APPENDIX G

- **Water Resources Background Information**

--Water Resources Assessment, Fugro West, Inc.
(March 2008)

--Technical Memorandum, Fugro West, Inc.
(February 8, 2010;
Revised November 4, 2010)

--Revised Water Discharge Requirements
Order No. R3-2002-0065
(November 1, 2002)

FUGRO WEST, INC.

WATER RESOURCES ASSESSMENT FOR THE COLD CANYON LANDFILL EXPANSION ENVIRONMENTAL IMPACT REPORT

Prepared for:
MORRO GROUP

March 2008
Fugro Project No. 3571.001

Draft

FUGRO WEST, INC.

4820 McGrath Street, Suite 100
Ventura, California 93003-7778
Tel: (805) 650-7000
Fax: (805) 650-7010

March 4, 2008
Project No. 3571.001

Morro Group
1422 Monterey Street
San Luis Obispo, California 93401

Attention: Mr. Keith Miller, Project Manager

Subject: Water Resources Assessment for the Cold Canyon Landfill Expansion, Environmental Impact Report

Dear Mr. Miller:

This report provides an evaluation of the groundwater resources for the proposed Cold Canyon Landfill (CCL) Expansion. The report describes the environmental setting relative to groundwater resources, the reliability of the groundwater supply, and identifies potential groundwater quantity and quality impacts associated with the planned use of groundwater for the proposed landfill expansion.

Principal conclusions of the assessment include:

1. The landfill expansion will require an estimated water demand of up to 80,000 gallons per day (gpd), which is an increase of approximately 20,000 gpd relative to current operational demand of up to 60,000 gpd.
2. The on-site wells are capable of meeting the estimated water demand for the proposed landfill expansion. Existing wells at the landfill are capable of providing sufficient groundwater for the average daily operational demand (dust control, composting, MRF and non-potable use) with or without supplemental supplies. Water demand associated with grading activities for future landfill modules could create greater short-term water demand that will be met by importation of water from off-site sources.
3. The quality of groundwater in the area unaffected by landfill operations is generally poor, such that landfill operational staff reportedly rely on bottled water for potable needs. The San Luis Obispo County Environmental Health Department will require the CCL to be permitted as a non-transient non-community water system. Further, the CCL will be required to submit chemical and bacterialogical analyses of all water sources that could come in bodily contact with employees to prove that the water is potable.
4. The estimated increase in water use for the landfill expansion of about 9 acre feet per year will not have a significant impact on existing groundwater uses in the vicinity of the landfill.
5. A general review of the existing groundwater monitoring program indicates it is consistent with the RWQCB objectives relative to protection of groundwater quality. The current waste discharge requirements (WDRs) and future WDRs that will be adopted for expansion of the landfill will address compliance issues of the landfill expansion on groundwater quality. The forthcoming RWQCB guidance (WDRs, preliminary closure, and post-closure maintenance plans) will prescribe methods to maintain the integrity of the final cover, drainage system, leachate control system, landfill gas system, and groundwater monitoring system in a manner that protects groundwater quality.

We will remain available to respond to questions you or the County of San Luis Obispo may have regarding groundwater resource issues for the proposed Cold Canyon Landfill Expansion.

Sincerely,

FUGRO WEST, INC.

Timothy A. Nicely, P.G.
Project Hydrogeologist

David A. Gardner, P.G., CHg
Senior Vice President

Copies Submitted: (1-Pdf)

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INTRODUCTION

This water resources assessment for the Cold Canyon Landfill (CCL) expansion Environmental Impact Report (EIR) evaluates potential impacts of the proposed expansion on groundwater resources. It is the aim of the water resources assessment to identify potentially significant groundwater impacts to the water supply and quality both on-site and in the surrounding area.

The goals of this water resources assessment as related to water supply are to:

- Compile and review information related to the project site and underlying groundwater basin;
- Describe the estimated current and future water demand for the project;
- Assess the hydrologic connectivity between the CCL and adjacent properties;
- Assess on-site water availability;
- Identify potential short- and long-term impacts to local groundwater supplies including potential drawdown effects from on-site wells;
- Identify potential impacts to local groundwater supplies from the cumulative demand of other groundwater users; and
- Recommend mitigation measures to minimize potential impacts related to groundwater availability.

The goals of the water resources assessment as related to water quality are to:

- Compile and review potable water quality baseline data in the area of the project site;
- Identify potable water quality impacts should the aquifer experience an overdraft condition, intensification of agricultural uses, topographic alteration, short- and long-term water resource impacts from leachate migration, adequacy of the existing groundwater monitoring network; and,
- Recommend mitigation measures to minimize potential impacts related to groundwater quality, including: short- and long-term leachate production, maintenance of the landfill caps, composition of the leachate, ability of the groundwater monitoring system to detect leakage from the landfill liner, and a qualitative description of potential clean-up procedures if contamination is detected.

DATA SOURCES

Data were collected from local, regional, state and federal agencies describing existing local water demand, land use, climate, hydrology, and hydrogeology. Well completion reports were obtained from the California Department of Water Resources (DWR) for an area approximately 1 mile in radius from the CCL. Many geologic and hydrogeologic reports and maps have been prepared that frame the geology and regulatory framework at the periodically

expanded and highly-regulated landfill. Baseline data for this EIR have been extracted largely from published data sources and through discussions with CCL staff. We reviewed hydrogeologic site characterizations prepared by EMCON Associates (1992) and Golder (2007). Groundwater monitoring was discussed in several reports by RMC Geoscience (2006; 2007a, 2007b). An additional annual groundwater monitoring report was prepared by RMC Geoscience in January 2008; however, it was not available for inclusion in this report. We also reviewed a final EIR of the site prepared by ERCE (1991) in advance of a prior expansion.

In addition to the above sources, we also contacted and met with CCL general manager, Mr. Bruce Rizzoli (2007), to better estimate their use of groundwater to meet the historic and future water demands at the site. CCL staff also provided data describing existing production wells and data for current and historical water demand of the CCL. The meeting also included a discussion of any limitations the CCL may have experienced in providing a reliable source of water during construction of the landfill modules (cells) and their estimates of future water demand related to the proposed expansion.

REGULATORY SETTING

The California Environmental Quality Act provides authority to the County of San Luis Obispo to assess the extent to which proposed projects such as this may contribute to groundwater overdraft within individual basins and to determine whether the incremental contribution to the overdraft is considered significantly adverse. To accomplish this, the Governor's office of Planning and Research (1994) established a "threshold of significance criteria" that provides a way of defining thresholds of significant impacts. It is the intent of this water resources assessment to identify whether the proposed project will have any significant impact on the water resources of and surrounding the project site. Specific thresholds, related to groundwater supply and quality, were adopted from CEQA guidelines.

The regulation of impacts to surface and groundwater resources are within the jurisdiction of local, state, and federal agencies including the California Regional Water Quality Control Board (RWQCB) and the California Integrated Waste Management Board (IWMB). Current permits required for the operation of the CCL include Solid Waste Facilities Permit No. 40-AA-0004, Revised Waste Discharge Requirements (WDR) Order No. R3-2002-0065, Monitoring and Reporting Program (MRP) No. R3-2002-0065, Approved Land Development Plan Permit No. D860156D, and Title V Permit to Operate No. 37 (RMC Geoscience, 2007b).

The WDR describes requirements to protect groundwater quality related to the operation of the CCL. The WDR discusses the site description and history of monitoring; status of the monitoring programs; basin water quality issues; prohibitions; provisions for groundwater monitoring, onsite use of water, post-closure maintenance plans, reporting, and general provisions. The MRP discusses the self-monitoring program to document compliance with RWQCB requirements as follows. The MRP identifies the monitoring and observation schedules; site, leachate and drainage system inspections; specific monitoring points; sampling methods, analyses, frequency; and record keeping and reporting requirements. The MRP also summarizes the contingency response necessary if a release is tentatively identified including general conditions for the preparation of an Evaluation Monitoring and Reporting Program, and

release discovery responses. The WDR is presented in Appendix A – Revised Waste Discharge Requirements.

ENVIRONMENTAL SETTING

LOCATION

The CCL is currently a 121-acre, permitted Class III solid waste disposal site located approximately 7 miles southeast of the City of San Luis Obispo in a rural area of San Luis Obispo County, California. The Santa Lucia Mountains are located east of the site, and the Edna Valley located to the east and north. The actively producing Price Canyon Oilfield is located approximately 1 mile to the west. The general location of the CCL is presented as Plate1 -Vicinity Map. The specific location of the CCL is presented as Plate 2 - Site Location Map.

The proposed project would increase the facility footprint by approximately 88 acres and the disposal area by approximately 46 acres (Morro Group, 2007). The CCL would be located on four parcels (totaling approximately 209 acres) following expansion onto the properties located southeast of the current site.

CLIMATE

The CCL is situated within a region that has a Mediterranean climate with warm, dry summers and mild winters. The average annual precipitation is 22.1 inches, which was measured at the San Luis Obispo County Regional Airport located approximately 3.5 miles northwest of the CCL. The standard annual average evapotranspiration rate (ETo) at the Salinas Reservoir (Santa Margarita Lake), located approximately 11 miles northeast, is 5.6 feet per year. Closer to the site, the standard annual average ETo at Lopez Lake, approximately 6 miles east, is 3.7 feet per year (San Luis Obispo County Public Works Department, 2008). ETo measures the loss of water to the atmosphere by evaporation from soil and plant surfaces and transpiration from plants. Environmental data are presented in Appendix B - Precipitation and Evaporation Data.

GEOLOGY

The Central Coast hydrologic basin planning area, as defined by the Central Coast RWQCB, encompasses all coastal drainages flowing to the Pacific Ocean between the Pajaro River in southern Santa Clara County and Rincon Point on the coast of Western Ventura County. The CCL is located in the southern portion of the 779-square mile Estero Bay watershed immediately downgradient from the San Luis Obispo groundwater basin and upgradient of the narrow northeast-southwest trending lower Pismo groundwater basin (Plate 3, Regional Groundwater Basins and Geologic Map).

The study area is located in the Pismo (geologic) Basin along the northeastern flank of the Pismo Syncline. The Pismo (geologic) Basin is bounded on the northeast by the Huasna fault zone and on the west by the Hosgri fault zone (EMCON, 1992).

The Pismo Syncline formed during the late Pliocene as part of a tectonic block bounded between the San Andreas fault zone on the east and the Hosgri fault zone on the west. The Indian Knob and Edna faults parallel the northeast limb of the Pismo Syncline within and adjacent the study area. The Indian Knob fault zone is a reverse fault that crosses the northern portion of the site. Reverse displacement of Indian Knob fault has juxtaposed the older Monterey Formation over the younger Pismo Formation. The Edna fault is an inferred high-angle fault (EMCON Associates, 1992).

Monterey Formation

Within the Pismo (geologic) Basin, the Monterey Formation includes four members. The older two typically consist of dolomitic claystone and siltstone, diatomite, tuffaceous siltstone, and tuff. The younger two members include bedded chert, diatomite and diatomaceous siltstone, tuffaceous sandstone and siltstone, and phosphatic or porcelaneous shale. At the CCL, the exposed Monterey Formation consists of the younger diatomaceous member deposited northeast of a volcanic topographic high (EMCON, 1992). The Monterey Formation sediments include copious organic material that, subjected to heat and pressure due to deformation, produced hydrocarbons. These hydrocarbons accumulated in structural traps and formed significant reserves, including the Arroyo Grande Oil Field located approximately 1 mile west of the CCL.

Pismo Formation

The Pismo Formation is composed of five members: Edna, Miguelito, Gragg, Belleview, and Squire (Hall, 1973). Each member contains basal gravel or coarse sand deposited in a high-energy environment overlain by a thick, upward-fining sequence of sandstone, diatomaceous siltstone, and claystone deposited in progressively lower-energy environments. At the CCL, the exposed Pismo Formation consists of the Edna Formation (EMCON, 1992).

Younger Deposits

After the Pismo Formation was deposited, the area was uplifted and eroded by waves and streams that deposited sediments including marine terraces, dunes, alluvium, and landslide deposits. Locally, these deposits are present within the study area in Cañada Verde and west into Price Canyon.

REGIONAL HYDROGEOLOGY

The principal aquifer of the Pismo (geologic) Basin consists of the recent alluvial deposits. The alluvium consists of sand, gravel and clay to a maximum thickness of 100 feet. The Monterey and Pismo formations that underlie the site are not considered major groundwater aquifers, although they do yield usable quantities of water for small-scale operations such as domestic and livestock purposes. Within the Monterey and Pismo Formations, groundwater generally occurs under semi-confined to confined conditions (EMCON, 1992). Recharge to the aquifer occurs by percolation of stream flow, percolation of

precipitation, and subsurface underflow. Basin discharges occur through surface outflow, springs, groundwater pumpage, and ETo (RMC Geoscience, 2007).

Regionally, groundwater flow directions reflect topography and geologic structure; generally from northeast to southwest. Groundwater in the San Luis Obispo groundwater basin is structurally controlled (Plate 3).

Water from the alluvium is generally of good quality with relatively low concentrations of dissolved constituents. Generally, water quality from the Pismo Formation is good in shallow wells and poor in deeper wells. Water quality from the Monterey Formation is not well documented but likely affected by naturally occurring tar and oil (EMCON, 1992).

LOCAL HYDROGEOLOGY

Hydrogeologic conditions at the site were determined based on data from the drilling and installation of monitoring wells on the existing and proposed expanded site (Golder, 2007). The drilling, installation, pump testing, and regular sampling of the network of monitoring wells at the site have allowed determination of water level data, hydraulic gradient, flow direction, water quality, and aquifer characteristics.

The fractured bedrock of the Monterey Formation underlies approximately 35 percent of the current and proposed expanded CCL. Surface fractures indicate that there are two dominant bedrock fracture trends, both of which strike north-south subparallel to groundwater flow. Surface and subsurface connectivity of the fractures increases to the north towards the Indian Knob fault zone. Hydraulic conductivity is approximately 0.18 feet per day (ft/d) or 6.3 x 10^{-5} centimeters per second (cm/sec) (Golder, 2007). The effective porosity of the formation at the site is approximately 20 percent (Golder, 2007).

The Pismo Formation underlies approximately 65 percent of the entire CCL and most of the proposed expansion area. The Pismo Formation is predominantly massive bedrock at the site, but exists in the undifferentiated Pismo Formation north of the CCL as approximately 55 percent fractured bedrock and 45 percent massive bedrock. Fractures are typically present as discrete zones (15 to 25 feet thick). The hydraulic conductivity of the Edna Member of the Pismo Formation (the only member present below the site) was determined based on a constant-discharge test within well P-1B to be approximately 0.65 ft/d or 2.3 x 10^{-4} cm/sec (Golder, 2007). The effective porosity of the formation is estimated to be 25 percent (Golder, 2007).

Bedding in the Pismo and Monterey Formations are generally consistent across the site. Beds dip from 30 to 45 degrees to the southwest and strike from 50 to 75 degrees to the northwest (refer to Plate 3).

Groundwater occurs in the Pismo and Monterey formations at the site, both of which are water-bearing materials that appear to be hydraulically connected (ERCE, 1991). Locally, groundwater flows generally from northeast to southwest at a gradient of 0.04 to 0.05 feet per foot (EMCON Associates, 1992). Generally, shallow groundwater elevations within the

Monterey Formation vary between 180 and 210 feet above mean sea level (MSL). Water levels in MW-5 vary between 260 and 280 feet above MSL. The locations of the monitoring wells are presented as Plate 4 - On-Site Groundwater Well Location Map. Groundwater hydrographs for the site monitoring wells are presented on Plate 5 - Groundwater Hydrographs. The most recent groundwater contour map from May 2006 is representative of pumping conditions and is presented on Plate 6 - Typical Groundwater Contour Map. Groundwater extraction from Supply Well Nos. 1 and 2, to be discussed later, appears to have created an artificial depression in the potentiometric surface, creating a localized area of groundwater flow to the north and east, toward the supply wells.

Groundwater occurrence beneath the proposed expansion area is described by Golder (2007) based on data obtained through the drilling of new Monitoring Wells P-10 through P-14 and temporary Observation Wells B-1 and B-2. A total of 15 monitoring wells were present at the site prior to the installation of monitoring wells P-10 through P-14, after which, there are 20 monitoring wells. The depth to the water surface varies between approximately 7 feet in well P-11 to 93 feet in Well B-1. Groundwater elevations range between approximately 230 feet above MSL in the northern well (P-14) and 180 feet above MSL in the southern well (P-11). Groundwater elevations are measured quarterly in the site monitoring wells as presented on Plate 5 - Groundwater Hydrographs. The hydrographs indicate that MW-2 and P-5 (Monterey Formation wells) have an extended period of seasonal variability. The same seasonal variability may be evident in limited-duration hydrographs (not presented) for the newer monitoring wells (P-11, P-12 and P-13). For the five-event period of record for the newer monitoring wells, groundwater levels have varied between 0.14 feet (Well B-1) and 7.27 feet (Well P-13) (Golder, 2007).

San Luis Obispo County Public Works Department maintains a database of groundwater levels throughout the County (San Luis Obispo County Water Resources Unit, 2008). However, water Resources Unit staff does not measure water levels in any well within the study area.

GROUNDWATER SUPPLY

On-Site Supply

The hydrogeologic site characterization report (EMCON, 1992) and personal communications with CCL general manager, Mr. Bruce Rizzoli (2007) are the main sources of data related to groundwater supply at the CCL and within the surrounding area.

Six on-site low-capacity wells are located on the property with an estimated total source capacity of approximately 88 gallons per minute (gpm) (Rizzoli, 2007). The wells, as with all wells within the hydrogeologic study area, pump from an area that is not within a defined groundwater basin (RWQCB, 2007), but near the San Luis Obispo groundwater basin and lower Pismo groundwater basin. None of the on-site wells have meters to document groundwater production. The locations of the wells are presented on Plate 4. Photographs of the wells are presented in Appendix C - Site Photographs.

In the westernmost corner of the site are three wells known as the "Shop Wells," and are located adjacent to the shop. Two of these wells (PW-1 and PW-2), which operate as a single water source produce an estimated 10 gpm. Except for the recycling operation, the two wells satisfy demand associated with the landfill operation and all non-potable uses. Well PW-1 was constructed in 1986 to a depth of 205 feet, with perforations placed between 65 and 205 feet. The well is surface sealed to 24 feet and produces water from the Monterey Formation. The well consists of a 6-inch diameter PVC casing and is gravel packed. According to the Water Well Drillers Report, the well is equipped with a 1-horsepower submersible pump that reportedly produced approximately 50 gpm at the time it was drilled. The actual production rate from the well is much less, likely several gpm, but unknown because of the lack of a flow meter.

The other shop well (PW-2) was installed in 1987 to a depth of 400 feet, with perforations placed between 320 and 400 feet. The well is located 10 feet from Well PW-1. The well is surface sealed to 20 feet and produces water from the Monterey Formation. The well consists of a 6-inch diameter PVC casing and is gravel packed. The well is equipped with a submersible pump that produced approximately 8 gpm at the time it was drilled according to the Water Well Drillers Report.

A third shop well (PW-3) located near the other two, is completed to a depth of 367 feet. A Water Well Drillers Report does not exist for this well. Although the well is equipped with a 1-1/2-horsepower pump, it is believed that it does not contribute water to the system and is not used. The three shop wells will be destroyed as part of the CCL expansion (Rizzoli, 2007).

Three wells are located along the southeastern edge of the site that contains the expansion area on the so-called Weir property. The "Weir" wells, designated as Wells #1, #2 and #3 on Plate 4, produce water from the Pismo Formation and consist of 5-inch-diameter PVC casing and are gravel packed. Well No. 1 is 186 feet deep. Well No. 2 is 156 feet deep. Well No. 3 is 245 feet deep. Each well is equipped with a 5-horsepower (Well No. 1) or 2-horsepower (Well Nos. 2 and 3) submersible pump. Currently, only Well Nos. 1 and 2 are connected and in use. Well No. 3 could be reactivated in the future. State well completion reports, which document the design and age of the wells, do not exist for these wells. Mr. Rizzoli believes that one of the wells (Well No. 1) may have been installed when the adjacent house was built around 1956. The other well (Well No. 2), may have been installed around 1975. Well No. 3 is reportedly more recent, but the date of installation is unknown (Rizzoli, 2007). Other than State well completion reports and Mr. Rizzoli's opinion, we have no way to confirm the age or condition of the wells.

The two active Weir wells satisfy water demand associated with site operations on the southeastern portion of the site, the Sort facility, and fire suppression. The produced groundwater is pumped directly to an 86,000-gallon steel tank behind the Sort Facility (65,000 gallons of which are maintained for fire suppression) or to a pond adjacent Well P-14 where it is stored for site operational needs (Golder, 2007) (Plate 4). During the expansion, these wells will be the only remaining water supply wells on-site. The three Weir wells would have a combined source capacity of 78 gpm, although the current capacity from the wells is 62 gpm because Weir Well No. 3 is not active (Rizzoli, 2007).

A summary of the on-site groundwater supply well data is presented as Table 1 - Summary of On-Site Water Well Data. Well Completion Reports and Well Summary Sheets for the wells for which this data exists are provided in Appendix D - On-Site Well Information.

Table 1. Summary of On-Site Water Well Data

Well	State Well Completion Report	Status	Formation Aquifer	Capacity (gpm)	Future Use
Shop Wells (PW-1 and PW-2)	Yes	Active	Monterey	10 (combined)	To Be Destroyed
Shop Well PW-3	No	Inactive	Monterey	0	To Be Destroyed
Weir Well No. 1	No	Active	Pismo	40	To Remain
Weir Well No. 2	No	Active	Pismo	22	To Remain
Weir Well No. 3	No	Inactive	Pismo	16	To Remain

Private and Public Water Companies

The Department of Public Health (DPH) Drinking Water Program for the Santa Barbara District regulates water systems for San Luis Obispo, Santa Barbara and Ventura counties for water systems with greater than 15 connections or 25 people. The only DPH-regulated water system in the general area is the Golden State Water Company, Edna Road System. The system is located approximately 2 miles northwest of the CCL, generally along County Club Drive (personal communication with DPH staff). This water system is outside of the hydrogeologic study area that could potentially be impacted by the landfill expansion project. The extent of the area to be evaluated for potential impact analysis is presented as Plate 7 - Hydrogeologic Study Area.

The San Luis Obispo County Environmental Health Services Division regulates Small Water Systems (15 to 199 service connections, regularly serving 25 or more individuals at least 60 days per year) and State Small Water Systems (5 to 14 service connections, serving more than an average of 25 individuals daily for more than 60 days per year). A single Small Water System and a single State Small Water System are located immediately outside of the hydrogeologic study area. H_2O Incorporated is a Small Water System with 24 connections located slightly more than a mile northeast of the CCL expansion area. Camino Edna is a State Small Water System located north of Corbett Canyon Road approximately 1 mile northwest of the existing CCL. This State Small Water system serves 10 connections.

WATER DEMAND

Current On-Site Water Demand

Estimates of current and future on-site water demand were acquired through an interview with Mr. Bruce Rizzoli (2007). Water demand at the landfill has historically varied seasonally and between phases of site operations. The existing landfill uses water for dust control purposes, irrigation of compost, Materials Recovery Facility (MRF) uses (excluding

potable use), and for the yard/office area (excluding potable use). No on-site groundwater has historically been used as a potable water source. Groundwater is pumped from four on-site wells, two of which (Weir Well Nos. 1 and 2) will provide all non-potable water for the project during expansion.

For landfill-related dust control, water produced from the shop wells is conveyed by water truck and spread as needed around the heavily-trafficked areas. Approximately two to three loads, each consisting of a volume of 4,300 gallons (for a total of 8,600 to 12,900 gallons) is used for these purposes each weekday (Monday through Friday). No dust-suppression water is needed following rainfall events. Conversely, on exceedingly dry, warm, or windy days up to four loads of water (17,200 gallons) is used per day for dust control (Rizzoli, 2007). Based on a field visit to the CCL during active landfill operations, these estimates seem reasonable.

The compost operation irrigates approximately 16 compost windrows daily. Each windrow is between 200 and 600 feet long and approximately 7 feet high. The facility currently maintains 18 aisles for the windrows, but in leaving room to turn each windrow, has room for only 16 filled windrows at any time. Each windrow requires approximately 8,000 gallons of water per week during the weekdays, or on average of approximately 25,600 gallons per day (gpd). The compost operation also requires an average of 2 loads per day for dust suppression (8,600 gpd). In total, approximately 34,200 gallons are used each weekday for this operation. Demand increases in warm weather up to as much as 40,000 gpd. Demand decreases during and following rainfall periods.

Other than for employee water use, the MRF uses water only for periodic washing down of the facility. Less than 1,000 gpd is used during the weekdays, and 300 gpd on the weekends for these operations (Rizzoli, 2007). These estimates seem reasonable.

According to the County of San Luis Obispo's Environmental Health department report that light-industrial workers use an average of about 15 gpd for non-potable uses (personal communication with Mr. Brad Pryor). Currently, a total of 40 people work at the MRF on weekdays. No employees work at the MRF on weekends. Approximately 14 employees work at the landfill operation on weekdays, decreasing to 7 employees on weekends. In total 79 employees currently work in all components of the CCL including administrative, landfill, scalehouse, MRF, compost, resource recovery park, household hazardous waste, and universal and electronic waste components (Morro Group, 2007). The entire CCL staff is estimated to use about 1,185 gpd on weekdays and 105 gpd on weekends. Total current on-site water demand is summarized in Table 2 - Summary of Estimated Current On-Site Water Demand.

Table 2. Summary of Estimated Current On-Site Water Demand

Operation	Typical Weekday Use		Typical Weekend Use		Maximum Use	
	gpd	afy	gpd	afy	gpd	afy
Landfill (dust control)	8,600	6.9	4,300	1.4	17,200[1]	10.1[2]

Composting (compost irrigation)	34,200	27.3	0	0	40,000[1]	30.1[2]
MRF (toilets, hand washing, cleaning, facility maintenance)	1,000	0.8	300	0.1	1,000[3]	0.9[3]
Non-Potable Use (toilets, hand washing, cleaning)	1,185	0.9	105	0.03	1,185[3]	1[3]
Total	44,985	35.9	4,705	1.5	59,385	42.1[2]

Note: Total average groundwater demand: 31,500 gpd or 35.2 afy
[1] Landfill and composting maximum use values represent hot and dry conditions
[2] Number of days of hot and dry conditions are unknown but estimated to be 60 per year
[3] MRF and employee use values represent weekdays

Total water use at the CCL ranges between approximately 45,000 and 59,000 gpd on weekdays. Weekend water use is about 10 percent of the typical weekday water use, averaging about 4,700 gpd. Average water demand is approximately 33,000 gpd (37.4 acre-feet per year [afy]). During exceedingly hot and dry years, on-site demand could be as great as approximately 37,600 gpd (42.1 afy). Of this total water demand, approximately 700,000 gallons per year (2.1 afy) are satisfied by application of leachate for dust control purposes. Therefore, total groundwater demand is currently approximately 31,500 gpd on average (35.2 afy). Past water demand associated with cell development is not included in the current groundwater demand estimates but is discussed more thoroughly later. Following rainfall events, neither dust-control nor composting irrigation demand exists. During and following rainfall, on-site water demand can be as low as 5,000 gpd. During the dry months, the wells have typically pumped for 48 hours per week to satisfy demand (Golder, 2007).

Future On-Site Water Demand

Daily Operations

As part of the expansion, the landfill will begin accepting greater quantities of waste. Daily tonnage limits will increase at the resource recovery park (450 tons per day, up from 0 tons per day), the compost operation (450 tons per day, up from 300 tons per day) and the MRF (400 tons per day, up from 120 tons per day). A summary of the current and future tonnage limits is presented in Table 3 - Summary of Existing and Proposed Daily Tonnage Limits.

Table 3. Summary of Existing and Proposed Daily Tonnage Limits

Component	Permitted Tonnage Limit (tons per day)	Proposed Tonnage Limit (tons per day)
Landfill	1,200	1,200
Resource Recovery Park	Included in landfill	450
Compost	300	450
MRF	120	400
Total	1,620	2,500

The increase in tonnage to be processed as part of the recovery park will result in no additional water demand. The 50 percent increase in compost generation will result in a total

demand of 38,400 gpd, up from 25,600 gpd. At the MRF, the increase in tonnage is best quantified by the increase in employee water use. According to the project description, a total of 120 people will be employed at the expanded CCL, an increase from the current employment of 79 people. The total future on-site water demand is presented in Table 4 - Summary of Estimated Future On-Site Water Demand.

Table 4. Summary of Estimated Future On-Site Water Demand

Operation	Typical Weekday Use		Typical Weekend Use		Maximum Use	
	gpd	Afy	gpd	afy	gpd	afy
Landfill (dust control)	8,600	6.9	4,300	1.4	17,200[1]	10.1[2]
Composting (compost irrigation)	47,000	37.5	0	0.0	60,000[1]	42.3[2]
MRF (toilets, hand washing, cleaning, facility maintenance)	1,000	0.8	300	0.1	1,000[3]	0.9
Non-Potable Use (toilets, hand washing, cleaning)	1,800	1.4	105	0.03	1,800[3]	1.5
Total	**58,400**	**46.6**	**4,705**	**1.5**	**80,000**	**54.8[2]**

Note: Total average groundwater demand: 39,200 gpd or 44.0 afy
[1] Landfill and composting maximum use values represent hot and dry conditions
[2] Number of days of hot and dry conditions are unknown but estimated to be 60 per year
[3] MRF and employee use values represent weekdays

Following expansion, water use at the CCL is estimated to range between 58,400 and 80,000 gpd on weekdays. Weekend water use will be less than a tenth of the weekday water use, averaging about 4,700 gpd. Throughout the year, the average water demand will be approximately 42,900 gpd (48.1 afy). During exceedingly hot and dry years, on-site demand could be as great as approximately 48,900 gpd (54.8 afy) to accommodate increases in dust-control operations. Leachate applied for dust control will satisfy approximately 700,000 gallons per year (2.1 afy).

Module Construction

Construction of the landfill cells (modules) will entail a significant short-term increase in water demand associated with excavation and construction of the cells. The proposed expansion would entail construction of seven additional cells with a total area of approximately 46 acres and a total disposal capacity of 13.1 million cubic yards (Morro Group, 2007). According to Mr. Rizzoli (2007), the excavation and construction of each cell will likely occur for approximately 6 to 7 months and require approximately 4,000 gpd. The water demand for construction of each cell is proportional to the volume of material to be excavated. Assuming a typical cell requires 6 months to construct (Rizolli, 2007), approximately 87,000 gallons of water would be required per month or 522,000 gallons (1.60 acre-feet) per cell. Construction of each of the past three cells was performed by three different contractors, each of whom was required to provide water for the construction. Each contractor obtained off-site water from the adjacent Corbett Canyon Winery (now Vintage Wine Trust) through methods that included a combination

of placing temporary pipelines directly from a well to a cell area, or to a pond with use of water trucks.

