STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

STAFF REPORT FOR REGULAR MEETING OF AUGUST 22-23, 2024
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ITEM NUMBER: **13**

SUBJECT: **LAND DISPOSAL PROGRAM UPDATE**

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KEY INFORMATION

Location: Region-Wide

Type of Discharge: Waste Discharge to Land

ACTION: **Information/Discussion**

SUMMARY

This is an informational item to provide a general update on activities related to the Central Coast Regional Water Quality Control Board (Central Coast Water Board) Land Disposal Program. The Land Disposal Program includes one Senior Water Resource Control Engineer, two Water Resource Control Engineers, and one Engineering Geologist who splits time between the Land Disposal Program and the Active Oilfield Program. Land Disposal Program staff are responsible for providing technical and regulatory oversight for landfills, surface impoundments, and compost facilities within the central coast region.

DISCUSSION

Land Disposal Program Background

The Central Coast Water Board's Land Disposal Program regulates active and closed landfills, surface impoundments, and compost operations. The primary goal at these sites is to ensure that waste contained in these facilities does not impact surface waters or groundwaters.

California has regulated the landfill industry since 1972 with the adoption of the Porter Cologne Water Quality Control Act (California Water Code).[1] Since the early 1990s, the State Water Resources Control Board (State Water Board) and Regional Water Quality Control Boards have regulated landfills using prescriptive technical design standards for liners, covers, leachate collection and removal systems (LCRS), stormwater drainage systems, and gas collection systems. Federal regulations associated with solid waste facilities are contained within the Code of Federal Regulation (CFR), title 40, part 257[2] and part 258.[3] California Code of Regulations (CCR), title 27, division 2[4] contains classification criteria for wastes and for disposal sites, and prescribe minimum standards for the siting, design, construction, monitoring, and closure of waste management units.

Potential Impacts to Water Quality from Landfills

Landfills have the potential to impact groundwater and surface water because they contain large volumes of various, and sometimes unknown, waste materials. In addition, municipal solid waste landfills have grown significantly more complex as liner and cover technologies have changed, airspace is maximized, and diversion and recycling of various waste streams has expanded resulting in more potentially exposed waste processing areas.

Groundwater impacts from landfills generally result from discharges associated with landfill gas and leachate, depending on the wastes contained. Landfill gas is a natural byproduct of the decomposition of organic materials in landfills and is primarily composed of methane and carbon dioxide and can also contain moisture and volatile organic compounds. Landfill gas is also a significant public health and safety risk; the California Department of Resources Recycling and Recovery (CalRecycle)[5] provides regulatory oversight for the design, operation, and maintenance of landfill gas collection and treatment systems to safely handle potentially explosive and hazardous gases produced in landfills (e.g., methane). The proper design and operation of landfill gas collection systems also helps prevent groundwater quality impacts associated with landfill gas (typically organic compounds) from contacting and dissolving into groundwater. Landfill leachate is a liquid generated from existing moisture within landfill waste at the time of disposal, the breakdown of organic material within the landfill, and the percolation of water into the landfill from storm events or groundwater coming into contact with wastes. Landfill leachate can vary significantly based on age and type of waste disposed. Leachate from municipal solid waste landfill facilities typically contains high concentrations of total dissolved solids and chemical oxygen demand, and is slightly acidic to slightly basic pH depending on landfill age. It also contains volatile and semi-volatile organic compounds, and may contain heavy metals. Recent monitoring

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[1] California Water Code: https://www.waterboards.ca.gov/laws_regulations/docs/portercologne.pdf
[2] CFR, title 40, part 257: https://www.ecfr.gov/current/title-40/chapter-I/subchapter-I/part-257
[3] CFR, title 40, part 258: https://www.ecfr.gov/current/title-40/chapter-I/subchapter-I/part-258
[4] CCR title 27, division 2: https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=IABB53440512211EC828B000D3A7C4BC3&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default)
[5] CalRecycle: https://calrecycle.ca.gov/

has shown municipal solid waste leachate to also contain Per- and Polyfluoroakyl Substances (PFAS).

