

State of California
California Regional Water Quality Control Board
Santa Ana Region

December 11, 2015

STAFF REPORT

Item: *7

SUBJECT: Renewal of Waste Discharge Requirements for Milliken Sanitary Landfill, Order No.R8-2015-0040

DISCUSSION:

The County of San Bernardino Solid Waste Management Division (hereinafter the Discharger) owns and maintains the Milliken Sanitary Landfill (Milliken Landfill). The Milliken Landfill is located approximately 1 mile west of Interstate 15 and 1.2 miles southeast of Ontario International Airport as shown on Attachment A, which is hereby made a part of this order.

The Milliken Landfill is a closed, unlined Class III landfill that operated from 1956 to 1999. When the Landfill was operating, waste accepted at the site included household refuse, tree and lawn clippings, leaves and brush, scrap lumber, metal, appliances, furniture, wood chips, plastic containers, newspaper, cardboard, glass containers, and a small amount of household hazardous waste, such as paint and household cleaners. As these wastes decompose, they generate landfill gases and leachate. The landfill gases generally contain methane and other volatile organic compounds (VOCs). The leachate may also contain VOCs and other pollutants. Investigations conducted at Milliken Landfill indicated that groundwater at the site was contaminated with VOCs.

The Discharger has implemented a corrective action system (CAS) to treat the groundwater that has been impacted by VOCs release from the Landfill. The corrective action treatment system includes two major elements: A groundwater extraction and collection system that is designed to contain VOC impacted shallow groundwater at the point of compliance of the landfill (hydrologically down-gradient from the refuse footprint); and an aeration channel system that removes VOCs from groundwater. Extracted groundwater is discharged into a 250-foot long aeration channel, which takes advantage of site topography by allowing extracted groundwater to flow under the force of gravity into a borrow pit located immediately west of the landfill. Other corrective measures already implemented at the Landfill include a landfill gas collection system, and a final cover constructed to impede water infiltration and reduce leachate production. The gas collection system was designed to remove landfill gas that might have been contributing to the VOC contamination of groundwater at the Landfill.

The groundwater extraction wells at the Landfill have gone dry since 2007 due to decline of the regional groundwater levels caused by the draught; therefore, the CAS has not been operated since then. VOCs have been detected at levels above the drinking water standards at a monitoring well down-gradient from the Landfill since 2012. Subsequently, the Discharger has submitted an updated Engineering Feasibility Study and an off-site VOC investigation workplan. The workplan addresses the need for alternative or additional corrective action measure implementation at the landfill. On August 19, 2015, Regional Water Board staff approved the workplan.

The Discharger is currently regulated under Resolution No. 81-3 as amended by Order No. 98-99. The requirements for the Milliken Landfill are being updated to reflect the most recent activities at the site which include the implementation of an updated corrective action program, to prescribe post-closure requirements, and to revise the requirements to be consistent with the most recent versions of State and federal laws and regulations applicable to landfill operations.

APPLICABLE LAWS AND REGULATIONS

The State and Regional Water Boards are authorized to regulate discharges of waste to land under: California Code of Regulations, Title 27, Division 2, Subdivision 1, "Consolidated Regulations for Treatment, Storage, Processing or Disposal of Solid Waste (referred to as Title 27 regulations). Title 27 generally deals with non-hazardous wastes and it provides regulatory authority to the Water Boards and Cal Recycle (formerly called the California Integrated Waste Management Board) and clearly defines the responsibilities assigned to each agency. The regulations governing the disposal of waste to land includes authority for the Regional Water Boards to adopt waste discharge requirements and to establish site-specific requirements for regulatory compliance and closure design and post-closure monitoring requirements. The primary purpose of the regulations is to assure: 1) the protection of human health and the environment; 2) ensure waste is properly contained or cleaned-up as appropriate; and 3) surface and groundwater are protected from the discharge of waste to land. Title 27, Section 20430 requires the Discharger to implement a corrective action program to remediate releases from the Landfill to ensure that the Discharger achieves compliance with the Water Standards adopted under §20390 for the site.

The Water Quality Control Plan for the Santa Ana River Basin (Basin Plan) lists the beneficial uses and water quality objectives for surface and groundwater bodies in the Region. This Order contains waste discharge requirements that implement the Basin Plan. The Landfill could impact the Chino Groundwater Management Zone.

The Order requires the Discharger to implement a corrective action program; maintain and operate the existing landfill gas collection system; monitor groundwater on a quarterly basis; continue to investigate and address any contamination determined to have originated from the Landfill; and maintain the drainage and erosion control

Staff Report
Order R8-2015-0040

systems on all parts of the Landfill. These requirements are consistent with the state and federal laws and regulations, including the Basin Plan, and are protective of the water resources in the area.

RECOMMENDATION:

Adopt Order No. RB-2015-0040, as presented.

Comments were solicited from the following agencies:

U. S. Environmental Protection Agency, Region 9- Steve Wall (wall.steve@epa.gov)
and Zoe Heller (heller.zoe@epa.gov)

State Water Resources Control Board, Division of Clean Water Program - Leslie Graves
(leslie.graves@waterboards.ca.gov)

State Water Resources Control Board, Office of Chief Counsel - David Rice
(david.rice@waterboards.ca.gov)

CalRecycle, Sacramento- Susan Markie (Susan.Markie@CalRecycle.ca.gov)

South Coast Air Quality Management District- Jay Chen (jchen@aqmd.gov)

San Bernardino County Department of Environmental Health Services, LEA- Diana Almond
(Diana.Aimond@dph.sbcounty.gov)

State Water Resources Control Board, Division of Drinking Water, San Bernardino-
Sean McCarthy (Sean.mccarthy@waterboards.ca.gov)

STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION

ORDER NO. R8-2015-0040

WASTE DISCHARGE REQUIREMENTS
FOR
COUNTY OF SAN BERNARDINO SOLID WASTE MANAGEMENT DIVISION
FOR
MILLIKEN SANITARY LANDFILL (POST-CLOSURE MAINTENANCE AND
CORRECTIVE ACTION PROGRAM)
CLASS III SOLID WASTE DISPOSAL SITE
SAN BERNARDINO COUNTY

Discharger	COUNTY OF SAN BERNARDINO SOLID WASTE MANAGEMENT DIVISION
Facility	MILLIKEN SANITARY LANDFILL (A CLOSED CLASS III SOLID WASTE DISPOSAL SITE) 2050 SOUTH MILLIKEN AVENUE ONTARIO, CALIFORNIA

The California Regional Water Quality Control Board, Santa Ana Region (hereinafter Regional Water Board), finds that:

1. The County of San Bernardino Waste Management Division (hereinafter the Discharger) owns and operated the Milliken Class III Sanitary Landfill (Landfill). The landfill is located approximately 1 mile west of Interstate 15 and 1.2 miles southeast of Ontario International Airport. Specifically, the Landfill is located in a portion of Section 36, T1S, R7W, SBB & M as shown on **Attachment A**, which is hereby made a part of this order.
2. The total area of the Milliken Sanitary Landfill (Landfill) site is approximately 196 acres, of which only 140 acres was utilized for the placement of waste. Landfill has an estimated in-place volume of 25 million cubic yards of solid waste. The surrounding area consists mainly of densely populated tilt-up industrial facilities.

Site Description and Regulatory Background

3. The Landfill is a closed, unlined Class III landfill that operated from 1956 to 1999.

When the Landfill was operating, waste accepted at the Landfill included household refuse, tree and lawn clippings, leaves and brush, scrap lumber, metal, appliances, furniture, wood chips, plastic containers, newspaper, cardboard, glass containers, and the small amount of household hazardous waste, such as paint and household cleaners. The Landfill also accepted commercial waste which included roofing material, paper, cardboard, gravel, tires, wooden pallets, asphalt, tile, wood scraps, cans, magazines, fiberglass, car seats, railroad ties, dry wall, plastic, concrete, asphalt, wood, brick, and steel.

4. On February 26, 1981, the Regional Water Board adopted waste discharge requirements (WDRs), Resolution No. 81-3, for the discharge of municipal solid wastes (MSW) at the Milliken Landfill. Resolution No. 81-3 contains requirements for the placement and containment of waste at the Landfill. The Order does not require groundwater monitoring.
5. Groundwater monitoring activities were initiated at the Landfill in 1987 with the installation of five wells (M-1, M-2, M-2B, M-3, and M-4) as part of the landfill's Solid Waste Assessment Test (SWAT) program. The results of the SWAT investigation indicated that groundwater underlying and adjacent to the Landfill had been affected by organic compounds and elevated inorganic constituent concentrations.
6. These impacts were most notable in groundwater samples collected from downgradient well M-2B, where dichlorodifluoromethane (DCDFM), tetrachloroethene (PCE), trichloroethene (TCE), vinyl chloride, 1,1-dichloroethane (1,1-DCA), chloride, and sulfate were observed at concentrations significantly above background.
7. On May 19, 1989, Board staff requested the Discharger to submit a workplan to investigate a suspected volatile organic compound (VOC) plume originating from the landfill. The request required the Discharger to define the nature and extent of the VOC plume.
8. The County submitted a work plan to Regional Water Board Staff in July 1989, and after incorporating requested revisions, began implementing the RWQCB-approved Phase I EMP.
9. During implementation of the Phase I EMP work plan, ten new groundwater monitoring wells were installed (eight downgradient [M-2C, M-2D, M-6A, M-6B, M-7A, M-7B, M-8A, and M-8B] and two upgradient [M-5A and M-5B] of the landfill). Constituents of concern identified in samples from the new monitoring wells included TCE, PCE and, to a lesser extent, calcium, magnesium, sodium, sulfate, and nitrate.
10. On June 24, 1991, the Regional Board adopted Cleanup and Abatement Order No. 91-92 for the Landfill. The Order required the discharger to correct the

drainage and erosion control deficiencies that existed at the Landfill. Upon compliance with the Order, the Cleanup and Abatement Order was rescinded on April 22, 1994.