Landscaping

As part of the proposed expansion, additional short-term water demand will be needed for re-landscaping associated with the relocation of a new scalehouse and entrance amenities to be located approximately 2,800 feet south of the existing entrance on State Highway 227. The extent of this water demand is included in the Landscape Plan as the Maximum Applied Water Allowance (Wallace Group, 2008). The Maximum Applied Water Allowance constitutes a worst-case water demand estimate for re-landscaping. The Landscape Plan focuses on southwestern, southern, and southeastern boundaries of the property and will consist of planting natives or plants adapted to the Central Coast climate. A summary of the estimated water demand associated with the Landscape Plan is presented in Table 5 - Summary of Estimated Landscape Water Demand. The values presented in Table 5 have not been adjusted for precipitation, which would offset some portion of the landscaping demand. The extent of the area to be re-landscaped is not contained in the Maximum Applied Water Allowance document, therefore, correction for precipitation could not be made.

Table 5. Summary of Estimated Landscape Water Demand

Planting Type	Water Demand First Year (afy)	Water Demand Second Year (afy)[1]	Water Demand Third Year (afy)[2]
Screen Planting	2.86	1.43	0.71
Wetland Enhancement	3.89	1.94	0.97
Bioswale	0.83	0.42	0.21
Bioretention	0.61	0.31	0.15
Oak Trees	0.09	0.04	0.02
Total	**8.27**	**4.14**	**2.07**

1. Second year demand is calculated as half of first year demand
2. Third year demand is calculated as quarter of first year demand

For the first year of the re-landscaping project, approximately 8.3 afy will be required. In the second year, approximately half of that amount would be required, or approximately 4.1 afy. If the landscaping is planted during dry years, it is conceivable the plants would need a little water during the third summer; approximately 25 percent of the first year's water demand or 2.1 afy (Wallace Group, 2008). Because this demand will only occur during the first 3 years, landscaping demand will increase total groundwater demand above current demand (Table 1, estimate of 35.2 afy), not the total future water demand (Table 2, estimate of 44.0 afy). Therefore, total groundwater demand will increase to 43.5 afy during the first year of the expansion project, decrease to 39.4 afy, then decrease further to 37.2 afy during the third year. Presumably, irrigation water will only be needed to establish the native plants in the 3 years, after which they will survive on precipitation alone.

Proposed On-Site Supply

Proposed Onsite Production

During the expansion, the three Weir wells will be the only remaining water supply wells on-site, with a combined source capacity of 78 gpm. Well Nos. 1 and 2 will be required to pump approximately 15 hours per day to satisfy average future weekday demand. If additional water is required, it is possible to reactivate Weir Well No. 3 to obtain an additional 16 gpm (Rizzoli, 2007). Activation of Well No. 3 would decrease the required pumping duration to approximately 12.5 hours per day. If additional supply is required, additional well(s) could be drilled for short-term demand on-site. Any additional wells should be completed within the Pismo Formation due to the relatively higher transmissivity values of the Pismo relative to the Monterey Formation. The Weir wells are completed within the Pismo Formation that is located in two areas at the site; south of the MRF along the southeastern edge of the site and in the northern portion of the site. Water produced from the Pismo Formation is more likely to be of potable quality than water from the Monterey Formation, due to a lack of hydrogen sulfide present in many wells completed in the Monterey Formation.

Proposed Imported Water

To supplement water supplies, the CCL has reached an informal agreement with the adjacent Vintage Wine Trust to purchase water from their wastewater ponds. The quantity, quality, and time during which such water would be available for purchase is unknown. This additional water source, if available, could decrease demand from on-site groundwater operations to approximately 39,200 gpd (44.0 afy) if the additional water source proves dependable. Because the supplemental water is described as wastewater, and generally because it will be applied to the landfill, the use of the water for dust control may need to be approved by the RWQCB pending analysis of the water source. The nature of the water-use agreement between the CCL and Vintage Wine Trust is not known. Without the supplemental water supply, the proposed groundwater supply is sufficient to satisfy future demands. We gather or assume:

- The quantity of water available may be as much as 2 afy,
- The water would be conveyed through a small diameter pipe from a wastewater pond at the vineyard to the pond adjacent Well P-14,
- The water would be available for the expansion project (module construction) and on a regular basis throughout the year,
- The quality of the water will meet RWQCB standards for dust-control water.

Currently, the CCL provides employees with potable drinking water from bottled sources. According to Mr. Brad Pryor of the San Luis Obispo County Environmental Health Department (2008), certain non-community water systems, such as schools and small offices that have either poor water quality or an unreliable supply, are allowed to use bottled water for potable uses. However, the CCL is not currently permitted by the Environmental Health Department to supply water to its employees, by bottled sources or otherwise. Because the CCL employs

more than 25 people, they will need to be permitted by the Environmental Health Department to supply potable water to its employees. The CCL would become a non-transient, non-community water system. The source of potable water for employees is not known, but may include bottled sources or water from the Weir wells. Whatever the source of drinking water, the CCL will be required to submit chemical and bacterialogical analyses of all water sources that could come in contact with employees to prove that the water is potable including each well that provides water to the restroom areas. We have asked for, but have not received, water quality data from the Weir wells to determine if the water, with disinfection, is potable. Prior to the CCL's acquisition of the Weir property, the Weirs used the water for drinking (Rizzoli). As part of the process of permitting the water system with the Environmental Health Department, the CCL will be required to submit water quality data for the water sources or, if no water quality data exists, collect and analyze samples.

The on-site Weir wells (Nos. 1, 2, and if needed, 3) have sufficient capacity to supply the groundwater demand associated with the proposed landfill expansion of approximately 58,000 gpd on average during weekdays. Total groundwater demand will be approximately 39,200 gpd on average (44.0 afy). Possible importation of water from the adjacent winery could provide approximately 5 percent of the daily water demand. Such water could possibly be imported through a pipe or water truck for the proposed module construction. Potable water could be supplied by bottled sources.

Water Demand Within The Study Area

The scope of work of this study included an assessment of water demand within a defined study area surrounding the CCL based on the assumption that the existing, largely fallow land uses of nearby properties would be converted to agriculture. Such a "build-out" projection of water demand entailed a number of assumptions, such as the area to consider, type of agriculture, density of agriculture, and the suitability of soils, slopes, and drainage to accommodate agriculture. Groundwater was assumed to be the source of water for such future build-out. The extent of the defined study area is presented on Plate 7.

Currently, groundwater wells surrounding the CCL are used for domestic and livestock purposes. The locations of some of the wells were determined based on review of approximately 200 Well Completion Reports for the area provided by the DWR. Additional water supply wells, for which records were not included in DWR files, were identified through a field survey. The locations of surrounding wells are presented on Plate 8 - Surrounding Land Use and Water Well Location Map.

Potential water demand resulting from "build out" within the study area was estimated based on the assumption that: 1) parcels not currently developed with intensive agriculture, but within the agriculture land use category would be developed with vineyards, and 2) within the designated hydrogeologic study area, second dwellings would be built on parcels classified in the residential rural (RR) land use category. Plate 8 shows parcels within the study area where water consumption may increase significantly due to vineyard planting and/or residential development (Morro Group, 2008). Currently, and into the foreseeable future, the predominant

agricultural crop is and will be grapes. Other land uses include dry-land farming of grasses and native vegetation in support of livestock grazing.

Currently, approximately 169 acres of vineyards are planted within the hydrogeologic study area. Vineyards in the area require 1.0 to 1.2 acre-feet of irrigation water per acre per year (afy/ac) (Fugro West and ETIC Engineering, 2005). Using the higher value of 1.2 afy/ac, the estimated current groundwater demand to satisfy vineyards is up to 203 afy.

Intensification of conversion from fallow land to vineyards is expected for much of the study area. The soil types and topography in the area are similar to those in areas to the north and east of the CCL currently developed with vineyards. In some places, steep slopes and heavy vegetation make vineyard development less likely. These areas have not been included in the acreage calculations. As many as 550 acres of new vineyards may be planted within the next 20 years. By assigning a water duty factor of 1.2 acre-feet of irrigation water per acre per year (Fugro West and ETIC Engineering, 2005), this would increase demand for groundwater by approximately 660 afy. Total groundwater demand to satisfy the estimated 719 acres of vineyards after build-out could be as great as 863 afy. The increase in groundwater demand from approximately 200 afy to approximately 860 afy would represent a four fold increase in groundwater demand related to vineyards, directly proportional to the increase in vineyard acreage.

Based on parcel data supplied by the County of San Luis Obispo Planning and Building Department (Morro Group, 2008), approximately 70 parcels exist within the study area and each of which contain at least a single dwelling. For this analysis, we assumed that all parcels except for the landfill currently have a single dwelling. Based on the County's standard water consumption rates, each dwelling requires approximately 1.26 afy (City of Santa Barbara, 1989). Therefore, the current domestic water consumption within the hydrogeologic study area is approximately 88 afy.

Construction of second dwellings will be the only source of residential development within the study area within the next 20 years (Morro Group, 2008). This type of development is possible for parcels that are both designated within the RR land use category and within the study area. A total of 42 such parcels exist on which second dwellings could potentially be constructed (Morro Group, 2008). For purposes of this analysis, it was assumed that second dwellings do not already exist on the parcels in the RR land use category. In addition, to develop a reasonable worst-case development scenario, our analysis assumed that all parcel configurations within the RR land use category could accommodate a second dwelling, which would be regulated by the San Luis Obispo County Land Use Ordinance (Title 22). This may not be the case on smaller parcels and those with steep slopes. Based on City of Santa Barbara guidelines (1989), each secondary well requires approximately 0.33 afy. Therefore, total water consumption resulting from future development of second dwellings would equal approximately 14 afy (Morro Group, 2008).

Current water consumption in the area related to domestic and agricultural uses is estimated to be approximately 292 afy. Increases associated with both residential and agricultural development could increase total groundwater demand by approximately 674 afy,

for a total of 900 afy. The proposed project would increase demand by approximately 9 afy, an increase from 35 afy to approximately 44 afy. Total groundwater demand could increase from approximately 326 afy to as much as 1,009 afy or an increase of 210 percent. The CCL demand would increase by approximately 26 percent, domestic demand by 16 percent and vineyard demand by over 300 percent. Estimates of current and maximum future groundwater demand within the study area are presented in Table 6.

Table 6. Summary of Estimated Current and Maximum Future Groundwater Demand within the Study Area

Groundwater User	Current Demand (afy)	Maximum Future Demand (afy)	Increased Demand	
			Afy	%
Cold Canyon Landfill	35	44	9	26
Domestic Use	88	102	14	16
Agriculture (vineyards)	203	863	660	324
Total	**326**	**1,009**	**683**	**210**

HYDROGEOLOGIC CONNECTIVITY BETWEEN LANDFILL AND ADJACENT PROPERTIES

The CCL is located in an area relatively isolated from its surroundings hydrogeologically. The hydrogeologic study area, which contains the CCL is bounded on the north by the Edna Valley fault and the other sides by shallow alluvial valleys. The hydrogeologic study area is underlain largely by the Pismo and Monterey Formations, with alluvial clay and sand deposits in the surrounding valleys. The study area encompasses approximately 1,687 acres, of which the expanded CCL will encompass 209 acres, or approximately 12 percent of the entire area. As described below, groundwater users outside of the hydrogeologic study area will likely not be affected by groundwater drawdown associated with pumpage at the CCL. The boundaries of the hydrogeologic study area consist of a barrier to flow (northern boundary) or a recharge boundary (alluvium). The hydrogeologic study area is believed to be the maximum extent of hydraulic communication with the CCL.

A Theis analysis was performed by ERCE (1991) to predict drawdown at distances of 0.25, 1, and 1.5 miles from two pumping wells (DG-1 and PW-2) at the project site. Well DG-1 was located in the far western corner of the existing landfill property (ERCE, 1991). Other than the location of the well and the aquifer parameters of hydraulic conductivity and storativity calculated from a pumping test (presented below) little is known about this well. The predicted drawdowns were calculated for durations of 1, 5, 10, and 20 years from wells that had not been pumped previously. The results of the analyses overestimated actual drawdown because the predicted values were based upon a condition that no previous pumpage had occurred. Pumping from the production wells at rates of 2 and 4 gpm, respectively, did not cause significant drawdown. The Theis analysis, as performed in this geologic setting is appropriate to use as a guide to assess drawdown impacts. The area is geologically complex with various fracture and joint systems, geologic contacts, and adjacent groundwater basins and faults and

the geologic materials are not laterally extensive. The use of Theis analyses to predict drawdown at any great distance is not appropriate in such a complex geologic setting. It is not appropriate to reproduce simple Theis analyses to predict drawdown at any great distance from the current pumping wells using current and future on-site groundwater pumping rates. This analysis should only be used to gain a general understanding of predicted drawdown as general worst-case guidance.

In the current study, a Theis analysis was used to generally predict drawdown within Well Nos. 1 and 2 while pumping at average rates sufficient to satisfy average future demand, or 24 and 14 gpm, respectively. The analysis was also used to predict drawdown a short distance to the nearest property boundary of approximately 80 feet from Well No. 1 and 400 feet from Well No. 2. In lieu of pumping test data from Well Nos. 1 and 2, hydraulic conductivity values of 2.3×10^{-4} cm/sec or 4.9 gpd/ft^2 for the Pismo Formation at the site were used (Golder, 2007). Golder calculated storativity of the Pismo Formation to be approximately 0.25. Both pumping wells are completed within the Pismo Formation. These values are considered reasonable for the geologic materials. One set of analyses of pumping test data performed on Well DG-1 (ERCE, 1991) indicated that hydraulic conductivity values of 24 to 32 gpd/ft^2 may be warranted, which would cause predicted drawdowns to be less than predicted. For Well Nos. 1 and 2, we calculated worst-case predicted drawdowns at the end of 1, 5, 10 and 20 years of pumping using saturated thickness values of 116 and 130 feet, respectively. A summary of predicted drawdown in Well Nos. 1 and 2 is presented in Tables 7 and 8, respectively.

Table 7. Predicted Drawdown in Well No. 1

Pumping Duration (years)	Predicted Drawdown (feet)	Base of Well (feet. Below TOC)	Saturated Thickness (feet)
1	73.62	186	42.38
5	81.42	186	34.58
10	84.78	186	31.22
20	88.14	186	27.86

Table 8. Predicted Drawdown in Well No. 2

Pumping Duration (years)	Predicted Drawdown (feet)	Base of Well (feet. Below TOC)	Saturated Thickness (feet)
1	38.58	156	77.42
5	42.64	156	73.36
10	44.39	156	71.61
20	46.13	156	69.87

On the basis of these calculations, approximately 28 feet of saturated thickness would remain within Well No. 1 at the end of 20 years of pumping. Well No. 2 would have approximately 70 feet of saturated thickness remaining at the end of 20 years of pumping. At

the property boundary nearest Well No. 1, drawdown after 1 year of pumping would be 17.8 feet; after 20 years of pumping, drawdown would be 32 feet. At the property boundary nearest Well No. 2, drawdown after 1 year of pumping would be 2.2 feet; after 20 years of pumping, drawdown would be 9 feet. Water levels will not likely decline significantly beyond the footprint of the current and expanded CCL due to pumpage associated with the project.

The analysis as performed is considered conservative (worst-case) for the following reasons. The drawdown predictions assume no prior pumpage of the production wells has occurred. Because both wells have been producing for many years, steady state conditions may have already been achieved and future drawdown in Well Nos. 1 and 2 would be expected to be significantly less than the calculations suggest. The drawdown predictions represent water levels due to pumpage associated the project expansion, but do not consider what the drawdowns would be at the current pumpage rates. The current pumpage (35.2 afy) is about 80 percent of future proposed pumpage (44.0 afy). Therefore, it is reasonable to conclude that the impacts of the proposed project cause about 20 percent of the predicted drawdown and the current pumpage would cause about 80 percent of the predicted drawdown. Analysis of mutual interference was not performed, which would have increased predicted drawdown slightly. However, it is believed that the prior pumping of the wells (lack of steady state) and cumulative predicted drawdown (current plus future demand) overestimate the predicted drawdown associated with the proposed project significantly.

During periods of increased pumpage associated with summer-time irrigation at the adjacent winery, water levels in the Weir wells declined somewhat (Rizzoli, 2007). The magnitude of the decline is not evident in on-site water level hydrographs, so is likely less than several feet (Plate 5).

The water level hydrographs presented on Plate 5 indicate no significant declining water level trends in most monitoring wells, some of which have continuous water level data dating from as early as January 1989. The water level in Monitoring Well P-6, located approximately 800 feet west of Well No. 2, has declined approximately 7 feet between 1993 and 2006. Similarly, Monitoring Well MW-8 (to be decommissioned) has shown 6 feet of water level decline between 2000 and 2006. Monitoring Well MW-2 is a Monterey Formation monitoring well with the longest period of record and is to be decommissioned. MW-2 is located approximately 800 feet north-northwest of Well No. 2. Water levels within MW-2 have declined from an initial high of approximately 218 feet above MSL in 1989 to a low (dry state) of 200 feet MSL in 2004. Between 2004 and 2006 (above average water years), water levels rose 2 feet for a period-of-record decline of 16 feet, or about 1 foot per year on average. The observed historic water level variations are not considered significant.

Localized subsidence will not occur due to the groundwater pumpage related to the expansion operations at the CCL because of the bedrock environment underlying the site, and the limited magnitude and duration of groundwater pumping from the CCL.

GROUNDWATER RECHARGE ESTIMATE

An estimate of recharge in the hydrogeologic study area was performed by considering percolation of precipitation. For this analysis, we considered all components of groundwater inflow and outflow. For lack of data and geologic complexity, it is assumed that subsurface inflow and subsurface outflow are equal and as a result neither contribute nor remove water from the aquifer. Of the components of inflow (recharge), percolation of precipitation is often the component that contributes the greatest quantities of water to the aquifer, as can, to a lesser degree, percolation of applied irrigation and percolation of streamflow. Calculation of streamflow percolation requires streamflow data, which are not available for the hydrogeologic study area. Therefore, only percolation of precipitation and percolation of applied irrigation water were utilized to estimate groundwater recharge within the study area. Such an approach is considered reasonable to estimate a gross water balance for the area.

Only a small portion of total rainfall percolates to groundwater. Some of the rainfall runs off, some evaporates directly from the soil surface, or is taken up by plants to be transpired to the atmosphere (a process jointly referred to as ETo). Only after a sufficient amount of rainfall has saturated the soil to some depth can any additional precipitation percolate to become groundwater. Detailed estimates of percolation of precipitation require surface area, soil type, daily measurements of precipitation and ETo and runoff data. We referred to a study conducted in the Arroyo Grande - Nipomo Mesa area (DWR, 2002) that presents estimates of percolation of precipitation based on annual precipitation. Based on that study, between 9 (Tri-Cities Mesa - Arroyo Grande Plain) and 16 percent (Santa Maria Valley) of average annual precipitation percolates to groundwater. For our calculations we chose a factor of 12 percent of average annual precipitation to estimate percolation of precipitation. Average annual precipitation in the area is approximately 22.1 inches per year. Application of the DWR's average value is 12 percent of the 22.1 inches, or 2.65 inches, to the study area of approximately 1,687 acres, leads to an estimated percolation of precipitation of approximately 373 afy. This estimate would not change significantly following expansion of the CCL. Arguably, percolation of precipitation directly on the coarser alluvial materials (refer to Qa and Qoa on Plate 3) would increase the recharge estimate, as would percolation of streamflow.

Percolation of applied irrigation water can be calculated relative to total applied irrigation water. Based on studies in the region that included detailed water balances (Fugro West, 2002; DWR, 2002), it is estimated that as much as 15 percent of irrigation water applied within the study area percolates deeply to the aquifer. If so, an estimated 31 afy would recharge the groundwater. If the future projections of conversion to vineyards are accurate, as much as 129 afy of applied irrigation water could percolate to the aquifer after build out. Total recharge due to percolation of precipitation and applied irrigation water is approximately 404 afy. If fallow land is converted to the full extent estimated, a total of 502 afy will recharge the groundwater in the study area.

Components of groundwater outflow include groundwater pumpage, underflow, and extraction by phreatophytes. Underflow into and out of the aquifer are assumed to be equal. Phreatophytes (deep rooted plants that obtain water from shallow groundwater) typically located within alluvial valleys, are not present within the study area to a significant degree. Generally,

the quantity of phreatophytes is considered so small as to be negligible in the overall water balance. Therefore, extractions by phreatophytes were not estimated as a groundwater outflow component.

The only significant and quantifiable groundwater outflow component is groundwater pumpage from the CCL and domestic and agricultural users. Currently, groundwater pumpage (326 afy) is lower than the estimated recharge (404 afy). Total future groundwater demand of as great as 1,009 afy would be significantly greater than the estimated future recharge of 502 afy by as much as 507 afy.

A comparison of the components of groundwater recharge and outflow is presented as Table 9 – Gross Water Balance for Hydrogeologic Study Area.

Table 9. Gross Water Balance for the Hydrogeologic Study Area

Period	Components of Recharge (afy)		Component of Outflow (afy)	Surplus / Deficit (afy)
	Percolation of Precipitation	Percolation of Irrigation	Pumpage	
Current	373	31	326	78
Proposed	373	129	1,009	-507

Without future conversion of fallow land to vineyards, total future groundwater pumpage within the study area would be approximately 349 afy, a value lower than the estimated recharge of 404 afy. Of this increase in pumpage over current conditions of 26 afy, a total of 17 afy would be due to the addition of secondary homes and 9 afy would be due to expansion of the CCL.

GROUNDWATER QUALITY

Existing Groundwater Quality

Groundwater quality data from EMCON Associates (1992) and RMC Geoscience (2007) were reviewed in order to determine the background water quality on and surrounding the site, the variability of the native water quality, the impact of the various operations at the CCL on water quality, and the record of compliance with relevant groundwater quality requirements.

Water quality data through 1965 were considered as conditions present prior to the landfilling operations, a time before which landfill operations were not likely to cause any groundwater contamination. EMCON's analysis of water quality extended regionally as far northwest as Well -12D9 located near the San Luis Obispo County Airport, and as far north as Well -16D2 located on Righetti Road north of Orcutt Road. More locally, EMCON attempted to compile water quality data for all wells within a 1-mile radius of the CCL. Generally, water quality both regionally and from wells within a 1-mile radius of the CCL is magnesium bicarbonate in chemical character and has not changed significantly since CCL operations

began. Within 1 mile west of the CCL, total dissolved solids (TDS) ranged between 423 and 1,227 mg/l, nitrate ranged between 0 and 27 mg/l, and sodium ranged between 27 and 67 mg/l. South of the site within 1-mile, the TDS ranged between 608 and 693 mg/l, nitrate ranged between 0 and 14 mg/l, and sodium ranged between 56 and 135 mg/l. East of the site within 1-mile, TDS ranged between 420 and 484 mg/l, nitrate ranged between 0 and 31 mg/l and sodium ranged between 34 and 72 mg/l.

Generally, groundwater within a mile radius to the west of the CCL is high in TDS and slightly elevated with respect to sodium. According to Mr. Rizzoli (2007), groundwater west of the site (within the Monterey Formation), including the Shop Wells, has elevated hydrogen sulfide (H_2S) concentrations, which limit potablity. Hydrogen sulfide is commonly associated with hydrocarbons in the diatomaceous Monterey Formation. TDS concentrations are lower within a mile radius to the south of the site, but sodium concentrations are elevated. Water quality from the alluvium and Pismo Formation east of the site is generally considered to be of potable quality. The three Weir wells are completed in the Pismo Formation.

Water quality data for the site are more complete than regional water quality data. Groundwater sampling has been performed at the site regularly since 1987, originally as part of a hydrogeologic site characterization study (EMCON, 1987). In February 1989, groundwater samples collected from wells MW-1, MW-2, MW-5, PW-2, UG-1, and DH-1 were analyzed for organic and inorganic constituents for comparison with California drinking water standards (maximum contaminant limits or MCLs). The results indicate that secondary (aesthetic) MCLs were exceeded for: TDS in all wells, electrical conductivity in all wells except MW-3, chloride in PW-2, and sulfate in MW-2. Generally, except for chloride and sulfate, all downgradient exceedences were also exceeded in upgradient MW-5. The elevated chloride and sulfate character of the groundwater may reflect natural groundwater conditions within the shallow geologic formations in which they were detected (RMC, 2007b and ERCE, 1991). The chloride and sulfate concentrations are likely controlled by relatively higher solubility of chloride and sulfate minerals relative to bicarbonate minerals. The reasons for the increases in chloride and sulfate are not known in all instances (RMC, 2007b). The WDRs require quarterly monitoring of groundwater quality to determine if a statistical exceedence occurred in any well and constituent.

The RWQCB issued WDRs for the site in 1975, subsequently updated in January 1990 (Order 90-33). Order No. 93-51 was issued in 1993 to allow a horizontal and vertical expansion of the landfill. In response to the requirements of the order, the CCL capped 14 acres of the unlined area and constructed a gas extraction system. The Order was updated in 2002, during which RWQCB staff issued a letter indicating that the CCL was in substantial compliance with the requirements of the Order and that a comprehensive file review from 1993 to 2002 failed to turn up a single Notice of Violation or other formal enforcement action. The report also indicated that Volatile Organic Compounds (VOC) had been reduced to levels below detectable limits as a result of several corrective actions (RMC, 2007b).

The 2002 RWQCB report indicated that there may have been a release (of undocumented constituents) from the existing landfill in the vicinity of MW-2 and MW-3. However, upon installing Wells P-8 and P-9, and performing subsequent monitoring, it was

determined that the release had not migrated beyond MW-2 and MW-3 (RMC, 2007b). Subsequent groundwater monitoring reports have not identified any release. The methods to mitigate statistically significant releases through a corrective action plan are discussed below.

In March 2002, CCL documented that chloride and sulfate concentrations measured in well P-7 were statistically significant.. The cause was identified as seepage associated with a former wet-weather fill area, which has since been corrected (RMC, 2007b). The CCL prepared an Amended Report of Waste Discharge that concluded that the conditions in Well P-7 were not replicated. Additional monitoring or corrective action were not required (RMC, 2007b).

Current Groundwater Quality Monitoring

Currently, the CCL is subject to water quality sampling requirements contained in the adopted WDR MRP No. R3-2002-0065. The MRP requires that 15 of the monitoring wells on site be sampled and analyzed on a quarterly or semiannual basis as a part of three routine monitoring programs. Detection monitoring includes those constituents that have not been exceeded. Corrective action monitoring is based on inorganic constituents that occasionally exceed statistically-derived concentration limits for chloride, sulfate, or dissolved manganese. All constituents involved with Corrective Action Monitoring are naturally occurring or associated with naturally-occurring oil and tar in the geologic formations underlying the site. A summary of the monitoring status of each of the monitoring wells is presented in Table 10 - Summary of Groundwater Monitoring Requirements (RMC, 2007b).

Table 10. Summary of Groundwater Monitoring Requirements

Well	Detection Monitoring	Corrective Action Monitoring	Other Monitoring
MW-1	X (VOCs)	X (Inorganics)	
MW-2		X (VOCs and Inorganics)	
MW-3	X (VOCs)	X (Inorganics)	
MW-5	X		
P-1A			X
P-1B	X		
P-2			X
P-3A	X (VOCs)	X (Inorganics)	
P-3B	X		
P-4			X
P-5	X		
P-6			X
P-7	X (VOCs)	X (Inorganics)	
P-8	X		
P-9	X		

Note: X indicates inclusion in monitoring program

The MRP requires that a total of 8 quarters of background monitoring be performed prior to the expansion of the CCL. Two years of monitoring is a sufficient time to provide the CCL and RWQCB a "fingerprint" of the native groundwater quality, against which future groundwater quality can be compared to demonstrate whether any significant impacts are occurring. The extended background monitoring will include the additional Monitoring Wells P-10 through P-14 located in the expansion area (Plates 4 and 6). The addition of these five monitoring wells will allow more complete monitoring of the water-bearing zone underlying the present and expanded CCL.

In the event that monitoring results identify significant levels of contamination, the RWQCB will be notified immediately and an evaluation monitoring program will be initiated per Chapter 15 of the California Code of Regulations requirements. The evaluation monitoring program would include a subsurface investigation to assess the vertical and horizontal extent of the contamination plume and potential sources. If it is determined through the evaluation monitoring program that a release has occurred and the nature and extent of the release are known, an incident-specific corrective action program would be designed and implemented. The corrective action program would also take corrective action to remediate releases, such as the installation of one or more pumping wells to remove the contaminant. A water quality monitoring program shall be implemented to demonstrate the effectiveness of the corrective action program. We are not aware of any past corrective action plans at the CCL. Determination of the details of potential costs, specific responsibilities, and logistical issues is not possible until a release is identified and an appropriate corrective action plan is adopted.

Leachate Collection System

A system is installed within each module to collect and remove liquids that migrate downward through the waste. Captured liquids are conveyed to a sump where they are pumped into an above-ground storage tank located in the southwest corner of the site (Plate 4). On average, the landfill generates approximately 700,000 gallons of leachate per year (Morro Group, 2007). The generated leachate offsets groundwater pumpage for dust control as an in-lieu water source.

Leachate collected from Modules 6, 7, and 8 is collected in an 11,000 gallon above-ground storage tank, which when full, is applied on the lined portions of the landfill for dust control or, if it is deemed hazardous, sent off-site to a wastewater treatment facility that can accept hazardous wastes. Leachate from the storage tank is analyzed annually. The most recent analysis of leachate was performed in 2006, the results of which are presented in Appendix E - Summary of Recent Leachate Analytical Results. To date, the leachate has been determined to be non-hazardous and acceptable for use in dust control operations.

IMPACTS ANALYSIS

Thresholds of significance for the project were adopted from Section 15382 of the State CEQA Guidelines. Based on information contained in CEQA Guidelines, the proposed project would have a significant environmental effect if it would:

- Violate any water quality standards or waste discharge requirements;
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level;
- Create or contribute runoff water, which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff; or
- Otherwise substantially degrade water quality.

In addition to CEQA Guidelines impacts, the proposed project may pose significant environmental effects if it would:

- Cause groundwater overdraft;
- Contribute to leachate migration into the groundwater; or
- Contribute to short- and long-term leachate production.

VIOLATION OF WATER QUALITY STANDARDS OR WASTE DISCHARGE REQUIREMENTS

We reviewed the CCL's record of compliance related to the WDRs and MRPs. The CCL has complied with the water quality monitoring and reporting requirements of the RWQCB. The proposed project will continue to be monitored within the current regulatory setting. Before onset of expansion of the landfill, the CCL will have obtained 8 quarters of background water quality data from the monitoring well network. Data obtained from these 8 quarters will be used to develop the future WDRs and MRPs. The intent of the MRP will be to obtain water quality data from the recently installed monitoring wells (P-10 through P-14) and the existing monitoring well network. Compliance with the WDRs and MRPs will require quarterly review of water quality data for identification of any statistically-significant releases from the CCL.