Onsite groundwater impacts, to varying degrees, are associated with most landfills in the region because most facilities have unlined disposal areas where construction predates technical standards and associated regulations for landfills. 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). Some landfills also have offsite groundwater impacts. To address groundwater impacts, some facilities have cutoff 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 LCRS for treatment or used for dust control over lined areas.

Surface water impacts from landfills are primarily associated with offsite discharges of sediment contaminated stormwater because active landfills are similar to large and ongoing construction projects, with new soil interim cover slopes and working decks that have the potential to erode during intense storm events or when erosion controls are inadequate. Landfill operators implement best management practices to prevent stormwater contact with waste including containers and covers for diverted wastes, or drainage features such as berms or reverse grades near active disposal areas to prevent offsite discharge of stormwater that contacts waste; however, there is also the potential for leachate seep discharges to surface water at some landfills, typically where excessive infiltration has occurred due to inadequate interim cover and drainage control.

Emerging Contaminant - PFAS

In 2019, the State Water Board Issued California Water Code section 13267 orders for the Determination of the Presence of Per- and Polyfluoroakyl Substances (PFAS), Order WQ 2019-0006-DWQ to active landfills to sample leachate and groundwater for 23 PFAS analytes. Active landfills in the Central Coast region submitted sampling workplans and subsequently submitted monitoring data to satisfy the sampling requirements in the order. Data from the sampling events indicated that all landfill leachate sampled contained PFAS and some groundwater wells, typically downgradient of old unlined waste disposal areas, had PFAS detections in groundwater.

Based on the initial PFAS sampling data, the Central Coast Water Board issued a California Water Code section 13267 investigation order in July 2021, requiring landfill operators to submit a follow-up PFAS workplan. The follow-up workplan required landfill operators to 1) include a minimum of semi-annual PFAS monitoring for two years for 31 PFAS analytes, 2) identify potential sources of PFAS, 3) provide a leachate management plan, and 4) provide a plan to identify potential downgradient receptors, including notification of neighboring property owners if data indicate PFAS impact or threaten to impact supply well(s). Active landfills submitted follow-up PFAS workplans, and the workplans have been reviewed and approved by Land Disposal Program staff. The Land Disposal Program anticipates that the majority of active landfills will complete their follow-up workplan monitoring in 2024 and the remaining active landfills in 2025.

Data from the follow-up workplans will help inform next steps in minimizing PFAS water quality impacts from landfills in the Central Coast region. The Land Disposal Program

intends to prioritize evaluation of the PFAS monitoring data and potential corrective actions based on identified potential critical receptors. Additionally, the Land Disposal Program intends to update the Monitoring and Reporting Programs (MRPs) requirements for PFAS monitoring at active landfills to be consistent with the MRPs to be issued for General Waste Discharge Requirements (WDRs) Order No. R3-2024-0036 for Closed Landfill Facilities in the Central Coast Region up for consideration today. The Land Disposal Program anticipates that active landfill MRPs will be updated within the next several years pending the enrollment of the closed landfill facilities and issuance of their site specific MRPs, and evaluation of the monitoring data from the active landfill PFAS follow-up workplans.

Land Disposal Sites in the Central Coast Region

The Central Coast Water Board's Land Disposal Program manages 15 active landfill facilities, 41 closed/other landfill facilities, and when necessary, provides technical guidance and/or informal oversight on issues related to historic unregulated landfills and burn dumps. Typically, the historical unregulated landfills and burn dumps are small dump sites that are low risk for 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 to small, unpermitted one- to two-acre closed sites.

Given the significant level of regulation, most landfill facility owners and operators within the Central Coast Region are accustomed to being regulated by multiple agencies with differing authorities and responsibilities. These landfill facility dischargers include city and county public agencies, private companies, and the United States Department of Defense.