11. On June 23, 1994, Board staff directed the Discharger to install additional groundwater monitoring wells, and soil gas probes as part of the evaluation monitoring program (EMP) in an effort to further define the lateral and vertical extent of the VOC plume in groundwater at beneath the Landfill.
12. On April 18, 1996, the Regional Board adopted Cease and Desist Order No. 96-41 to the Discharger for failure to maintain the drainage and erosion control system at the landfill.
13. On October 2, 1996, Board staff approved the Final Closure and Postclosure Maintenance Plan for the Landfill.
14. On May 29, 1997, Board staff approved a drainage and erosion control mitigation plan for the landfill. The plan included additional erosion protection measure that minimized slope and bench road erosion at the landfill.
15. On July 18, 1997, the State Water Resources Control Board (State Water Board) and the California Integrated Waste Management Board (now known as the Department of Resources Recycling and Recovery [CalRecycle]) enacted the Solid Waste Disposal Requirements, Title 27, Division 2, Subdivision 1, California Code of Regulations (Title 27) to replace the non-hazardous waste portions of Title 23, Division 3, Subchapter 15.
16. The Landfill began a phased closure in 1996, while the Landfill continued to accept waste. The landfill closure cap was emplaced in three phases between 1996 and 2005. Phase One, East Mound closure was completed in March 1997, and was a demonstration project that documented the performance of the 6-foot thick monolithic soil final cover. Phase Two, North and East Slope closure was completed in December 1997, which included the placement of 6-foot thick monolithic cover on the north and east sides of the main mound, approximately 45 acres.
17. The final and last closure phase of the Landfill was completed on March 31, 2005. The Landfill final cover included a 4-foot-thick monolithic soil cover over the remaining 72 acres, including the south and west faces, and the top deck. The final closure required placement of about 509,000 cubic yards of final cover soils imported from Robertson's Ready Mix plant from the Gypsum Canyon landfill. The cover was designed to have a maximum hydraulic conductivity of 1.0×10^{-5} cm/sec. All phases of the landfill closure covers were constructed in accordance with requirements contained in Title 27 of the California Code of Regulations (Title 27), and were approved by Regional Water Board staff.

18. On November 20, 1998, Orders No. 93-57 and 94-17 were rescinded and replaced by Order No. 98-99. Order No. 98-99 requires municipal solid waste landfill owners in the Santa Ana Region to comply with Title 27 regulations and State Water Board Order No. 93-62, Policy for Regulation of Discharges of Municipal Solid Waste.
19. On March 4, 1999, Board staff approved the point of compliance (POC) corrective action system (CAS) at the landfill. The treatment system includes two major elements: A groundwater extraction and collection system that is designed to contain VOC impacted shallow groundwater at the POC; and an aeration channel system that removes VOCs from groundwater. Extracted groundwater is discharged into the 250-foot long aeration channel, which takes advantage of Landfill topography by allowing extracted groundwater to flow under the force of gravity into a borrow pit located immediately west of the landfill.
20. The system began operations in 1999, and to date, the system has removed approximately 24.4 pounds of VOCs from local groundwater.
21. A combination of below-average precipitation and increasing groundwater production in the Chino Basin since 2000 has resulted in declining groundwater elevations in the vicinity of the Landfill. As a result, the 13 extraction wells that are part of the existing groundwater CAS have been dry since 2007.
22. VOCs have been detected in lower aquifer wells downgradient from the point of compliance, at concentrations above drinking water standards at well M-8B, an offsite monitoring well, historically and, recently since 2012.
23. On April 10, 2013, Board staff approved the revised updated engineering feasibility study (EFS) for the landfill. The updated EFS evaluated offsite VOC plume at the Landfill and several potential corrective action measures to mitigate the VOC plume, provided certain "trigger points" are exceeded. Regional Board staff approved the trigger points for additional mitigation measures.
24. In a letter dated January 29, 2015, and in a meeting at the Regional Board's office on April 30, 2015, Regional Water Board staff expressed concerns that the VOCs at well M-8B have exceeded MCLs consistently since 2012.
25. On July 28, 2015, the Discharger submitted a workplan to investigate the offsite VOC impacts to groundwater by the landfill. The workplan includes updating the groundwater flow model, and collecting soil-pore gas samples from the Landfill, and a schedule to implement the plan. Board staff approved the workplan on August 19, 2015.

Geology and Hydrogeology

1. The Landfill is situated within the Peninsular Ranges Geomorphic Province, on an alluvial plain that extends south from the San Gabriel Mountains. The majority of the water-bearing sediments underlying the landfill are included in a 600 to 800-foot-thick sequence of relatively flat-lying, medium to low energy alluvial strata, consisting of interbedded clays, silts, sands, and gravel. The large Lytle Creek fan and the smaller Day and East Etiwanda Creek fans appear to have provided most of the sediments that underlie the landfill, although a thin layer, 5 to 20 feet, of eolian sand typically blankets the existing natural ground surface in the area of the landfill.
2. The Landfill is located within the Chino groundwater basin, which is an alluvial groundwater basin that is recharged by local streams and creeks that carry surface water from the San Gabriel Mountains. Along the mountain front, the largest of these creeks are Lytle, Day, Deer and Cucamonga Creeks. In the immediate vicinity of the landfill, there are no well-established drainage courses, and most surface-water drainage occurs as ephemeral sheet wash and/or braided-stream flow along a natural topographic gradients. Groundwater flows, throughout the central portion of the Chino groundwater basin, to the south-southwest; a flow direction which is consistent with recent water depth measurements in the Landfill monitoring wells.
3. Groundwater in the vicinity of the landfill occurs within alluvial sediments and is first encountered at depths ranging from 200 to 260 feet. A local groundwater barrier has been inferred, 2,500 feet northeast of the Landfill, on the basis of relatively abrupt changes in groundwater elevation. This feature may represent the subsurface expression of faulting in the area, but has no effect on groundwater flow immediately adjacent to or downgradient of the landfill.
4. Two different aquifers can be recognized beneath the Landfill: an upper, unconfined aquifer that has a saturated thickness of only a few feet and a lower, partially-confined aquifer encountered at depths greater than 245 to 285 feet below ground surface. The two aquifers are separated by a locally-continuous, low-permeability aquitard that varies in thickness between 5 and 40 feet.

Basin Plan

1. A revised Water Quality Control Plan (Basin Plan) became effective on January 24, 1995, and was subsequently amended a number of times. The Basin Plan specifies beneficial uses and water quality objectives for waters in the Santa Ana Region.

2. The groundwater beneath the Landfill flows into, and a small portion of the Landfill is located within, the Chino Groundwater Management Zone, the beneficial uses of which include:
 - a. Municipal and supply,
 - b. Groundwater recharge
 - c. Agricultural supply,
 - d. Industrial service supply, and
 - e. Process supply.

The monitoring network at the Landfill includes 14 groundwater monitoring wells, 14 piezometers, three surface water sampling stations, five soil-pore gas probes, and one landfill gas condensate sampling station, as detailed in Table 1 of **Attachment B** of the Monitoring and Reporting Program.

3. This Order updates and replaces Order No. 81-003-24 and those portions of Order No. 98-99 that apply to the Milliken Landfill.
4. This Order is being adopted in order to establish a corrective action program at the Landfill and to prescribe post-closure maintenance to minimize adverse environmental impacts.
5. This Order updates a waste discharger requirements for an existing landfill, and is therefore categorically exempt from the provisions of the California Environmental Quality Act (Public Resources Code, §1000 et seq) in accordance with Section 15301, Chapter 3, Title 14 of the California Code of Regulations. The Order does not permit an expansion of the existing footprint of the Landfill or additional deposit of wastes to the Landfill.
6. The terms used in this Order, as included in **Attachment E** of this Order, are defined in Title 27, §20164.
7. The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe revised waste discharge requirements for the Landfill.
8. The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that the Discharger, in order to meet the applicable provisions contained in the California Water Code (CWC), Title 27, the federal Municipal Solid Waste regulations of 40 CFR, Part 258, and State Water Board Order No. 93-62, shall comply with the following:

A. DISCHARGE SPECIFICATIONS

1. GROUNDWATER

When requested by the Executive Officer, the Discharger shall evaluate the effectiveness of the Corrective Action Program, and if necessary, shall propose alternative and/or additional corrective measures, such as but not limited to: (1) expansion of the gas extraction system; (2) improvements to the landfill cover; or (3) Installation of a soil vapor extraction system at the Landfill's POC to mitigate VOC impacts downgradient of the landfill, designed to meet the Water Standards. Corrective action measures taken may be discontinued when the concentrations of constituents of concern have been reduced to acceptable levels consistent with the Water Standards concentration limits for a minimum of three consecutive years throughout the entire zone affected by the release. Within 60 days, or other appropriate time period, following completion of the Corrective Action Program, the Discharger shall submit a plan identifying the means by which the Discharger will meet the federal requirements of 40 CFR §258.55(e) and, thereby, be able to return to a federal Detection Monitoring Program.