The RWQCB requires that any release from the landfill, as determined from periodic groundwater, leachate, and landfill gas monitoring be reported immediately followed by implementation of a corrective action plan. Such plans typically include comprehensive investigations to assess the vertical and horizontal extent of the release. If any groundwater contamination is deemed significant (a release), a groundwater remediation program would be required by the RWQCB.

The monitoring program in place is considered appropriate to detect a release from the landfill that could affect groundwater quality. Compliance with the future required monitoring and reporting programs will mitigate potential adverse effects of the project on water groundwater quality to a level that is **less-than-significant.**

DEPLETION OF GROUNDWATER SUPPLIES OR INTERFERENCE WITH GROUNDWATER RECHARGE

The CCL will require approximately 42,900 gpd of water on average, with a peak water demand of 80,000 gpd. During the course of a year, the CCL will require approximately 48.1 afy, of which approximately 44.0 afy (39,200 gpd) will be satisfied by groundwater. The remaining water demand (4.1 afy) will be satisfied by application of leachate on the landfill for dust control purposes and from water that may be obtained from the adjacent Vintage Wine Trust property. Potable water demand for CCL employees will continue to be satisfied by bottled supplies.

Water demand for the expansion of several landfill components and construction of additional landfill modules will increase during the proposed expansion project. Water use should be quantified through the installation of meters on all of the water supply wells and from the adjacent winery property. The well meters and water levels should be read regularly (monthly) and used to calculate actual site water demand. Water for construction of the expansion modules may exceed the capabilities of the on-site water supply system. If additional water is required, it is considered feasible to reactivate Weir Well No. 3 to obtain an additional 16 gpm. If further additional supply is required, additional well(s) could be installed on-site within the Pismo Formation to satisfy additional water demands.

No significant groundwater level declines have been noted within the monitoring well record available on-site since 1989 (refer to the discussion in the Hydrogeologic Connectivity section). With the installation of water meters, and the use of alternate sources of water for dust control (leachate and possibly Vintage Wine Trust water), reliance on off-site water to satisfy construction needs related to cell development and general water conservation practices on-site, will reduce this potential impact to a level that is **less-than-significant.**

CONTRIBUTION TO RUNOFF

According to the project description, the surface drainage control system will consist of a series of benches, culverts, natural drainage channels, and sedimentation basins. Finished landfill slopes will be graded to slopes of 3H:1V (horizontal:vertical) or flatter and will include benches placed every 50 feet of elevation. Flat surfaces at the top of the slope (top deck) will be sloped to approximately a 3 percent grade to discourage formation of ponds and too-rapid runoff, which would increase erosion.

Surface water runoff will be directed to one of three detention basins designed to accommodate flows from 100-year, 24-hour storm events, where sediment and other debris can settle out. When eventually full, the basins will outfall to tributaries of Pismo Creek. The grading controls and topographical alteration, if properly implemented, will minimize the impact of creating runoff that exceeds the capacity of planned storm water drainage systems to a level that is **less-than-significant.**

SUBSTANTIAL DEGRADATION OF WATER QUALITY

Any water quality impacts from the CCL will be well-documented through the processes described within the MRP, which also provides methods for mitigation of any detected water quality exceedences. Therefore, compliance with the existing and any forthcoming MRPs will reduce this impact to a level that is **less-than-significant.**

INCREASED AGRICULTURAL USE

Agricultural demand could increase significantly, as estimated by the Morro Group (2008), and compete for groundwater resources in the designated hydrogeologic study area. Groundwater demand associated with the expansion of agricultural and, to a lesser extent, residential uses could increase from an estimated current demand of 261 afy to as much as 925 afy in 20 years. A simple water balance for the area indicates groundwater is not sufficient to support such land use changes. Implementation of the project, along with full build-out of neighboring properties and maximum conversion of agricultural properties to vineyards would create a condition that would have **significant, unavoidable impacts on the groundwater resource.**

MONITORING AND MAINTENANCE OF LANDFILL CAPS

California Code of Regulations will require that the CCL prepare a preliminary closure and post-closure maintenance plan. Typical plans describe the methods that will be used to close a landfill in a manner that protects the long-term health of the public and the environment. The long-term maintenance plan will specify programs to maintain the integrity of the final cover, drainage system, leachate control system, landfill gas system, groundwater monitoring system, and the final grading. Details of potential costs, specific responsibilities, and logistical issues will be included in the post-closure maintenance plan.

The WDR requires that the Closure and Postclosure Plan be submitted to the RWQCB by August 18, 2006. The CCL has not done so in anticipation of acceptance of formalized expansion plans. Therefore, the RWQCB considers the CCL to be out of compliance. However, the RWQCB has stated that formal enforcement is not likely as long as they submit the Closure and Postclosure Plan in a "timely manner," that is, upon acceptance of the formalized expansion plans.

Compliance with RWQCB and IWMB final cover designs and post-closure maintenance plans, which will describe the specific methods to determine that the landfill caps remain effective, will minimize this impact to a level that is **less-than-significant**.

SUMMARY AND CONCLUSIONS

In this water resources assessment, the impacts of anticipated pumping demand for the proposed CCL expansion on local groundwater levels, reliability and quality were evaluated. Groundwater use for the proposed landfill expansion is expected to be pumped from the Weir Well Nos. 1 and 2 at a build-out pumping rate of 39,200 gpd or 44 afy. Peak water demand,

expected to occur on weekdays during the driest and warmest months, is estimated to be about 80,000 gpd. Well Nos. 1 and 2, with the possible later reactivation of Well No. 3, are capable of satisfying the daily demand. Water demand associated with construction of the landfill modules will likely be greater than the current sources can supply. Therefore, as was the case during the prior landfill expansions, the contractors may be required to temporarily obtain water from an off-site source during construction.

The CCL is not currently permitted by the Environmental Health Department to supply water for its employees by bottled water sources for drinking. Such use will need to be permitted by the San Luis Obispo County Environmental Health Department as a non-transient, non-community water system. Even though the proposed source for potable use for the 120 future employees will be bottled sources, the CCL will be required to submit chemical and bacterialogical analyses of all water sources that could come in contact with employees to prove that the water is potable.

Surrounding groundwater demand could increase significantly during the next 20 years due to intensification of agriculture and, to a lesser extent, residential in-filling. Total groundwater demand within a defined hydrogeologic study area could increase by as much as 254 percent. CCL demand may increase by approximately 26 percent, domestic demand may increase by 61 percent, and vineyard demand may increase by over 300 percent. Groundwater supply in the designated study area is likely not sufficient to satisfy the cumulative water demand if agricultural intensification and residential development occur as projected.

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Draft

PERSONS CONTACTED

Cold Canyon Landfill, Mr. Bruce Rizzoli

San Luis Obispo County, Public Works Department, Water Resources Unit, Mr. Sylas Cranor

San Luis Obispo County, Environmental Health Department, Mr. Brad Pryor

Department of Public Health (DPH) Drinking Water Program, Santa Barbara District staff.

California Regional Water Quality Control Board, Central Coast Region (2007), Mr. Martin Fletcher

California Department of Water Resources, Mr. Michael Van Raalte.

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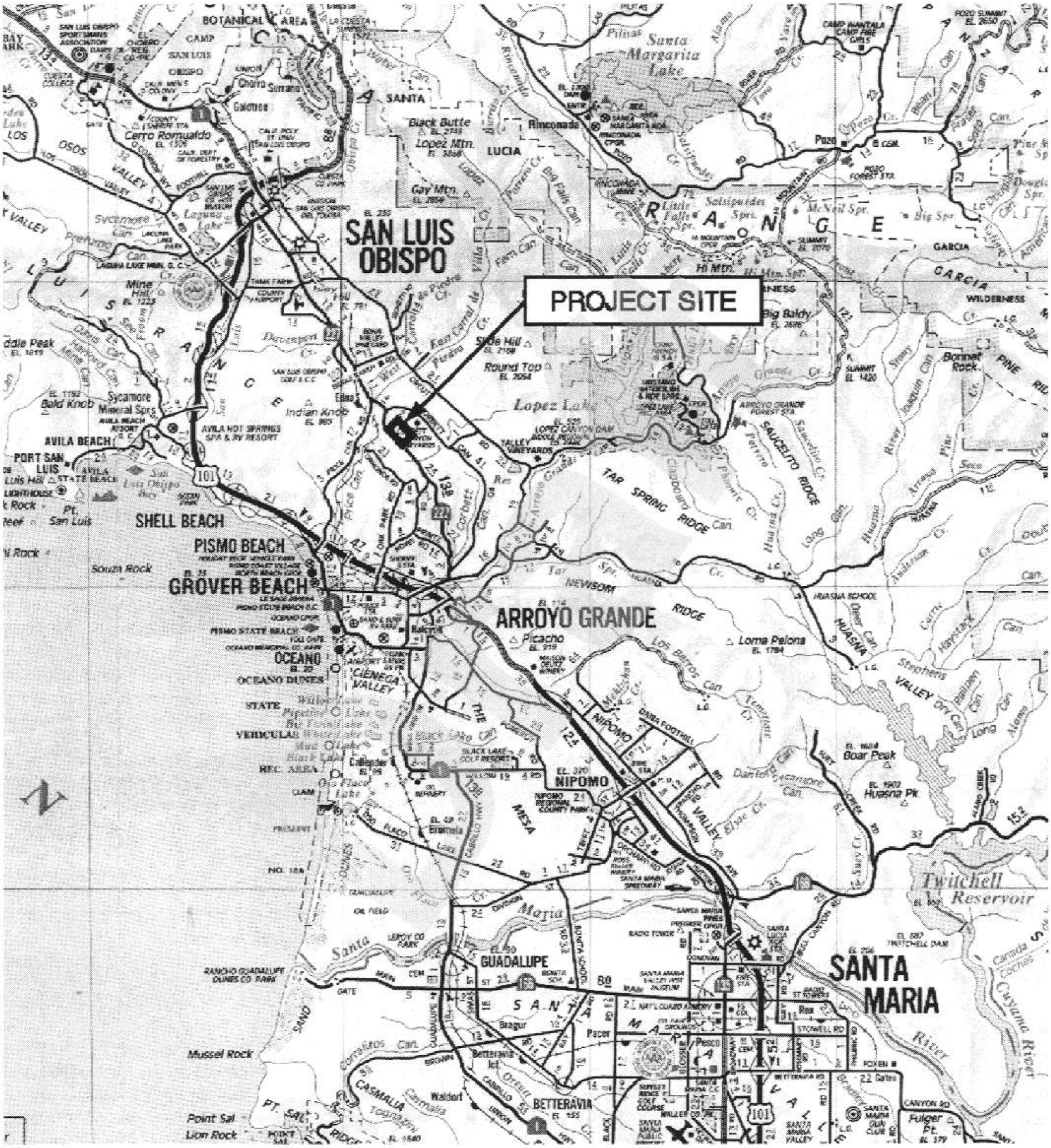
PLATES



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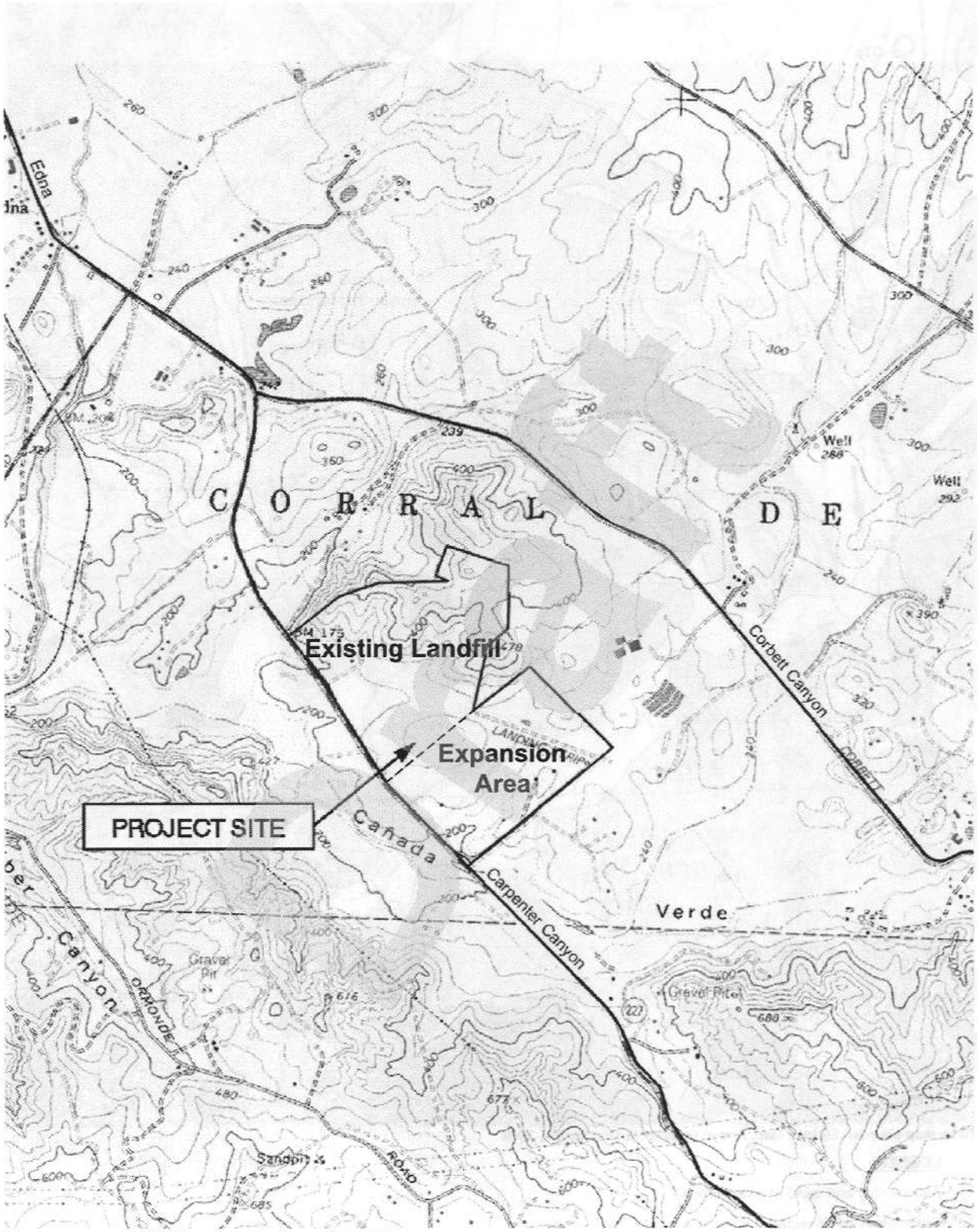
NORTH

VICINITY MAP

Water Resources Assessment
Cold Canyon Landfill Expansion
San Luis Obispo County, California

PLATE 1



Base map source: USGS quadrangle - Arroyo Grande NE.

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SITE LOCATION MAP
Water Resources Assessment
Cold Canyon Landfill Expansion
San Luis Obispo County, California

PLATE 2

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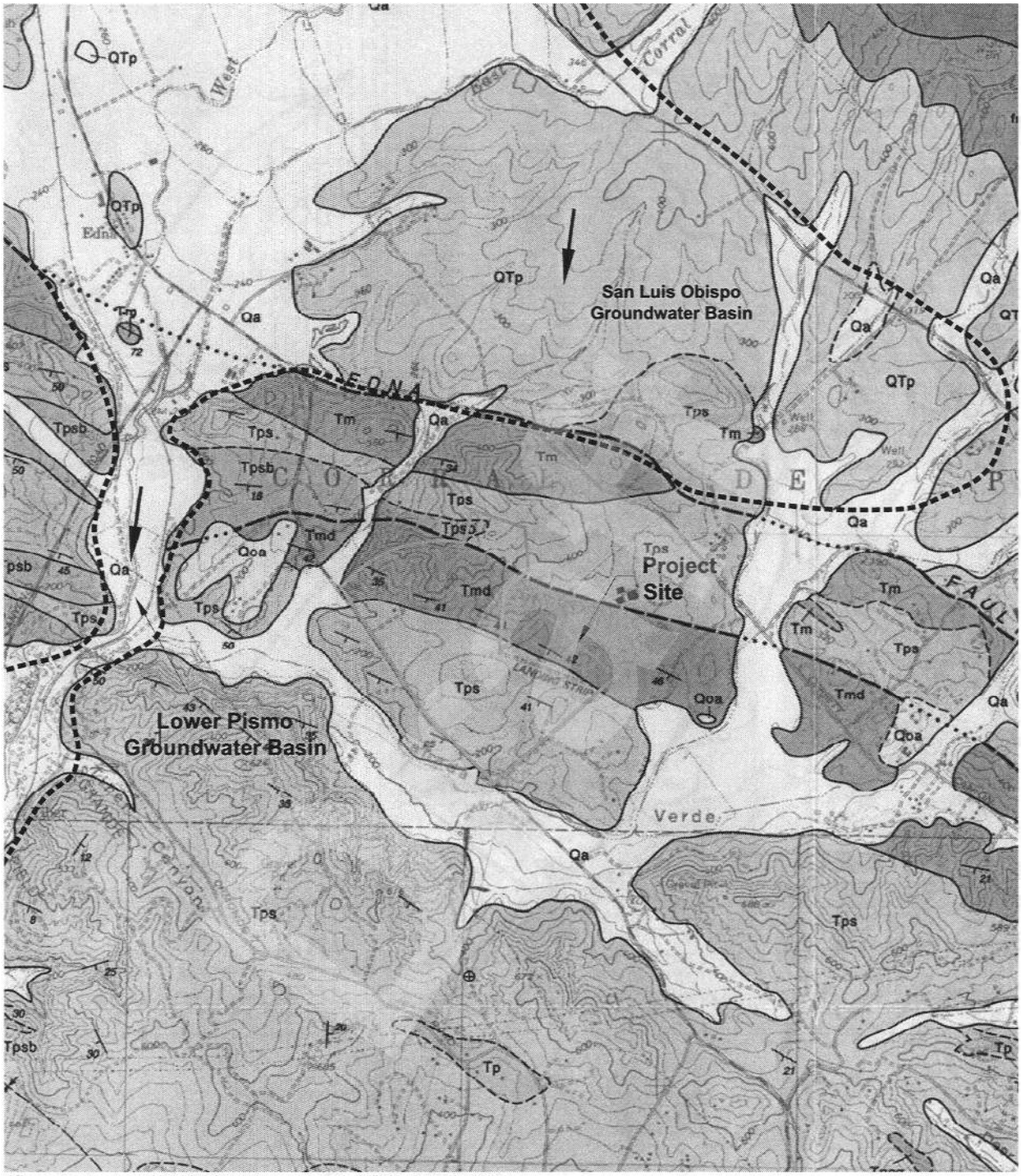

Base map source: Dibblee Map, Arroyo Grande NE Quadrangle, 2006

LEGEND

Qa	Alluvial clay and sand of valley areas
Qoa	Older alluvium dissected
QTp	Paso Robles Formation - pebble, gravel, sand and gravel pebbles
Tps/Tpsb	Pismo Formation - sandstone
Tm/Tmd	Monterey Formation
▬▬▬	Approximate boundary of groundwater basin
↙	Approximate direction of groundwater flow

REGIONAL GROUNDWATER BASINS AND GEOLOGIC MAP
Water Resources Evaluation
Cold Canyon Landfill Expansion
San Luis Obispo County, California

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PLATE 3

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M:\Drafting\JOBFILES\2008\3571.001\On-Site GW Loc Map.dwg 03-03-2008 - 12:13pm

BASE MAP SOURCE: Morro Group Inc., Fig. III-10, 7/31/07.

LEGEND

- Groundwater monitoring well
- Groundwater monitoring well to be decommissioned
- Proposed groundwater monitoring well
- Stormwater discharge sample location
- Proposed stormwater discharge sample location
- Groundwater monitoring well to be decommissioned
- Water supply well
- Proposed stormwater discharge sample location

ON-SITE GROUNDWATER WELL LOCATION MAP

Water Resources Assessment
Cold Canyon Landfill Expansion
San Luis Obispo County, California

NORTH

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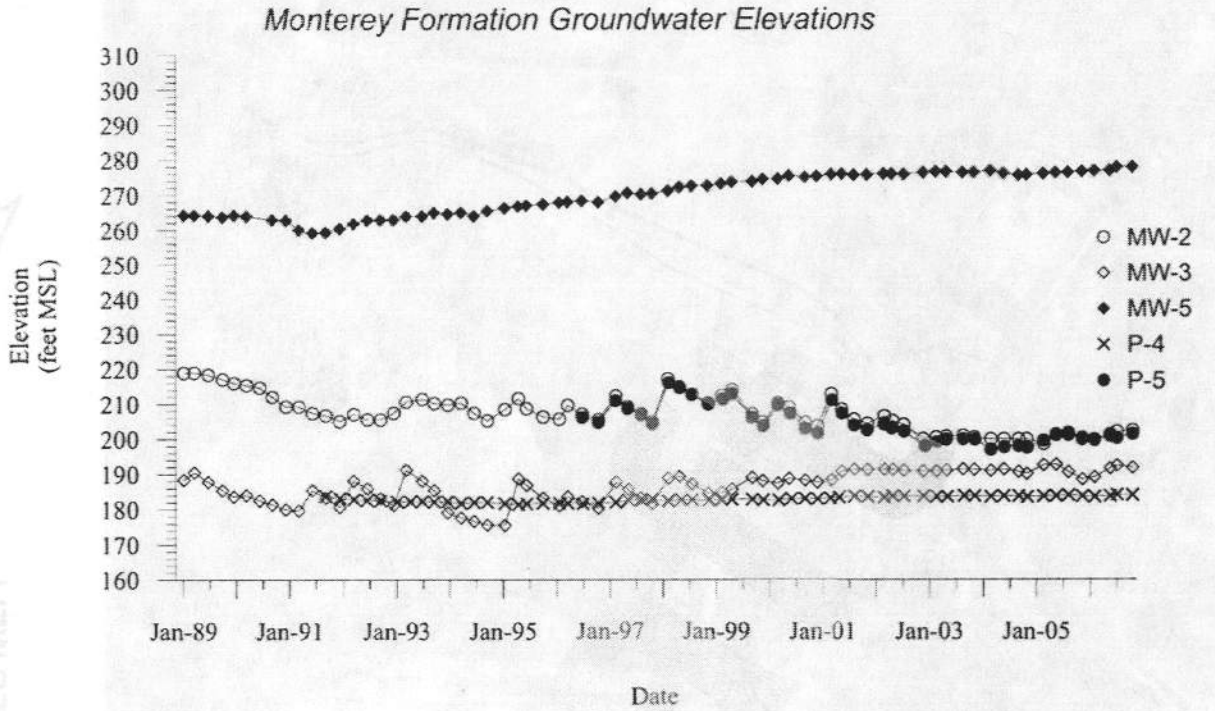
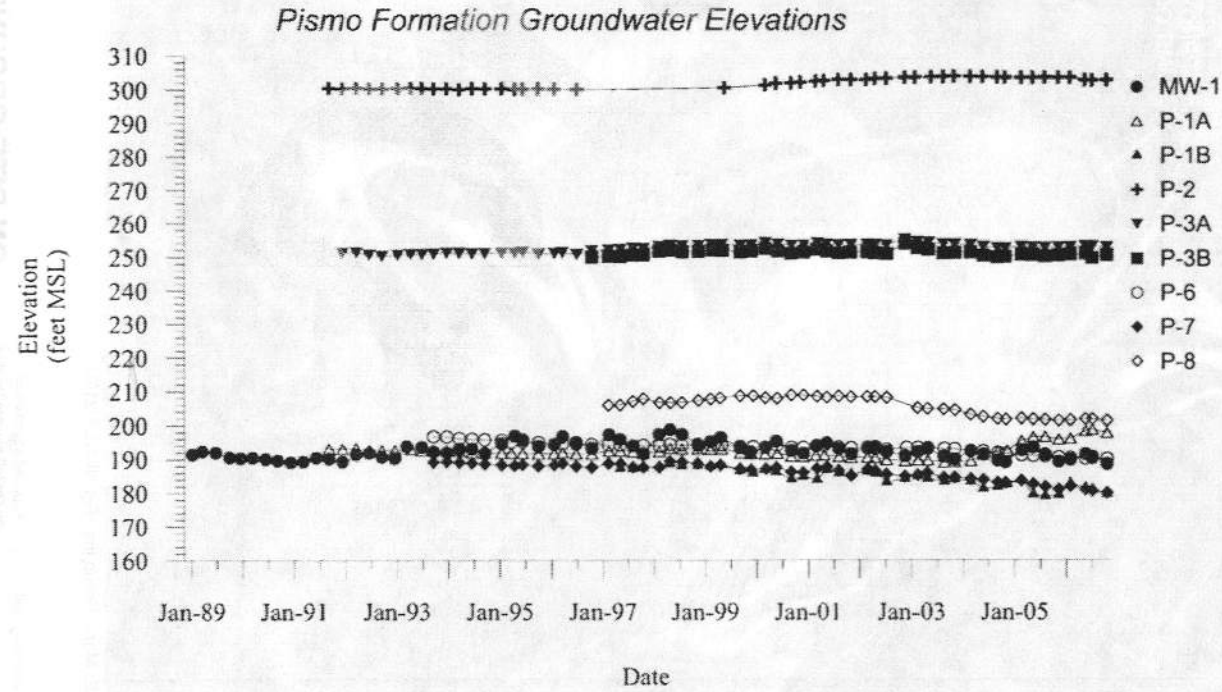
The Morro Group
Project No. 3571.001

PLATE 4





Document source: Golder Associates, Hydrogeologic Characterization Report, January 2007.

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GROUNDWATER HYDROGRAPHS
Water Resources Assessment
Cold Canyon Landfill Expansion
San Luis Obispo County, California

PLATE 5

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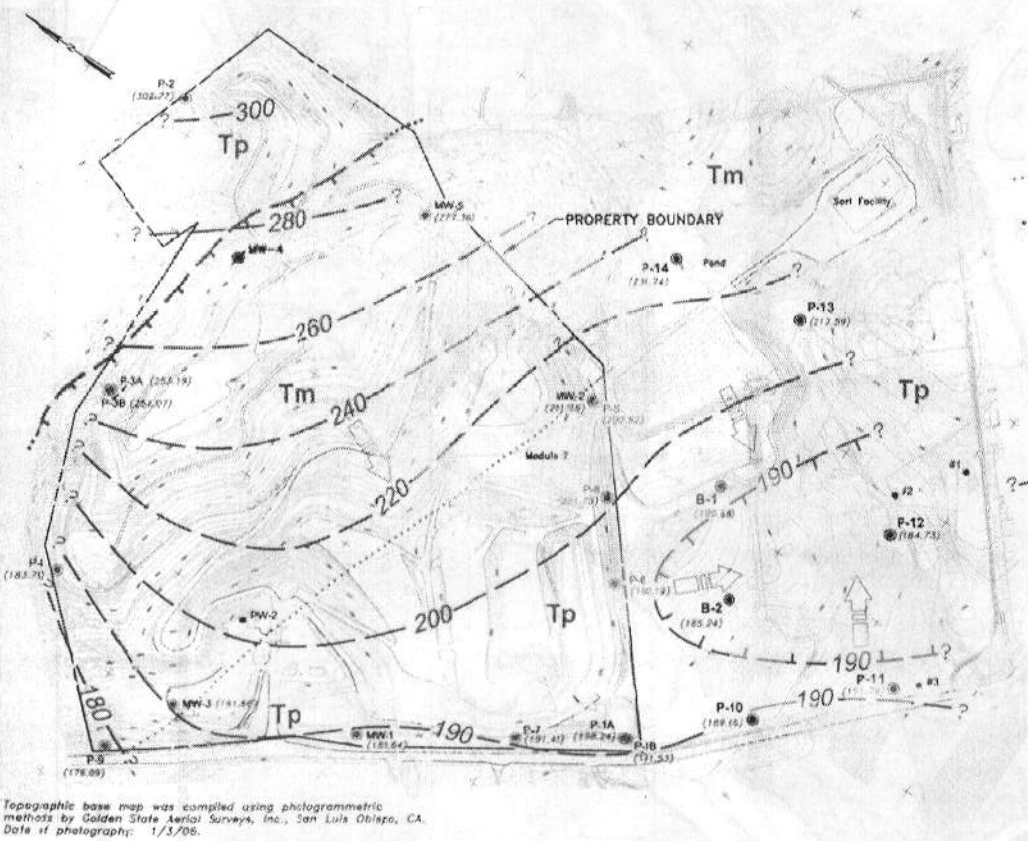

Topographic base map was compiled using photogrammetric methods by Golden State Aerial Surveys, Inc., San Luis Obispo, CA. Date of photography: 1/3/06.

EXPLANATION

Tp	Pismo Formation
Tm	Monterey Formation
	Geologic contact; dashed where approximately located, dotted where concealed
	Indian Knob Fault; hachures on upper fault block, dashed where approximately located, dotted where concealed
	Groundwater monitoring well
	New groundwater monitoring well (installed June or December 2005)
	Decommissioned groundwater monitoring well
	Water supply well
(117.98)	Groundwater elevation (Ft.-MSL); measured 5/30/06
?——200	Groundwater elevation contour (Ft.-MSL); queried where uncertain
	Approximate direction of groundwater flow

NOTES

1. Wells PW-2, #1, #2, and #3 are water production wells and subject to intermittent pumping, which may affect local groundwater elevations.
2. Well MW-4 was decommissioned between the fourth quarter 1990 and the first quarter 1991 monitoring event.
3. Wells P-1B, P-3B, and P-5 are screened in a deeper portion of the aquifer to characterize the vertical gradient. Their water elevations were not used to generate the contours.

Base map source: Golder Associates, Hydrogeologic Characterization Report, January 2007.

