

**STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION**

STAFF REPORT FOR REGULAR MEETING OF FEBRUARY 8-9, 2018

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ITEM NUMBER: 13

SUBJECT: Land Disposal Program Overview

STAFF CONTACT: Matt Keeling 805/549-3685, Matt.Keeling@waterboards.ca.gov

KEY INFORMATION:

Location: Region-Wide
Type of Discharge: Waste Discharge to Land

THIS ACTION: Informational Discussion

SUMMARY

This is an informational item only and is intended to provide the Water Board with background information about the Land Disposal Program. In an effort to keep the Board and public informed about current regulatory program activities and priorities in the Central Coast Region, staff plans to routinely provide programmatic presentations at future Board Meetings as time allows; these updates will cover the various regulatory programs we manage. Staff last provided an update to the Board on the Land Disposal Program in February 2010. The following discussion is a high-level overview of the program. At the Board meeting, staff will also present a brief overview of the Land Disposal Program, expanding on some of the topics discussed below.

DISCUSSION

Facility Workload and Staffing Resources

Land Disposal Program staff oversee 63 waste disposal sites (i.e., landfills, solid waste management units and dumps) throughout our region. Some of these sites consist of two landfill facilities in close proximity to each other that are essentially regulated as one facility. Fourteen of the 63 disposal sites are active and the remaining sites are either closed, inactive, or undergoing closure. Fifty-five land disposal sites are covered by either individual (32 sites) or general (23 sites) waste discharge requirements (WDRs). The eight sites without WDRs include closed and/or abandoned (i.e., no responsible party) historical dump sites that are low risk with respect to potential water quality impacts. Most of these sites have deed restrictions associated with them to create a historical record of the dump site and to prevent incompatible land use activities that could result in public health and safety risks. Disposal sites in the region range in size from active, hundred acre, multi-cell, state-of-the-art facilities (e.g., Monterey Peninsula and Santa Maria Landfill) to small, unpermitted one- to two-acre closed sites (e.g., Creston and San Martin sites). Of the fourteen active facilities, one – City of Santa Maria Landfill - is slated for closure in the next five to ten years. The City of Santa Maria has secured initial permitting approval from the county for a new landfill, Santa Maria Integrated Waste Management Facility Los Flores Ranch Landfill, near the Town of Orcutt to replace the current landfill. Although this pending landfill is not included in the list of the 63 facilities,

Land Disposal Program staff issued WDRs (Order No. R3-2014-0024) in support of the City's planning efforts and in anticipation of receiving design documents for the new landfill.

The Land Disposal Program staff work consists primarily of developing and implementing WDRs for high priority active and closed facilities. This entails the development of WDRs based on facility and site specific conditions in accordance with applicable requirements, review and approval of proposed landfill module/cell (liner) and closure (cover) design plans and associated documents, the implementation of pre- and post-wet weather compliance inspections, the evaluation of monitoring reports, and the implementation of enforcement related tasks as needed to address significant compliance issues.

Composting: Land Disposal Program staff are also in the process of implementing the Statewide General Waste Discharge Requirements for Composting Operations (Order WQ 2015-0121-DWQ). The State Water Board created this General Order in response to legislative mandates requiring a 50 percent reduction in organic material disposal by 2020, and a 75 percent reduction by 2025. Six facilities have been enrolled under the General Composting Order and only a few more are anticipated. Some of the composting operations are co-located at active landfills.

Staff Resources: Funding for statewide landfill program staff comes from two sources, tipping fees¹ and WDR fees. Active landfills pay a portion of their tipping fees into an account administered by the California Department of Resources Recycling and Recovery (aka CalRecycle)². The State and Regional Water Boards receive a portion of these fees to oversee water quality-related regulatory compliance associated with the design, construction, operation, maintenance and monitoring active landfill sites. Annual WDR fees pay for oversight of closed landfills. Annual WDR fees are collected and administered by the State Water Board as part of its Waste Discharge Permit Fund. The State Water Board provides funding for approximately 2.6 staff to oversee the Land Disposal Program in this region. In contrast, the State Water Board provided funding for approximately 5.0 staff for this region in 2000. The reduction in resources reflects declining tipping fees from active landfills as a result of the economic downturn in 2008, although this region received a disproportionately large reduction in personnel funding relative to other regions.