2. SURFACE WATER

Discharges from the Landfill shall neither cause nor contribute to any surface water contamination, pollution, or nuisance, including, but not limited to:

- a. Floating, suspended, or deposited macroscopic particulate matter or foam;
- b. Increases in bottom deposits or aquatic growth;
- c. An adverse change in temperature, turbidity, or apparent color change beyond natural background levels and occurrences;
- d. The creation or contribution of visible, floating, suspended, or deposited oil or other products of petroleum origin; and
- e. The introduction or increase in the concentration of toxic or other substances resulting in unreasonable impairment of beneficial uses of the waters of the State.

3. UNSATURATED ZONE

Discharges from the Landfill shall not cause any increase in the concentration of constituents of concern in soil-pore gas, soil-pore liquid, soil, or other geologic materials beneath or outside of the Landfill if such waste constituents could migrate to the waters of the State and cause a condition of contamination, pollution, or nuisance.

4. CONSTITUENTS OF CONCERN

The discharge shall not cause the concentration of any constituent of concern or Monitoring Parameter to exceed its respective background value in any monitored medium at any Monitoring Point assigned to Detection Monitoring pursuant to the Monitoring and Reporting Program (M&RP).

5. LIQUIDS USAGE

The discharge of liquids, including groundwater¹, leachate or landfill gas condensate, or their use for dust control or irrigation, is prohibited. Any discharge of treated groundwater from the Landfill groundwater treatment systems will be regulated by a separate Order issued by the Regional Water Board.

B. PROVISIONS

1. The Discharger shall comply with all discharge prohibitions, specifications, provisions, and monitoring and reporting requirements of this Order and the Monitoring and Report Program (M&RP), R8-2015-0040, immediately upon its adoption.
2. The Milliken Landfill is a closed landfill. Therefore, the disposal of any additional waste at the landfill is prohibited. Should illegal dumping occur at the site, the Discharger shall remove and properly dispose of any wastes and relocate that wastes to an approved waste disposal landfill.
3. Maintenance of the Landfill shall not cause a discharge of pollutants into waters of the United States, including wetlands, that violates any requirements of the Clean Water Act.
4. The Discharger shall establish and maintain monuments in California coordinates (or equivalent) to define the boundary of the landfill footprint. The control benchmarks shall be certified by a licensed surveyor or a professional civil engineer authorized to practice in California.
5. The Discharger shall notify the Regional Water Board within 24 hours of any slope failure of slopes constructed to maintain compliance with the requirements of this Order. A written notification shall be submitted to the Executive Officer within five days. Any failure that threatens the integrity of containment features

¹ This prohibition does not apply to the discharge of purge water during sampling events (Resolution R8-2013-0015: Waiver of Waste Discharge Requirements for Specific Types of Discharges).

at the Landfill shall be promptly remediated after approval of a remediation workplan and schedule by the Executive Officer of the Regional Water Board.

6. At any time, the Discharger may file a written request, including appropriate supporting documents, with the Executive Officer, proposing modifications to the M&RP. The Discharger shall implement any monitoring changes in the revised M&RP approved by the Executive Officer upon receipt of a signed copy of the revised M&RP.
7. The Discharger shall install any additional groundwater, soil pore liquid, soil pore gas, or leachate monitoring devices determined by the Executive Officer to be necessary to comply with the M&RP.
8. The Discharger shall continue to employ the existing landfill gas extraction and treatment system and other corrective measures pursuant to Title 27 §20430 during the confirmation monitoring for the three consecutive years as discussed under Section A.1, above; the landfill gas extraction system shall be continued during the detection monitoring program following a successful confirmation monitoring period.
9. Order No. 81-003 is hereby rescinded. This order supersedes all portions of Order No. 98-99 that are specific to the Milliken Landfill; therefore, Order No. 98-99 is no longer applicable to the Milliken Landfill.

C. CONTINGENCY RESPONSES

1. Leachate seep – The Discharger shall immediately report by telephone or email the discovery of any seepage from, or soil staining at, the Landfill. If feasible, a sample of the leachate shall be collected and analyzed. In response to such seepage, the Discharger shall submit a corrective action report to the Regional Water Board for approval by the Executive Officer within seven days, containing at least the following information:
 - a. Map – A map showing the location(s) of seepage;
 - b. Flow rate – An estimate of the flow rate or volume;
 - c. Description – A description of the nature of the discharge (e.g., all pertinent observations and analyses); and
 - d. Corrective measures - Measures proposed to address any seep(s).
2. Change in known release beyond landfill boundary – Any time the Discharger, or the Executive Officer, concludes that the known release from the Landfill has proceeded beyond the facility boundary, the Discharger shall so notify all persons who either own or reside upon the land that directly overlies any part of the plume (Affected Persons).

- a. Updated notice – Subsequent to initial notification, the Discharger shall provide updates to all Affected Persons, including any persons newly affected by the change in the known release, within 14 days of concluding that there has been any material change in the nature or extent of the known release.
- b. Submittal – Each time the Discharger sends a notification to the Affected Persons, the Discharger shall, within seven days of sending such notification, provide the Regional Board with both a copy of the notification and a current mailing list of all Affected Persons. A copy of the notification and the list of Affected Persons shall also be included in the Facility Operating Record.

D. DRAINAGE AND EROSION CONTROL

1. The Discharger shall maintain the Landfill in a manner that prevents, to the greatest extent possible, ponding, infiltration, inundation, erosion, slope failure, and washout that could occur as a result of precipitation from a 100-year, 24-hour storm. This shall be accomplished by, at a minimum, the following:
 - a. Top deck surfaces shall be constructed to achieve a minimum of one percent slope, including structures that will direct water to downdrains;
 - b. Downdrains and other necessary drainage structures must be constructed for all sideslopes; and
 - c. All components of the facility drainage system must be designed and constructed to withstand site-specific maximum intensity precipitation (peak flow from a 100-year, 24-hour storm).
2. The Discharger shall protect and maintain the containment structures to ensure their effectiveness and to prevent commingling of leachate and gas condensate with surface run-on and runoff.
3. The Discharger shall design, construct, and maintain:
 - a. A run-on drainage control system to prevent flow from off-site sources onto the disposal areas of the Landfill, and to collect and divert the peak flow calculated volume from off-site sources that result from a 100-year, 24-hour storm;
 - b. A runoff drainage control system to collect and divert both the calculated volume of precipitation and the peak flow from on-site surface runoff that results from a 100-year, 24-hour storm; and
 - c. Drainage control structures to divert natural seepage from native ground and to prevent such seepage from entering the waste disposal area.

4. All drainage structures shall be protected and maintained to assure their effectiveness.
5. Annually, by October 1, all drainage control system construction and maintenance activities shall be completed.
6. At least 30 days prior to the construction of any new elements of the drainage control system, the Discharger shall submit a workplan outlining all design parameters and calculations, construction details, and a construction quality assurance plan for approval by the Executive Officer.
7. The Discharger shall submit as-built drawings within 4 weeks of completing construction of any new elements of the drainage control system at the Landfill.
8. All design plans, construction plans, and operation and maintenance plans shall be prepared by, or prepared under the direct supervision of, a registered civil engineer or a certified engineering geologist.
9. The Discharger shall notify the Executive Officer by telephone, (951-782-4130), or e-mail within 24 hours of determination of a failure of facilities necessary to maintain compliance with the requirements in this order. Within 5 days, the notification shall be submitted in writing to the Regional Board.
10. The Discharger shall maintain a copy of this Order at the Discharger's headquarters so it is available for review at all times.
11. The Discharger shall permit Regional Board staff to:
 - a. Enter upon the Landfill property;
 - b. To copy any records required to be kept under the terms and conditions of this Order;
 - c. To photograph or videotape any structures, facilities, activities, or other phenomena that could result in adverse impacts to water quality and that are pertinent to compliance with this Order; and
 - d. To sample any discharges from the Landfill.
12. The Discharger shall notify the Regional Board in writing of any proposed change in ownership prior to the effective date of the change in ownership.

E. REQUIRED REPORTS AND NOTICES

1. Applications, reports or information submitted to the Regional Board shall be signed and certified in accordance with 40CFR §122.22.

2. The Discharger shall furnish, within 90 days of notification, unless the Executive Officer specifies an alternative date, any information the Executive Officer deems necessary in order to determine whether cause exists for modifying, reissuing, or terminating this Order. The Discharger shall also furnish to the Regional Board, upon request, copies of records that this Order requires the Discharger to maintain.
3. The Discharger shall provide advance notice to the Regional Board of any planned changes or activities at the Landfill that may result in noncompliance with this Order.