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TYPICAL GROUNDWATER CONTOUR MAP

Water Resources Assessment
Cold Canyon Landfill Expansion
San Luis Obispo County, California

The Morro Group
Project No. 3571.001

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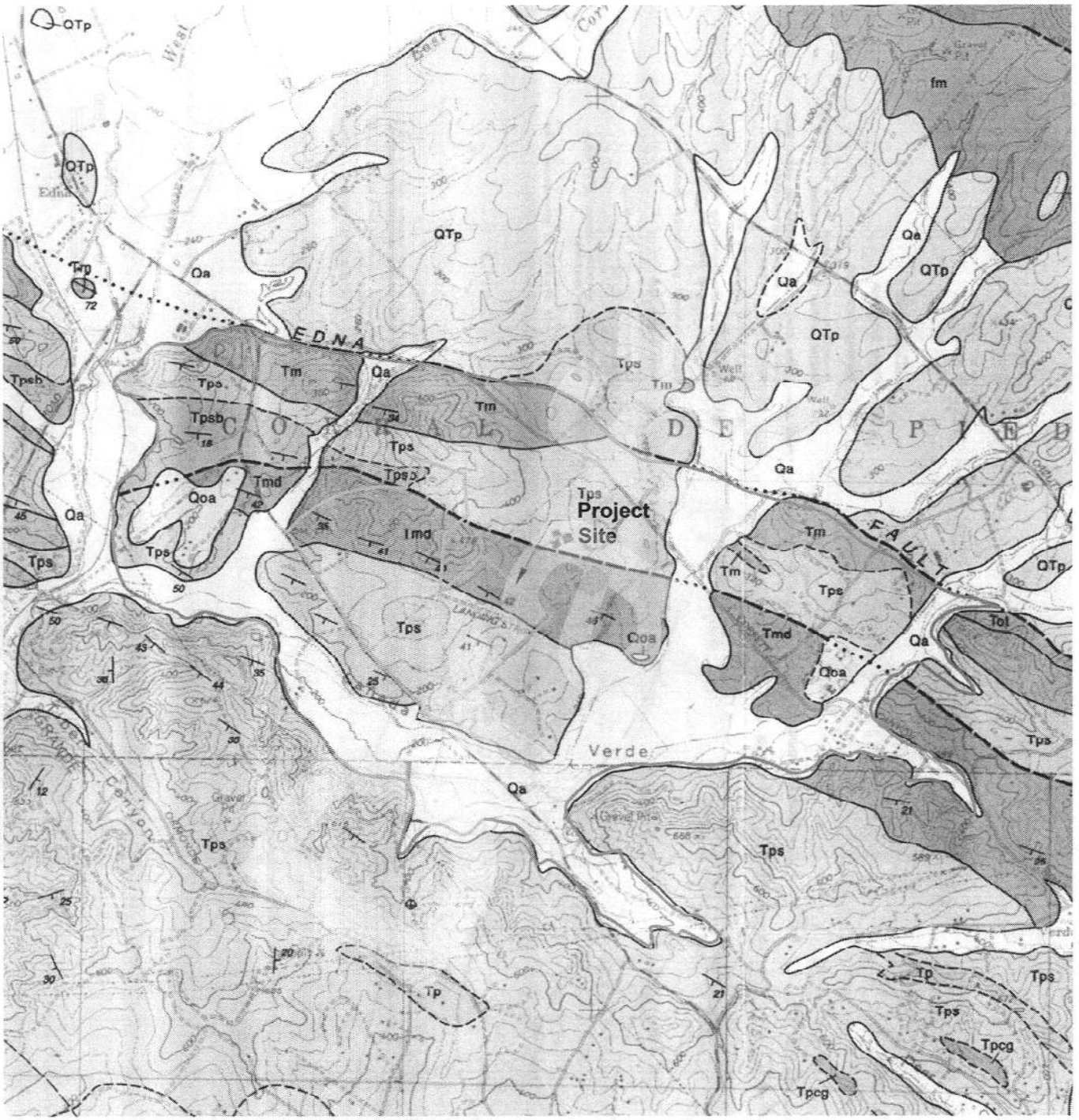
PLATE 6



Base map source: Dibblee Map, Arroyo Grande NE Quadrangle, 2006

LEGEND

Qa	Alluvial clay and sand of valley areas
Qoa	Older alluvium dissected
QTp	Paso Robles Formation - pebble, gravel, sand and gravel pebbles
Tps/Tpsb	Pismo Formation - sandstone
Tm/Tmd	Monterey Formation
——	Hydrogeologic Study Area

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HYDROGEOLOGIC STUDY AREA

Water Resources Assessment
Cold Canyon Landfill Expansion
San Luis Obispo County, California

PLATE 7

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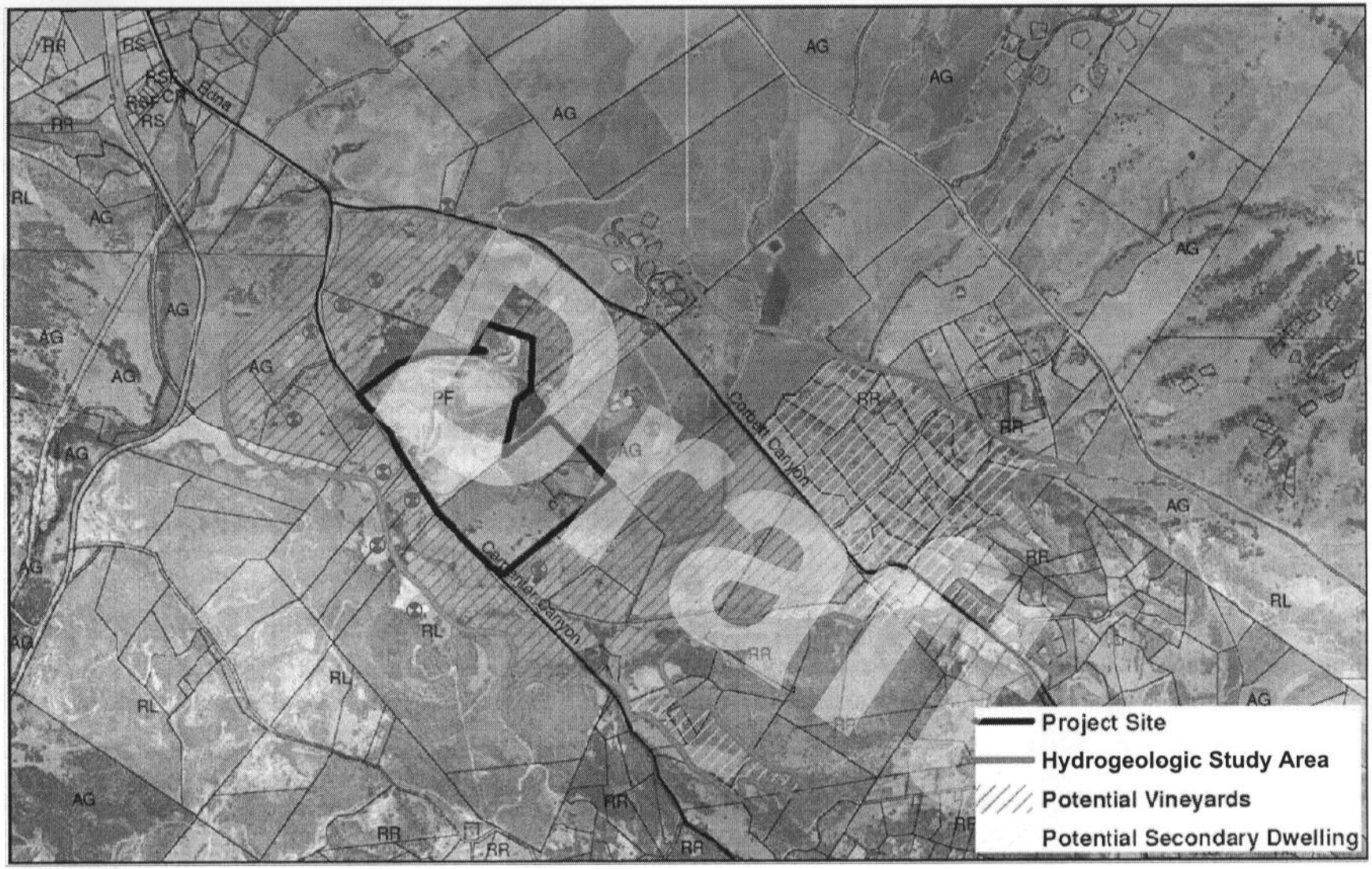

BASE MAP SOURCE: Morro Group Inc., Fig. III-10, 7/31/07. Land Use Codes from County of San Luis Obispo Planning and Building Department. Parcels from Barclay Maps.

LEGEND

Approximate location of water supply well (per DWR files or field survey).

LAND USE CODES

AG Agricultural
RR Residential Rural
RL Rural Lands
PF Public Facilities
CR Commercial Residential

SURROUNDING LAND USE AND WATER WELL LOCATION MAP

Water Resources Assessment
Cold Canyon Landfill Expansion
San Luis Obispo County, California

NORTH
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The Morro Group
Project No. 3571.001

PLATE 8

APPENDIX A
REVISED WASTE DISCHARGE REQUIREMENTS

California Regional Water Quality Control Board
Central Coast Region

Winston H. Hickox
Secretary for Environmental Protection

Internet Address: http://www.swrcb.ca.gov/~rwqcb3
81 Higuera Street, Suite 200, San Luis Obispo, California 93401-5427
Phone (805) 549-3147 • FAX (805) 543-0397

Gray Davis
Governor

August 5, 2002

Jeff Clarin
Cold Canyon Landfill, Inc.
974 B Monterey Street
San Luis Obispo, CA 93401

COLD CANYON LANDFILL, REVISED WASTE DISCHARGE REQUIREMENTS ORDER NO. R3-2002-0065 AND MONITORING AND REPORTING PROGRAM NO. R3-2002-0065

Dear Mr. Clarin:

Enclosed are draft Revised Waste Discharge Requirements Order No. R3-2002-0065 (Order) and Monitoring and Reporting Program No. R3-2002-0065 (MRP) for the Cold Canyon Class III Landfill. We have scheduled the proposed draft Order to be considered by the Regional Board at its November 1, 2002, meeting, to be held in San Luis Obispo. We request your written comments on the Order and MRP by **September 6, 2002**. A copy of this Order and MRP may also be found on our web site at: **http://www.swrcb.ca.gov/rwqcb3/Downloads/index.htm.**

If you have any questions regarding the enclosed documents, please contact **David Athey at (805) 542-4644** or Michael LeBrun at (805) 542-4645.

Sincerely,

Roger W. Briggs
Executive Officer

Enclosures: Revised Waste Discharge Requirements Order No. R3-2002-0065
Revised Monitoring and Reporting Program No. R3-2002-0065

cc's: See next page for list cc's that do not include enclosures. For a copy of the Order and MRP please visit: **http://www.swrcb.ca.gov/rwqcb3/Downloads/index.htm.**

s:\icb\ldu\landfills\permitted sites\cold canyon\new wdr & mrp r3-2002-0065\cover letter wdr r3-2002-0065.doc

This letter has been provided to the following interested parties without enclosures. For a copy of the Order and MRP please visit: **http://www.swrcb.ca.gov/rwqcb3/Downloads/index.htm** or call Ms. Sue Gerdsen at (805) 549-3465 to request a hard copy of the Order via regular mail.

cc:

Mr. Joe Mello
Division of Clean Water Programs
State Water Resources Control Board
P.O. Box 944212
Sacramento, CA 94244-2120

Jenifer Kiger
Enforcement Branch
CIWMB, Mail Stop 15
1001 I Street
P. O. Box 4025
Sacramento, CA 95812-4025

Melissa St. John, R.E.H.S.
San Luis Obispo County Health Department
Division of Environmental Health
P.O. Box 1489
2156 Sierra Way
San Luis Obispo, CA 93406

Larry Allen
Air Pollution Control Officer
San Luis Obispo County
Air Pollution Control District
3433 Roberto Court
San Luis Obispo, CA 93401

Carmen Fojo
SLO Co. Engineering Department
Solid Waste Division
County Government Center
San Luis Obispo, CA 93408

Rodger Anderson, Mayor
City of Morro Bay
595 Harbor Street
Morro Bay, CA 93422

William A. Worrell
SLO County IWMA
870 Osos Street
San Luis Obispo, California 93401

Michael A. Lady, Mayor
City of Pismo Beach
214 E. Branch Street
Arroyo Grande, CA 93421
Rudy Natoli, Mayor
City of Pismo Beach
760 Matte Road
Pismo Beach, CA 93449

Stephen C. Lieberman, Mayor
City of Grover Beach
Post Office Box 365
Grover Beach, CA 93483

Santa Lucia Chapter of the Sierra Club
P.O. Box 15755
San Luis Obispo, CA 93406

ECOSLO
P.O. Box 1014
San Luis Obispo, CA 93406

Coastal San Luis Resource Conservation District
545 Main Street, Suite B-1
Morro Bay, CA 93442

Tom Vercoutere
Conor Pacific
2580 Wyandotte Street, Suite G
Mountain View, CA 94043

Larry D. Viles or Current Resident
2225 Carpenter Canyon Road
San Luis Obispo, CA 93401

Pat Clements or Current Resident
2245 Carpenter Canyon Road
San Luis Obispo, CA 93401

James M. Blocher or Current Resident
2391 Carpenter Canyon Road
San Luis Obispo, CA 93401

Jeffery H. Edwards
Representing Michael Silva
J.H. Edwards Co.
P.O. Box 6070

Los Osos, CA 93412

cc continued:

Jon A. Hoffman
960 Buck Ridge Lane
Arroyo Grande, CA 93420

Dave Colby, News Director
KSBY-TV
1772 Calle Joaquin
San Luis Obispo, California 93405

Editor
The Telegram Tribune
3825 South Higuera Street
P.O. Box 112
San Luis Obispo, CA 93406-0112

Robert L. Johnston or Current Resident
944 San Adriano
San Luis Obispo, CA 93401

Michael Silva
P.O. Box 260192
Encino, CA 91426-0192

James D. Weir or Current Resident
2114 Carpenter Canyon Road
San Luis Obispo, CA 93401

Bill Warth
773 Mamuela Way
Arroyo Grande, CA 93420

STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION
81 Higuera Street, Suite 200
San Luis Obispo, CA 93401-5411

REVISED WASTE DISCHARGE REQUIREMENTS ORDER NO. R3-2002-0065

Waste Discharger Identification No. 3 400310001

FOR

COLD CANYON CLASS III LANDFILL
San Luis Obispo County

The California Regional Water Quality Control Board, Central Coast Region (hereafter Regional Board) finds that:

SITE OWNER AND LOCATION

1. Waste Connections, Inc. owns Corral de Piedra Land Company, Inc. which owns the Cold Canyon Class III Landfill, which is operated by Cold Canyon Landfill, Inc. For the purposes of this Order, Waste Connections Inc., Corral de Piedra Land Company, Inc., and Cold Canyon Landfill Inc., are hereafter referred to collectively as "Discharger" and the Cold Canyon Class III Landfill is hereafter referred to as "Landfill".

2. The 121-acre site includes a 14-acre unlined closed Class III area, and a permitted Class III landfill footprint of 74-acres. In addition to landfilling, the Discharger occasionally composts greenwaste on the Landfill.

3. The Landfill is eight miles south of San Luis Obispo along State Highway 227, in Sections 28, 29, 32, and 33, Township 31 south, Range 13 east, Mount Diablo Base and Meridian as shown on the attached **Figure 1**. The address of the Landfill is 2268 Carpenter Canyon Road, San Luis Obispo, CA 93401. The Landfill latitude is 35° 11 and the longitude is 120° 35.

4. The site is comprised of one parcel, with Assessor Parcel Number:
   - 044-171-012 – Class III Landfill

PURPOSE OF ORDER

5. The Discharger is currently regulated by Waste Discharge Requirements Order No. 93-051 (hereafter "Order 93-051") and Waste Discharge Requirements Order No. 93-83 (Landfill Super Order). The purpose of Order No. R3-2002-0065 (Hereafter "Order" or "Order No. R3-2002-0065") is to revise and update requirements for discharge of waste to land.

6. The Discharger submitted a Joint Technical Document (JTD) on April 17, 2002. The JTD was submitted at the request of the Central Coast Regional Water Quality Control Board, to facilitate the review and revision of Order 93-051. This revision includes the following key elements:

   - A detailed review of the entire 121-acre Landfill site.
   - Review and revision of Monitoring and Reporting Program 93-051 (MRP 93-051), which includes landfill gas, groundwater and surface water monitoring.
   - Bring the Landfill into compliance with California Code of Regulations Title 27, Solid Waste, effective July 18, 1997 (CCR Title 27); and, 40 CFR Parts 257 and 258 Solid Waste Facility Disposal Criteria, Final Rule, as promulgated October 9, 1991 (40CFR 257 and 258).

LANDFILL SITE DESCRIPTION AND HISTORY

7. Cold Canyon Landfill Inc. began landfilling operations at the current location in 1965. The Landfill is located on land leased from Corral de Piedra Land Company.

   The Landfill is situated on the eastern flank of Canada Verde. Site elevations vary from 200 feet mean sea level (msl) at the site entrance to 500 feet msl at the sites northern bounds. Slopes range from five percent at the site's southern area to twenty-five percent on eastern slopes. A site map is included as **Figure 2**. For the purposes of this Order, the Landfill can be divided into two basic areas:

   ❶ **Closed Area**: This portion of the site is comprised of 14-acres. Landfill operations began in 1965 until closure in 1996. The area received an engineered alternative final cover, consisting of two feet of foundation layer soil overlain by a geosynthetic clay blanket overlaid by one foot of vegetative cover. The closed area is shown on the attached **Figure 2.**

   ❷ **Active Area**: The Active Area consists of unlined and lined modules. Approximately 7.3 million cubic yards of waste have been landfilled in both areas. A majority of the active area was not constructed with a bottom liner or leachate collection system. A lateral and vertical expansion was permitted in 1993. The horizontal expansion consists of Modules Six, Seven and Eight. The vertical expansion consists of Module Nine, which will be located on top of Modules Six, Seven, and Eight. This expansion increased the Landfill's capacity to 10.9 million cubic yards (waste + cover material). Based on January 4, 2002 capacity estimates, the Landfill has approximately 3.6 million cubic yards of remaining capacity in all active modules. The individual modules are shown on the attached **Figure 2** and are described below:

   - **Existing Modules 1-5** are closed, at final grades or have minimal capacity. Active landfilling currently takes place in Module Five. Module Five has approximately six to eight months of capacity remaining.
   - **Existing Module No. 6** has a capacity of 135,100 cubic yards. Filling of Module Six is nearly complete. However, once Modules Seven and Eight are complete, Module Nine will overlap this module.
   - **Module No. 7** will have a capacity of 390,400 cubic yards. The Module Seven design report was found acceptable to the Executive Officer on June 3, 2002. Module Seven construction is expected to be completed by November 2002.
   - **Module No. 8** will have a capacity of 1,700,700 cubic yards. Construction of Module Eight is anticipated in 2004.
   - **Module No. 9** will have a capacity of 1,129,500 cubic yards. Module 9 will overlap Modules Six through Eight. The maximum elevation of module 9 is approximately 490 feet (JTD, 2002).

8. The landfill property is zoned Public Facilities (PF) on the Land Use Element Map of the San Luis Obispo County General Plan. In December 1991, the San Luis Obispo County Planning Commission found the landfill project was consistent with the San Luis Obispo County General Plan.

9. Land within 1000 feet of the Landfill is used for: cattle grazing, composting, a material recovery facility, vineyards, a winery bottling plant, and scattered domestic residences. Nearby residences utilize private wells for domestic water supply.

WASTE TYPE & CLASSIFICATION

10. Currently, the Landfill receives municipal and solid waste from Pismo Beach, San Luis Obispo, Arroyo Grande, Los Osos, Cayucos, Cambria, San Simeon, Morro Bay, and surrounding unincorporated areas. The Landfill received approximately 172,500 tons of waste in 2001. An average of 474 tons are disposed daily, based on 364 operating days per year.

11. Wastes received are classified as nonhazardous solid wastes or inert wastes using the criteria set forth in California Code of Regulations, Title 27 (CCR Title 27). The Landfill is also permitted to receive non-hazardous sludge and treated medical waste.

12. Wastes are disposed of utilizing the area disposal method. Refuse lifts average 15 feet in thickness. Wastes are placed and compacted in two foot layers with maximum perimeter slope steepness of 3:1 (horizontal:vertical).

13. The Discharger's current plans indicate the existing permitted disposal area will reach capacity in 2011. This is based on the Discharger's assumptions of an 8:1 refuse to soil ratio, 2.3percent population growth, and a waste density of 1,150 pounds per cubic yard.

14. The currently permitted, unlined modules do not meet CCR Title 27, Section 20260 (b)(1) siting criteria with regard to "geologic setting". Considering the size of the waste management unit, permeability and transmissivity of underlying soils, depth to groundwater, background quality of groundwater, current and anticipated use of groundwater, and annual precipitation, the native underlying soils do not ensure protection of groundwater or surface water quality.

15. The permitted horizontal expansion Modules have or will have engineered containment system based on the geologic setting criteria in **Finding 14**. The CCR Title 27 prescriptive containment requirements are outlined in **Specification 20**.

GEOLOGY

16. **Setting** – The site is located in the southernmost part of Edna Valley between the San Luis Range to the west and the Santa Lucia Range to the east. The Landfill is located on the eastern flank of Canada Verde and lies along the southern margin of the Upper Pismo and eastern margin of the Lower Pismo groundwater basins (California Dept. of Water Resources, 1958) as shown on **Figure 3**.

17. **Topography** - Landfill topography is hilly. Topography ranges from gentle 5 percent slopes to steeper 25 percent slopes at the sites eastern margin. Historic landfill operations near the northwestern boundary have altered topography to 33 percent on side slopes and 5 percent on top deck areas. As landfill expansion continues, site topography in the site's southern portion will be altered to accommodate Modules Seven and Eight. There is approximately 300 feet of elevation change across the length of the site.

18. **Stratigraphy** – Three geologic units have been mapped at the site: the Monterey Formation, Pismo Formation, and surficial deposits. The Monterey Formation underlies approximately 90 percent of the unlined portion of the Landfill, while the Pismo Formation underlies most of the lateral expansion area.

19. Where exposed, the Monterey Formation consists of approximately 52 percent siltstone, 27 percent claystone and 21 percent fine- to very fine- grained sandstone with a total stratigraphic thickness of 630 feet in the site's central area. Where exposed, the Pismo Formation consists of approximately 82 percent fine- to very fine-grained sandstone, 9 percent claystone, 9 percent siltstone and some conglomerate. The beds trend to the northwest, consistent with regional geology.

20. Bedrock fracture data indicates that the Pismo Formation is less fractured than the Monterey formation and that there are two dominant sets of bedrock fractures. Both sets trend north south sub-parallel to groundwater flow. Highly fractured and crushed zones in both formations typically occur within silty sandstone units cemented with calcium carbonate. Fracturing and connectivity increase from south to north towards the Indian Knob fault zone. The Indian Knob fault zone is located in the northern Landfill area as shown on **Figure 5**.

21. Surficial deposits are considered un-cemented or weakly cemented earth materials that have been reworked by natural and artificial means. They include refuse fill in the sites northern

and central portion, and alluvial deposits that commonly mantle slopes and ridges.

22. **Structure** – Earthquake evaluations have been performed to determine the Maximum Probable Earthquake (MPE) event for a near Landfill fault. Based on past studies by the Discharger, the maximum probable earthquake (MPE) event could result from any of three faults, the Indian Knob fault, San Simeon-Hosgri Fault or the San Andreas Fault.

23. The Indian Knob Fault and Edna Fault are located near the site's northern boundary, as shown on **Figure 6**. The Indian Knob Fault is capable of generating a magnitude 6.3 MPE with a mean peak bedrock acceleration of 0.65g. However, the Discharger certified in an October 1989, "Activity of the Indian Knob Fault..." report that the Indian Knob Fault and Edna Fault have not been active during the Holocene Period. The San Simeon-Hosgri Fault is located approximately 8.7 miles west and is capable of generating a magnitude 7.7 MPE with a mean peak bedrock acceleration of 0.46g. The San Andreas Fault is located 35 miles to the northeast and is capable of generating a magnitude 8.3 MPE with a mean peak bedrock acceleration of 0.2g.

GROUND, STORM & SURFACE WATER

24. **Groundwater** - Based on the site characterization reports submitted by the Discharger[1], groundwater at the site occurs in both the Pismo and Monterey formations with the hydraulic head elevation ranging from approximately 190 feet above mean sea level (MSL) at the sites' southern edge to approximately 300 MSL at the northern edge. Depth to groundwater measured in on-site monitoring wells ranges from approximately 56 feet below ground surface southwest of the Landfill, to 208 feet below ground surface north of the Landfill.

25. Groundwater at the site flows generally from northeast to southwest under a relatively uniform hydraulic gradient through the undifferentiated member of the Pismo Formation, Indian Knob Fault Zone, Monterey Formation, and Edna Member of the Pismo Formation. Although the Indian Knob Fault zone is less permeable than the Pismo and Monterey Formations, it has little influence on groundwater flow[1].

26. The Monterey Formation's groundwater horizontal gradient is approximately 0.05 foot/foot. Additionally, there is a downward vertical gradient, ranging in magnitude from 0.01 to 0.05 feet/foot. The Discharger has determined that groundwater velocity within the Monterey Formation is approximately 15 feet per year. This is based on a mean hydraulic conductivity of 6.3×10^{-5} centimeters per second (cm/sec) and an effective porosity of 20 percent.

27. As the groundwater enters the Edna member of the Pismo Formation, the gradient flattens to approximately 0.01 feet/foot. This is related to the more permeable nature of the massive sandstones of the Edna member. The Discharger has determined that groundwater velocity within this area is approximately 25 feet per year. This is based on a mean hydraulic conductivity of 2.3×10^{-4} (cm/sec) and an effective porosity of 25 percent.

28. Regional groundwater flow direction is typically towards the southwest. The Landfill is located hydraulically downgradient from the Upper Pismo Groundwater Basin and upgradient of the Lower Pismo Groundwater Basin. **Figure 3** shows the Landfill location in relation to both basins.

29. **Wells** - There are 50 water supply wells within one mile of the Landfill. The closest well, well PW-2, is located near the Landfill scale house, and is used for site operations. Wells within one mile of the site are shown on **Figure 4**.

30. **Springs** – There are five springs located within one mile of the site. Three of the springs occur upgradient along the Edna Fault. A fourth spring feeds the intermittent stream that flows within a canyon immediately northeast of the site. The fifth spring feeds Canada Verde approximately 0.8 miles southwest of the

[1] *Hydrogeologic Site Characterization, Cold Canyon Sanitary Landfill, San Luis Obispo County, California,* EMCON Associates, February 1992

Landfill. The Canada Verde Spring is shown on **Figure 4**.

31. **Groundwater Separation** – According to the Discharger's JTD, separation between waste in the expansion area modules and groundwater will be at least 10 feet. This value is based on the highest recorded groundwater levels site wide. The minimum separation between groundwater and waste, for expansion modules, is five feet.

32. **Groundwater Quality** – Groundwater has been monitored at the Landfill since 1987. Historically, Volatile Organic Compounds (VOC) have been detected. Landfill gas was suspected of being the source of VOC detections. In response the Discharger installed a landfill gas extraction system. Since installing the system, VOC have been detected intermittently, but have never been verified in follow up testing. Landfill gas is discussed in 44.

33. Statistical evaluation of inorganic water-quality in wells MW-2 and MW-3 indicate a release has occurred. The Discharger installed wells P-8 and P-9 to determine the lateral and vertical extent of the release at Wells MW-2 and MW-3. During this evaluation it was determined that the release has not migrated beyond wells MW-2 and MW-3.

34. An Amended Report of Waste Discharge was submitted in March 2002 to address a confirmed inorganic release in well P-7. Test results from well P-7 showed chloride and sulfate concentrations were statistically significant and were an indication of a release. The Discharger will be performing further evaluation of this release as required by MRP R3-2002-0065 and this Order.

35. **Storm Water** –On March 13, 1992, the Discharger submitted a "Notice of Intent" to comply with the "State Water Resources Control Board Water Quality Order No. 97-03-DWQ National Pollutant Discharge Elimination System General Permit No. CAS000001 Waste Discharge Requirements for Discharge of Storm Water Associated with Industrial Activities Excluding Construction Activities". Regulation of storm water discharge is covered under that permit.

36. Rainfall is seasonal with the majority of the precipitation falling between November and April. The annual average precipitation recorded at the San Luis Obispo Poly station is 23.4 inches. The 100-year, 24 hour storm at the San Luis Obispo Poly station is 6.74 inches (DWR, 1976).

37. **Surface Water** – Runoff from the Landfill is collected in ditches and over side drains and routed to a permanent sedimentation basin. As part of Module Seven construction, the Discharger will be installing a second basin. Surface water is then discharged to offsite drainage ways adjacent to highway 227. Storm water run-on is intercepted by perimeter collection ditches, routed around the Landfill, and discharged to onsite drainage ways.

38. The site is not located in a 100-year flood plain according to the Federal Emergency Management Agency maps for San Luis Obispo County.

MONITORING PROGRAMS

39. **Groundwater Monitoring** – Groundwater was first monitored in 1987 and has been monitored continuously since 1989. The first wells, MW-1, MW-2, MW-3, MW-4 and MW-5, were installed to complete the Solid Waste Assessment Test Report. Subsequently MW-4 was abandoned because of Landfill expansion. Over time, additional wells have been added to the monitoring network. The present monitoring systems consists of 15 wells, which are sampled according to a schedule specified in the attached Monitoring and Reporting Program. One additional well is used for non-potable water supply. See **Figure A-1** attached to MRP R3-2002-0065, for monitoring well locations.

40. **Leachate Monitoring** – There is a limited leachate recovery system in the unlined class III area. The Discharger installed a pipe in Excavation Cell C that collects leachate and diverts it to Module Seven's leachate collection system. Leachate collection is not required in other unlined areas. The

discharger conducted an investigation in 1989 to determine if unlined areas contained leachate. Leachate was not found in large quantities; therefore, leachate extraction in unlined areas was not pursued. Module Six and all future modules will be equipped with leachate collection and disposal systems. Leachate from the expansion area will be monitored according to the approved Monitoring and Reporting Program attached to these Waste Discharge Requirements.

41. **Surface Water Monitoring** – Surface water is monitored at six locations around the Landfill. Surface water monitoring requirements are stipulated in MRP R3-2002-0065. Additionally, storm water is monitored according to the State's NPDES storm water discharge general permit.

42. **Vadose Zone Monitoring** – California Code of Regulations Title 27, Section 20415, requires vadose zone monitoring unless demonstrated by representative soil suction curves that soil pore liquid cannot be extracted. An Unsaturated Zone Monitoring Report was submitted in November of 1994 which detailed the infeasibility of unsaturated zone monitoring at this landfill. The Discharger installed a pan lysimeter under the leachate sump in Module Six for leak detection purposes. Order R3-2002-0065 and MRP R3-2002-0065 require the discharger to monitor this lysimeter.

43. **Landfill Gas Monitoring** – Landfill gas is collected via wells and trenches in active and closed Landfill areas. Primarily, the landfill gas is sold to an offsite user. Additionally, an onsite gas flare is installed and available if offsite demand is curtailed for any reason. Landfill gas is sampled and analyzed according to MRP R3-2002-0065. Landfill gas is a potential source of groundwater contamination at this site.

BASIN PLAN

44. The Water Quality Control Plan, Central Coast Basin (Basin Plan), was adopted by the Regional Board on September 8, 1994, and approved by the State Water Resources Control Board on November 17, 1994. The Basin Plan incorporates statewide plans and policies by reference and contains a strategy for protecting beneficial uses of State Waters. This Order implements the water quality objectives of the Basin Plan.

