
Thermopile Composting Project:
Summary of Regulatory Standards and Applicability

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*Detailed summaries of each regulatory document can be found in the “Thermopile Regulatory Matters” folder on Google Docs

Purpose:

The purpose of this Summary of Regulations is to briefly describe the general purpose of each set of regulations and their applicability to the Thermopile Composting Project. The regulations reviewed and discussed in this memo are the following:

- **Compostable Materials Handling Operations and Facilities Regulatory Requirements**
California Integrated Waste Management Board
14 CCR Division 7, Chapter 3
- **General Waste Discharge Requirements for the Discharge of Wastes at Compost Management Units**
California State Water Resources Control Board
Water Quality No. DWQ-2012-XXXX
- **Standards for the Use or Disposal of Sewage Sludge**
US Environmental Protection Agency
40 CFR 503
- **General Waste Discharge Requirements for the Discharge of Biosolids to Land for Use as a Soil Amendment in Agricultural, Silvicultural, Horticultural, and Land Reclamation Activities**
California State Water Resources Control Board
Water Quality No. 2004-0012-DWQ

Overview:

The applicability of regulations relevant to the Thermopile Compost Project are depicted below in Table 1. The composting regulations set forth by the California Integrated Waste Management Board (CIWMB) and the State Water Resources Control Board (SWRCB) are directly applicable to the Thermopile Project. Whether the Thermopile Project is subject to compliance under the EPA Sewage Sludge and the SWRCB Biosolids Regulations is somewhat controversial and debatable due to some of the wording and language in these regulations. The sections of these regulations that cause uncertainty are discussed in their respective subparts of this Memo, however in conclusion, they are almost certainly not applicable to the Project.

Regulation	Applicable	Non-Applicable
US EPA 40 CFR 503		✓
SWRCB Biosolids		✓
SWRCB Compost	✓	
CIWMB Compost	✓	

Table 1: Applicability of Regulations to the Thermopile Composting Project

Regulation Summaries & Applicability

A. Compostable Materials Handling Operations and Facilities Regulatory Requirements

California Integrated Waste Management Board
California Code of Regulations, Title 14, Chapter 3

This set of regulations covers all general composting operations that handle “active compost” and “compostable material” [*active compost: compost feedstock that is in the process of being rapidly decomposed and is unstable. Active compost is generating temperatures of at least 50 C during decomposition; or is releasing carbon dioxide at a rate of at least 15mg per gram of compost per day, or the equivalent of oxygen uptake*][*compostable material: any organic material that when accumulated will become active compost*]. Human waste, green material, agricultural material and other feedstocks used in the Thermopile Project is easily considered compostable material that can become active compost, therefore requiring the Thermopile Project to be comply with these regulations.

All compostable materials handling under these regulations require a Compostable Materials Handling Facility Permit, unless (in the case of the Bolinas Project), the activity is located at a facility that has a tiered or full permit, a Report of Facility Information and will only use the material on the facility site. If the Bolinas facility already has a Registration or Standardized permit in accordance with the composting regulations in effect prior to April 4, 2003, the facility is able to conduct operations until the Enforcing Agency conducts a permit review and determines that a Compostable Materials Handling Facility Permit is required.

Other exemptions, aside from those regarding permitting, include the beneficial use of compostable materials including, but not limited to, slope stabilization, weed suppression, land application etc.. It is possible that the Thermopile Project could be exempt on the premise that the product is being used for beneficial land application purposes as defined by the Food and Agriculture Code Section 14505 that states “agricultural material that is derived from municipal sewage sludge shall be regulated as a fertilizing material pursuant to this chapter”. The chapter referenced, provides standards and regulations for fertilizing producing operations and requires a license of its own. Attempting to use this premise to avoid compliance with this regulation would require a CDFA License.