F. FINANCIAL ASSURANCE PLANS

The Discharger shall maintain assurances of financial responsibility for:

- a. Post-Closure maintenance activities pursuant to Title 27, §22212; and
- b. Corrective action activities pursuant to Title 27, §22222.

I, Kurt V. Berchtold, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an order adopted by the California Regional Water Quality Control Board, Santa Ana Region, on December 11, 2015.

Kurt V. Berchtold
Executive Officer

STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION

MONITORING AND REPORTING PROGRAM NO. R8-2015-0040
FOR
COUNTY OF SAN BERNARDINO SOLID WASTE MANAGEMENT DIVISION

MILLIKEN SANITARY LANDFILL
CLASS III SOLID WASTE DISPOSAL SITE
SAN BERNARDINO COUNTY

A. GENERAL

1. The County of San Bernardino Solid Waste Management Division (hereinafter Discharger) shall perform monitoring activities specified in this Monitoring and Reporting Program (M&RP) to implement §§20380 - 20430 of Title 27 (Water Quality Monitoring and Response Programs for Solid Waste Management Units).
2. Sample collection, storage, and analysis shall be performed according to the most recent version of Standard USEPA Methods (USEPA Publication "SW-846")

B. WATER QUALITY MONITORING PROGRAM UNDER CORRECTIVE ACTION PROGRAM (CAP)

1. The Water Quality Protection Standards (Water Standards), which is required pursuant to Title 27, §20390, shall consist of a list of Constituents of Concern (COC), the respective concentration limit for each COC at each Monitoring Point, the Point of Compliance, and all Monitoring Points, as described in this M&RP. The Water Standards shall apply during the corrective action compliance period.
2. Monitoring Points and Background Monitoring Points are selected in accordance with Title 27, §20405. The wells monitored as part of the corrective action program (CAP) and background detection monitoring program (DMP) are shown in **Attachment A** and Table 1 in **Attachment B**.
3. The Point of Compliance is a vertical surface located at the hydraulically downgradient limit of the Landfill that extends through the uppermost aquifer underlying the Landfill and is shown in the attached Map (**Attachment A**).
4. The Water Standards concentration limits for each COC shall be determined as follows:

- a. In cases where the constituent's method detection limit (MDL) is exceeded in less than ten percent of the historical samples, the Water Standards concentration limit is the highest Practical Quantification Limit (PQL) value associated with the Monitoring Point/COC pair's historical data set.
 - b. In cases where the inorganic constituent's MDL is exceeded in ten percent or more of the historical samples, a statistically based Water Standards concentration limit must be defined and regularly updated as follows:
 - i. Statistically analyze the historical data set, and propose to the Executive Officer a statistically derived Water Standards concentration limit for each Monitoring Parameter at each Monitoring Point for which there are at least eight reference data points. The statistical analysis shall comply with Title 27, §20415.
 - ii. In cases where there are less than eight reference data points, for a given Monitoring Point/COC pair, the Discharger shall collect samples quarterly until each such data deficient Monitoring Point/COC pair has at least eight reference background data points, at which point, the Discharger shall submit a proposed Water Standards concentration limit(s), together with a proposed data analysis method for each Monitoring Point/COC pair to the Executive Officer for approval. This data collection and submittal to the Executive Officer shall take no longer than two years.
 - c. In cases where the organic or synthetic constituent's PQL is exceeded in ten percent or more of the historical data set, and the organic or synthetic constituent is from a source other than the Landfill, each such Monitoring Point/COC pair must have its Water Standards concentration limit determined by applying an approved data analysis method to its historic data set, just like a readily detectable inorganic constituent would be addressed.
 - d. In cases where the organic or synthetic constituent's PQL is exceeded in ten percent or more of the historical data set, and the organic or synthetic constituent is from the Landfill, each such Monitoring Point/COC pairs' Water Standards concentration limit shall be the highest Practical Quantification Limit (PQL) value associated with the Monitoring Point/COC pair's historical data set, just like an infrequently detected constituent would be addressed (Section B.7a of the M&RP). The Discharger may propose a Water Standards concentration limit greater than background, or in this instance the highest PQL, provided that the proposed concentration limit is in accordance with Title 27, §20395. The proposed concentration limit greater than background shall not be effective until approved by the Executive Officer.
5. The Discharger shall review the statistically derived Water Standards concentration limits every two years. Recent data that has been statistically analyzed in accordance with B.7.a.(i), and is determined to be statistically similar to existing background data, shall be made a part of the revised background

data. This new background data shall be used to statistically derive the revised Water Standard concentration limits. The Discharger shall propose to update that pair's Water Standards concentration limit data analysis to include the new data points, and shall include in the proposal a revised Water Standards concentration limit value determined in the same manner as previously determined for that pair. The revised historic data and Water Standards concentration limit shall become effective during the first Reporting Period following approval of the proposal.

6. Throughout the Corrective Action Program, for each Monitoring Point/Monitoring Parameter pair that has shown a verified release indication, the Discharger shall create and maintain a concentration-versus-time plot with the pair's Water Standards concentration limit shown as a horizontal line on the plot, pursuant to **Attachment A** to this M&RP. This line serves as the pair's cleanup goal. The Discharger shall include these plots in a Corrective Action Measures Report in the Landfill's Annual Summary Monitoring Report. This Corrective Action Measures Report shall identify which release-affected Monitoring Point/Monitoring Parameter pairs are responding well to the Corrective Action Measures (i.e., they are trending down toward, or have reached their Water Standards concentration limit) and shall identify all other release-affected Monitoring Point/Monitoring Parameter pairs as indicating a need to revise the Corrective Action Measures. At the request of the Executive Officer, the Discharger shall propose, as part of the Monitoring Report for the next Reporting Period, revised Corrective Action Measures that will provide positive remediation effects on all release-affected Monitoring Point/Monitoring Parameter pairs. The revised Corrective Action Measures become effective immediately upon approval.
7. Monitoring Parameters:
 - a. The Discharger shall analyze separate water samples from each groundwater monitoring well for each Monitoring Parameter in Tables 2 and 4 of **Attachment B** of this M&RP, and shall test the resulting data using one of the statistical or non-statistical methods listed in Title 27, §20415(e).
 - i. Monitoring parameters that use statistical methods — For all Monitoring Point/Monitoring Parameter pairs not addressed by an assigned or approved nonstatistical data analysis method, the Discharger shall use only statistical data analysis methods approved by the Executive Officer, meet Title 27, §20415(e)(6-12), use a pass-1-of-2 retesting approach that involves taking the first sample at the very start of the reporting period with subsequent period retest sample, if needed, and that are developed to meet USEPA's Unified Guidance (2009)¹, including validation of the method's statistical power by comparison to that agency's relevant

¹ US EPA, MARCH 2009, STATISTICAL ANALYSIS OF GROUNDWATER MONITORING DATA AT RCRA FACILITIES UNIFIED GUIDANCE (EPA 530/R-09-007) (available at <http://www.epa.gov/osw/hazard/correctiveaction/resources/guidance/sitechar/gwstats/unified-guid.pdf>)

Reference Power Curve, as therein described. Monitoring Point/Monitoring Parameter pairs subject to such testing include:

- (a) Metals surrogate Monitoring Parameters - pH, total dissolved solids (TDS), chloride, sulfate, and nitrate as nitrogen, or other constituents as approved.
 - ii. Monitored constituents that use non-statistical methods:
 - (a) Volatile Organic Compounds and any other organic constituents that have not been detected in historical data, except by accident, or that are detected less than 10 percent of the time in the historical data, use the California Nonstatistical Data Analysis Method described in **Attachment C** to this M&RP;
 - (b) All Monitoring Point/Monitoring Parameter pairs in Tracking Status (verified release indication) shall use the Concentration-Versus-Time-Plotting nonstatistical data analysis method described in **Attachment C** to this M&RP; and
 - (c) All Monitoring Point/UnPar (see **Attachment C**) pairs that are monitored every five years shall use the Upper 85th Percentile Nonstatistical Data Analysis Method provided for that purpose in **Attachment C** to this M&RP.
 - b. For monitoring parameters that are specified in **Attachment B, Table 4** and **Table 5**, the Executive Officer may approve alternative monitoring parameters that meet the requirements of Title 27, §20380 et seq. The Executive Officer may also approve alternative statistical or non-statistical methods that meet the requirements of Title 27, §20415(e).
8. The Discharger must monitor for COCs as follows:
- a. Known constituents plus Appendix II
 - i. The "COC list" (list of Constituents of Concern required under Title 27, §20395) includes all constituents listed in **Attachment B, Table 4**, of this M&RP.
 - ii. The Discharger shall monitor all COCs (i.e., those COCs that are not Monitoring Parameters), Table 5, every five years, pursuant to Title 27, §20420(g). The analytical data shall be analyzed by using the Upper 85th Percentile Nonstatistical Method provided for that purpose in **Attachment C** of this M&RP.
 - b. Background sampling for new constituents - For each newly detected Appendix II constituent that is added to the existing Monitoring Parameter COC list, the Discharger shall establish a reference background value using

the method described in Section B.4 of this M&RP. Once this reference set of background data is established, for a given new Monitoring Point/Monitoring Parameter pair, the discharger shall include the data set for that pair, in a separate identified item in the monitoring report for that reporting period. This item shall include, for each new Monitoring Point/COC pair, a data analysis method (meeting Section B.7 of this M&RP) to be used on it when it begins functioning as a Standard Status Monitoring Point/Monitoring Parameter pair (looking for a release indication). Existing background data for the newly identified Appendix II constituents may be substituted for additional background sampling with the approval of the Executive Officer.