45. The beneficial uses of surface water in the vicinity of the Landfill include:
    - Domestic and Municipal Supply
    - Agricultural Supply
    - Groundwater Recharge
    - Water Contact Recreation
    - Non-Contact Water Recreation
    - Wildlife Habitat
    - Warm Freshwater Habitat
    - Cold Freshwater Habitat
    - Industrial Service Supply
    - Fish Migration
    - Fish Spawning

46. The beneficial uses of groundwater in the vicinity of the Landfill are:
    - Domestic and Municipal Supply
    - Agricultural Supply
    - Industrial Supply.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

47. The San Luis Obispo County Planning Commission certified a final Environmental Impact Report on December 2, 1991, in accordance with the California Environmental Quality Act (Public Resources Code Section 21000 et. seq.). The Findings, Prohibitions, Specifications, and Provisions of this Order are consistent with the certified final Environmental Impact Report.

48. The final Environmental Impact Report found that the Landfill and Landfill activity could have significant impacts on water quality and may degrade water quality unless appropriate measures are taken. The potential significant impacts are intended to be mitigated or avoided by a series of design measures to control erosion and provide containment of waste and leachate by the use of liners, leachate collection and removal systems, grading, planting, drainage systems, and limits on the physical dimension of the Landfill. The mitigation measures are described in the

Dischargers application and these Waste Discharge Requirements.

GENERAL FINDINGS

49. Discharge of waste is a privilege, not a right, and authorization to discharge waste is conditioned upon the Discharger complying with provisions of Division 7 of the California Water Code and with any more stringent limitations necessary to implement the Basin Plan, to protect beneficial uses, and to prevent nuisance. Compliance with this Order should assure conditions are met and mitigate any potential changes in water quality caused by the project.

50. The Landfill operates under the following Permits:

    - Development Plan Permit No. D860156D issued by the San Luis Obispo County Planning Commission on December 2, 1991.
    - Permit to operate No.37 (Title V Permit) issued by the San Luis Obispo County Air Pollution Control District on October 23, 1998.
    - Solid Waste Facilities Permit No. 40-AA-0004, issued in January 2002 by the San Luis Obispo County, Environmental Health Department with concurrence from the Integrated Waste Management Board.

51. This Order implements the prescriptive standards and performance goals of CCR Title 27, as approved on July 18, 1997.

52. On **August 5, 2002**, the Regional Board notified the Discharger and interested agencies and persons of its intention to update the Landfill Waste Discharge Requirements and has provided them with a copy of the proposed Order and an opportunity to submit views and comments.

53. After considering all comments pertaining to this discharge during a public hearing on **November 1, 2002** this Order was found consistent with the above findings.

IT IS HEREBY ORDERED pursuant to authority in Section 13263 of the California Water Code, Waste Connections, Inc., Corral de Piedra Land Company, Inc., and Cold Canyon Landfill, Inc., their agents, successors, and assigns may discharge wastes at the Cold Canyon Class III Landfill, providing compliance is maintained with the following:

A. COMPLIANCE WITH OTHER REGULATIONS, ORDERS AND STANDARD PROVISIONS

1. Discharge of waste shall comply with all applicable requirements contained in the California Code of Regulations Title 27, Division 2, Solid Waste (CCR Title 27) and Title 40 CFR Parts 257 and 258 (40 CFR) Solid Waste Facility Disposal Criteria. If any applicable regulation requirements overlap or conflict in any manner, the most water quality protective requirement shall govern in all cases, unless specifically stated otherwise in this Order, or as directed by the Executive Officer.

2. This Landfill is no longer subject to this Regional Board's Order No. 93-84 "Waste Discharge Requirements Amendment for All MSW Landfills in the Central Coast Region" (Super Order). The Super Order updated all Region 3 landfill WDRs to comply with the updated federal landfill regulations, 40 CFR Parts 257 and 258. Through compliance with CCR Title 27 and 40 CFR Parts 257 and 258 as required above in A.1, the Discharger will satisfy requirements identical to those within Order No. 93-84.

3. The Discharger shall monitor potential releases from the Landfill related to storm water runoff by complying with all requirements contained in the "State Water Resources Control Board Water Quality Order No. 97-03-DWQ National Pollutant Discharge Elimination System General Permit No. CAS000001 Waste Discharge Requirements for Discharge of Storm Water Associated with Industrial Activities Excluding Construction Activities".

B. PROHIBITIONS

1. Discharge of waste to areas outside the Active Landfill Area identified in **Figure 2** is prohibited.

2. Discharge of waste to areas within the Active Landfill Area that have not previously received waste is prohibited unless a composite liner system as described in **Specification 20**, is installed and accepted by the Executive Officer.

3. Discharge of the following types of wastes is prohibited;

   a. Radioactive wastes.
   b. Designated waste.
   c. Hazardous waste.
   d. Wastes that have the potential to reduce or impair the integrity of containment structures or which, if commingled with other wastes in the unit, could produce violent reaction, heat or pressure, fire or explosion, toxic by-products, or reaction products.
   e. Wastes that require a higher level of containment than provided by the Landfill.
   f. Wastes that are restricted hazardous wastes, or wastes which impair the integrity of containment structures.

4. Discharge of liquid or semi-solid waste (i.e., waste containing less than 50 percent solids by weight) other than dewatered sewage or water treatment sludge as described in Discharge **Provision E. 11**, and Landfill leachate and gas condensate as described in Discharge **Specification C. 23**, is prohibited.

5. Discharge of solid or liquid waste or leachate to surface waters, ponded water from any source, surface water drainage courses, or groundwater is prohibited.

6. Discharge of waste within 50 feet of the property line or within 100 feet of surface waters or domestic supply wells is prohibited.

7. Disposal of wastes within five (5) feet of the highest anticipated elevation of underlying groundwater, including the capillary fringe, is prohibited.

C. SPECIFICATIONS

General Specifications

1. All technical and monitoring reports submitted pursuant to this Order are required pursuant to Section 13267 of the California Water Code. Failure to submit reports in accordance with schedules established by this Order, attachments to this Order, or failure to submit a report of sufficient technical quality to be acceptable to the Executive Officer, may subject the Discharger to enforcement action pursuant to Section 13268 of the California Water Code. The Regional Board will base all enforcement actions on the date of Order adoption.

2. The Discharger shall implement the attached Monitoring and Reporting Program No. R3-2002-0065 (MRP No. R3-2002-0065) in order to detect, at the earliest opportunity, any unauthorized discharge of waste constituents, or any unreasonable beneficial use impairment associated with and or caused by the discharge of waste.

3. The discharge 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 beyond natural background levels.
   d. The creation or contribution of visible, floating, suspended, or deposited oil or other products of petroleum origin.
   e. The introduction or increase in concentration of toxic or other pollutants/contaminants resulting in unreasonable impairment of beneficial uses of waters of the State.

4. The discharge shall not cause an increase in concentration of waste constituents in soil-pore gas, soil-pore liquid, perched water, groundwater or geologic materials outside of the Point of Compliance (as defined by CCR Title 27).

5. The Discharger shall conduct intake load checking as specified by the 2002 JTD, Appendix C "Waste Control Program" and shall monitor for radioactive materials in the incoming waste.

6. The Discharger shall remove and relocate any wastes discharged in violation of these requirements.

7. All Landfill facilities shall be designed and constructed to prevent damage during the maximum probable earthquake.

8. Refuse shall be covered daily by at least six inches of soil cover material or an Executive Officer accepted alternative daily cover. Daily cover shall promote lateral runoff of rainfall away from the active disposal area.

9. Water used over areas underlined by waste within unlined Landfill areas shall be limited to the minimum amount necessary for dust control and construction.

10. Surface drainage from tributary areas and internal site drainage from non-landfill surface or subsurface sources shall not contact or percolate through wastes.

11. To prevent erosion and percolation through the waste, drainage ditches crossing over Landfill areas shall be lined with either a synthetic liner or at least a one-foot-thick layer of soil having an in-place hydraulic conductivity of 1×10^{-6} cm/sec or less.

12. Regional Board staff shall be notified within 24 hours by phone, with a written report to follow within seven days, of any slope failure or leachate seep occurring at the Landfill. Any leachate seep or any failure, which threatens the integrity of containment features or the Landfill, shall be promptly corrected and the methods shall be so stated in the written report.

Wet Weather

13. By **October 1** of each year, all necessary runoff diversion and erosion prevention measures shall be implemented. All necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed to prevent erosion or flooding of the Landfill and to prevent surface drainage from contacting or percolating through wastes.

14. **Throughout the rainy season of each year,** a compacted intermediate soil cover designed and constructed to minimize percolation of precipitation through wastes, shall be maintained over the entire Waste Management Unit. The soil cover shall be in-place by **October 1 of each year.** The thickness and permeability of the intermediate cover shall be based primarily on site specific conditions including, but not limited to: length of exposure time; volume of underlying material; permeability, thickness and composition of existing cover; amount of yearly rainfall; depth to groundwater; beneficial uses of underlying groundwater; site specific geologic and hydrogeologic conditions; existing groundwater impacts and effectiveness of existing monitoring system.

    The only exception to this specification is the working face. The working face shall be confined to the smallest area practicable based on the anticipated quantity of waste discharged and required waste management facility operations. Landfill areas which have been provided with an Executive Officer approved vegetative layer as of the adoption date of this Order, shall not be required to satisfy this requirement. Based on site-specific conditions, the Executive Officer may require a thicker soil cover for any portion of the active WMU prior to the rainy season.

15. By **October 1 of each year,** vegetation shall be planted and maintained as necessary to minimize erosion on interim cover slopes and on slopes at final elevation. Vegetation shall be selected to require a minimum of irrigation and maintenance and shall have a rooting depth not in excess of the vegetative layer thickness. Upon written Executive Officer approval, non-hazardous sewage sludge may be utilized as a soil amendment to promote vegetation. Soil amendments and fertilizers (including wastewater sludge) used to establish vegetation shall not exceed the vegetation's agronomic

rates (i.e., annual nutrient needs), unless approved by the Executive Officer.

16. All Landfill surfaces and working faces shall be graded and operated to minimize rainfall infiltration into wastes, to prevent ponding of water, and to resist erosion.

17. Drainage facilities shall be designed and constructed to accommodate anticipated precipitation and peak surface runoff flows from a 100-year, 24-hour rainstorm event.

18. Storage facilities associated with precipitation and drainage control systems shall be emptied immediately following each storm, or otherwise managed, to maintain the design capacity of the system. A minimum of two feet of freeboard shall be maintained in all storm water/sediment containment ponds.

Design Criteria

19. Waste management units, containment structures and drainage facilities shall be designed and constructed under the direct supervision of a California Registered Civil Engineer or a Certified Engineering Geologist, and shall be certified by that individual as meeting the prescriptive standards and performance goals of all state and federal landfill regulations including, but not limited to, CCR Title 27 and 40 CFR parts 257 and 258, prior to waste discharge.

20. Wastes shall not be discharged to new modules within the Active Landfill Area unless equipped with a containment system, which meets either a. or b. below:
    a. A composite liner and a leachate collection and removal system consisting of the following components:
        - A well-prepared subgrade, engineered to support the Landfill and associated structures.
        - Lower Component: a minimum two-foot layer of compacted soil with a hydraulic conductivity of no more than $1X10^{-7}$ cm/sec:
        - Upper Component: a minimum 60-mils high-density polyethylene (HDPE). The upper component must be installed in direct and uniform contact with the lower component.
        - A Leachate Collection and Removal System (LCRS), designed such that leachate gravity drains to a collection point/sump and is removed through either gravity or pumping to a holding tank or sanitary sewer for volume measurement, testing and disposal.
        - A protective soil layer or operations layer shall be placed above the LCRS and liner system. This layer shall be a minimum of 12 inches thick; or

    b. An engineered alternative liner design, approved by the Executive Officer. Engineered alternative designs must satisfy the performance criteria in 40 CFR Section 258.40(a)(1) and (c), and satisfy the criteria for an engineered alternative to the above Prescriptive Design, as provided by CCR Title 27 Section 20080(b). Performance of the alternative composite liners' components, in combination, shall equal or exceed the waste containment capability of the Prescriptive Design, outlined above.

21. A preferential leachate pathway layer shall be installed between the existing unlined areas and new cells. This layer shall be constructed so that leachate generated in new waste placed over the overlapped side slopes of those unlined areas flows to the lined portion of the Landfill for collection and disposal.

22. The leachate collection and removal system shall:

    - Be designed and constructed to prevent more than 12 inches of static hydraulic head on the liner.
    - Convey to a sump, or other appropriate collection area, all leachate, which reaches the liner. The depth of fluid in any collection sump shall be kept at the minimum needed to ensure efficient pump operation.
    - Be designed so that short and long term system performance can be monitored and evaluated [CCR Tile 27, Section 20340 (d)].

- Storage facilities shall have a secondary containment system sized to hold 110 percent of the primary containment system capacity.
- Be constructed with double lined sump with leak detection capability.

23. Discharge of condensate or leachate shall comply with the following:

    - Liquids returned to only a waste management unit equipped with a containment system that meets or exceeds the performance standards of CCR Title 27, 40 CFR, Part 258.40(a)(2), or in this Order, whichever is more protective of water quality.
    - Liquids measured by volume and recorded on a monthly basis. These monthly volumes shall be included as a part of monitoring submittals as required in MRP R3-2002-0065.
    - No discharge of leachate within 48 hours of any forecasted rain event, during any rain event, or 48-hours after any rain event, unless a site specific Leachate Application Plan acceptable to the Executive Officer, is submitted.
    - Have an approved alternate method of leachate disposal (e.g., wastewater treatment plant) that is acceptable to the Executive Officer.

Closure

24. Areas at final elevations shall receive final cover pursuant to Title 27, Section 21090 which meets either a. or b. below:

    a.
    - Minimum two-foot foundation layer placed over waste, compacted to maximum density obtainable at optimum moisture conditions (CCR Title 27, Section 21090 (a)(1)).
    - For units that have not been equipped with a Subtitle D composite liner system, a low hydraulic conductivity layer, consisting of compacted clay with a hydraulic conductivity of 1X10-6 cm/sec. Compacted clay will not be considered for sites with VOC detections in point of compliance wells. In such cases a geosysnthetic clay layer or geomembrane will be proposed.
    - For units that have been equipped with a Subtitle D composite liner system, a low hydraulic conductivity layer equal to or less than the hydraulic conductivity of the bottom liner system.
    - At least one foot of soil capable of supporting vegetation, resisting erosion, and protecting the underlying low hydraulic conductivity layer.

    b. An engineered alternative design, approved by the Executive Officer, will be considered for final cover areas. Engineered alternative designs must satisfy the performance criteria in 40 CFR Parts 257 and 258, and satisfy the criteria for an engineered alternative to the above Prescriptive Design, as provided by CCR Title 27. Performance of the alternative composite cover's components, in combination, shall equal or exceed the waste containment capability of the prescriptive design, outlined above.

D. WATER QUALITY PROTECTION STANDARDS

1. Discharge of waste shall not cause the concentration of any Constituents of Concern (COC) or Monitoring Parameter to exceed its respective background value in any monitored media (i.e., soil, or groundwater) at any Monitoring Point pursuant to MRP No. R3-2002-0065.

2. Constituents Of Concern and monitoring parameters for groundwater and surface water are listed in MRP No. R3-2002-0065. Monitoring points and background monitoring points for Detection and Corrective Action monitoring shall be those specified in MRP No. R3-2002-0065.

3. The discharge of waste shall not cause a statistically significant difference in water quality over background concentrations or Concentration Limit for each COC or Monitoring Parameter (per MRP No. R3-2002-0065) at the Point of Compliance. The Concentration Limits shall be maintained for as long as the waste poses a threat to water quality. Discharge of waste shall not adversely impact the quality of State waters.

4. Discharge of waste shall not cause a violation of any applicable water quality standard for receiving waters adopted by the Regional Board or the State Water Resources Control Board.

5. Discharge of waste shall not cause concentrations of chemicals and radionuclides in groundwater down-gradient of the point of compliance to exceed the State Department of Health Services latest recommended Drinking Water Action Levels or Maximum Contaminant Levels of the California Code of Regulations Title 22, Division 4, Chapter 15, Article 5.5.

6. The Discharger is responsible for containment of waste and monitoring as long as the waste poses a threat to water quality.

7. The Monitoring Parameters for samples include those listed in the Monitoring and Reporting Program. Monitoring Parameters will be subjected to the most appropriate statistical or non-statistical test, as required by the attached Monitoring and Reporting Program.

8. The Dischargers shall, in a timely fashion, install any additional groundwater, soil pore liquid, soil pore gas, surface water, and leachate monitoring devices as required by the Executive Officer

E. PROVISIONS

General Provisions

1. Order No. 93-51, *Waste Discharge Requirements for Corral De Piedra Land Company and Cold Canyon Landfill, Inc.*, adopted by the Board on July 9, 1993, is hereby rescinded.

2. Two weeks prior to and during construction of each module (e.g., preparing foundation, installing liner, install leachate collection and removal system, placing operations layer, etc.), the Discharger shall provide a schedule of construction activities. Schedules shall be updated on a weekly basis.

3. A Construction Quality Assurance Plan, acceptable to the Executive Officer, must be implemented by a third party (e.g., unrelated to the Discharger, Landfill operator, project designer, contractor) prior to starting construction.

4. Prior to beginning discharge of waste into any newly constructed waste management unit, the Discharger must receive a final site inspection, submit a final construction Quality Assurance report, and receive written permission from the Executive Officer [CCR Title 27, Section 20324(d)(1)(C).]

5. The Discharger shall maintain a copy of this Order at the facility and make it available at all times to regulatory agency personnel and to facility operating personnel (who shall be familiar with its contents).

6. The Discharger shall comply with all other applicable provisions of CCR Title 27 and 40 CFR Parts 257 and 258 that are not specifically referred to in this Order. If any applicable requirements overlap or conflict in any manner, the most restrictive requirement shall govern in all cases, unless specifically stated otherwise in this Order, or as directed by the Executive Officer.

7. The Discharger shall have a continuing responsibility to assure protection of usable waters, from discharged wastes and from gases and leachate generated by discharged waste, during the Landfill's active life, closure, and post-closure maintenance periods and during subsequent use of the property for other purposes.

8. The Discharger shall maintain waste containment facilities and precipitation and drainage controls, and shall continue to monitor, as appropriate, groundwater, vadose zone, liquid and gas, surface waters, and leachate from waste management units throughout the post-closure monitoring and maintenance period.

9. Methane and other landfill gases, generated as a result of waste disposal, shall be adequately vented, removed from the Landfill, or

otherwise controlled to prevent the danger of explosion, adverse health effects, nuisance conditions, and the degradation of water quality.

10. The Regional Board will review this Order periodically and will revise these requirements when necessary.

11. Sewage sludge or water treatment sludge with greater than 50 percent moisture content may be discharged to the waste management unit if all the following criteria are met:
    - Sludge shall be discharged only to lined modules that have a LCRS, designed such that leachate gravity drains to a collection point/sump and is removed through either gravity or pumping to a holding tank or sanitary sewer for volume measurement, testing and disposal.
    - A daily minimum solids-to-sludge ratio of 5 to 1, based on weight, shall be maintained when co-disposing sludge with solid waste.
    - Primary and mixtures of primary and secondary sewage sludge shall contain at least 20 percent solids by weight.
    - Secondary sewage sludge and water treatment sludge shall contain at least 15 percent solids by weight.

Reporting Provisions

12. All technical and monitoring reports submitted pursuant to this Order are being requested pursuant to Section 13267 of the California Water Code. Failure to submit reports in accordance with schedules established by this Order or attachments to this Order, or failure to submit a report of sufficient technical quality to be acceptable to the Executive Officer may subject the Discharger to enforcement action pursuant to Section 13268 of the California Water Code.

13. Discharger shall notify Board staff, within 24 hours by telephone and within seven days in writing, of any noncompliance potentially or actually endangering health or the environment. Any noncompliance which threatens the Landfill's containment integrity shall be promptly corrected. Correction schedules are subject to the approval of the Executive Officer, except when delays will threaten the environment and/or the Landfill's integrity (i.e., emergency corrective measures). Corrections initiated prior to Executive Officer approval shall be so stated in the written report. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance including exact dates and times or anticipated duration; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. This provision includes, but is not limited to:
    - Violation of a discharge prohibition.
    - Violation of any Water Quality Protection Standard.
    - Slope failure.
    - Leachate seep occurring on, or in proximity to, the Landfill.

14. Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any compliance schedule, shall be submitted within 14 days following each scheduled date unless otherwise specified within the Order. A report shall be submitted within 14 days of achieving full compliance.

15. Design reports shall be submitted 180 days in advance of any planned changes in the permitted facility or any activity, which could potentially or actually result in noncompliance.

16. The Discharger shall submit a report of Wet Weather Preparedness. The report shall detail preparedness actions taken to ensure discharges to surface or groundwater do not occur during the impending rainy season, and ensure all other relevant CCR Title 27 and 40 CFR criteria have been implemented. **REPORT DUE DATE:** October 1 yearly

17. The Dischargers shall obtain and maintain Financial Assurance Instruments (Instruments), which comply with CCR Title 27 and 40 CFR parts 257 and 258. The Dischargers shall submit a report every five years that either validates the instrument's ongoing viability or proposes and substantiates any needed changes [e.g., a documented increase in the monitoring systems' ability to provide reliable early detection of a release

can cause a decrease in the Instrument's financial coverage].
REPORT DUE DATE: December 20, 2002.

18. The Discharger shall submit a letter report providing survey coordinates for the edge of Class III Area Boundary (see Figure 2). Survey coordinates shall also be established for the perimeter of each Expansion Area Module.
REPORT DUE DATE:
Active lined and unlined areas- April 15, 2003
Newly lined areas- 30 days after construction of each cell.

19. For the protection of water quality, the Executive Officer may require partial and or final closure of any Waste Management Unit and/or Module regardless of whether the unit has reached final capacity. Such a requirement will be requested in writing and in accordance with CCR Title 27, Section 22190.

20. The Discharger shall submit a Joint Technical Document pursuant to CCR Title 27, Section 21710, to the Executive Officer. The JTD shall contain, but is not limited to, the following:
    - Information on waste characteristics, geologic and climatologic characteristics of the Landfill and the surrounding region, installed features, operation plans for waste containment, precipitation and drainage controls, and closure and post closure maintenance plans, in accordance with CCR Title 27 Sections 21740, 21750, 21760, and 21769.
    - A completed SWRCB JTD Index, in accordance with CCR Title 27, Section 21585(b), with your JTD addendum.
    - A Discussion of whether, in the Discharger's opinion, there is any portion of this Order that is incorrect, obsolete, or otherwise in need of revision.
    - Any technical documents needed to demonstrate continued compliance with this Order and all pertinent State and Federal requirements.
    - Detailed information regarding regulatory considerations; design, construction and operating provisions; environmental monitoring; and closure and post-closure.
    - A Fill Sequencing Plan which includes detailed maps. The Fill Sequencing Plan should describe in detail the overall development of the entire Landfill.
    - A detailed description of the lateral and vertical extent of refuse within all existing Modules. It must include an accurate estimate of waste volumes within each existing Landfill module and an approximation of the remaining volume and years of capacity for each existing module and all new proposed modules within currently permitted Landfill boundaries. It must also describe all existing available space within currently permitted Landfill areas (i.e., modules where refuse has been placed in the past, but have not reached final permitted elevation and modules or portions of modules where refuse has never been placed).
    - A discussion of any plans/proposals to close or partially close any modules or portions of modules, any proposed liner systems and respective design components, any proposed plans for long-term intermediate cover for Landfill areas which may remain inactive for long periods of time.

    REPORT DUE DATE: April 15, 2007

21. The Discharger shall submit to the Regional Board an updated closure and post-closure maintenance plan (Closure Plan). The Closure Plan shall describe the methods and controls to be used to assure protection of the quality of surface and groundwater during partial and final closure operations and during any proposed subsequent use of the land. The Closure Plan shall include:
    - A description of the final cover, designed in accordance with all applicable State and Federal regulations and the methods and procedures to be used to install the cover.
    - An estimate of the largest area of Waste Management Unit requiring a final cover at any time during the active life.
    - An estimate of the maximum inventory of wastes on-site over the active life of the Landfill.
    - A schedule for completing all activities necessary to satisfy all closure criteria as

required by CCR Title 27 and 40 CFR Parts 257 and 258 regulations.

- An estimate of closure and post closure maintenance costs.
- A proposal for a trust fund or equivalent financial arrangement to provide sufficient funding for closure and post-closure maintenance.
- The amount to be deposited in the trust fund or equivalent financial arrangement each year.

The Closure Plan shall be prepared by or under the supervision of a California Registered Civil Engineer or Certified Engineering Geologist. Updates of the plan are required whenever substantial changes occur or five years has elapsed since the last major revision. The method, identified for each Module's closure and protection of the quality of surface and groundwater, shall comply with this Order. The Closure Plan report shall be consistent with all applicable state and federal regulations, including CCR Title 27 and 40 CFR Parts 257 and 258.
REPORT DUE DATE: August 18, 2006

22. The Discharger shall submit a technical report providing the design of liner components for the Expansion Modules. This design report shall include, but is not limited to, all waste containment and design elements included above in **Specification 20**. This report shall also include evaluation of all landfill-siting criteria, including liquefaction potential and elevated groundwater conditions. A proposed schedule for construction activities with real calendar dates shall be included with this report. The liner system design report shall be acceptable to the Executive Officer, prior to installation.
REPORT DUE DATE: 180 Days prior to construction.

23. The Discharger shall submit a technical report providing detailed procedures for leachate collection and removal system testing. This design report shall address the requirements of CCR Title 27, Section 20340 (d). The leachate collection and removal system testing report shall be acceptable to the Executive Officer, prior to implementation.
REPORT DUE DATE: April 15, 2003

24. The leachate collection and removal system shall be tested annually to demonstrate proper operation. The results of the test shall be compared with previous tests and included in the Compliance Report.

25. The Regional Board considers the Discharger to have a continuing responsibility for correcting any problems, which may arise in the future as a result of this waste discharge. This responsibility continues as long as the waste poses a threat to water quality.

26. The Discharger shall notify the Regional Board in writing of any proposed change in ownership or responsibility for construction or operation of the Landfill in accordance with CCR Title 27, Section 21710 (c)(1). Failure to submit the notice in writing shall be considered a violation of §13264 of the Water Code. The written notice shall be given at least 90-days prior to the effective date of change in ownership or responsibility and shall:
    - Be accompanied by an amended Report of Waste Discharge and any technical documents that are needed to demonstrate continued compliance with these Waste Discharge Requirements.
    - Contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Regional Board.
    - Contain a statement indicating that the new owner or operator assumes full responsibility for compliance with this Order.

    Request for change in ownership or responsibility may be approved or disapproved in writing by the Executive Officer. In the event of any change in ownership of this Landfill, the Discharger shall notify the succeeding owner or operator, in writing, of the existence of this Order. A copy of that notification shall be sent to the Executive Officer.

27. At any time, the Discharger may file a written request (including appropriate supporting

documents) with the Regional Board Executive Officer, proposing appropriate modifications to the Monitoring and Reporting Program. The Executive Officer either shall reject the proposal for reasons listed, or shall incorporate it into a revised Monitoring and Reporting Program. The Discharger shall implement any changes in the Monitoring and Reporting Program proposed by the Executive Officer upon receipt of a revised Monitoring and Reporting Program.

28. The Discharger shall notify the Executive Officer at least 180 days prior to beginning any partial or final Landfill closure activities. The notice shall include a statement that all closure activities will conform to the most recently approved Closure Plan and that the Plan provides for closure in compliance with all applicable State and Federal regulations. If there is no approved Closure Plan, the Discharger must submit a complete Closure Plan at least 240 days prior to beginning any Landfill closure activities.

29. The Regional Board shall be allowed, at any time and without prior notification:
    - Entry upon the Landfill or where records must be kept under the conditions of this Order and MRP No. R3-2002-0065.
    - Access to copy any records that must be kept under the conditions of this Order and MRP No. R3-2002-0065.
    - To inspect any facility, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order and MRP No. R3-2002-0065.
    - To photograph, sample, and monitor for the purpose of showing compliance with this Order.

30. Except for data determined to be confidential under Section 13267 (b) of the California Water Code, all reports prepared in accordance with this Order are considered public record and shall be sent to the appropriate contact at the Integrated Waste Management Board and County Environmental Health Department. All report shall be signed as follows:
    - For a public agency - by either a principal executive officer or ranking elected official*.
    - For a partnership or sole proprietorship - by a general partner or the proprietor, respectively*.
    - For a corporation - by a principal executive officer of at least the level of vice president*.
    - For **engineering reports** and monitoring reports- by a California Registered Civil Engineer or Certified Engineering Geologist.

*or their "duly authorized representative."

31. Any person signing a report makes the following certification, whether its expressed or implied:

    "I certify under penalty of perjury I have personally examined and am familiar with the information submitted in this document and all attachments and, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

32. Any person who violates Waste Discharge Requirements and/or who intentionally or negligently discharges waste or causes or permits waste to be deposited where it is discharged into waters of the State is liable for civil and/or criminal remedies, as appropriate, pursuant to Section 13350, 13385, and 13387 of the California Water Code.

33. Provisions of this Order are severable. If any provision of this Order is found invalid, the remainder of this Order shall not be affected.

34. This Order does not authorize commission of any act causing injury to the property of another, does not convey any property rights of any sort, does not remove liability under federal, state, or local laws, and does not guarantee a capacity right.

35. The Discharger must comply with all conditions of these Waste Discharge Requirements. Violations may result in enforcement actions, including Regional Board orders or court orders requiring corrective action or imposing civil monetary

liability, or in modification or revocation of these Waste Discharge Requirements by the Regional Board. [CWC Section 13261, 13263, 13265, 13267, 13268, 13300, 13301, 13304, 13340, 13350].

The Discharger shall comply with the following submittal and implementation schedule for all tasks and/or reports required by this Order:

REPORT AND TASK IMPLEMENTATION DATE SUMMARY

REPORT/TASK	IMPLEMENTATION DATE
Wet Weather Preparedness Report [Provision No. E.16]	**October 1**, of each year
Financial Assurance Report [Provision No. E.17]	**December 20, 2002** and every five years thereafter
Survey Coordinate Report [Provision No. E.18]	**April 15, 2003** for Active lined and unlined areas **30 days** after completion of construction
Joint Technical Document [Provision No. E.20]	**April 15, 2007**
Closure Plan [Provision No. E.21]	**August 18, 2006**
Liner Design Report [Provision No. E.22]	**180 days** prior to construction
Leachate Collection and Removal System Testing Report. [Provision No. E.23]	**April 15, 2003**

I, Roger W. Briggs, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Coast Region, on November 1, 2002.