Pursuant to CCR, title 27, division 2, 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:

- Class I – Hazardous wastes
- Class II – Designated wastes
- Class III – Municipal wastes
- 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 Central Coast Water Board to regulate a closed Class I landfill. There are 3 closed Class I landfills in the region (John Smith Road, Crazy Horse, and Casmalia).

Class II landfills are associated with designated waste. Pursuant to California Water Code, section 13173[6] designated waste means either:

(a) Hazardous waste that has been granted a variance from hazardous waste management requirements pursuant to Health and Safety Code, section 25143.[7]
(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 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.

There is one active class II landfill in the region (Chevron Guadalupe) and 2 closed or closing Class II landfills in the region (Rancho Los Lobos, CEMEX Davenport).

Class III landfills are associated with municipal solid waste, and unclassified landfills are associated with inert waste (e.g., clean soil, construction debris, etc.). There are currently 15 active landfills in the region that 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. There is also an inactive brine surface impoundment for the California Valley Solar Farm that is regulated by the Land Disposal Program.

The Land Disposal Program also regulates 17 closed, abandoned or inactive (CAI) non-hazardous waste landfills that were closed, abandoned, or inactive prior to November 27, 1984, pursuant to CCR, title 27, division 2, section 20080.[8]

Compost Facilities

Compost facilities are permitted under the State Water Resources Control Board General WDRs for Commercial Composting Operations Order WQ 2020-0012-DWQ (Compost General Order[9]). Currently nine compost facilities within the region are enrolled in the Compost General Order and one facility is covered with landfill specific individual WDRs (i.e., Recology Pacheco Pass Closed Landfill with a co-located compost facility). Compost facilities covered by the Compost General Order are classified as either a Tier 1 or Tier 2 facility based on the threat to water quality, the types and quantity of compost feedstocks, additives, and amendments used at the facility as well as hydrogeologic conditions. Tier 2 facilities generally have a greater threat to water quality than Tier 1 facilities. There are currently seven Tier 2 facilities

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[6] California Water Code, section 13173: https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=WAT&sectionNum=13173
[7] Health and Safety Code, section 25143: https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=HSC&sectionNum=25143
[8] CCR, title 27, division 2, section 20080: https://govt.westlaw.com/calregs/Document/IAC08846A512211EC828B000D3A7C4BC3?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)
[9] Compost General Order: https://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2020/wqo2020_0012_dwq.pdf

and three Tier I facilities in the region. Permitted facilities are required to construct waste containment features and implement site specific water and wastewater management plans to minimize groundwater quality degradation and to prevent wastewater from running offsite.

For more information about the Land Disposal Program, related regulations, related permits, a list of active landfills within the Central Coast Region, and associated staff contact information, please visit the Central Coast Water Board Land Disposal Program Webpage.[10]

Land Disposal Program Priorities

Landfills are designed, constructed, and operated in phases associated with individual waste modules (or cells) that are generally built on top of, overlap or butt up against each other, with each module often having its own liner, cover and sometimes 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 technical reports, quality assurance and financial assurance documents, numerous inspections, and regular coordination between Central Coast Water Board staff, the Discharger, and consultants.

The planning and implementation of closure for individual modules or entire landfills, 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 until waste is no longer a threat to water quality. The level of Central Coast Water Board staff oversight for closed landfills can 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 and post-closure requirements.

To improve programmatic efficiency, allow limited staff resources to focus on landfill activities with the greatest potential impact to water quality, and help dischargers maintain compliance with WDRs, the Land Disposal Program has recently prioritized the development of general orders for similar landfill facilities. On September 25, 2020, the Central Coast Water Board adopted Order No. R3-2020-0001, General WDRs for Active Class III Landfills in the Central Coast Region.[11] Up for consideration during this Central Coast Water Board Meeting, Item 14, is proposed General WDRs Order No. R3-2024-

[10] Central Coast Water Board Land Disposal Program: https://www.waterboards.ca.gov/centralcoast/water_issues/programs/land_disposal/index.html

[11] General Order for Active Class III Landfills in the Central Coast Region: https://www.waterboards.ca.gov/centralcoast/board_decisions/adopted_orders/2020/r3_2020_0001_general_order.pdf

0036 for Closed Landfill Facilities in the Central Coast Region. The purpose of these general orders is to provide consistency between similar landfill facilities, with customized MRPs for each facility upon enrollment. The general orders create efficiency by reducing staff time on administrative activities and prioritizing resources to more effectively evaluate compliance with the order and assist facilities with compliance efforts. The Land Disposal Program will continue to manage several individual permits for other active and closed landfills that require site specific WDRs due to site specific conditions or water quality concerns.