C. GENERAL SITE MONITORING

1. At a minimum, the landfill gas condensate collection system shall be inspected and evaluated on a monthly basis for its effectiveness. All deficiencies identified and the dates and types of corrective actions taken shall be recorded in a permanent log. All deficiencies shall be photographed for the record. Samples of gas condensate shall be collected in accordance with the monitoring frequency in Table 2, and analyzed for constituents specified in Tables 3 & 5.
2. Quarterly, the Discharger shall inspect all waste management units and shall evaluate their effectiveness. All areas of slope failure, differential settlement, fissuring, erosion, ponding, leachate staining, and seepage into or from the Landfill shall be identified, field-marked, and documented. In the event seepage is discovered, the location of each seep shall be mapped and a mitigation plan submitted for the approval by the Executive Officer. All findings shall be photographed for the record.
3. At a minimum, all run-on and runoff drainage control structures shall be inspected and evaluated quarterly for their effectiveness. During dry weather conditions, the effectiveness of the drainage control system shall be evaluated on the basis of its conformance to the as-built drawings, or revised drawings, for the system. All deficiencies shall be identified, recorded, and repaired.
4. Every five years, an aerial or ground survey of the Landfill shall be performed in accordance with the schedule in Table 2.

D. REPORTING

1. Monitoring report contents - All reports shall be submitted no later than one month following the end of the respective Monitoring Period. The reports shall comprise of at least the following, in addition to the specific contents listed for each respective report:
 - a. Transmittal letter - A letter summarizing the essential points in the report. This letter shall include a discussion of any violations found since the last such report was submitted, and shall describe actions taken or planned for correcting those violations;
 - b. Compliance evaluation summary - For groundwater monitoring and COC reports, a compliance evaluation summary containing at least:
 - i. Flow rate/direction - For each monitored groundwater body, a description and graphical presentation (e.g., arrow on a map) of the velocity and direction of groundwater flow under/around the Landfill, based upon water level elevations taken during the quarterly measurements. The groundwater flow rate/direction shall be reported on a semi-annual basis in the semiannual reports;
 - ii. Well sampling information - For each monitoring well addressed by the report, a description of the method and time of water level measurement, and a description of the method of purging used before sampling to remove stagnant water in the well, pursuant to Title 27, §20415(e)(12)(B);
 - iii. Sampling information - For each monitoring point and background monitoring point addressed by the report, a description of the type of pump or other device used and its vertical placement for sampling, and a detailed description of the sampling procedure (number and description of the samples, field blanks, travel blanks, and duplicate samples taken, the type of containers and preservatives used, the date and time of sampling, the name of the person collecting the samples, and any other observations); and
 - iv. Monitoring report in PDF format - A word-searchable-PDF-format copy of each monitoring report shall be, uploaded to the Landfill's GeoTracker account for each Reporting Period.
 - c. Map - A map (or copy of an aerial photograph) showing the locations of observation stations, monitoring points, and background monitoring points;
 - d. Laboratory data - The laboratory results of all analyses shall be submitted in accordance with Section D.8 of this M&RP;

- e. Landfill gas condensate containment, and drainage and erosion control systems - A statement as to the condition and performance of the landfill gas condensate containment structure, the landfill closure cap, and the drainage and erosion control systems. The summary shall include a list of deficiencies identified and the dates and types of corrective actions taken to achieve compliance with the waste discharge requirements. If corrective actions for identified deficiencies could not be implemented by the end of the monitoring period; the Discharger shall provide the reason(s) for noncompliance and a time schedule for implementing the corrective actions.
2. Quarterly water quality monitoring reports - All monitoring reports shall be submitted in accordance with the schedule shown in **Table 1**, and shall include a list of all Monitoring Point/Monitoring Parameter pairs that have shown a verified exceedance of their respective Water Standards concentration limit during that reporting period, in addition to a listing of all other Monitoring Point/Monitoring Parameter pairs that have demonstrated a release during any prior reporting period.
 3. Annual summary report - The Discharger shall submit an annual report to the Regional Water Board covering the previous monitoring year (April 1 of the previous year through March 31 of the following year). The annual summary report is due on April 30. This report may be combined with the water quality monitoring report for the period ending on March 31, and shall meet the following requirements:
 - a. Graphical presentation - Graphing the groundwater analytical data shall be in accordance with Title 27, §20415(e)(14), but the concentration-versus-time plots (including the Water Standards concentration limit, plotted as an identified horizontal line) for all release-affected Monitoring Point/Monitoring Parameter pairs will be included in the compliance record discussion of Section D.3.c. of the M&RP;
 - b. Tables - All monitoring analytical data obtained during the four previous quarterly reporting periods shall be presented in tabular form and shall be uploaded electronically onto the State's database (GeoTracker) within one month following the submittal of the quarterly monitoring reports to the Regional Board. The tables shall include the following:
 - i. Concentration Limit Table -- Each Monitoring Point/COC pair's Water Standards concentration limit, together with a declaration of the type and (for inter-well) the name of the well from which the data was drawn. Each datum shall include a date (when it was taken) and, if less than the PQL, include its MDL and PQL. For trace values, include a concentration estimate.
 - ii. Data Analysis Method Table -- A table indicating those Monitoring Point/COC pairs that use each listed data analysis method. For statistical

methods, indicate the retesting approach (e.g., pass-1-of-2) and the parameter settings used. For standardized (assigned) nonstatistical methods, merely name the method.

- iii. Retesting Table -- A table showing each retest done that Monitoring Year for any non-COC test, UnPar test, Standard Status Monitoring Parameter, or Tracking Status (concentration-versus-time plot) Monitoring Parameter test for which a preliminary indication invoked the approved retesting approach.
 - c. Compliance record discussion - A comprehensive discussion of the compliance record, and of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the Landfill's waste discharge requirements relating to water quality issues. This discussion shall evaluate whether the existing corrective action measures (Corrective Action Measures) are bringing all release-affected Monitoring Point/Monitoring Parameter pairs back into compliance with their respective Water Standard concentration limit [see Title 27, §20415(h)], and shall include the concentration-versus-time plots for each such release-affected Monitoring Point/Monitoring Parameter pair. Pursuant to Title 27, §20080(a)(1), the Regional Water Board finds that an annual update frequency, for this Corrective Action Measures-effectiveness report, will be more effective at noting changes than would be the case under the prescriptive semi-annual reporting frequency required for it at Title 27, §20415(h);
 - d. Summary of changes - A written summary of monitoring results and monitoring and control systems, indicating any changes made or observed since the previous annual report;
4. UnPar COC Report at least every five years - In the absence of a major change in the known releases, the Discharger shall monitor all UnPars (non-Monitoring Parameter COCs for the Landfill).
- a. Reporting period for UnPars - The Discharger shall sample all monitoring points and background monitoring points for each monitored medium for all UnPars (non-Monitoring Parameter COCs) every fifth year, beginning with the Fall of 2020. The first Reporting Period ends September 30, 2020, with subsequent UnPar COC monitoring to be carried out every fifth year thereafter, alternately in the Spring (Reporting Period ends March 31) and the Fall (Reporting Period ends September 30).
 - b. UnPar COC report - This report, which is due one month following the Monitoring Period, shall be combined either with the semi-annual monitoring report for the completion date or with the annual summary report for that monitoring year. The most recent COC report (then termed "COC report") was submitted in May 2015. Future UnPar COC reports are due every 5 years (in 2020, 2025, etc.). The UnPar COC reports shall identify all non-

Monitoring Parameter COCs that need to become Monitoring Parameters because they have exceeded their upper 85th percentile (of background data) both initially and in the mid-reporting-period retest sample (see **Attachment C**). Any non-Monitoring Parameter COC that fails this test at any Monitoring Point shall be reported as such in the monitoring report for that reporting period, including being noted in the summary for it, and becomes a Monitoring Parameter at all monitoring points in that monitored medium as of the following reporting period.

5. Landfill Gas or Gas Condensate Monitoring Report

- a. October gas condensate sampling results - The Discharger shall report to the Regional Water Board, no later than January 31 of each year, the analytical results of the gas condensate samples taken during the previous October. If sufficient gas condensate was not available to perform the necessary analyses, then analytical results for the landfill gas may be substituted for the gas condensate.
- b. April gas condensate retest results - If the annual gas condensate samples taken in October identify constituents that exceed their respective PQL and are not on the current Monitoring Parameter list, the Discharger shall collect and analyze a landfill gas condensate sample in April. The retest sample(s) shall be analyzed only for the constituents detected in the October sampling event. During any year in which an April landfill gas condensate retest is carried out, the Discharger shall submit a report to the Regional Water Board no later than August 1 of that year. This report shall identify all VOC constituents that must be added to the Landfill's monitoring parameters list as a result of having exceeded their respective PQL in both the previous calendar year's October sample and also in the April retest sample [as well as degradation by-products of confirmed constituents(s)], plus any additional Appendix II constituents identified as new COCs pursuant to Section B.8.b of the M&RP for which the Discharger is in the process of establishing a Concentration Limit (background data set). The report shall also include an updated monitoring parameter list.