The Land Disposal unit consists of two Water Resources Control Engineers, Ryan Lodge and Martin Fletcher, who work exclusively on landfill issues, and Engineering Geologist Dan Niles who dedicates approximately 30 percent of his time to landfill sites (the rest of his time is focused on Site Cleanup Program work). Matthew Keeling is the Land Disposal Program manager (accounting for about 30 percent of his time), and Angela Schroeter is the Groundwater Section manager who oversees this and other programs. A small portion of the Land Disposal Program funding is also used for administrative support associated with processing inspection reports and correspondence.

Regulatory Framework and Landfill Classifications

Since the early 1990s, municipal landfills have been highly regulated via prescriptive technical design standards (e.g., liners, covers, leachate collection and recovery systems, stormwater drainage systems, etc.) and associated construction quality assurance requirements, monitoring and reporting requirements, and financial assurance requirements for closure and post-closure system operation and maintenance as well as for the investigation and cleanup of discharges to groundwater or surface water if they occur. The objectives of the state and federal regulations are threefold: 1) to prevent offsite discharges of waste to groundwater and surface water, 2) to provide early detection of discharges, and 3) to ensure sufficient financial resources have been set aside to operate and maintain landfill's closure and post-closure systems and to evaluate and cleanup discharges if and when they occur.

¹ Tipping fee is the charge levied upon a given quantity of waste received at a waste processing facility.

² CalRecycle was created in 2010 from a merge of the Department of Conservation, Division of Recycling and the California Integrated Waste Management Board (CIWMB). Tipping fees were formerly collected by CIWMB.

Federal regulations associated with the Solid Waste Disposal Act (SWDA) are contained within Title 40, Code of Federal Regulation (CFR), Parts 257 and 258 (aka federal municipal solid waste [MSW] regulations or Subtitle D regulations). In response to the federal MSW regulations, the State Water Board promulgated regulations applicable to the discharge of solid waste to land in Division 2 of Title 27 of the California Code of Regulations (27 CCR §§20005-23014). The Title 27 regulations contain classification criteria for wastes and for disposal sites, and prescribe minimum standards for the siting, design, construction, monitoring, and closure of waste management units. These more protective landfill regulations act as the basis for WDRs and were borne out of studies, including the California's Solid Waste Assessment Test (SWAT) program, indicating a very high correlation between unlined landfills and groundwater impacts, due to fugitive leachate and landfill gas generated through the decomposition of waste. Most landfills are also required to comply with NPDES stormwater regulations and are usually enrolled under the Statewide General Permit for Storm Water Discharges Associated with Industrial Activities (Industrial Permit or IGP).

All of the land disposal sites in our region are either unlined or have portions of their waste footprint in unlined areas because they were built prior to the 1990s³. However, since the early 1990s all new waste modules/cells are built with engineered liners, covers and associated stormwater drainage infrastructure and are approved by Land Disposal Program staff. The liners and covers must meet or exceed regulatory performance standards for waste containment such that each protects groundwater and surface water. This includes stormwater drainage infrastructure consisting of both temporary and permanent drainage channels and retention or detention ponds to control stormwater run-on and runoff. The cover and drainage controls are required to prevent stormwater from contacting and mobilizing waste materials via surface flows or the percolation of stormwater through the waste. Only discharges of "clean" stormwater are allowed from landfills, and any stormwater or groundwater that has come into contact with waste materials has to be handled as wastewater (i.e., leachate). These requirements have resulted in a shift from smaller, community landfills, towards consolidation via larger, regional landfill facilities with requisite economies of scale and technical expertise to comply with state and federal regulations.

Under California waste regulations, landfills, or waste management units, fall into four categories based on the type of waste they contain or are allowed to receive. These classifications are:

1. Class I – Hazardous wastes;
2. Class II – Designated wastes;
3. Class III – Municipal wastes; and
4. Unclassified - Inert wastes.

Class I landfills consist of landfills that either historically received hazardous waste or are designed and operated for the disposal of hazardous waste. Class I landfills are regulated by the California Department of Toxic Substances Control (DTSC) unless a record of decision is made allowing the Water Board to regulate a closed Class I landfill. There are two Class I landfills in the region, the Casmalia Resource Hazardous Waste Landfill and a small closed portion of the John Smith Road Landfill near the City of Hollister. Although the Casmalia landfill is designated as a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) superfund site and is regulated by DTSC, Water Board Land Disposal staff, Dan Niles, is actively engaged in the ongoing groundwater assessment and remediation activities associated with historical releases from this facility. The Water Board is the lead agency for the closed Class I portion of the John Smith Road Landfill. Class II landfills are associated with designated waste⁴, Class III landfills are associated

³ The pending Los Flores Ranch Landfill will be the only fully lined facility in our region.