Executive Officer

Figures: Figure 1 – Vicinty Map
Figure 2 – Site Map & Expansion Areas
Figure 3 – Groundwater Basin Map
Figure 4 – Well & Spring Location Map
Figure 5 – Fault Location Map
Attachment: Attachment A –Monitoring and Reporting Program No. R3-2002-0065

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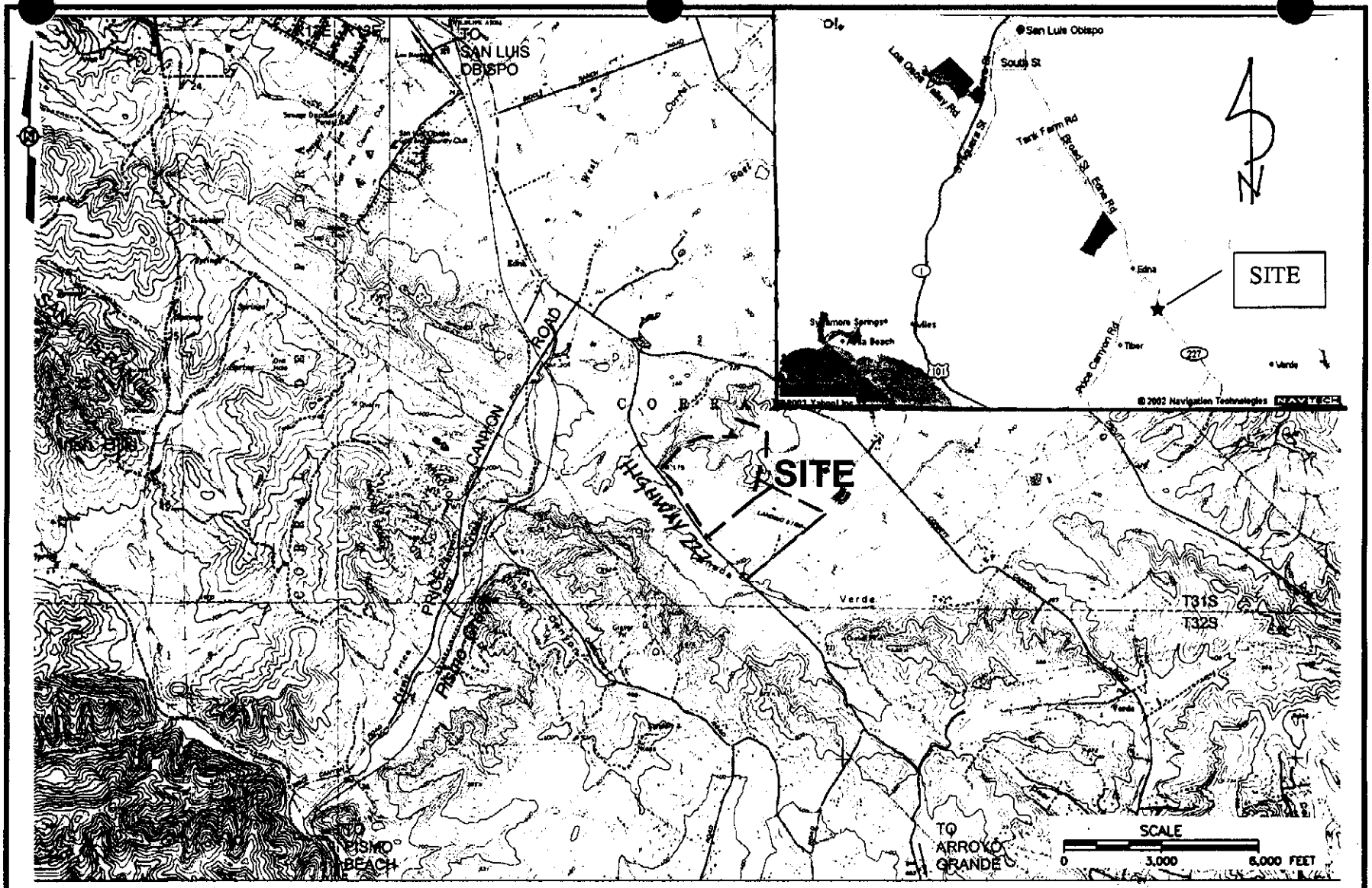

LAND DISPOSAL UNIT
CENTRAL COAST REGIONAL WATER QUALITY CONTROL BOARD

COLD CANYON LANDFILL
COUNTY OF LUIS OBISPO, CALIFORNIA

VICINITY MAP

FIGURE

1

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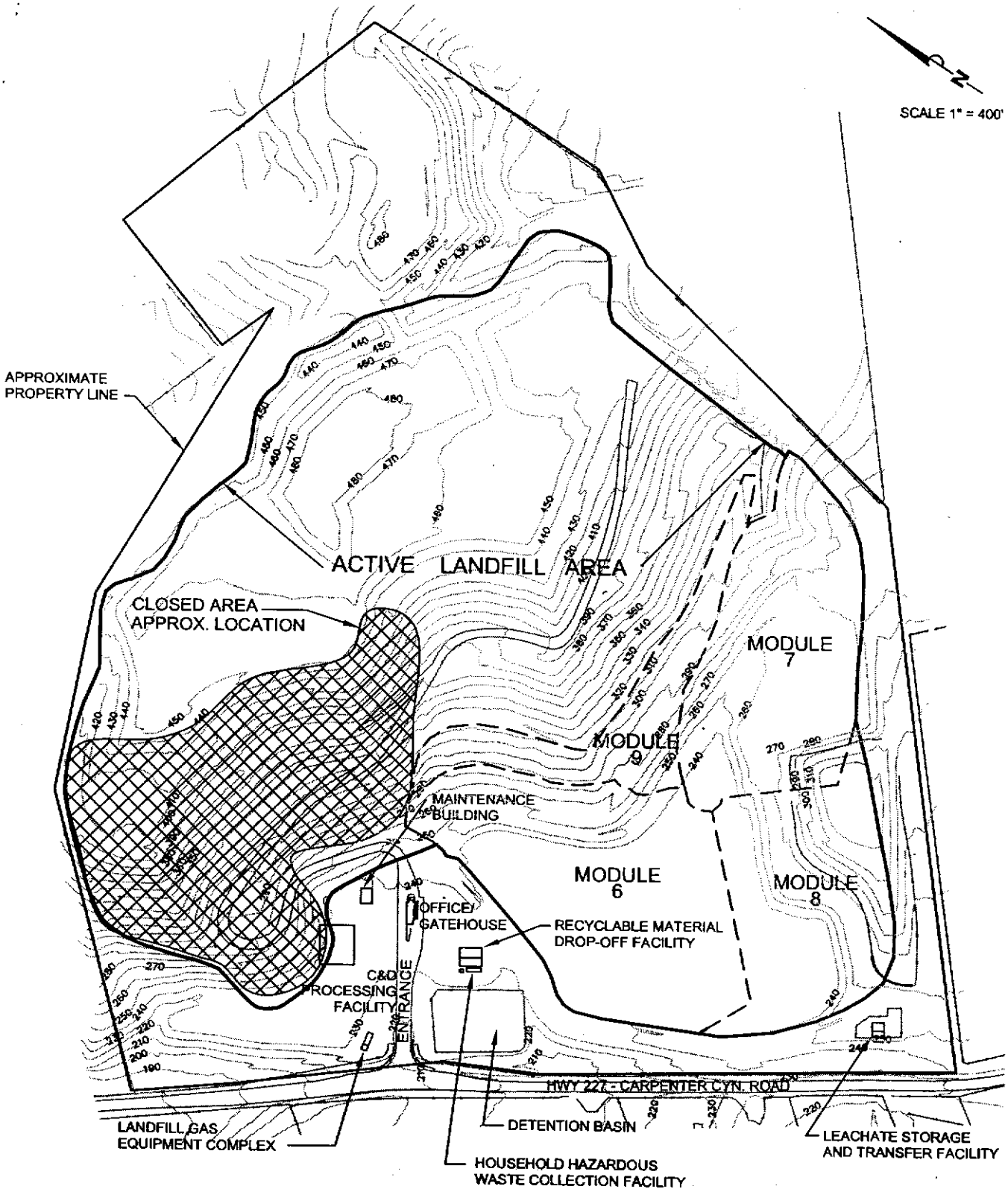

Cold Canyon Class III Landfill
County of San Luis Obispo

SITE MAP & EXPANSION AREAS

FIGURE
2

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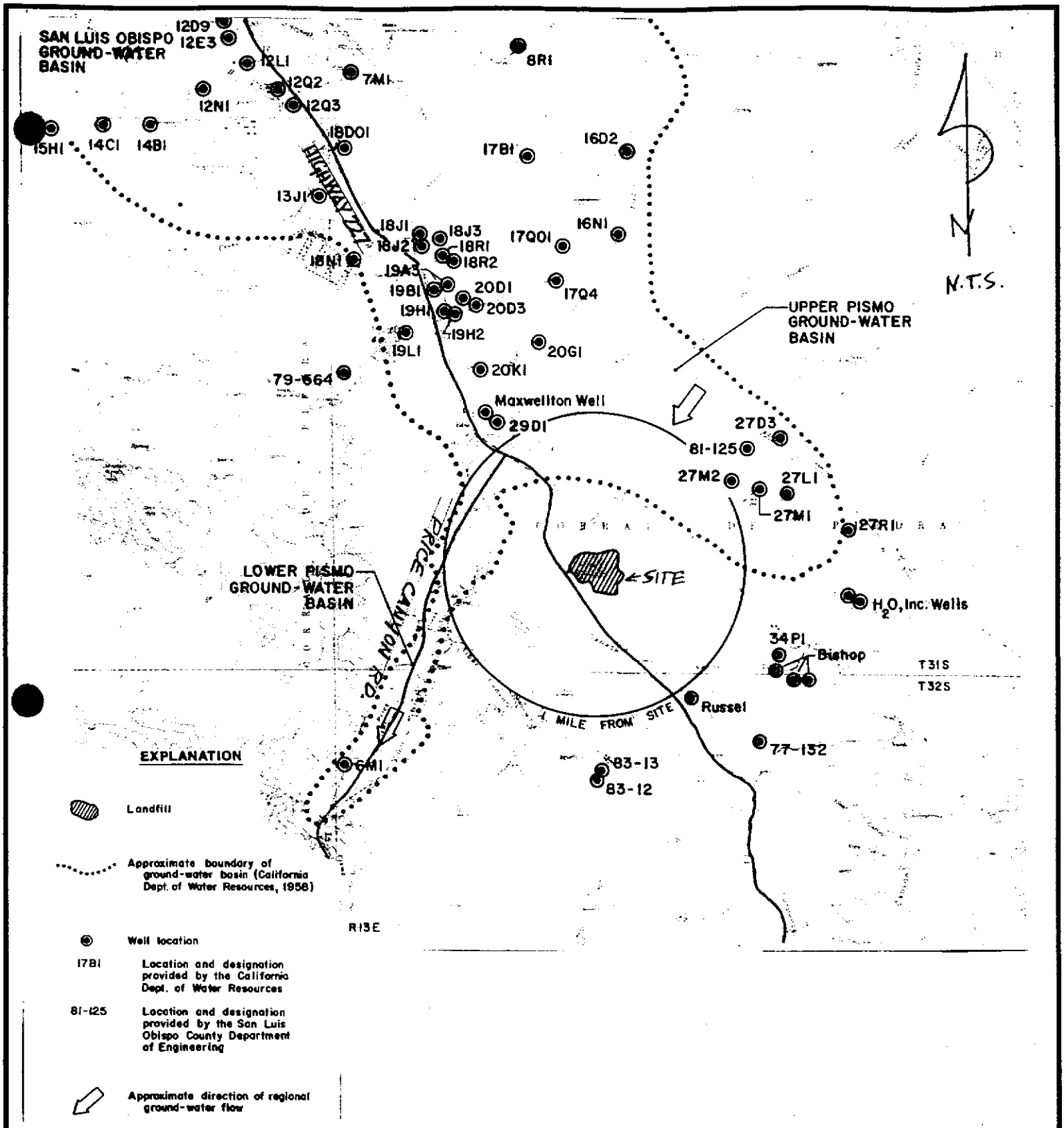

LAND DISPOSAL UNIT
CENTRAL COAST REGIONAL WATER QUALITY CONTROL BOARD

Cold Canyon Class III Landfill
County of San Luis Obispo

GROUNDWATER BASIN MAP

FIGURE 3

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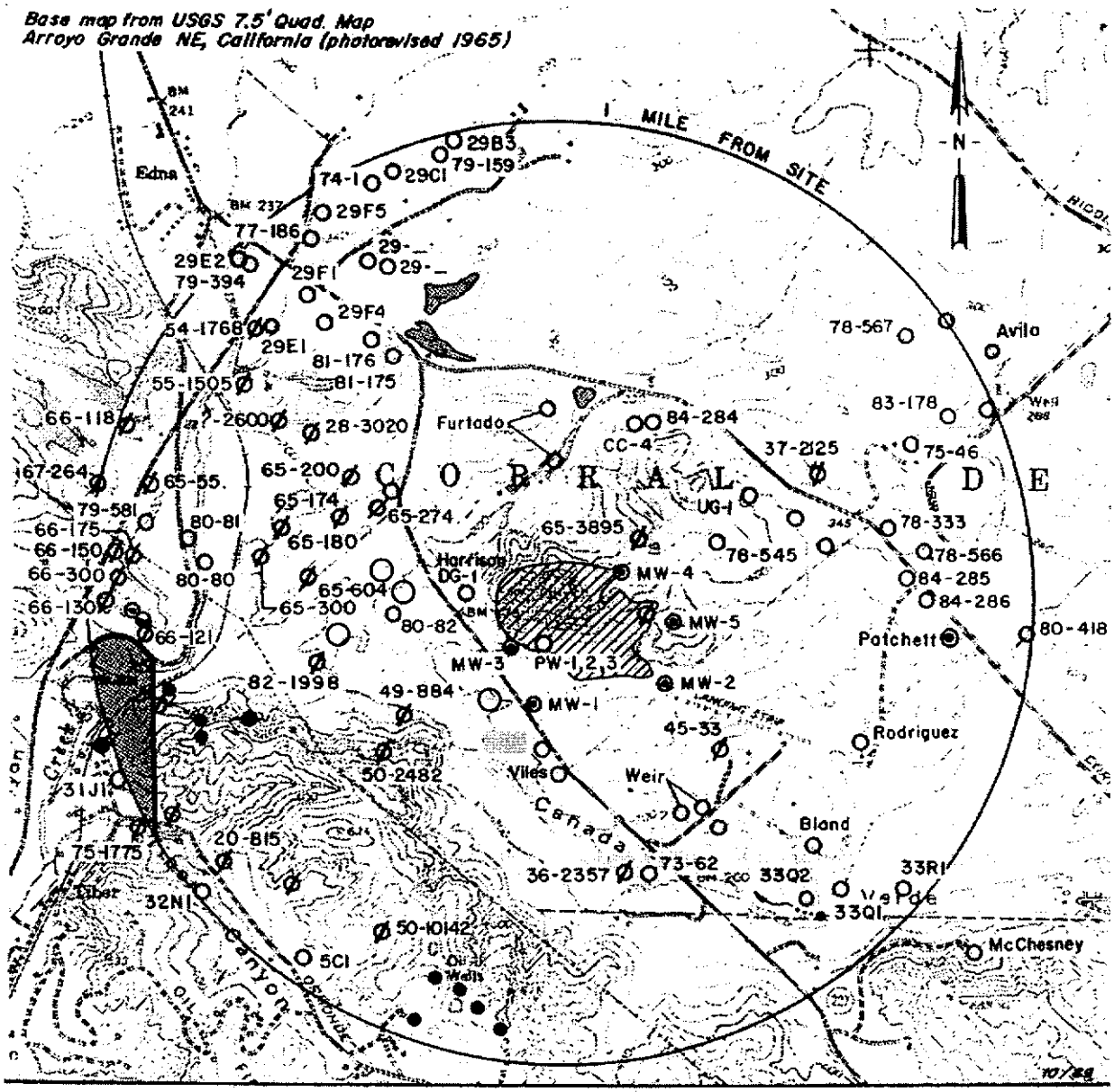

EXPLANATION

- Monitoring well
- Water production well
- 29E1 Designation and location provided by the California Dept. of Water Resources
- 80-82 Designation and location provided by the San Luis Obispo Co. Department of Engineering
- Oil well, active
- Oil well, under construction
- Plugged and abandoned dry hole
- Plugged and abandoned oil well
- All oil well designations and locations provided by the California Dept. of Oil and Gas
- Spring
- Spring-fed pond
- Arroyo Grande Oil Field; shaded area contains 26 active oil wells, 5 wells under construction, and 6 steam injection wells
- Landfill operations

Scale: 0 — 2000 Feet

Cold Canyon Class III Landfill
County of San Luis Obispo

WELL & SPRING LOCATION MAP

FIGURE 4

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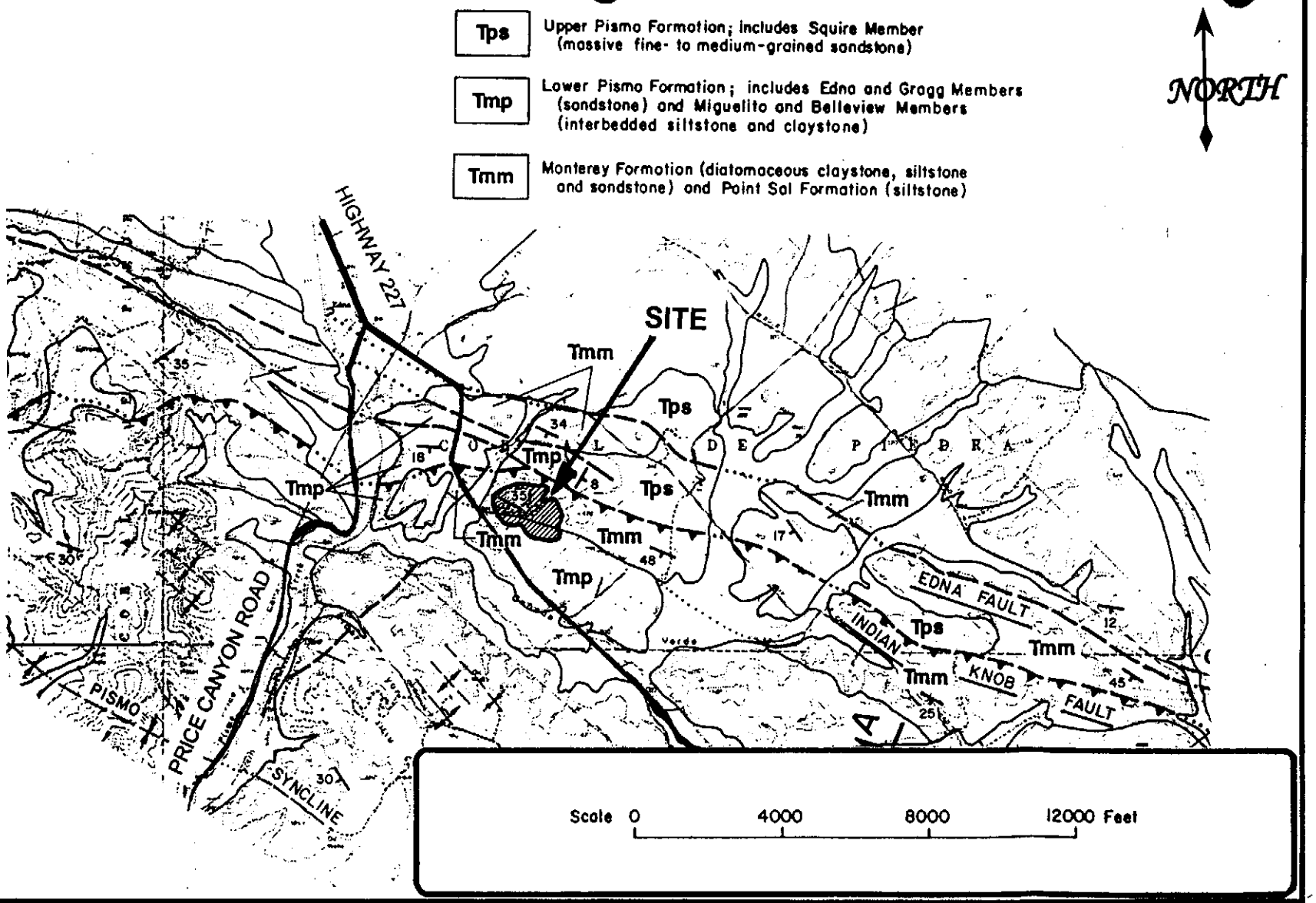

LAND DISPOSAL UNIT
CENTRAL COAST REGIONAL WATER QUALITY CONTROL BOARD

COLD CANYON LANDFILL
COUNTY OF LUIS OBISPO, CALIFORNIA

FAULT LOCATION MAP

FIGURE
5

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STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION
81 Higuera Street, Suite 200
San Luis Obispo, CA 93401-5427

REVISED MONITORING AND REPORTING PROGRAM NO. R3-2002-0065

Waste Discharger Identification No. 3 400310001

FOR

COLD CANYON CLASS III LANDFILL

San Luis Obispo County

PART I: MONITORING AND OBSERVATION SCHEDULE

Unless otherwise indicated, all monitoring and observations shall be reported as outlined in Part IV.

A. SITE INSPECTIONS

The Discharger shall inspect the Landfill in accordance with the following schedule, and record, at a minimum, Standard Observations.

Site Inspection Schedule:

1. During the wet season (October through April), following each storm which produces storm water discharge, with inspections performed at least monthly.
2. During the dry season a minimum of one inspection every three months.

B. INTAKE MONITORING

The Discharger shall maintain a daily record of the waste stream. The record shall include the following:

1. Weight and volume of waste received.
2. Running totals of volume received, volume remaining for waste placement, and Landfill life expectancy.
3. Current fill area.
4. Log of random load checking program. The log shall contain a record of refused loads, including the type of waste refused, and the date, name, address, and phone number of the party attempting to dispose of the waste.

C. LEACHATE AND DRAINAGE SYSTEMS INSPECTIONS

1. The Discharger shall inspect leachate systems and record the following information:
   a. Weekly; leachate containment system integrity, record volume of leachate collected and disposal method used.
   b. Quarterly; pumping system operational check; Annually; leachate collection and removal system testing as required by CCR Tile 27, Section 20340 (d), and an Executive Officer accepted monitoring plan. The absence or presence of biofouling shall be addressed in the inspection report.
   c. At sites where leachate is used for dust control, testing that shows the leachate is non-hazardous shall be submitted annually.

2. The Discharger shall inspect drainage control systems following each Storm and record the following information:

a. Condition of facilities and liners, whether storm storage basins and drainage ditches contain liquids;
b. Any apparent seepage from storage basins.
c. Steps taken to correct any problems found during inspection and date(s) when taken.

D. RAINFALL DATA

The Discharger shall record the following information;

1. Total precipitation during the Monitoring Period.
2. Number of Storms received during Monitoring Period.
3. Return rating of most intense 24 -hour storm (25 year, 100 year, and so on).

E. ANALYTICAL MONITORING

1. Sampling, Analyses, and Reporting Schedule: The Discharger shall monitor the site's media in accordance with the following schedule(s). Monitoring locations are shown on **Figure A-1**. Sampling, analyses, and reporting are also discussed in and shall comply with Parts II, III, and IV.
   a. Detection and Evaluation Monitoring: See Table 2 below.
   b. Constituent of Concern Monitoring: The Constituent of Concern (COC) parameter includes constituents listed in Table 1 below. Monitoring for COC shall encompass only those Constituents of Concern that do not also serve as Monitoring Parameters. Analysis of Constituents of Concern shall be carried out once every five years at each of the site's groundwater monitoring points, unless required more frequently due to indication of release (Part IV.C.4). Wells that have not previously been sampled for COC or not sampled within the past 54 months, shall be sampled and analyzed for all COC within six months of this program becoming effective.

2. Groundwater Flow Rate and Direction:
   For each monitored groundwater body, the Discharger shall measure the water level in each well, at least quarterly, including the times of expected highest and lowest elevations of the water level, and determine the presence of horizontal and vertical gradients, and groundwater flow rate and direction for the respective groundwater body.

3. Sample Procurement Limitation for any given monitored medium, the samples taken from Monitoring Points to satisfy the data analysis requirements for a given Monitoring Period shall be taken within a span not exceeding 30 days, and shall be taken in a manner that ensures sample independence to the greatest extent feasible [CCR Title 27, Section 20415(e)(12)(B)]. Sampling for successive monitoring periods shall occur at least 30 days apart.

Table 1.
Constituents Of Concern

CONSTITUENTS	METHOD[1]	UNITS
Antimony	6010	mg/l
Arsenic	7060	mg/l
Barium	6010	mg/l
Beryllium	6010	mg/l
Cadmium	6010	mg/l
Chromium	6010	mg/l
Cobalt	6010	mg/l
Copper	6010	mg/l
Cyanide	9010	mg/l
Lead	7421	mg/l
Mercury	7470	mg/l
Nickel	6010	mg/l
Selenium	7740	mg/l
Silver	6010	mg/l
Sulfide	9030	mg/l
Thallium	7841	mg/l
Tin	6010	mg/l
Vanadium	6010	mg/l
Zinc	6010	mg/l
Chlorophenoxy Herbicides	8150	µg/l
Organochlorine Pesticides	8081	µg/l
PCBs	8082	µg/l
Organophosphorus Pesticides	8141	µg/l
Semi-Volatile Organic Compounds	8270	µg/l
Volatile Organic Compounds, Appendix II*	8260	µg/l

[1] The Discharger shall analyze for all constituents using the USEPA analytical methods indicated above or the most recently approved SW-846 USEPA method or other equivalent USEPA method.
* Includes MTBE.

TABLE 2
Detection and Corrective Action Monitoring

Sample Location	Monitoring Program			VOC[2] Monitoring Frequency	Inorganic-Parameter[3] Monitoring Frequency
	Detection	Corrective Action	Other		
MW-1*	X			Quarterly	Quarterly
MW-2		X		Quarterly	Semi-Annually
MW-3*	X	X		Quarterly	Semi-Annually
MW-5	X			Quarterly	Quarterly
P-1A			X	Annually (alternating between high and low groundwater)	Annually (alternating between high and low groundwater)
P-1B	X			N/A	Quarterly
P-2			X	Every 3 Years (alternating between high and low groundwater)	Every Three Years (alternating between high and low groundwater)
P-3A*	X	X		Quarterly	Semi-Annually
P-3B	X			N/A	Quarterly
P-4			X	Annually (alternating between high and low groundwater)	Annually (alternating between high and low groundwater)
P-5, P-8, P-9	X			Quarterly	Quarterly
P-6			X	Annually (alternating between high and low groundwater)	Annually (alternating between high and low groundwater)
P-7*	X			Quarterly	Semi-Annually
Sump Lysimeter	X			Yearly (when liquid is present)	Yearly (when liquid is present)
DB-1, HD-1, HD-2	X			N/A	Twice during wet season
COMP-1, RES-1	X			N/A	Twice during wet season
Leachate	X			Yearly (from the tank)	Yearly (from the tank)
LF Gas[1]	X			Annually	N/A

* Wells MW-1,3, P-3A and P-7 are in detection monitoring for VOCs and evaluation monitoring for inorganic parameters, media types are listed on Table 3.

[1] Sample collection port at gas collection system header

[2] Volatile Organic Compounds: USEPA method 8260(b) for groundwater, method TO-14 for landfill gas (or approved EPA method)

[3] **Groundwater** inorganic parameters: Laboratory: chloride, arsenic, manganese, sulfate
Field: pH, EC, temperature, turbidity, dissolved oxygen

Storm Water inorganic parameters:
Laboratory: pH, total suspended solids, EC, and total organic carbon or O&G, iron, turbidity, pesticides (COMP-1 only).

Table 3
Media Monitoring Points

Monitoring Point	Media Monitored
MW-1	Groundwater
MW-2	Groundwater
MW-3	Groundwater
MW-5	Groundwater
P-1A	Groundwater
P-1B	Groundwater
P-2	Groundwater
P-3A	Groundwater
P-3B	Groundwater
P-4 through P-9	Groundwater
DB-1, HD-1, HD-2	Storm Water
COMP-1, RES-1	Storm Water
LF Gas	Landfill Gas
Sump & Lysimeter	Leachate

PART II: SAMPLE COLLECTION AND ANALYSIS

A. SAMPLING AND ANALYTICAL METHODS

Sample collection, storage, and analysis shall be performed according to the most recent version of Standard USEPA Methods (USEPA publication "SW-846"), and in accordance with a sampling and analysis plan acceptable to the Executive Officer. A State of California approved laboratory shall perform water analysis. Specific methods of analysis must be identified. The director of the laboratory whose name appears on the certification shall supervise all analytical work in his/her laboratory and shall sign reports of such work submitted to the Board. In addition, the Discharger is responsible for seeing that the laboratory analysis of samples from Monitoring Points meets the following restrictions:

1. The methods of analysis and the detection limits used must be appropriate for the expected concentrations. For detection monitoring of any constituent or parameter that is found in concentrations which produce more than 90% non-numerical determinations (i.e., Trace) in historical data for that medium, the SW-846 analytical method having the lowest Method Detection Limit (MDL) shall be selected.

2. Trace results (results falling between the MDL and the Practical Quantitation Limit (PQL)) shall be reported as such.

3. Method Detection Limits and Practical Quantitation Limits shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. Both limits are defined in Part V and shall reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the laboratory. If the laboratory suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived values, the results shall be flagged accordingly, and an estimate of the limit actually achieved shall be included.

4. Quality assurance and quality control (QA/QC) data shall be reported along with the sample results to which it applies. Sample results shall be reported unadjusted for blank results or spike recovery. The QA/QC data submittal shall include:
   a. The method, equipment, and analytical detection limits.
   b. The recovery rates, an explanation for any recovery rate that is outside the USEPA-specified recovery rate.
   c. The results of equipment and method blanks.
   d. The results of spiked and surrogate samples.
   e. The frequency of quality control analysis.
   f. The name and qualifications of the person(s) performing the analyses.

5. QA/QC analytical results involving detection of common laboratory contaminants in any sample shall be reported and flagged for easy reference.

6. Non-targeted chromatographic peaks shall be identified, quantified, and reported to a reasonable extent. When significant unknown peaks are encountered, second column or second method confirmation procedures shall be performed in an attempt to identify and more accurately quantify the unknown analyte(s).

B. CONCENTRATION LIMIT DETERMINATION

1. For the purpose of establishing Concentration Limits for COC and Monitoring Parameters detected in greater than ten percent of a medium's samples the Discharger shall:
   a. Statistically analyze existing monitoring data (Part III), and propose, to the Executive Officer, statistically derived Concentration Limits for each Constituent of Concern and each Monitoring Parameter at each Monitoring Point for which sufficient data exists.
   b. In cases where sufficient data for statistically determining Concentration Limits does not exist the Discharger shall collect samples and analyze for Constituent(s) of Concern and Monitoring Parameter(s) which require additional data. Once sufficient data is obtained the Discharger shall submit proposed Concentration Limit(s) to the Executive Officer for approval. This procedure shall take no longer than two calendar years.
   c. Sample and analyze new Detection Monitoring Points, including any added by this Order, until sufficient data is available to establish a proposed Concentration Limit for all COC and Monitoring Parameters. Once sufficient data is obtained the Discharger shall submit the proposed Concentration Limit(s) to the Executive Officer for approval. This procedure shall take no longer than two calendar years.