6. Winterization plans and topographical mapping updates - By October 1 of each year, all drainage and erosion control system construction and maintenance activities shall be completed. Annually, by October 31, winterization plans and topographical mapping updates shall be submitted as follows:

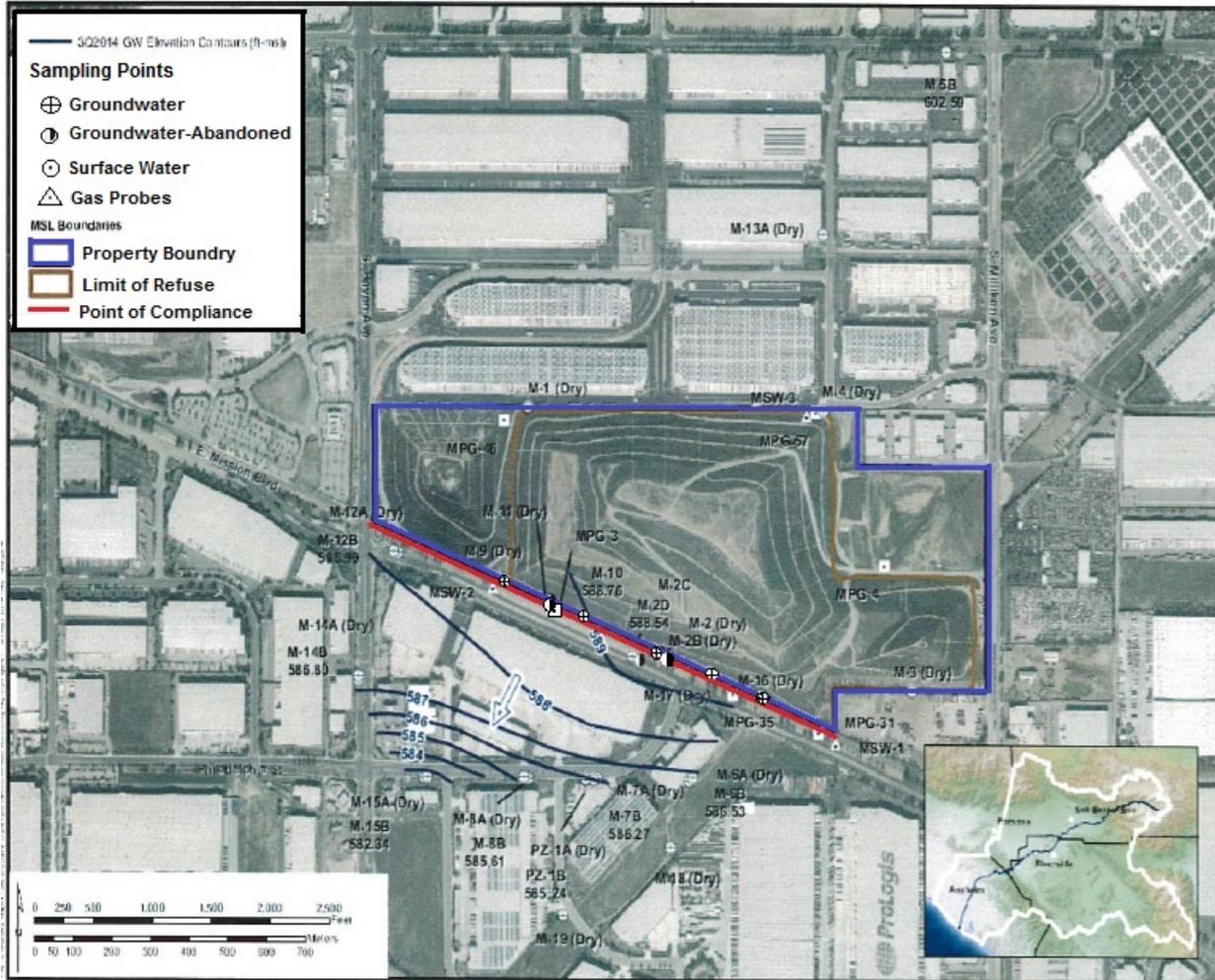
- a. An 11x17 inch facility site map shall be provided indicating locations of new and existing components of the site drainage and erosion control system, including hardscape structures and other permanent and annual/seasonal erosion control systems, sediment control systems and storm water treatment best management practices.

7. Reporting Schedule - The Discharger shall submit the reports/documents in accordance with the deadlines specified in **Table 1**.
8. Uploading Laboratory Data —For each reporting period, the Discharger shall upload all monitoring data to the Landfill's GeoTracker account in Electronic Deliverable Format (EDF).
9. Signature - All reports shall be signed by a responsible officer or a duly authorized representative of the Discharger and shall be submitted under penalty of perjury.

Kurt V. Berchtold
Executive Officer

December 11, 2015

ATTACHMENT A Location, Point of Compliance, and Groundwater Monitoring Well Map



Attachment B

Milliken Sanitary Landfill Monitoring Programs, Monitoring Parameters and Monitoring Frequency

Table 1 - Monitoring and Reporting Due Dates

Location	Task Description	Monitoring Period	Report Due Date
Groundwater Monitoring Wells M-2B, M-2D, M-3, M-6B, M-7B, M-8B M-9, M-10, M-12B, M-14, M-15A/B, M-16 M-17, and M-19, M-1, and M-4	Quarterly Water Quality Monitoring	October 1 – December 31	January 31 of each year
		January 1- March 31	April 30 of each year
		April 1- June 31	July 31 of each year
		July 1- September 1	October 31 of each year
Groundwater Monitoring Wells: M-7A and M-8A	Semi-Annual Water Quality Monitoring	October 1- March 31	April 30 of each year
		April 1- September 30	October 31 of each year
All Wells	Quarterly Water Level Measures		
All Wells	UnPar COC Analysis	Every 5 years (alternating between Fall and Spring Reporting Periods)	April 30, 2020; October 31, 2025; April 30, 2030; October 31, 2035; etc.
LANDFILL LFG System	October Landfill Gas Condensate Testing Analysis	October 1 - October 31	April 30 of the following year
LANDFILL LFG System	April Landfill Gas Condensate Retesting Analysis (When Required)	April 1 - April 30	August 1 of each year
LANDFILL	Winterization Plan – Facility Site Map	October 1 of each year	October 31 of each year
LANDFILL	Aerial or Ground Survey	By October 1 of every fifth year	October 31 of every fifth year
Surface Water Monitoring: MSW-1, MSW-2, MSW-3	Semi-Annual Water Quality Monitoring	October 1- March 31	April 30 of each year
		April 1- September 30	October 31 of each year

Table 2: Monitoring Programs, Parameters and Frequency

Type of Program	Monitoring Parameters	Monitoring Frequency
Corrective Action Water Quality Monitoring Program	Mpar COC List (Table 4) ¹	Quarterly and Semi-annually (See Table 1)
	General Minerals and Appendix II Constituents (Table 5)	Once every five years
Landfill Gas (LFG) Condensate Monitoring	General minerals (Table 3) and all Appendix II Constituents (Table 5), except Organochlorine Pesticides, Chlorinated Herbicides and Polychlorinated Biphenyls (PCBs)	Annually ²
Extracted Landfill Gas (only if LFG condensate is not monitored)	Select Appendix II Constituents (Table 5)	Annually
Aerial or Ground Survey	Not applicable	Once every five years
General Site Monitoring	Not Applicable	Varies (see Section B.2 of M&RP)

1. The COC lists shall be updated each year based on landfill gas condensate testing/retesting programs.
2. October landfill gas condensate testing with a confirmation retest in April of the following year.
3. Extracted landfill gas condensate shall only be analyzed for Appendix II constituents that have not been previous detected.

TABLE 3

List of General Minerals

Parameter	EPA Method	Parameter	EPA Method
Total Hardness	130	Specific Conductance (Electrical Conductivity - EC) - field	120.1
Bicarbonate (HCO ₃)	310.2	pH - field	150.1
Carbonate (CaCO ₃)	310.2	Total Dissolved Solids	160.1
Total Alkalinity	310.1	Chemical Oxygen Demand	410
Total Cations	1	Phenols	420.1
Total Anions	1	Total Organic Carbon	415
Hydroxide (OH)	2	Total Organic Halogens	450.1
Chloride (CL)	325	Calcium (Ca)	200.7/215
Fluoride (F)	340	Magnesium (Mg)	200.7/242.1
Nitrate (NO ₃)	353.2	Manganese (Mn)	200.7/243.1
Sulfate (SO ₄)	375	Potassium (K)	200.7/258.1
Phosphate (PO ₄)	365.2	Sodium (Na)	200.7/273.1
Total Phosphorus	365.1/365.2	Iron (Fe)	200.7/236.1
Boron (B)	212.3/200.7	Zinc (Zn)	200.7/289.1

Total cations and anions are determined by the summation of all cations and anions, respectively, in the sample analyzed.

