order and this MRP pursuant to the eligibility and termination criteria established in the Order.
5. **APPLICABILITY.** This MRP Order must be implemented by all Dischargers subject to the General Waste Discharger Requirements Order No. DWQ-2012-XXXX, unless an individual MRP has been issued for the site.

Ordered by: _____
Tom Howard
Executive Director