⁴ California Water Code §13173. Designated waste means either of the following:

- (a) Hazardous waste that has been granted a variance from hazardous waste management requirements pursuant to Section 25143 of the Health and Safety Code.
- (b) Nonhazardous waste that consists of, or contains, pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water

with municipal solid waste, and unclassified landfills are associated with inert waste (e.g., clean soil, construction debris, etc.). All of the 14 active landfills in the region, and the pending Los Flores Ranch Landfill, are classified as Class III municipal solid waste landfills. However, some of the active Class III facilities in the region are allowed to receive limited quantities of designated waste (e.g., asbestos, lead paint chip waste, brine waste, etc.). Most of the remaining closed, inactive or abandoned facilities in the region are either Class III or undesignated landfills, with only two Class II landfills (Rancho Los Lobos and the two cement kiln dust [CKD] landfills at the CEMEX Davenport Cement Plant counted as one facility). Class II facilities also include surface impoundments like that employed by the Cambria Community Services District (CSD) to handle brine waste from its Emergency Water Supply Project treatment system. Although Land Disposal Program staff are actively involved in the oversight of the Cambria CSD surface impoundment, WDR Program staff are the lead on this facility. There is also an inactive brine surface impoundment for the California Valley Solar Farm that is being overseen by Land Disposal Program staff. These Class II surface impoundments are not included in the 63 Land Disposal Program facility count because they are not specifically related to the landfill focus of this update.

The Dynamic and Cyclic Nature of Landfills

The operation and maintenance of landfills is a highly dynamic process that is tied to the economy. According to the Solid Waste Association of North America (SWANA) and the National Solid Wastes Management Association, the state of the local, national, and international economy, has an impact on all aspects of both the public and private solid waste industry. When the economy is robust, people and businesses generate more trash and recyclables, which in turn generates more tipping fee revenues for solid waste authorities. When the economy slows down, tipping fee revenues decrease because less trash is being generated. The rise and decline of residential and commercial construction and manufacturing can also have a significant effect on waste generation and associated disposal revenues. In addition, fluctuations in housing prices and associated property tax revenues can impact local municipal and county solid waste management budgets. Further compounding things, during a recession, lower tipping fee revenues result in reduced income and sales tax revenues that are available for federal and state funding of solid waste programs.

Landfills are designed, constructed and operated in phases associated with individual waste modules (or cells) that are generally stacked on top of, overlap or butt up against each other, with each module often having its own liner, cover and sometimes leachate collection and recovery system (LCRS) components. In addition, stormwater run-on and runoff controls need to be implemented for each module in conjunction with the stormwater control infrastructure for the entire facility. To achieve effective modular linkage and connectivity, facilities require master development plans defining how the whole of the site will be developed, typically covering many decades, and how each module will be integrated as it is constructed. As a result, the planning and construction of a landfill module is a complex, highly technical and time intensive process requiring the development and review of numerous technical, quality assurance and financial assurance documents, numerous inspections and regular coordination between Water Board staff, the Discharger and multiple consultants.

When the economy is booming and the trash is flowing, landfills are in a constant state of flux associated with filling and closing of individual modules and designing and constructing new modules to meet anticipated demand. During these times, Land Disposal Program staff generally spend a significant amount of time reviewing module liner design reports and associated construction quality assurance plans, inspecting the critical components of the module as it is being constructed, and reviewing the final as-built plans and quality assurance reports to verify the module was built to specifications prior to authorizing its use. The technical

quality objectives or that could reasonably be expected to affect beneficial uses of the waters of the state as contained in the appropriate state water quality control plan.

review work generally occurs during the wet winter months and the physical work occurs during the dry construction season window to protect the module components as they are being installed. During any given year, staff may be required to oversee multiple module construction projects at different landfill facilities.