The standard method, SM 2330B, in the "Standard Methods for the Examination of Water and Wastewater" for hydroxide ion analysis shall be used.

TABLE 4

**Current Monitoring Parameter Constituent List
 For the Milliken Sanitary Landfill**

General Chemistry Parameter	Volatile Organic Compounds Parameter
Specific Conductance (Electrical Conductivity – EC) - field	1,1,1-Trichloroethane
Dissolved Oxygen - field	1,1-Dichloroethane
pH - field	1,1-Dichloroethene
	1,2-Dichloroethane
Bicarbonate (HCO ₃)	1,4-Dichlorobenzene
Carbonate (CaCO ₃)	Benzene
Total Alkalinity	Chlorobenzene
Total Dissolved Solids	Chloroethane
Chloride	Chloroform
Sulfate	cis-1,2-Dichloroethene
Nitrate	Dichlorodifluoromethane
Calcium	Isobutyl Alcohol
Magnesium	Methylene Chloride
Manganese	Tetrachloroethene
Potassium	Total Xylenes
Sodium	o-Xylene
Iron	trans-1,2-Dichloroethene
	Trichloroethene
	Trichlorofluoromethane
	Vinyl Chloride
	1,4 Dioxane

TABLE 5 List of Appendix II Constituents

Acenaphthene	Dibenzofuran
Acenaphthylene	Dibromochloromethane; Chlorodibromomethane
Acetone	1,2-Dibromo-3-chloropropane; DBCP
Acetonitrile; Methyl cyanide	1,2-Dibromoethane; Ethylene dibromide; EDB
Acetophenone	Di-n-butyl phthalate
2-Acetylaminofluorene; 2-AAF	o-Dichlorobenzene; 1,2-Dichlorobenzene
Acrolein	m-Dichlorobenzene; 1,3-Dichlorobenzene
Acrylonitrile	p-Dichlorobenzene; 1,4-Dichlorobenzene
Aldrin	3,3-Dichlorobenzidine
Allyl chloride	trans-1,4-Dichloro-2-butene
4-Aminobiphenyl	Dichlorodifluoromethane; CFC 12
Anthracene	1,1-Dichloroethane; Ethylidene chloride
Antimony (total)	1,2-Dichloroethane; Ethylene dichloride
Arsenic (total)	1,1-Dichloroethylene; 1,1-Dichloroethene; Vinylidene chloride
Barium (total)	cis-1,2-Dichloroethylene; cis-1,2-Dichloroethene
Benzene	trans-1,2-Dichloroethylene; trans-1,2-Dichloroethene
Benzo[a]anthracene; Benzanthracene	2,4-Dichlorophenol
Benzo[b] fluoranthene	2,6-Dichlorophenol
Benzo[k] fluoranthene	1,2-Dichloropropane; Propylene dichloride
Benzo[ghi] perylene	1,3-Dichloropropane; Trimethylene dichloride
Benzo[a] pyrene	2,2-Dichloropropane; Isopropylidene chloride
Benzyl alcohol	1,1-Dichloropropene
Beryllium (total)	cis-1,3-Dichloropropene
alpha-BHC	trans-1,3-Dichloropropene
beta-BHC	Dieldrin
delta-BHC	Diethyl phthalate
gamma-BHC; Lindane	0,0-Diethyl 0-2-pyrazinyl phosphorothioate; Thionazin
Bis(2-chloroethoxy) methane	Dimethoate
Bis(2-chloroethyl) ether; Dichloroethyl ether	p-(Dimethylamino)azobenzene
Bis(2-chloro-1-methylethyl) ether; 2,2-Dichlorodiisopropyl ether; DCIP	7,12-Dimethylbenz[a]anthracene
Bis(2-ethylhexyl) phthalate	3,3-Dimethylbenzidine
Bromochloromethane; Chlorobromomethane	2,4-Dimethylphenol; m-Xylenol
Bromodichloromethane; Dibromochloromethane	Dimethyl phthalate
Bromoform; Tribromomethane	m-Dinitrobenzene
4-Bromophenyl phenyl ether	4,6-Dinitro-o-cresol; 4,6-Dinitro-2-methylphenol
Butyl benzyl phthalate; Benzyl butyl phthalate	2,4-Dinitrophenol
Cadmium (total)	2,4-Dinitrotoluene
Carbon disulfide	2,6-Dinitrotoluene
Carbon tetrachloride	Dinoseb; DNBP; 2-sec-Butyl-4,6-dinitrophenol
Chlordane	Di-n-octyl phthalate
p-Chloroaniline	Diphenylamine
Chlorobenzene	Disulfoton
Chlorobenzilate	Endosulfan I
p-Chloro-m-cresol; 4-Chloro-3-methylphenol	Endosulfan II
Chloroethane; Ethyl chloride	Endosulfan sulfate
Chloroform; Trichloromethane	Endrin
2-Chloronaphthalene	Endrin aldehyde
2-Chlorophenol	Ethylbenzene
4-Chlorophenyl phenyl ether	
Chloroprene	
Chromium (total)	
Chrysene	
Cobalt (total)	Ethyl methacrylate
Copper (total)	Ethyl methanesulfonate
m-Cresol; 3-methylphenol	Famphur
o-Cresol; 2-methylphenol	Fluoranthene
p-Cresol; 4-methylphenol	Fluorene
Cyanide	Heptachlor
2,4-D; 2,4-Dichlorophenoxyacetic acid	Heptachlor epoxide
4,4-DDD	
4,4-DDE	
4,4-DDT	
Diallate	
Dibenz [a,h] anthracene	

Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachloroethane

Hexachloropropene
2-Hexanone; Methyl butyl ketone
Indeno (1,2,3-cd) pyrene
Isobutyl alcohol
Isodrin

Isophorone
Isosafrole
Kepone
Lead (total)
Mercury (total)
Methacrylonitrile
Methapyrilene
Methoxychlor
Methyl bromide; Bromomethane
Methyl chloride; Chloromethane
3-Methylcholanthrene
Methyl ethyl ketone; MEK; 2-Butanone
Methyl iodide; Iodomethane
Methyl methacrylate
Methyl methanesulfonate
2-Methylnaphthalene
Methyl parathion; Parathion methyl
4-Methyl-2-pentanone; Methyl isobutyl ketone
Methylene bromide; Dibromomethane
Methylene chloride; Dichloromethane
Naphthalene
1,4-Naphthoquinone
1-Naphthylamine
2-Naphthylamine
Nickel (total)
o-Nitroaniline; 2-Nitroaniline
m-Nitroaniline; 3-Nitroaniline
p-Nitroaniline; 4-Nitroaniline
Nitrobenzene
o-Nitrophenol; 2-Nitrophenol
p-Nitrophenol; 4-Nitrophenol
N-Nitrosodi-n-butylamine
N-Nitrosodiethylamine
N-Nitrosodimethylamine
N-Nitrosodiphenylamine
N-Nitrosodipropylamine; N-Nitroso-N-dipropylamine;
Di-n-propylnitrosamine
N-Nitrosomethylethylamine
N-Nitrosopiperidine
N-Nitrosopyrrolidine
5-Nitro-o-toluidine
Parathion
Pentachlorobenzene
Pentachloronitrobenzene
Pentachlorophenol
Phenacetin
Phenanthrene
Phenol
p-Phenylenediamine
Phorate
Polychlorinated biphenyls; PCBS; Aroclors
Pronamide
Propionitrile; Ethyl cyanide
Pyrene
Safrole
Selenium (total)
Silver (total)
Silvex; 2,4,5-TP
Styrene
Sulfide
2,4,5-T; 2,4,5-Trichlorophenoxyacetic acid
1,2,4,5-Tetrachlorobenzene
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane

Tetrachloroethylene; Tetrachloroethene; Perchloroethylene
2,3,4,6-Tetrachlorophenol
Thallium (total)
Tin (total)
Toluene
o-Toluidine
Toxaphene
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane; Methylchloroform
1,1,2-Trichloroethane
Trichloroethylene; Trichloroethene
Trichlorofluoromethane; CFC-11
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
1,2,3-Trichloropropane
0,0,0-Triethyl phosphorothioate
sym-Trinitrobenzene
Vanadium (total)
Vinyl acetate
Vinyl chloride; Chloroethene
Xylenes (total)
Zinc (total)

The concentration limits for Appendix II Constituents, that are not current Monitoring Parameters, are the laboratory practical quantitation limits.