Specifications in these regulations include lechate control, metal concentrations, pathogen reduction requirements, vector attraction reduction as well as utilizing best management practices that minimizes odor impacts, litter, hazards, nuisances and noise impacts. Metal concentration requirements are more strictly regulated by the CIWMB than the requirements for sewage sludge in the EPA requirements.

Conclusions: These regulations provide general standards for composting operations. The Thermopile Project composts human waste/domestic septage and therefore is covered under these regulations. While there are avenues that could provide exemption for the Thermopile Project under these regulations, they would be avoiding one enforcing agency only to involve another. These standards are relatively unspecific, simple to comply with, and applicable to the Thermopile Project.

B. General Waste Discharge Requirements for the Discharge of Wastes at Compost Management Units

State Water Resources Control Board

Water Quality No. DWQ-2012-XXXX

This Order is primarily concerned with the threat to water quality caused by runoff during composting processes. In order to be exempt from these regulations, the Thermopile Project can:

- Use a within-vessel/fully-enclosed composting system; OR
- Compost at a facility with an existing State Water Board permit that addresses potential impacts to groundwater quality.

As the biggest concern of composting to the State Water Board is leachate contaminating regional waters of the state; water quality can be preserved though the incorporation of design specifications, water quality monitoring and best management practices at composting facilities.

If site-specific projects do *not* accommodate (1) within-vessel composting, (2) a fully-enclosed composting system or (3) composting at a facility with existing permits, the Thermopile Project *will be subject* to compliance under these regulations.

This order requires dischargers or operators of Composting Management Units (CMUs) to comply with these regulations when compost and/or wastewaters are discharged for treatment or storage. [*CMU: area of land or portion of a compost facility at which feedstocks, additives, amendments, compost and/or wastewaters are discharged for treatment or storage*] Under Section D. [Prohibitions], the Order states that anyone proposing to compost septage **must** contact the Regional Board for an individual Waste Discharge Requirement (WDR) because it has been classified as a significant threat to water quality in the state. WDRs are necessary for any person/s discharging waste that could affect waters of the state, which could be applicable if Thermopile composting is not done in an enclosed vessel and leachate is carried away from the pile due to precipitation, flooding etc..

A caveat mentioned in this Order is under Finding 27. [Applicability] that states “CMUs or other composting operations for which a Regional Water Board Executive Officer determines that a project could *not* affect the quality of the state waters in its region” will be exempt from the regulations in this Order. This could potentially be a way to involve the Regional Water Board and get a generalized exemption for the project if it is determined by the Regional Executive Officer that the Thermopile project does not threaten water quality when conducted in a non-enclosed process.

If the Thermopile Project is not excluded by the Regional Executive Officer, the California Water Code requires any person who discharges waste that could affect the quality of waters of the state to file a Report of Waste Discharge [NOI and technical report suffice as a Report of Waste Discharge].

If the Thermopile Project is subject to compliance, this Order requires a three-tiered composting design structure dependent on feedstock, volume and discharge. Tier 2 and Tier 3 standards are the most applicable to the Thermopile Project, as Tier 1 is geared towards small-scale (less than 12,500 cubic yards at any given time) green, agriculture, paper and vegetative material composting. Tier 2 applies to larger scale composting (over 12,500 cubic yards at a time) of additional materials to green, agricultural, paper and vegetative food material, as defined by this Order. The pre-approved additional materials are listed in Finding A.4.a. and include anaerobic digestate, biosolids, food materials, manure, and other feedstocks individually approved by Regional Water Boards through NOIs and NOAs. Tier 2 also requires that working surfaces have a specific level of impermeability, slope and runoff systems (ie. Detention ponds, berms, drainage ditches etc) in place to avoid state water contamination. Tier 3 includes all standards and regulations required by Tier 2 specifications, but is applied when existing CMU structures and management practices are equally protective of waters of the state and that current management practices at the CMU minimize the potential emergence of leachate from any feedstock, additive, amendment, or compost pile. Tier 3 can potentially be applied for a demonstration project like the proposed project in Bolinas, where the facility may already be classified as a Composting Management Unit. Tier 2 would be more applicable for projects not taking place on already permitted CMUs.