During boom times, tipping fee revenues are high and can be applied to the development of new modules as well as ongoing operation and maintenance activities for the entire facility. The implementation of sufficient landfill operation and maintenance is critical to prevent water quality related impacts associated with offsite discharges of waste, particularly the discharge of stormwater that has come into contact with waste materials or the entrainment of sediments/soils from roads and construction areas. When the economy slows down, the phasing and construction of landfill modules also slows down. If the duration and severity of the economic downturn are significant, landfills operating on tight budgets can have difficulty keeping pace with operation and maintenance requirements as well as monitoring and reporting requirements. This in turn can lead to the need for more Water Board staff inspections and enforcement related oversight.

The planning and implementation of closure for individual modules, and an entire landfill in particular, requires additional layers of oversight associated with documenting that financial assurance instruments are in place to provide ongoing post-closure operation and maintenance of the facility for a minimum of 30-years and usually forever. The level of Water Board staff oversight for closed landfills can still be significant depending on the location, age, type, state of maintenance, and construction of the landfill. At a minimum, staff will need to review semiannual or annual monitoring reports and conduct annual inspections, usually pre- and post-wet weather, to verify compliance with closure requirements.

Water Quality Issues

Landfills have the potential to severely impact groundwater and surface water because they contain large volumes of various, and sometimes unknown, waste materials that can be entrained in water and because active landfills are constantly under construction. Surface water impacts are primarily associated with offsite discharges of stormwater with total suspended solids (TSS) concentrations in excess of the 100 mg/L limitation. The TSS discharges are usually associated with runoff containing "clean" sediments/soil from dirt roads and areas of the facility that are under construction (e.g., grading activities for forthcoming or closed cells), and not a result of stormwater contacting waste materials. Groundwater impacts generally result from landfill gas dissolving into groundwater and leachate⁵ discharges to groundwater. There is also the potential for leachate seep discharges to surface water at some landfills, typically where excessive infiltration has occurred due to insufficient or inadequate interim cover and drainage control. To address landfill gas related public health and safety risks, CalRecycle provides regulatory oversight of the design, operation and maintenance of landfill gas collection and treatment systems to safely handle potentially explosive and hazardous gases produced in landfills. The proper design and operation of landfill gas collection systems also helps prevent groundwater quality impacts associated with landfill gas (typically organic compounds) from coming in contact with and dissolving into groundwater.

The sites posing the greatest risk to groundwater are older, unlined landfills with poor underlying geologic conditions (e.g., high permeability soils and shallow groundwater beneath an unlined portion of a landfill). Onsite groundwater impacts to varying degrees are associated with almost all of the landfills in the region because all or a portion of the facilities are unlined. Some landfills also have offsite groundwater impacts. To address groundwater impacts, some facilities have cutoff

⁵ Leachate is the liquid that drains or 'leaches' from a landfill; it varies widely in composition based on the age of the landfill and the type of waste that it contains. Leachate can contain both dissolved and suspended materials. Leachate is generated in two ways, by the breakdown of organic material in the landfill or by stormwater or groundwater coming into contact with wastes.

trenches to collect impacted groundwater before it leaves the site while others have offsite groundwater collection systems. Impacted groundwater is generally either routed to a nearby sanitary sewer or the landfill leachate collection and recovery system for treatment or is used for dust control and irrigation of vegetative cover at the landfill facility where it can be controlled as part of the facility stormwater system. One closed landfill facility in the region formerly operated an offsite pump-and-treat system and was required to provide replacement water to approximately eight parcels via a new water distribution system connected to a “clean” groundwater well.

Goals and Objectives

The primary objectives of the Land Disposal Program are to ensure appropriate landfill siting conditions and engineering controls protect and restore surface water and groundwater and to minimize public health threats associated with landfill waste while facilitating transparent permitting and compliance activities in coordination with landfill operators and other agencies to ensure active landfills have enough capacity to meet anticipated waste flows over time.