The Land Disposal Program also regulates some CAI landfills with the General WDRs for Post-Closure Maintenance of Closed, Abandoned or Inactive Nonhazardous Waste Landfills Order No. R3-2004-0006 (General Order for CAI Landfills[12]). However, this General Order is older and will be evaluated by Land Disposal Program staff for possible update in the next few years.

Human Right to Water

California Water Code section 106.3, subdivision (a) states that it is the policy of the State of California "that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitation purposes." On January 26, 2017, the Central Coast Water Board adopted Resolution No. R3-2017-0004, which affirms the realization of the human right to water and the protection of human health as the Central Coast Water Board's top priorities.

The Land Disposal Program's general and site specific WDRs are consistent with Resolution No. R3-2017-0004 by requiring waste containment at landfills, surface impoundments, and compost facilities while ensuring design, construction, operation, closure, and monitoring protect groundwater and surface water that serve as sources of drinking water within the Central Coast Region. If measurably significant evidence of a release from a landfill is determined, Dischargers are required to propose and implement an evaluation monitoring program to adequately delineate the release and identify and evaluate nearby receptors (e.g., drinking water supply wells), submit an engineering feasibility study for a corrective action program, and implement a corrective action program to protect water quality standards, which include background concentrations, drinking water action levels or maximum contaminant levels, and receiving water standards adopted by the Central Coast Water Board or State Water Board. If impacted water supply wells are identified, the corrective action program would be required to address the impacted wells with supplemental monitoring and well head treatment and/or replacement water.

[12] General Order for CAI Landfills: https://www.waterboards.ca.gov/centralcoast/board_decisions/adopted_orders/2004/2004_0006_post_closure_wdr.pdf

Climate Change

The Central Coast faces the threat and the effects of climate change for the foreseeable and distant future. To proactively prepare and respond, the Central Coast Water Board has developed the Central Coast Water Board's Climate Action Initiative, which identifies how the Central Coast Water Board's work relates to climate change and prioritizes actions that improve water supply resiliency through water conservation and wastewater reuse and recycling; mitigate for and adapt to sea level rise and increased flooding; improve energy efficiency; and reduce greenhouse gas production. The Climate Action Initiative is consistent with the Governor's Executive Order B-30-15 and the State Water Board's Climate Change Resolution No. 2017-0012.

Consistent with the Governor's Executive Order and the State Water Board's Climate Change Resolution, the Central Coast Water Board prioritizes actions that address climate change adaptation and mitigation strategies to help reduce the resulting impacts to water quality. For example, Central Coasts Water Board staff regularly consider climate change carbon impacts as a component of proposed landfill projects/activities, against the water quality benefits of prescriptive requirements.

Climate change is predicted to result in more frequent extreme weather events that may damage landfill covers and drainage facilities. The Land Disposal Program general and specific WDRs require dischargers to design, construct, operate and maintain facilities to prevent inundation or washout due to large storm events. For example, class III landfills are required to be designed, constructed and maintained to handle 100-year, 24-hr storms and require Dischargers to inspect their landfill facility promptly following wet weather. Due to climate change, Central Coast Water Board staff recognize that 100-year flood maps may be updated, and/or the 100-year, 24-hr storm design values may trend higher due to more frequent high intensity storms. Central Coast Water Board staff anticipate evaluating more conservative storm design requirements for critical drainage components based on site specific drainage system performance and observations. If necessary, levees that protect landfills may need to be upgraded, and/or existing drainage facilities may need to be upgraded to handle updated 100-year, 24-hr storm design values.