2. The Discharger shall review Concentration limits annually. The past years data will be reviewed for application to revision of concentration limits. When appropriate, new concentration limits shall be proposed.

C. RECORDS TO BE MAINTAINED

Analytical records shall be maintained by the Discharger or laboratory, and shall be retained for a minimum of five years. The period of retention shall be extended during the course of any unresolved litigation or when requested by the Executive Officer. Such records shall show the following for each sample:

1. Identity of sample and the actual Monitoring Point designation from which it was taken, along with the identity of the individual who obtained the sample.
2. Date and time of sampling.
3. Date and time that analyses were started and completed, and the name of personnel performing each analysis.
4. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used.
5. Results of analyses, and Method Detection Limit and Practical Quantitation Limit for each analysis.

PART III: STATISTICAL AND NON-STATISTICAL ANALYSIS OF DATA

A. STATISTICAL ANALYSIS

1. For Detection Monitoring, the Discharger shall use statistical methods to analyze COC and Monitoring Parameters that exhibit concentrations that equal or exceed their respective MDL in at least ten percent of applicable historical samples. The Discharger may propose and use any statistical method that meets the requirements of California Code of Regulations, Title 27, §20414(e)(7). All statistical methods and programs proposed by the Discharger are subject to Executive Officer approval.
2. For wells in Corrective Action, The Discharger shall use the Mann Kendall trend analysis to evaluate changes in inorganic water-quality data or another method acceptable to the Executive Officer.

B. NON-STATISTICAL METHOD

The Discharger shall use the following non-statistical method for analyzing constituents, which are detected in less than 10% of applicable historical samples. This method involves a two-step process:

1. From constituents to whom the method applies, compile a specific list of those constituents, which exceed their respective MDL. The list shall be compiled based on either data from the single sample or in cases of multiple independent samples, from the sample, which contains the largest number of constituents.
2. Evaluate whether the listed constituents meet either of two possible triggering conditions. Either the list from a single well contains two or more constituents, or contains one constituent, which equals or exceeds its Practical Quantitation Limit. If either condition is met, the Discharger shall conclude that a release is tentatively indicated and shall immediately implement the appropriate re-test procedure under Part III.C.

C. RE-TEST PROCEDURE

1. In the event that the Discharger concludes that a release has been tentatively indicated, the Discharger shall carry out the reporting requirements of Part IV.C.2 and, within 30 days of receipt of analytical results, collect two new suites of samples for the indicated COC or Monitoring Parameter(s) at each indicating Monitoring Point, collecting at least as many samples per Monitoring Point as were used for the initial test.
2. Analyze each of the two suites of re-test analytical results using the same statistical method (or non-statistical comparison) that provided the tentative indication of a release. If the test results of either (or both) of the re-tested data suites confirm the original indication, the Discharger shall conclude that a release has been discovered and shall carry out the requirements of Part IV.C.

   Re-tests shall be carried out only for the Monitoring Point(s) for which a release is tentatively indicated, and only for the COC or Monitoring Parameter(s) which triggered the indication. When an analyte of the VOC composite parameter is re-tested the results of the entire VOC composite shall be reported.

PART IV: REPORTING

A. MONITORING REPORT

A written Monitoring Report shall be submitted semi-annually by January 31 and July 31 of each year. Monitoring Reports will be submitted in an electronic format, with text, tables, figures, laboratory analytical data, and appendices placed on a compact disc in PDF or JPEG format. Accompanying the electronic version of the report will be a hard copy transmittal letter, with signatures of preparers and submitters, (in accordance with requirements stated in Waste Discharge Requirements Order No. R3-2002-0065), along with an executive summary of the report text. Additionally, monitoring reports shall be prepared and signed by a registered civil engineer or geologist. The Monitoring Report shall address all Landfill monitoring facts. Reports shall include, but should not be limited to, the following:

1. Letter of Transmittal

A letter transmitting the essential points shall accompany each report. Such a 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. If the Discharger has previously submitted a detailed time schedule for correcting said requirement violations, a reference to the correspondence transmitting such schedule will be satisfactory. If no violations have occurred since the last submittal, this shall be stated in the letter of transmittal. Monitoring reports and the letter transmitting the monitoring reports shall be signed by a principal executive officer at the level of vice president or above, or by his/her duly authorized representative, if such a representative is responsible for the overall operation of the facility from which the discharge originates. The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true, complete, and correct.

2. Sampling Summary

The summary shall contain at least:

a. For each monitored groundwater body, a description and graphical presentation of

the velocity and direction of groundwater flow under/around the Unit, based upon water level elevations taken during the collection of the water quality data submitted in the report.

b. For each monitoring well addressed by the report: a description of the method and time of water level measurement, the type of pump used for purging and the placement of the pump in the well, and the method of purging (the pumping rate, the equipment and methods used to monitor field pH, temperature, and conductivity during purging, the calibration of the field equipment, results of the pH, temperature, conductivity, and turbidity testing, the well recovery time, and the method of disposing of the purge water).

c. For each Monitoring Point and Background Monitoring Point addressed by the report, a description of the sampling procedure (number of samples, field blanks, travel blanks, and duplicate samples taken; the type of containers and preservatives used; the date and time of sampling; the name and qualifications of the person actually taking the samples; description of any anomalies).

3. **Graphical Presentation of Analytical Data**
For each Monitoring Point in each medium, submit, in graphical format, the complete history of laboratory analytical data. Graphs shall effectively illustrate trends and/or variations in the laboratory analytical data. Each graph shall plot a single constituent concentration over time at one (for intra-well comparison) or more (for inter-well comparisons) monitoring points in a single medium. Maximum contaminant levels (MCL) and/or concentration limits shall be graphed along with constituent concentrations where applicable. When multiple samples are taken, graphs shall plot each datum, rather than plotting mean values.

4. **Corrective Action Summary**
Discuss significant aspects of any corrective action measures conducted during the monitoring period. Calculate pollutant load removed from the sites impacted media by mass (water, gas, leachate) removal system(s). Mass removal calculations shall be based on actual analytical data as required by Part I.E. Present discussion and indications relating mass removal data to the violation the corrective action is addressing.

5. **Laboratory Results**
Laboratory results and statements demonstrating compliance with Part II of this Monitoring and Reporting Program. Additionally results of sampling and analyses performed at the Landfill, outside the requirements of this Monitoring and Reporting Program, shall be summarized and reported.

6. **Standard Observations**
A summary and certification of completion of all Standard Observations (Part V.I) for the Landfill, for the perimeter of the landfill, and for the Receiving Waters.

7. **Leachate Collection and Detection Systems**
A summary of the total volume of leachate collected each month since the previous Monitoring Report for the leachate collection.

8. **Map(s)**
A map or aerial photograph showing monitoring locations, relative physical features, and groundwater contours to the greatest degree of accuracy possible.

B. ANNUAL SUMMARY REPORT

The Discharger shall submit an annual report to the Board covering the previous monitoring year. The annual Monitoring Period ends December 31. This report may be combined with the final Monitoring Report of the year and shall be submitted no later than January 31 each year. The annual report must include the information outlined above and the following:

1. **Discussion**
Include a comprehensive discussion of the compliance record, a review of the past year's significant monitoring system and operational changes, a summary of corrective action results and milestones, and a review of construction projects, with water quality significance,

completed or commenced in the past year or planned for the up-coming year.

2. **Graphical Presentation of Analytical Data**
For each Monitoring Point and Background Monitoring Point, submit in graphical format the laboratory analytical data for all samples taken within at least the previous five calendar years. Each such graph shall plot the concentration of one or more constituents over time for a given Monitoring Point or Background Monitoring Point, at a scale appropriate to show trends or variations in water quality. Maximum contaminant levels (MCL) shall be graphed along with constituent concentrations where applicable. Graphs shall plot each datum, rather than plotting mean values. For any given constituent or parameter, the scale for background plots shall be the same as that used to plot downgradient data.

3. **Analytical Data**
All monitoring analytical data obtained during the previous year, presented in tabular form as well as on **CDROM**, in MS-EXCEL format or in another file format acceptable to the Executive Officer. Additionally, complete data histories of each well shall be submitted on **CDROM**.

4. **Leachate Results**
Results of annual leachate collection and leachate detection system testing, as required by Part I.C. Where leachate is used for dust control, testing that shows the leachate is non-hazardous shall be submitted annually.

5. **Map(s)**
A map showing the areas where filling has taken place during the previous calendar year. Indicate areas, if any, in which filling has been completed or intermediate cover has been placed.

C. CONTINGENCY RESPONSE

1. **Leachate Seep**
The Discharger shall, within 24 hours report by telephone concerning the discovery any previously unreported seepage from the disposal area. A written report shall be filed with the Board 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.
   c. **Description** - A description of the nature of the discharge (e.g., all pertinent observations and analyses).
   d. **Location** – Location of sample(s) collected for laboratory analysis, as appropriate.
   e. **Corrective measures** - approved (or proposed for consideration) by the Regional Water Board Executive Officer.

2. **Response to an Initial Indication of a Release**
Should the initial statistical or non-statistical comparison (under Part III. A. or B. of this Monitoring and Reporting Program) indicate that a release is tentatively identified, the Discharger shall;
   a. Within 24 hours, notify their designated Regional Water Board staff contact verbally as to the Monitoring Point(s) and constituents) or parameter(s) involved;
   b. Provide written, notification by certified mail within seven days of such determination; and
   c. Either of the following:
      i. Shall carry out a discrete re-test in accordance with Part III.C. If the re-test confirms the existence of a release or the Discharger fails to perform the re-test, the Discharger shall carry out the requirements of Part IV.C.4. In any case, the Discharger shall inform the Board of the re-test outcome within 24 hours of results becoming available, following up with written results submitted by certified mail within seven days.
      ii. Make a determination, in accordance with Title 27, §20420(k)(7), that a source other than the waste management unit caused the release or that the evidence is an artifact caused by an error in sampling, analysis, or statistical evaluation or by natural variation in the groundwater, surface water, or the unsaturated zone.

3. **Physical Evidence of a Release**
If either the Discharger or the Regional Board Executive Officer determines that there is significant physical evidence of a release Title 27, Section 20385(a)(3), the Discharger shall conclude that a release has been discovered and shall:
   a. Within seven days notify the Regional Water Board of this fact by certified mail (or acknowledge the Regional Water Board's determination).
   b. Carry out the requirements of Part IV.C.4. for all potentially-affected monitored media.
   c. Carry out any additional investigations stipulated in writing by the Regional Water Board Executive Officer for the purpose of identifying the cause of the indication.

4. **Release Discovery Response**
If the Discharger concludes that a release has been discovered the following steps shall be carried out:
   a. If this conclusion is not based upon monitoring for all COC the Discharger shall sample for all COC at all Monitoring Points in the affected medium. Within seven days of receiving the laboratory analytical results, the Discharger shall notify the Executive Officer, by certified mail, of the concentration of all COC at each Monitoring Point. This notification shall include a synopsis showing, for each Monitoring Point, those constituents that exhibit an unusually high concentration.
   b. The Discharger shall, within 90 days of discovering the release, submit an Amended Report of Waste Discharge proposing an Evaluation Monitoring and Reporting Program that;
      i. Meets the requirements of Title 27, §20420 and §20425.
      ii. Satisfies the requirements of 40 CFR §258.55(g)(l)(ii) by committing to install at least one monitoring well at the facility boundary directly downgradient of the center of the release.
   c. The Discharger shall, within 180 days of discovering the release, submit a preliminary engineering feasibility study meeting the requirements of Title 27, Section 20430.
   d. The Discharger shall immediately begin delineating the nature and extent of the release by installing and monitoring assessment wells as necessary to assure that the Discharger can meet the requirements of Title 27, Section 20425 to submit a delineation report within 90 days of when the Executive Officer directs the Discharger to begin the Evaluation Monitoring and Reporting Program.

5. **Release Beyond Facility Boundary**
Any time the Discharger concludes (or the Regional Board Executive Officer directs the Discharger to conclude) that a release from the Unit 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. Initial notification to Affected Persons shall be accomplished within 14 days of making this conclusion and shall include a description of the Discharger's current knowledge of the nature and extent of the release.
   b. Subsequent to initial notification, the Discharger shall provide updates to all Affected Persons, including any persons newly affected by a change in the boundary of the release, within 14 days of concluding there has been any material change in the nature or extent of the release.
   c. Each time the Discharger sends a notification to Affected Persons (under a. or b., above), 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 Affected Persons.

D. RESPONSE TO VOC DETECTION IN BACKGROUND

1. Except as indicated in D.2. below, any time the laboratory analysis of a sample from a Background Monitoring Point shows either (1) two or more VOCs above their respective

Method Detection Limit, or (2) one VOC above its respective Practical Quantitation Limit, the Discharger shall:

a. Within 24 hours, notify the Regional Board by phone that possible Background Monitoring Point contamination has occurred.
b. Follow up with written notification by certified mail within seven days.
c. Shall immediately, obtain two new independent VOC samples from that Background Monitoring Point and send them for laboratory analysis of all detectable VOCs.

2. If either or both the new samples validates the presence of VOC(s), at the Background Monitoring Point, the Discharger shall:
   a. Within 24 hours, notify the Regional Board about the VOC(s) verified to be present at that Background Monitoring Point.
   b. Provide written notification by certified mail within seven days of validation.
   c. Within 180 days of validation, submit a report, acceptable to the Executive Officer, which; examines the possibility that the detected VOC(s) originated from other than the Unit, and proposes appropriate changes to the Monitoring and Reporting Program.

3. If the Executive Officer determines, after reviewing the report submitted under Part IV.D.I. above, that the VOC(s) detected originated from a source other than the Unit, the Executive Officer will make appropriate changes to the Monitoring and Reporting Program.

4. If the Executive Officer determines, after reviewing the report submitted under Part IV.D.I., that the detected VOC(s) most likely originated from the Unit, the Discharger shall assume that a release has been detected and shall immediately begin carrying out the requirements of Part IV.C.4. of this Monitoring and Reporting Program.
   a. Initial notification to Affected Persons shall be accomplished within 14 days of making this conclusion and shall include a description of the Discharger's current knowledge of the nature and extent of the release.
   b. Subsequent to initial notification, the Discharger shall provide updates to all Affected Persons, including any persons newly affected by a change in the boundary of the release, within 14 days of concluding there has been any material change in the nature or extent of the release.
   c. Each time the Discharger sends a notification to Affected Persons (under a. or b., above), 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 Affected Persons.

PART V: DEFINITION OF TERMS

A. AFFECTED PERSONS

All individuals who either own or reside upon the land that directly overlies any part of that portion of a gas- or liquid-phase release that has migrated beyond the facility boundary.

B. CONSTITUENTS OF CONCERN (COC)

Those constituents which are likely to be in the waste in the Unit or which are likely to be derived from waste constituents, in the event of a release. The Constituents of Concern for this Unit are listed in Part I.E.3, Table A.

C. FACILITY-SPECIFIC METHOD DETECTION LIMIT (METHOD DETECTION LIMIT)

The lowest concentration at which a given laboratory, using a given analytical method, to detect a given constituent, (in spite of any Matrix Effect) can regularly differentiate, with 99% reliability, between a sample which contains the constituent and one which does not.

D. MATRIX EFFECT

Any increase in the Method Detection Limit or Practical Quantitation Limit for a given constituent as a result of the presence of other constituents, either of natural origin or introduced through a release, that are present in the sample being analyzed.

E. MONITORED MEDIUM

Water bearing media that are monitored pursuant to this Monitoring and Reporting Program. The Monitored Media may include: (1) groundwater in the uppermost aquifer, in any other portion of the zone of saturation in which it would be reasonable to anticipate that waste constituents migrating from the Unit could be detected, and in any perched zones underlying the Unit, (2) any bodies of surface water that could be measurably affected by a release, and (3) soil pare liquid beneath and/or adjacent to the Unit.

F. MONITORING PARAMETERS

A short list of constituents and parameters used for the majority of monitoring activity. The Monitoring Parameters for this Unit are listed in Part I.E of this Monitoring and Reporting Program.

G. MONITORING PERIOD

The database duration separating the submittal of a monitoring report and the time of the next report submittal. The Monitoring Period for analysis of all Constituents of Concern is five years; the monitoring frequencey for the monitoring parameters is stated in Table 1 above. Monitoring of static water level elevations, in all monitoring wells will be performed quarterly. Report submittal dates are **July 31** and **January 31**. The due date for any given report will be 30 days after the end of its Monitoring Period, unless stated otherwise.

H. PRACTICAL QUANTITATION LIMIT (PQL)

The lowest acceptable calibration standard (acceptable as defined for a linear response or by actual curve fitting) times the sample extract dilution factor times any additional factors to account for Matrix Effect. The PQL shall reflect the quantitation capabilities of the specific analytical procedure and equipment used by the laboratory. PQLs reported by the laboratory shall not simply by restated from USEPA analytical method manuals. Laboratory derived PQLs are expected to closely agree with published USEPA estimated quantitation limits (EQL).

I. STANDARD OBSERVATIONS

1. For Receiving Waters;
   a. Floating and suspended materials of waste origin; presence or absence, source, and size of affected area.
   b. Discoloration and turbidity - description of color, source, and size of affected area.
   c. Evidence of odors - presence or absence, characterization, source, and distance of travel from source.
   d. Evidence of beneficial use - presence of water-associated wildlife.
   e. Flow rate to the receiving water.
2. Along the perimeter of the Unit:
   a. Evidence of liquid leaving or entering the Unit, estimated size of affected area, and flow rate (show affected area on map).
   b. Evidence of odors; presence or absence, characterization, source, and distance of travel from source.
   c. Evidence of erosion and/or of exposed refuse.
   d. Inspection of all storm water discharge locations for evidence of non-storm water discharges during dry seasons, and integrity during wet seasons.
3. For the Unit:
   a. Evidence of ponded water at any point on the waste management facility (show affected area on map).
   b. Evidence of odors; presence or absence, characterization, source, and distance of travel from source.
   c. Evidence of erosion and/or of daylighted refuse.
   d. Compliance with Storm Water Pollution Prevention Plan, insuring that the terms of the general permit are properly implemented.
   e. Integrity of all drainage systems.

J. RECEIVING WATERS

Any surface water which actually or potentially receives surface or groundwaters which pass over, through, or under waste materials or contaminated soils.

K. VOLATILE ORGANICS COMPOSITE MONITORING PARAMETER FOR WATER (VOCwater)

VOCwater, a composite parameter that encompasses a variety of VOCs. The constituents addressed by the **VOCwater** Composite Monitoring Parameter include all VOCs detectable using USEPA Method 8260, including at least all 47 VOCs listed in Appendix I to 40 CFR 258, MTBE and all unidentified peaks.

L. RECEIVING WATERS

Any surface water which actually or potentially receives surface or groundwaters which pass over, through, or under waste materials or contaminated soils.

ORDERED BY: _____
Executive Officer

DATE: 11/1/02

Figure: Figure A-1 Monitoring Point Location Map

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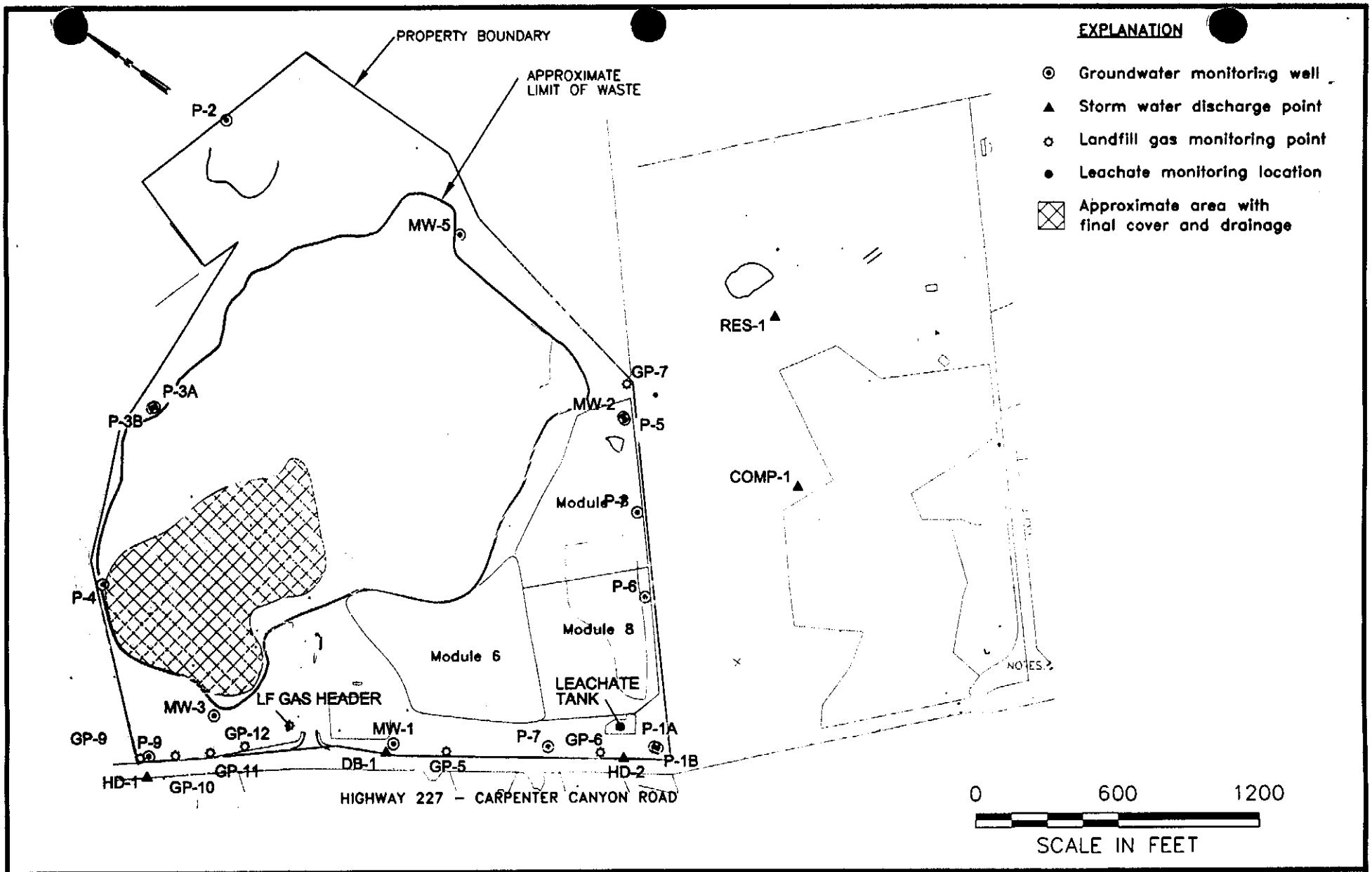
10/1/02 8:00 am



LAND DISPOSAL UNIT
CENTRAL COAST REGIONAL WATER QUALITY CONTROL BOARD

COLD CANYON LANDFILL
COUNTY OF LUIS OBISPO, CALIFORNIA

MONITORING LOCATION MAP

FIGURE
A-1

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STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION
81 Higuera Street, Suite 200
San Luis Obispo, CA 93401-5427

REVISED MONITORING AND REPORTING PROGRAM NO. R3-2002-0065

Waste Discharger Identification No. 3 400310001

FOR

COLD CANYON CLASS III LANDFILL

San Luis Obispo County

PART I: MONITORING AND OBSERVATION SCHEDULE

Unless otherwise indicated, all monitoring and observations shall be reported as outlined in Part IV.

A. SITE INSPECTIONS

The Discharger shall inspect the Landfill in accordance with the following schedule, and record, at a minimum, Standard Observations.

Site Inspection Schedule:

1. During the wet season (October through April), following each storm which produces storm water discharge, with inspections performed at least monthly.
2. During the dry season a minimum of one inspection every three months.

B. INTAKE MONITORING

The Discharger shall maintain a daily record of the waste stream. The record shall include the following:

1. Weight and volume of waste received.
2. Running totals of volume received, volume remaining for waste placement, and Landfill life expectancy.
3. Current fill area.
4. Log of random load checking program. The log shall contain a record of refused loads, including the type of waste refused, and the date, name, address, and phone number of the party attempting to dispose of the waste.

C. LEACHATE AND DRAINAGE SYSTEMS INSPECTIONS

1. The Discharger shall inspect leachate systems and record the following information:
   a. Weekly; leachate containment system integrity, record volume of leachate collected and disposal method used.
   b. Quarterly; pumping system operational check; Annually; leachate collection and removal system testing as required by CCR Tile 27, Section 20340 (d), and an Executive Officer accepted monitoring plan. The absence or presence of biofouling shall be addressed in the inspection report.
   c. At sites where leachate is used for dust control, testing that shows the leachate is non-hazardous shall be submitted annually.

2. The Discharger shall inspect drainage control systems following each Storm and record the following information:
   a. Condition of facilities and liners, whether storm storage basins and drainage ditches contain liquids;
   b. Any apparent seepage from storage basins.
   c. Steps taken to correct any problems found during inspection and date(s) when taken.

D. RAINFALL DATA

The Discharger shall record the following information;

1. Total precipitation during the Monitoring Period.
2. Number of Storms received during Monitoring Period.
3. Return rating of most intense 24 -hour storm (25 year, 100 year, and so on).

E. ANALYTICAL MONITORING

1. Sampling, Analyses, and Reporting Schedule: The Discharger shall monitor the site's media in accordance with the following schedule(s). Monitoring locations are shown on **Figure A-1**. Sampling, analyses, and reporting are also discussed in and shall comply with Parts II, III, and IV.
   a. Detection and Evaluation Monitoring: See Table 2 below.
   b. Constituent of Concern Monitoring: The Constituent of Concern (COC) parameter includes constituents listed in Table 1 below. Monitoring for COC shall encompass only those Constituents of Concern that do not also serve as Monitoring Parameters. Analysis of Constituents of Concern shall be carried out once every five years at each of the site's groundwater monitoring points, unless required more frequently due to indication of release (Part IV.C.4). Wells that have not previously been sampled for COC or not sampled within the past 54 months, shall be sampled and analyzed for all COC within six months of this program becoming effective.

2. Groundwater Flow Rate and Direction:
   For each monitored groundwater body, the Discharger shall measure the water level in each well, at least quarterly, including the times of expected highest and lowest elevations of the water level, and determine the presence of horizontal and vertical gradients, and groundwater flow rate and direction for the respective groundwater body.

3. Sample Procurement Limitation for any given monitored medium, the samples taken from Monitoring Points to satisfy the data analysis requirements for a given Monitoring Period shall be taken within a span not exceeding 30 days, and shall be taken in a manner that ensures sample independence to the greatest extent feasible [CCR Title 27, Section 20415(e)(12)(B)]. Sampling for successive monitoring periods shall occur at least 30 days apart.

Table 1.
Constituents Of Concern

CONSTITUENTS	METHOD[1]	UNITS
Antimony	6010	mg/l
Arsenic	7060	mg/l
Barium	6010	mg/l
Beryllium	6010	mg/l
Cadmium	6010	mg/l
Chromium	6010	mg/l
Cobalt	6010	mg/l
Copper	6010	mg/l
Cyanide	9010	mg/l
Lead	7421	mg/l
Mercury	7470	mg/l
Nickel	6010	mg/l
Selenium	7740	mg/l
Silver	6010	mg/l
Sulfide	9030	mg/l
Thallium	7841	mg/l
Tin	6010	mg/l
Vanadium	6010	mg/l
Zinc	6010	mg/l
Chlorophenoxy Herbicides	8150	µg/l
Organochlorine Pesticides	8081	µg/l
PCBs	8082	µg/l
Organophosphorus Pesticides	8141	µg/l
Semi-Volatile Organic Compounds	8270	µg/l
Volatile Organic Compounds, Appendix II*	8260	µg/l

[1] The Discharger shall analyze for all constituents using the USEPA analytical methods indicated above or the most recently approved SW-846 USEPA method or other equivalent USEPA method.
* Includes MTBE.

TABLE 2
Detection and Corrective Action Monitoring

Sample Location	Monitoring Program			VOC[2] Monitoring Frequency	Inorganic-Parameter[3] Monitoring Frequency
	Detection	Corrective Action	Other		
MW-1*	X			Quarterly	Quarterly
MW-2		X		Quarterly	Semi-Annually
MW-3*	X	X		Quarterly	Semi-Annually
MW-5	X			Quarterly	Quarterly
P-1A			X	Annually (alternating between high and low groundwater)	Annually (alternating between high and low groundwater)
P-1B	X			N/A	Quarterly
P-2			X	Every 3 Years (alternating between high and low groundwater)	Every Three Years (alternating between high and low groundwater)
P-3A*	X	X		Quarterly	Semi-Annually
P-3B	X			N/A	Quarterly
P-4			X	Annually (alternating between high and low groundwater)	Annually (alternating between high and low groundwater)
P-5, P-8, P-9	X			Quarterly	Quarterly
P-6			X	Annually (alternating between high and low groundwater)	Annually (alternating between high and low groundwater)
P-7*	X			Quarterly	Semi-Annually
Sump Lysimeter	X			Yearly (when liquid is present)	Yearly (when liquid is present)
DB-1, HD-1, HD-2	X			N/A	Twice during wet season
COMP-1, RES-1	X			N/A	Twice during wet season
Leachate	X			Yearly (from the tank)	Yearly (from the tank)
LF Gas[1]	X			Annually	N/A

* Wells MW-1,3, P-3A and P-7 are in detection monitoring for VOCs and evaluation monitoring for inorganic parameters, media types are listed on Table 3.

[1] Sample collection port at gas collection system header

[2] Volatile Organic Compounds: USEPA method 8260(b) for groundwater, method TO-14 for landfill gas (or approved EPA method)

[3] **Groundwater** inorganic parameters: Laboratory: chloride, arsenic, manganese, sulfate
Field: pH, EC, temperature, turbidity, dissolved oxygen

Storm Water inorganic parameters:
Laboratory: pH, total suspended solids, EC, and total organic carbon or O&G, iron, turbidity, pesticides (COMP-1 only).