The goals associated with meeting these objectives are as follows:

- Prioritizing work to focus on the facilities with the highest potential water quality risks and the facilities with immediate landfill module and closure construction design plan review and inspection needs.
- Developing and revising WDRs as needed for high priority active and closed landfills based on facility and site specific conditions to facilitate the protection of water quality.
- Ensuring high priority active and closed landfills prepare and implement wet weather preparedness plans every year.
- Providing timely review and approval of landfill module and closure design plans and associated documents to ensure they meet or exceed the minimum regulatory design criteria.
- Conducting regular inspections of high priority facilities to ensure they are in compliance with WDRs (and wet weather preparedness plans) and meet approved design specifications in accordance with regulatory criteria⁶.
- Reviewing monitoring reports to identify and evaluate water quality impacts.
- Coordinating with Central Coast Water Board Stormwater Program staff to implement joint or individual inspections meeting the needs of both programs (i.e., to ensure staff resource efficiency, avoid duplication of inspection or other programmatic efforts, etc.).
- Coordinating with and leveraging other landfill oversight agencies such as the county, CalRecycle and State Water Board to address water quality issues and staffing resource deficiencies.
- Making sure appropriate deed restrictions are applied to closed and abandoned facilities to prevent damage to cover systems and minimize potential public health and safety risks.
- Managing workload and facility related technical documents and correspondence in GeoTracker.

Facility Ranking and Prioritization

Land Disposal Program staff prioritized the landfill facilities to focus our limited staffing resources on the highest priority landfills that pose the greatest threat to water quality. The prioritization effort consisted of ranking each of the facilities to identify the highest and lowest priority work based on the following criteria: threat to water quality, natural siting factors, waste volume and size, status of site (active versus closed), whether engineered corrective actions are in place, public and organizational interests, and whether pending Water Board actions were needed.

⁶ Land Disposal Program staff conduct about 50 inspections per year, primarily consisting of pre- and post-wet weather inspections at active and closed high-priority landfills and landfill module construction inspections at active landfills. For the landfill facilities Water Board staff are unable to inspect, we coordinate with and rely on CalRecycle, or the county agency acting as the Local Enforcement Agency (LEA) for CalRecycle, that conduct regular inspections of all active and closed landfills and some inactive and abandoned landfills and dump sites.

Out of the 63 landfill sites, 12 were identified as high priority, ten as medium priority, and nine as low priority sites. Land Disposal Program staff spend about 90 percent of their time on the high and medium priority sites and associated projects, and the remaining 10 percent of their time is spent on low priority sites. Additionally, the prioritization effort identified 34 low risk landfill sites that we do not work on, unless water quality issues arise or there is a need to respond to requests for the review of technical documents associated with facility-related infrastructure repairs with a nexus to water quality or to address issues that no other agency has the authority or expertise to address.

Notwithstanding this prioritization effort, Land Disposal Program are often required to triage high priority work along with low priority work that requires immediate attention, such as a referral from another agency regarding water quality related violations or redevelopment plans for closed or abandoned landfills and dump sites. When the amount of work exceeds staffing resources, it is the Land Disposal Program manager's responsibility to ensure the highest priority work is completed in a timely manner by either taking on some of the work, having it delegated to other staff in coordination with the section and program managers, leveraging State Board or other agency resources, or delaying the lower priority work temporarily or indefinitely.

Performance Metrics

The Land Disposal Program primary performance metrics are zero water quality related violations and the construction of landfill modules that meet or exceed regulatory design criteria for liners, covers, leachate collection and recovery systems, and stormwater run-on and runoff control infrastructure. For those sites with existing water quality impacts, appropriate engineering controls (i.e., gas collection systems, liner systems, groundwater containment systems, as needed) are in place to eliminate or reduce those impacts. GeoTracker contains various water quality performance metric fields that enable us to evaluate and track groundwater issues and the effectiveness of corrective actions. Ensuring the proper design, construction and maintenance of these landfill components through high-level, detailed technical reviews and verification inspections is the most effective way to protect water quality. In addition, regular inspections allow for early detection and mitigation of water quality issues, and provide program staff with insights regarding the relative level of facility compliance that can be used to inform additional actions focused on preventing potential water quality impacts. As an example, pre-wet weather inspections allow for proactive measure to be taken by landfill operators to prevent potential surface and groundwater impacts.

CONCLUSION

The Land Disposal Program prioritizes its work, in part because it has more facilities and related work than it can address on average with available staffing resources. Staff will continue to prioritize its focus on the highest risk landfill facilities and projects with the potential to mitigate or prevent water quality related impacts. This primarily includes addressing known water quality problems with potential public health implications (i.e., offsite migration), and making sure new landfills, new landfill modules and closed landfills are appropriately designed, constructed and maintained. Landfill regulations applied by Water Board staff include very prescriptive siting and design criteria, and monitoring and financial assurance requirements, all of which, if implemented correctly, are designed to prevent any discharges of waste to surface water or groundwater.