Conclusions: The Thermopile Project must comply with these regulations unless it meets any of the three exemptions listed, (1) Composting is done within-vessel, (2) Composting is done in a fully-enclosed composting system or (3) Composting is done at a facility with an existing State Water Board permit that addresses potential impacts to groundwater quality.

C. Standards for the Use and Disposal of Sewage Sludge

US Environmental Protection Agency
Code of Federal Regulations, Title 40, Part 503

This purpose of this regulation is to establish standards for the final use or disposal of sewage sludge generated during the treatment of domestic sewage in a treatment works. The EPA defines sewage sludge as a solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works, including, but is not limited to, domestic septage, scum or solids removed in primary, secondary, or advanced wastewater treatment processes etc.. For projects such as the proposed Thermopile Project in Bolinas, the Wastewater Treatment Plant would be considered a treatment works, and whether the Thermopile Project is required to comply with these regulations rides on the term “sewage”. According to the definition of domestic septage, (either the liquid or solid material removed from a septic tank, cesspool, portable toilet etc.), the Thermopile

Project starting material is closer to the definition of domestic septage, not *sewage*. The main difference between septage and sewage, according to the EPA, is that *sewage* contains wastewater from household operations where there is an opportunity to incorporate chemicals into the waste stream.

If the Thermopile Project is considered a treatment of domestic septage (which is not a precise representation of the starting material either, but a more representative description than sewage), under the definition of “treatment works” in this regulatory document, it would not be classified as sewage sludge [treatment works: federally owned, publicly owned, or privately owned device or system used to treat (including recycle and reclaim) either domestic *sewage* or a combination of domestic sewage and industrial waste of a liquid nature]. Because the Thermopile Project does not fall within conventional treatment practices and because it treats domestic septage, (where the EPA treats domestic *sewage*), the Project could avoid compliance with the EPA.

Enforcement: §503.10 (b)(2) Explains that the Regional Administrator of EPA, or in the case of a State with an approved sludge management program, may apply all of the general requirements and management practices. California does NOT have an approved sludge management program, therefore, making the Regional Administrator of the EPA the enforcing official/agency.

Conclusion: The Thermopile Composting Process is a new, unconventional method of treating human waste. The Process is unique from conventional treatment processes and therefore does not appropriately fit within the regulations set forth for modern day conventional practices. Although the terminology in these regulations could possibly provide a blanket coverage over the Thermopile Process, it would not provide appropriate standards or regulations for the Process. The products produced in the Thermopile Process are unique from sewage sludge, and therefore should not have to comply with the standards in place for sewage sludge land application.

D. General Waste Discharge Requirements for the Discharge of Biosolids to Land for Use as a Soil Amendment in Agricultural, Silvicultural, Horticultural, and Land Reclamation Activities

California State Water Resources Control Board
Water Quality Order No. 2004-0012-DWQ

The purpose of this General Order is to further enforce the requirements in 40 CFR 503. The SWRCB is not an enforcing agency of the EPA 40 CFR 503 Regulation, they simply mimic the regulations and enforce them on a state level. The definition in the SWRCB Order for the term biosolids is very similar to the sewage sludge definition given by the EPA [*Biosolids: 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, silviculture, horticulture, and land reclamation activities as specified under 40 CFR 503*]. Using this definition while considering the applicability of this Order to the Thermopile Project, it is simple to find that the Thermopile Project does not have an obligation to comply with

these regulations, as the Project is not treating, nor testing or anything thereafter, **sewage sludge**.

This Order follows the EPA 40 CFR 503 regulations very closely, almost exactly, yet the Thermopile Project has no obligation to comply due to slight variance between the definition of biosolids and sewage sludge, and therefore is relevant and included in this Summary.

Conclusions: The Thermopile Project has no obligation to comply with these regulations.