ATTACHMENT C: NONSTATISTICAL TEST METHODS

Definitions of Terms

- “Constituents of Concern (COCs)”** means those waste constituents that could be released from the landfill. For any given medium, each such constituent is either: a Monitoring Parameter (Monitoring Parameter) subject to compliance testing each Reporting Period, due to being a good indicator or, in the event of a release, due to having been detected and verified in groundwater as having exceeded its respective background data set’s upper 85th percentile concentration; an UnPar (includes all constituents of concern that are not Monitoring Parameters for that medium);
- “Standard Status”** means that the given Monitoring Parameter, at a given Monitoring Point (i.e., a Monitoring Point/Monitoring Parameter pair, for tracking/administrative purposes) has not shown as verified indication of a release yet, so, its purpose, in the monitoring program, is to detect the arrival of the release. This includes Monitoring Point/Monitoring Parameter pairs, during an evaluation monitoring or corrective action program, that have not yet shown a verified release indication. This also includes Monitoring Parameters that had historical verified detections but are not currently classified in Tracking Status;
- “DMP, EMP, AMP, CAP”** mean the detection monitoring program, evaluation monitoring program, assessment monitoring program, and corrective action program;
- “InterPoint”** means that the Concentration Limit (background data set against which each new datum is tested) comes from the background (upgradient or sidegradient) Monitoring Point;
- “IntraPoint”** means that the Concentration Limit consists of historical data from the Monitoring Point being tested. This background data must be validated (before use) not to include any indication of a release for any constituent to which the nonstatistical data analysis method is applied;
- “Measurably significant increase”** has the same meaning as the federal term, “statistically significant increase,” but includes indications by any approved nonstatistical test;
- “Monitoring Parameter” or “Monitoring Parameter COCs”** means one the landfill’s set of Constituents of Concern that functions as a Monitoring Parameter, for any given monitored medium (i.e., that subset of the Constituents of Concern that are subject to compliance data analysis every Reporting Period at each Monitoring Point in that medium). Each monitored medium will have its own Monitoring Parameters;
- “Tracking Status”** means that the given Monitoring Parameter, at a given Monitoring Point (i.e., a Monitoring Point/Monitoring Parameter pair, for tracking/administrative purposes) has shown a recent verified indication of a release; therefore its purpose, in the monitoring program, is to track the released constituent’s concentration there via a concentration-versus-time plot upon which the Water Standard concentration limit (i.e. background value, laboratory practical quantitation limit or health risk based value serves as the cleanup goal). This plotting serves as that Monitoring Point/Monitoring Parameter pair’s nonstatistical data analysis method. The discharger notifies Regional Water Boardstaff as soon as the plot has been at-or-below this plotted horizontal cleanup goal line for two reporting periods in a row and the Monitoring Parameter shall return to Standard Status. For a landfill in corrective action, the discharger includes these plots of Tracking Status Monitoring Point/Monitoring Parameter pairs in each Corrective Action Measures Effectiveness Report (Corrective Action Measures Report);
- “UnPar” or “UnPar COC”** means one of the landfill’s set of Constituents of Concern that functions as an Uninvolved Parameter for any given monitored medium. For any given monitored medium (groundwater, surface, water, or the unsaturated zone), they are that subset of the Constituents of Concern that are not Monitoring Parameters (Monitoring Parameters). Each monitored medium will have its own UnPars.

CONCENTRATION-VERSUS-TIME PLOTTING METHOD

(See definition for “Tracking Status.”)

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NONSTATISTICAL DATA ANALYSIS METHODS (NSDAM)

A. Non-Statistical Method For Standard Status COCs Seldom Found In Background

For any given Monitoring Point (Monitoring Point) subject to compliance testing during each Reporting Period, regardless of the monitoring program (DMP, AMP/EMP, or CAP), the Discharger shall use this data analysis method, jointly, for all Standard Status Monitoring Parameters (Monitoring Parameters) on that Monitoring Point’s “scope list” (see §A.1. for the initial test scope list and §B.1 for the modified scope list use during the single retest).

1. **Scope List** — For the initial test (on the sample taken from that compliance-testing Monitoring Point at the start of that Reporting Period), create a current “scope list” that includes all of that Monitoring Point’s Standard Status Monitoring Parameters that exceed their “reference MDL” (i.e., the highest MDL associated with that constituent’s background data set) in less than 10% of the Monitoring Parameter’s background data set at that Monitoring Point. For each such qualifying constituent, in addition to its reference MDL, note its “reference PQL” as the highest PQL value associated with the constituent’s background data set at that Monitoring Point.
2. **Two Triggers** — From the scope list made under A.1., above, for an initial test [or, for a retest, using the modified scope list created under B.2, below], identify each scope list Monitoring Parameter in the **current** sample from that Monitoring Point that exceeds either its respective MDL or its respective PQL. The Discharger shall conclude that these exceeding constituents provide a preliminary indication [or, for a retest, provide a measurably significant indication] of a release indication, at that Monitoring Point, if **either**:
 - two or more of the Standard Status Monitoring Parameters on the Monitoring Point’s scope list exceed their reference MDL; **or**
 - at least one of the Standard Status Monitoring Parameters on the Monitoring Point’s scope list equals or exceeds its reference PQL.

B. Single Discrete Retest (A “Pass-1-of-2” Plan):

1. **Notification and Retest Sample Acquisition** — In the event that the Discharger concludes (pursuant to A.2., above) that the initial sample, taken at the very start of the reporting period, indicates that there is a preliminary indication for one-or-

more Monitoring Parameters on the scope list for that Monitoring Point, then the discharger shall immediately notify Regional Water Boardstaff by phone or e-mail and, at mid-reporting-period, shall collect a new independent retest sample from the indicating Monitoring Point.

2. **Apply Test To Modified Scope List** — For the Monitoring Point retest sample, the Discharger shall include, from the laboratory retest analysis results, only the determinations for those constituents indicated in that Monitoring Point's original test, under A.2., and these indicated constituents shall comprise the Monitoring Point's "modified scope list," for use in the retest. As soon as the retest data are available, the discharger shall apply the same test [under A.2., above, but using this modified scope list] to analyze the retest sample's data at that compliance Monitoring Point.
3. **Conclusions** — If the retest sample trips neither one of the triggers under §A(2), then the Discharger shall conclude that the original determination was in error and shall report this to the Regional Water Board by phone or e-mail and include it in the Monitoring Report for that Reporting Period.

If, instead, the retest sample trips either (or both) of the triggers under A.2., then the Discharger shall conclude that there is a measurably significant increase at that Monitoring Point for the constituent(s) indicated in the validating retest sample, shall report this to the Regional Water Board immediately (by phone or e-mail), and shall include this information in the Monitoring Report for that reporting period. Furthermore, given a confirming retest, beginning with the very next Reporting Period, the Discharger shall monitor the indicated-and-verified constituent(s) in Tracking Status (instead of Detection Status) at that Monitoring Point and shall no longer include those constituent(s) in the scope list created (under §A.1.) for that Monitoring Point.

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UPPER 85th PERCENTILE NONSTATISTICAL METHOD FOR UNPAR TESTING

Concentration Limit (retest-triggering concentration) — The UnPars, or UnPar COCs, are those Constituents of Concern (COCs) that are not Monitoring Parameters. Under this Order, they are tested every five years. For any given UnPar at a given Monitoring Point (i.e., for any given Monitoring Point/UnPar pair), its retest-triggering concentration shall be the upper 85th percentile value of its background data set. Nevertheless, for a constituent whose upper 85th percentile value lies below its then-current Practical Quantitation Limit (PQL), its retest-triggering concentration is the highest PQL associated with that pair's background data set.

Test & Pass-1-of-2 Retest — If, during the five-yearly UnPar testing, an UnPar exceeds its respective retest-triggering concentration in its initial sample (taken at the start of the reporting period), the Discharger shall take one retest sample (for the indicating Monitoring Point/UnPar pair) at mid-period (about 90 days later).

If that single retest sample's concentration does not exceed that UnPar's retest-triggering concentration, then the test is concluded without the UnPar's changing to a Monitoring Parameter and the Discharger includes the test information and conclusion in the Monitoring Report for that reporting period.

If, instead, the single retest sample's concentration for that UnPar exceeds that Monitoring Point/UnPar pair's retest-triggering concentration (like the initial sample did), then that constituent becomes a Monitoring Parameter COC at all Monitoring Points in that monitored medium (groundwater, surface water, or the unsaturated zone), beginning with the next Reporting Period, and the Discharger shall report this change to Regional Water Board staff immediately, declare it clearly in the monitoring report (including its summary page) for that Reporting Period.

This approach is imposed as an improvement over the Title 27 prescriptive standards of §20415(e)(8)(E)3., §20420(g) and §20425(e)(4), pursuant to §20080(a)(1) and the leading paragraphs of §20415(e)(8 & 9).

Tentative

List of Acronyms

Corrective Action Measures—Corrective Action Measures

CAP—corrective action program

CAS—corrective action system

CFR—Code of Federal Regulations

COC—constituents of concern

CQA—Construction Quality Assurance

CQC—Construction Quality Control

CWA—Clean Water Act

CWC—California Water Code

DCE—dichloroethene

DMP—Detection Monitoring Program

EDF—Electronic Deliverable Format

FCPMP—Final Closure and Post-Closure Maintenance Plan

LANDFILL—Milliken Class III Sanitary Landfill

LFG—landfill gas

MCL—maximum contaminant levels

MDL—method detection limit

Monitoring Parameter—Monitoring Parameter

Monitoring Point—Monitoring Points

M&RP—Monitoring & Reporting Program

MSW—municipal solid wastes

PQL—Practical Quantification Limit

ROS—Record of Survey

TCE—trichloroethene

TDS—Total Dissolved Solids

UnPar—Uninvolved Parameter

USEPA—United States Environmental Protection Agency

VC—vinyl chloride

VOC—volatile organic compounds

Water Standards—Water Quality Protection Standards

WDR—Waste Discharge Requirements