Climate change is also predicted to result in more frequent and extreme wildfires and flooding, which can generate large amounts of disaster debris that requires disposal at landfills, reducing landfill capacity and lifespan. Central Coast Water Board staff anticipate dischargers will submit more frequent landfill waste management units or lateral expansion design proposals to address capacity needs.

Central Coast Water Board staff work with agencies including CalRecycle, local County Environmental Health Departments, and California Air Districts to reduce methane emissions from landfills. Methane is a greenhouse gas, which contributes significantly to climate change. Methane reduction efforts include organic waste diversion, landfill gas control systems and monitoring, and evaluation and approval of landfill cover designs that limit methane releases. The landfill general and site specific WDRs allow onsite beneficial re-use of leachate rather than hauling to wastewater facilities, and encourages use of biosolids, compost, or other organic materials to establish and maintain vegetative cover on landfill slopes. The Compost General Order provides a

framework to protect water quality while allowing compost operators to beneficially use organics, which otherwise could be disposed of at a landfill. Reducing organics disposal in landfills will reduce production of landfill gases including methane, a potent greenhouse gas.

Environmental Justice

Environmental Justice principles call for the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income in the development, adoption, implementation, and enforcement of all environmental laws, regulations, and policies that affect every community's natural resources and the places people live, work, play, and learn. The Central Coast Water Board implements regulatory activities and water quality projects in a manner that ensures the fair treatment of all people, including Underrepresented Communities. Underrepresented Communities include but are not limited to Disadvantaged Communities (DACs), Severely Disadvantaged Communities (SDACs), Economically Distressed Areas (EDAs), Tribes, Environmentally Disadvantaged Communities (EnvDACs), and members of Fringe Communities.[13]

Furthermore, the Central Coast Water Board is committed to providing all stakeholders the opportunity to participate in the public process and provide meaningful input to decisions that affect their communities. If impacts to surface water or groundwater results from regulated facility discharges, Central Coast Water Board staff will help facilitate outreach and education to inform affected persons and connect them with available resources, especially underrepresented communities.

[13] Disadvantaged Community: a community with an annual median household income that is less than 80% of the statewide annual median household income (Public Resources Code section 80002(e)); Severely Disadvantaged Community: a community with a median household income of less than 60% of the statewide average. (Public Resources Code section 80002(n)); Economically Distressed Area: a municipality with a population of 20,000 persons or less, a rural county, or a reasonably isolated and divisible segment of a larger municipality where the segment of the population is 20,000 persons or less with an annual median household income that is less than 85% of the statewide median household income and with one or more of the following conditions as determined by the department: (1) financial hardship, (2) unemployment rate at least 2% higher than the statewide average, or (3) low population density. (California Water Code section 79702(k)); Tribes: federally recognized Indian Tribes and California State Indian Tribes listed on the Native American Heritage Commission's California Tribal Consultation List; EnvDACs: CalEPA designates the top 25 percent scoring census tracts as DACs. Census tracts that score the highest five percent of pollution burden scores but do not have an overall CalEnviroScreen score because of unreliable socioeconomic or health data are also designated as DACs (refer to the CalEnviroScreen 3.0 Mapping Tool or Results Excel Sheet); Fringe Community: communities that do not meet the established DAC, SDAC, and EDA definitions but can show that they score in the top 25 percent of either the Pollution Burden or Population Characteristics score using the CalEnviroScreen 3.0.

CONCLUSION

The Central Coast Water Board's Land Disposal Program regulates landfills, surface impoundments, and other waste disposal to land operations including compost operations. The Central Coast Water Board's role is to regulate these sites and oversee the implementation of requirements to ensure that wastes contained in these facilities do not impact surface water or groundwater. Land Disposal Program staff will continue to evaluate their work through human right to water, environmental justice, and climate change lenses in an effort to identify and implement strategies that effectively address these important priorities.