Table 3
Media Monitoring Points

Monitoring Point	Media Monitored
MW-1	Groundwater
MW-2	Groundwater
MW-3	Groundwater
MW-5	Groundwater
P-1A	Groundwater
P-1B	Groundwater
P-2	Groundwater
P-3A	Groundwater
P-3B	Groundwater
P-4 through P-9	Groundwater
DB-1, HD-1, HD-2	Storm Water
COMP-1, RES-1	Storm Water
LF Gas	Landfill Gas
Sump & Lysimeter	Leachate

PART II: SAMPLE COLLECTION AND ANALYSIS

A. SAMPLING AND ANALYTICAL METHODS

Sample collection, storage, and analysis shall be performed according to the most recent version of Standard USEPA Methods (USEPA publication "SW-846"), and in accordance with a sampling and analysis plan acceptable to the Executive Officer. A State of California approved laboratory shall perform water analysis. Specific methods of analysis must be identified. The director of the laboratory whose name appears on the certification shall supervise all analytical work in his/her laboratory and shall sign reports of such work submitted to the Board. In addition, the Discharger is responsible for seeing that the laboratory analysis of samples from Monitoring Points meets the following restrictions:

1. The methods of analysis and the detection limits used must be appropriate for the expected concentrations. For detection monitoring of any constituent or parameter that is found in concentrations which produce more than 90% non-numerical determinations (i.e., Trace) in historical data for that medium, the SW-846 analytical method having the lowest Method Detection Limit (MDL) shall be selected.

2. Trace results (results falling between the MDL and the Practical Quantitation Limit (PQL)) shall be reported as such.

3. Method Detection Limits and Practical Quantitation Limits shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. Both limits are defined in Part V and shall reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the laboratory. If the laboratory suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived values, the results shall be flagged accordingly, and an estimate of the limit actually achieved shall be included.

4. Quality assurance and quality control (QA/QC) data shall be reported along with the sample results to which it applies. Sample results shall be reported unadjusted for blank results or spike recovery. The QA/QC data submittal shall include:
   a. The method, equipment, and analytical detection limits.
   b. The recovery rates, an explanation for any recovery rate that is outside the USEPA-specified recovery rate.
   c. The results of equipment and method blanks.
   d. The results of spiked and surrogate samples.
   e. The frequency of quality control analysis.
   f. The name and qualifications of the person(s) performing the analyses.

5. QA/QC analytical results involving detection of common laboratory contaminants in any sample shall be reported and flagged for easy reference.

6. Non-targeted chromatographic peaks shall be identified, quantified, and reported to a reasonable extent. When significant unknown peaks are encountered, second column or second method confirmation procedures shall be performed in an attempt to identify and more accurately quantify the unknown analyte(s).

B. CONCENTRATION LIMIT DETERMINATION

1. For the purpose of establishing Concentration Limits for COC and Monitoring Parameters detected in greater than ten percent of a medium's samples the Discharger shall:
   a. Statistically analyze existing monitoring data (Part III), and propose, to the Executive Officer, statistically derived Concentration Limits for each Constituent of Concern and each Monitoring Parameter at each Monitoring Point for which sufficient data exists.
   b. In cases where sufficient data for statistically determining Concentration Limits does not exist the Discharger shall collect samples and analyze for Constituent(s) of Concern and Monitoring Parameter(s) which require additional data. Once sufficient data is obtained the Discharger shall submit proposed Concentration Limit(s) to the Executive Officer for approval. This procedure shall take no longer than two calendar years.
   c. Sample and analyze new Detection Monitoring Points, including any added by this Order, until sufficient data is available to establish a proposed Concentration Limit for all COC and Monitoring Parameters. Once sufficient data is obtained the Discharger shall submit the proposed Concentration Limit(s) to the Executive Officer for approval. This procedure shall take no longer than two calendar years.

2. The Discharger shall review Concentration limits annually. The past years data will be reviewed for application to revision of concentration limits. When appropriate, new concentration limits shall be proposed.

C. RECORDS TO BE MAINTAINED

Analytical records shall be maintained by the Discharger or laboratory, and shall be retained for a minimum of five years. The period of retention shall be extended during the course of any unresolved litigation or when requested by the Executive Officer. Such records shall show the following for each sample:

1. Identity of sample and the actual Monitoring Point designation from which it was taken, along with the identity of the individual who obtained the sample.
2. Date and time of sampling.
3. Date and time that analyses were started and completed, and the name of personnel performing each analysis.
4. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used.
5. Results of analyses, and Method Detection Limit and Practical Quantitation Limit for each analysis.

PART III: STATISTICAL AND NON-STATISTICAL ANALYSIS OF DATA

A. STATISTICAL ANALYSIS

1. For Detection Monitoring, the Discharger shall use statistical methods to analyze COC and Monitoring Parameters that exhibit concentrations that equal or exceed their respective MDL in at least ten percent of applicable historical samples. The Discharger may propose and use any statistical method that meets the requirements of California Code of Regulations, Title 27, §20414(e)(7). All statistical methods and programs proposed by the Discharger are subject to Executive Officer approval.
2. For wells in Corrective Action, The Discharger shall use the Mann Kendall trend analysis to evaluate changes in inorganic water-quality data or another method acceptable to the Executive Officer.

B. NON-STATISTICAL METHOD

The Discharger shall use the following non-statistical method for analyzing constituents, which are detected in less than 10% of applicable historical samples. This method involves a two-step process:

1. From constituents to whom the method applies, compile a specific list of those constituents, which exceed their respective MDL. The list shall be compiled based on either data from the single sample or in cases of multiple independent samples, from the sample, which contains the largest number of constituents.
2. Evaluate whether the listed constituents meet either of two possible triggering conditions. Either the list from a single well contains two or more constituents, or contains one constituent, which equals or exceeds its Practical Quantitation Limit. If either condition is met, the Discharger shall conclude that a release is tentatively indicated and shall immediately implement the appropriate re-test procedure under Part III.C.

C. RE-TEST PROCEDURE

1. In the event that the Discharger concludes that a release has been tentatively indicated, the Discharger shall carry out the reporting requirements of Part IV.C.2 and, within 30 days of receipt of analytical results, collect two new suites of samples for the indicated COC or Monitoring Parameter(s) at each indicating Monitoring Point, collecting at least as many samples per Monitoring Point as were used for the initial test.
2. Analyze each of the two suites of re-test analytical results using the same statistical method (or non-statistical comparison) that provided the tentative indication of a release. If the test results of either (or both) of the re-tested data suites confirm the original indication, the Discharger shall conclude that a release has been discovered and shall carry out the requirements of Part IV.C.

   Re-tests shall be carried out only for the Monitoring Point(s) for which a release is tentatively indicated, and only for the COC or Monitoring Parameter(s) which triggered the indication. When an analyte of the VOC composite parameter is re-tested the results of the entire VOC composite shall be reported.

PART IV: REPORTING

A. MONITORING REPORT

A written Monitoring Report shall be submitted semi-annually by January 31 and July 31 of each year. Monitoring Reports will be submitted in an electronic format, with text, tables, figures, laboratory analytical data, and appendices placed on a compact disc in PDF or JPEG format. Accompanying the electronic version of the report will be a hard copy transmittal letter, with signatures of preparers and submitters, (in accordance with requirements stated in Waste Discharge Requirements Order No. R3-2002-0065), along with an executive summary of the report text. Additionally, monitoring reports shall be prepared and signed by a registered civil engineer or geologist. The Monitoring Report shall address all Landfill monitoring facts. Reports shall include, but should not be limited to, the following:

1. Letter of Transmittal

A letter transmitting the essential points shall accompany each report. Such a 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. If the Discharger has previously submitted a detailed time schedule for correcting said requirement violations, a reference to the correspondence transmitting such schedule will be satisfactory. If no violations have occurred since the last submittal, this shall be stated in the letter of transmittal. Monitoring reports and the letter transmitting the monitoring reports shall be signed by a principal executive officer at the level of vice president or above, or by his/her duly authorized representative, if such a representative is responsible for the overall operation of the facility from which the discharge originates. The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true, complete, and correct.

2. Sampling Summary

The summary shall contain at least:

a. For each monitored groundwater body, a description and graphical presentation of

the velocity and direction of groundwater flow under/around the Unit, based upon water level elevations taken during the collection of the water quality data submitted in the report.

b. For each monitoring well addressed by the report: a description of the method and time of water level measurement, the type of pump used for purging and the placement of the pump in the well, and the method of purging (the pumping rate, the equipment and methods used to monitor field pH, temperature, and conductivity during purging, the calibration of the field equipment, results of the pH, temperature, conductivity, and turbidity testing, the well recovery time, and the method of disposing of the purge water).

c. For each Monitoring Point and Background Monitoring Point addressed by the report, a description of the sampling procedure (number of samples, field blanks, travel blanks, and duplicate samples taken; the type of containers and preservatives used; the date and time of sampling; the name and qualifications of the person actually taking the samples; description of any anomalies).

3. Graphical Presentation of Analytical Data

For each Monitoring Point in each medium, submit, in graphical format, the complete history of laboratory analytical data. Graphs shall effectively illustrate trends and/or variations in the laboratory analytical data. Each graph shall plot a single constituent concentration over time at one (for intra-well comparison) or more (for inter-well comparisons) monitoring points in a single medium. Maximum contaminant levels (MCL) and/or concentration limits shall be graphed along with constituent concentrations where applicable. When multiple samples are taken, graphs shall plot each datum, rather than plotting mean values.

4. Corrective Action Summary

Discuss significant aspects of any corrective action measures conducted during the monitoring period. Calculate pollutant load removed from the sites impacted media by mass (water, gas, leachate) removal system(s). Mass removal calculations shall be based on actual analytical data as required by Part I.E. Present discussion and indications relating mass removal data to the violation the corrective action is addressing.

5. Laboratory Results

Laboratory results and statements demonstrating compliance with Part II of this Monitoring and Reporting Program. Additionally results of sampling and analyses performed at the Landfill, outside the requirements of this Monitoring and Reporting Program, shall be summarized and reported.

6. Standard Observations

A summary and certification of completion of all Standard Observations (Part V.I) for the Landfill, for the perimeter of the landfill, and for the Receiving Waters.

7. Leachate Collection and Detection Systems

A summary of the total volume of leachate collected each month since the previous Monitoring Report for the leachate collection.

8. Map(s)

A map or aerial photograph showing monitoring locations, relative physical features, and groundwater contours to the greatest degree of accuracy possible.

B. ANNUAL SUMMARY REPORT

The Discharger shall submit an annual report to the Board covering the previous monitoring year. The annual Monitoring Period ends December 31. This report may be combined with the final Monitoring Report of the year and shall be submitted no later than January 31 each year. The annual report must include the information outlined above and the following:

1. Discussion

Include a comprehensive discussion of the compliance record, a review of the past year's significant monitoring system and operational changes, a summary of corrective action results and milestones, and a review of construction projects, with water quality significance,

completed or commenced in the past year or planned for the up-coming year.

2. **Graphical Presentation of Analytical Data**
For each Monitoring Point and Background Monitoring Point, submit in graphical format the laboratory analytical data for all samples taken within at least the previous five calendar years. Each such graph shall plot the concentration of one or more constituents over time for a given Monitoring Point or Background Monitoring Point, at a scale appropriate to show trends or variations in water quality. Maximum contaminant levels (MCL) shall be graphed along with constituent concentrations where applicable. Graphs shall plot each datum, rather than plotting mean values. For any given constituent or parameter, the scale for background plots shall be the same as that used to plot downgradient data.

3. **Analytical Data**
All monitoring analytical data obtained during the previous year, presented in tabular form as well as on **CDROM**, in MS-EXCEL format or in another file format acceptable to the Executive Officer. Additionally, complete data histories of each well shall be submitted on **CDROM**.

4. **Leachate Results**
Results of annual leachate collection and leachate detection system testing, as required by Part I.C. Where leachate is used for dust control, testing that shows the leachate is non-hazardous shall be submitted annually.

5. **Map(s)**
A map showing the areas where filling has taken place during the previous calendar year. Indicate areas, if any, in which filling has been completed or intermediate cover has been placed.

C. CONTINGENCY RESPONSE

1. **Leachate Seep**
The Discharger shall, within 24 hours report by telephone concerning the discovery any previously unreported seepage from the disposal area. A written report shall be filed with the Board 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.
   c. **Description** - A description of the nature of the discharge (e.g., all pertinent observations and analyses).
   d. **Location** – Location of sample(s) collected for laboratory analysis, as appropriate.
   e. **Corrective measures** - approved (or proposed for consideration) by the Regional Water Board Executive Officer.

2. **Response to an Initial Indication of a Release**
Should the initial statistical or non-statistical comparison (under Part Ill. A. or B. of this Monitoring and Reporting Program) indicate that a release is tentatively identified, the Discharger shall;
   a. Within 24 hours, notify their designated Regional Water Board staff contact verbally as to the Monitoring Point(s) and constituents) or parameter(s) involved;
   b. Provide written, notification by certified mail within seven days of such determination; and
   c. Either of the following:
      i. Shall carry out a discrete re-test in accordance with Part III.C. If the re-test confirms the existence of a release or the Discharger fails to perform the re-test, the Discharger shall carry out the requirements of Part IV.C.4. In any case, the Discharger shall inform the Board of the re-test outcome within 24 hours of results becoming available, following up with written results submitted by certified mail within seven days.
      ii. Make a determination, in accordance with Title 27, §20420(k)(7), that a source other than the waste management unit caused the release or that the evidence is an artifact caused by an error in sampling, analysis, or statistical evaluation or by natural variation in the groundwater, surface water, or the unsaturated zone.

3. **Physical Evidence of a Release**
If either the Discharger or the Regional Board Executive Officer determines that there is significant physical evidence of a release Title 27, Section 20385(a)(3), the Discharger shall conclude that a release has been discovered and shall:
   a. Within seven days notify the Regional Water Board of this fact by certified mail (or acknowledge the Regional Water Board's determination).
   b. Carry out the requirements of Part IV.C.4. for all potentially-affected monitored media.
   c. Carry out any additional investigations stipulated in writing by the Regional Water Board Executive Officer for the purpose of identifying the cause of the indication.

4. **Release Discovery Response**
If the Discharger concludes that a release has been discovered the following steps shall be carried out:
   a. If this conclusion is not based upon monitoring for all COC the Discharger shall sample for all COC at all Monitoring Points in the affected medium. Within seven days of receiving the laboratory analytical results, the Discharger shall notify the Executive Officer, by certified mail, of the concentration of all COC at each Monitoring Point. This notification shall include a synopsis showing, for each Monitoring Point, those constituents that exhibit an unusually high concentration.
   b. The Discharger shall, within 90 days of discovering the release, submit an Amended Report of Waste Discharge proposing an Evaluation Monitoring and Reporting Program that;
      i. Meets the requirements of Title 27, §20420 and §20425.
      ii. Satisfies the requirements of 40 CFR §258.55(g)(I)(ii) by committing to install at least one monitoring well at the facility boundary directly downgradient of the center of the release.
   c. The Discharger shall, within 180 days of discovering the release, submit a preliminary engineering feasibility study meeting the requirements of Title 27, Section 20430.
   d. The Discharger shall immediately begin delineating the nature and extent of the release by installing and monitoring assessment wells as necessary to assure that the Discharger can meet the requirements of Title 27, Section 20425 to submit a delineation report within 90 days of when the Executive Officer directs the Discharger to begin the Evaluation Monitoring and Reporting Program.

5. **Release Beyond Facility Boundary**
Any time the Discharger concludes (or the Regional Board Executive Officer directs the Discharger to conclude) that a release from the Unit 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. Initial notification to Affected Persons shall be accomplished within 14 days of making this conclusion and shall include a description of the Discharger's current knowledge of the nature and extent of the release.
   b. Subsequent to initial notification, the Discharger shall provide updates to all Affected Persons, including any persons newly affected by a change in the boundary of the release, within 14 days of concluding there has been any material change in the nature or extent of the release.
   c. Each time the Discharger sends a notification to Affected Persons (under a. or b., above), 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 Affected Persons.

D. RESPONSE TO VOC DETECTION IN BACKGROUND

1. Except as indicated in D.2. below, any time the laboratory analysis of a sample from a Background Monitoring Point shows either (1) two or more VOCs above their respective

Method Detection Limit, or (2) one VOC above its respective Practical Quantitation Limit, the Discharger shall:

a. Within 24 hours, notify the Regional Board by phone that possible Background Monitoring Point contamination has occurred.
b. Follow up with written notification by certified mail within seven days.
c. Shall immediately, obtain two new independent VOC samples from that Background Monitoring Point and send them for laboratory analysis of all detectable VOCs.

2. If either or both the new samples validates the presence of VOC(s), at the Background Monitoring Point, the Discharger shall:
   a. Within 24 hours, notify the Regional Board about the VOC(s) verified to be present at that Background Monitoring Point.
   b. Provide written notification by certified mail within seven days of validation.
   c. Within 180 days of validation, submit a report, acceptable to the Executive Officer, which; examines the possibility that the detected VOC(s) originated from other than the Unit, and proposes appropriate changes to the Monitoring and Reporting Program.

3. If the Executive Officer determines, after reviewing the report submitted under Part IV.D.I. above, that the VOC(s) detected originated from a source other than the Unit, the Executive Officer will make appropriate changes to the Monitoring and Reporting Program.

4. If the Executive Officer determines, after reviewing the report submitted under Part IV.D.I., that the detected VOC(s) most likely originated from the Unit, the Discharger shall assume that a release has been detected and shall immediately begin carrying out the requirements of Part IV.C.4. of this Monitoring and Reporting Program.
   a. Initial notification to Affected Persons shall be accomplished within 14 days of making this conclusion and shall include a description of the Discharger's current knowledge of the nature and extent of the release.
   b. Subsequent to initial notification, the Discharger shall provide updates to all Affected Persons, including any persons newly affected by a change in the boundary of the release, within 14 days of concluding there has been any material change in the nature or extent of the release.
   c. Each time the Discharger sends a notification to Affected Persons (under a. or b., above), 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 Affected Persons.

PART V: DEFINITION OF TERMS

A. AFFECTED PERSONS

All individuals who either own or reside upon the land that directly overlies any part of that portion of a gas- or liquid-phase release that has migrated beyond the facility boundary.

B. CONSTITUENTS OF CONCERN (COC)

Those constituents which are likely to be in the waste in the Unit or which are likely to be derived from waste constituents, in the event of a release. The Constituents of Concern for this Unit are listed in Part I.E.3, Table A.

C. FACILITY-SPECIFIC METHOD DETECTION LIMIT (METHOD DETECTION LIMIT)

The lowest concentration at which a given laboratory, using a given analytical method, to detect a given constituent, (in spite of any Matrix Effect) can regularly differentiate, with 99% reliability, between a sample which contains the constituent and one which does not.

D. MATRIX EFFECT

Any increase in the Method Detection Limit or Practical Quantitation Limit for a given constituent as a result of the presence of other constituents, either of natural origin or introduced through a release, that are present in the sample being analyzed.

E. MONITORED MEDIUM

Water bearing media that are monitored pursuant to this Monitoring and Reporting Program. The Monitored Media may include: (1) groundwater in the uppermost aquifer, in any other portion of the zone of saturation in which it would be reasonable to anticipate that waste constituents migrating from the Unit could be detected, and in any perched zones underlying the Unit, (2) any bodies of surface water that could be measurably affected by a release, and (3) soil pare liquid beneath and/or adjacent to the Unit.

F. MONITORING PARAMETERS

A short list of constituents and parameters used for the majority of monitoring activity. The Monitoring Parameters for this Unit are listed in Part I.E of this Monitoring and Reporting Program.

G. MONITORING PERIOD

The database duration separating the submittal of a monitoring report and the time of the next report submittal. The Monitoring Period for analysis of all Constituents of Concern is five years; the monitoring frequencey for the monitoring parameters is stated in Table 1 above. Monitoring of static water level elevations, in all monitoring wells will be performed quarterly. Report submittal dates are **July 31** and **January 31**. The due date for any given report will be 30 days after the end of its Monitoring Period, unless stated otherwise.

H. PRACTICAL QUANTITATION LIMIT (PQL)

The lowest acceptable calibration standard (acceptable as defined for a linear response or by actual curve fitting) times the sample extract dilution factor times any additional factors to account for Matrix Effect. The PQL shall reflect the quantitation capabilities of the specific analytical procedure and equipment used by the laboratory. PQLs reported by the laboratory shall not simply by restated from USEPA analytical method manuals. Laboratory derived PQLs are expected to closely agree with published USEPA estimated quantitation limits (EQL).

I. STANDARD OBSERVATIONS

1. For Receiving Waters;
   a. Floating and suspended materials of waste origin; presence or absence, source, and size of affected area.
   b. Discoloration and turbidity - description of color, source, and size of affected area.
   c. Evidence of odors - presence or absence, characterization, source, and distance of travel from source.
   d. Evidence of beneficial use - presence of water-associated wildlife.
   e. Flow rate to the receiving water.
2. Along the perimeter of the Unit:
   a. Evidence of liquid leaving or entering the Unit, estimated size of affected area, and flow rate (show affected area on map).
   b. Evidence of odors; presence or absence, characterization, source, and distance of travel from source.
   c. Evidence of erosion and/or of exposed refuse.
   d. Inspection of all storm water discharge locations for evidence of non-storm water discharges during dry seasons, and integrity during wet seasons.
3. For the Unit:
   a. Evidence of ponded water at any point on the waste management facility (show affected area on map).
   b. Evidence of odors; presence or absence, characterization, source, and distance of travel from source.
   c. Evidence of erosion and/or of daylighted refuse.
   d. Compliance with Storm Water Pollution Prevention Plan, insuring that the terms of the general permit are properly implemented.
   e. Integrity of all drainage systems.

J. RECEIVING WATERS

Any surface water which actually or potentially receives surface or groundwaters which pass over, through, or under waste materials or contaminated soils.

K. VOLATILE ORGANICS COMPOSITE MONITORING PARAMETER FOR WATER (VOCwater)

VOCwater, a composite parameter that encompasses a variety of VOCs. The constituents addressed by the **VOCwater** Composite Monitoring Parameter include all VOCs detectable using USEPA Method 8260, including at least all 47 VOCs listed in Appendix I to 40 CFR 258, MTBE and all unidentified peaks.

L. RECEIVING WATERS

Any surface water which actually or potentially receives surface or groundwaters which pass over, through, or under waste materials or contaminated soils.

ORDERED BY: _____
Executive Officer

DATE: _____

Figure: Figure A-1 Monitoring Point Location Map

S:\ICB\LDU\LANDFILLS\PERMITTED SITES\Cold Canyon\NEW WDR & MRP R3-2002-0065\Order to the Board\MRP R3-2002-0065 Final.doc\
10/1/02 8:00 am

APPENDIX B
PRECIPITATION AND EVAPORATION DATA

San Luis Obispo County Public Works

Volunteer Precipitation Gauge Station

MONTHLY PRECIPITATION REPORT

Station Name - SLO Airport # 205.4

Station Location -

Latitude - 35° 14' 14"

Longitude - 120° 38' 05"

Description - San Luis Obispo

Water Years -

Beginning - 1981-1982

Ending - 2006-2007

Station Statistics -

Month	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL
Average	0.03	0.04	0.34	0.83	2.14	3.81	4.25	4.90	3.95	1.37	0.44	0.03	22.13
Maximum	0.35	0.63	2.00	5.05	5.96	12.55	14.80	14.82	13.70	5.94	3.10	0.50	44.14
Minimum	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.30	0.00	0.00	0.00	0.00	8.97

San Luis Obispo County Public Works

Volunteer Precipitation Gauge Station

MONTHLY PRECIPITATION REPORT

Station Name and no. SLO Airport # 205.4

*** All units are in inches ***

Water Year	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Total
2006-2007	0.00	0.00	0.00	0.00	0.45	2.20	1.55	2.72	0.45	1.50	0.10	0.00	8.97
2005-2006	0.00	0.00	0.00	0.00	1.30	2.09	7.90	1.95	5.94	5.94	1.60	0.00	26.72
2004-2005	0.00	0.00	0.00	5.05	2.45	8.55	8.58	5.35	4.70	0.35	0.65	0.00	35.68
2003-2004	0.00	0.00	0.00	0.00	2.30	4.70	1.30	8.36	0.75	0.00	0.00	0.00	17.41
2002-2003	0.00	0.00	0.00	0.00	4.05	5.45	0.55	2.98	2.40	1.00	0.00	0.00	16.43
1999-2000	0.00	0.00	0.00	0.00	0.00	2.25	3.97	10.55	2.00	2.25	0.20	0.25	21.47
1998-1999	0.00	0.00	0.44	0.30	1.15	0.92	2.60	1.65	4.50	2.20	0.00	0.00	13.76
1997-1998	0.00	0.00	0.00	0.00	5.50	4.75	5.35	14.82	5.50	3.15	3.10	0.00	42.17
1996-1997	0.00	0.00	0.00	2.75	4.10	12.55	11.70	0.30	0.00	0.00	0.00	0.00	31.40
1995-1996	0.00	0.00	0.00	0.00	0.50	3.60	2.85	9.60	1.70	1.35	0.75	0.00	20.35
1994-1995	0.00	0.00	1.99	1.64	1.70	1.14	14.80	2.30	13.70	0.80	1.15	0.00	39.22
1993-1994	0.35	0.00	0.00	0.00	2.15	1.80	3.05	5.90	1.75	0.95	0.45	0.00	16.40
1992-1993	0.25	0.00	0.00	1.60	0.00	6.17	9.10	8.05	4.92	0.10	0.25	0.00	30.44
1991-1992	0.00	0.00	0.00	0.51	1.60	4.70	3.55	9.40	2.67	0.05	0.00	0.00	22.48
1990-1991	0.00	0.00	0.40	0.00	0.40	1.05	0.90	2.50	11.90	0.40	0.00	0.50	18.05
1989-1990	0.00	0.00	1.51	1.10	0.55	0.00	1.72	2.40	0.65	0.12	1.20	0.00	9.25
1988-1989	0.00	0.00	0.00	0.00	1.75	7.06	0.85	1.90	1.45	0.25	0.20	0.00	13.46
1987-1988	0.00	0.00	0.00	1.59	0.67	4.70	2.38	2.95	0.80	2.06	0.31	0.00	15.46
1986-1987	0.00	0.00	0.97	0.00	0.30	1.08	3.12	2.42	3.60	0.45	0.00	0.00	11.94
1985-1986	0.03	0.00	0.03	1.03	3.70	1.84	2.02	7.76	6.17	0.17	0.00	0.00	22.75
1984-1985	0.00	0.05	0.00	0.96	4.08	3.76	1.11	1.77	3.32	0.15	0.00	0.00	15.20
1983-1984	0.00	0.63	2.00	0.32	4.15	5.16	0.09	0.55	0.08	0.64	0.00	0.00	13.62
1982-1983	0.00	0.30	0.73	1.44	5.96	4.90	8.61	9.91	8.42	3.16	0.71	0.00	44.14
1981-1982	0.00	0.00	0.00	1.55	2.57	1.13	4.40	1.41	7.47	5.89	0.00	0.00	24.42

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

Station Name and no. **SLO Airport # 205.4** Season **2006-2007**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1													1
2													2
3											0.10		3
4													4
5							0.10						5
6													6
7													7
8								0.20					8
9						0.25							9
10						1.00							10
11						0.30		1.10					11
12					0.05								12
13													13
14					0.30					0.10			14
15													15
16													16
17							0.15						17
18													18
19													19
20										1.00			20
21									0.35				21
22						0.10		0.01		0.05			22
23								0.75		0.35			23
24													24
25								0.10					25
26													26
27					0.10	0.55	0.50	0.30	0.10				27
28							0.60	0.26					28
29							0.20						29
30													30
31													31
Total	0.00	0.00	0.00	0.00	0.45	2.20	1.55	2.72	0.45	1.50	0.10	0.00	
Cum. Total	0.00	0.00	0.00	0.00	0.45	2.65	4.20	6.92	7.37	8.87	8.97	8.97	

Season Total 8.97

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

Station Name and no. **SLO Airport # 205.4** Season **2005-2006**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1							1.30			0.70			1
2						0.49	5.65						2
3							0.45		0.50	2.10			3
4										0.80			4
5										0.70			5
6									0.80				6
7					0.15				0.30				7
8					0.15								8
9					0.70	0.15							9
10					0.25				0.25				10
11									0.40	0.35			11
12									0.20	0.10			12
13							0.30		0.10				13
14													14
15										0.20			15
16										0.05			16
17									0.25	0.14			17
18						0.50	0.20	0.30	0.15				18
19						0.20		0.65					19
20								0.10					20
21									0.35	0.05	1.60		21
22													22
23													23
24													24
25										0.60			25
26					0.05	0.25			0.21	0.15			26
27								0.15					27
28								0.75	1.35				28
29						0.25			0.65				29
30									0.13				30
31						0.25			0.30				31
Total	0.00	0.00	0.00	0.00	1.30	2.09	7.90	1.95	5.94	5.94	1.60	0.00	
Cum. Total	0.00	0.00	0.00	0.00	1.30	3.39	11.29	13.24	19.18	25.12	26.72	26.72	

Season Total **26.72**

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

Station Name and no. **SLO Airport # 205.4** Season **2004-2005**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1							0.20						1
2													2
3							1.60						3
4					0.50		0.10		0.25	0.10			4
5					1.75				0.20		0.65		5
6													6
7						0.30	0.10						7
8						1.60	1.75			0.10			8
9							2.20			0.15			9
10							0.55						10
11							1.20	0.30					11
12					0.10								12
13								0.10					13
14													14
15													15
16								0.60					16
17				0.70				1.00					17
18				0.35				0.05					18
19				2.10				0.55	0.50				19
20								0.65					20
21								1.25	0.55				21
22								0.10	1.40				22
23									1.55				23
24													24
25													25
26				1.90									26
27					0.10	0.40	0.23						27
28						2.35	0.40	0.75	0.25				28
29						0.75	0.25						29
30													30
31						3.15							31
Total	0.00	0.00	0.00	5.05	2.45	8.55	8.58	5.35	4.70	0.35	0.65	0.00	
Cum. Total	0.00	0.00	0.00	5.05	7.50	16.05	24.63	29.98	34.68	35.03	35.68	35.68	

Season Total **35.68**

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

Station Name and no. **SLO Airport # 205.4** Season **2003-2004**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1					0.20								1
2							1.00	0.85	0.50				2
3					0.20		0.15						3
4													4
5													5
6													6
7						0.20							7
8					0.10								8
9					1.60								9
10						0.75							10
11													11
12					0.10								12
13													13
14						0.50							14
15													15
16					0.10								16
17													17
18								1.01					18
19													19
20						0.50							20
21						0.15		0.30					21
22								0.40					22
23								0.50					23
24						0.15	0.05						24
25						1.30		2.80					25
26						0.50			0.25				26
27								2.50					27
28							0.10						28
29													29
30						0.65							30
31													31
Total	0.00	0.00	0.00	0.00	2.30	4.70	1.30	8.36	0.75	0.00	0.00	0.00	
Cum. Total	0.00	0.00	0.00	0.00	2.30	7.00	8.30	16.66	17.41	17.41	17.41	17.41	

Season Total **17.41**

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

Station Name and no. **SLO Airport # 205.4** Season **2002-2003**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1							0.35						1
2													2
3													3
4													4
5										0.15			5
6													6
7					2.90								7
8					1.00								8
9					0.15								9
10													10
11							0.20	0.15					11
12								0.40		0.85			12
13								1.25					13
14						1.65		0.10					14
15								0.40	2.40				15
16													16
17						0.25							17
18													18
19													19
20						1.35							20
21						0.50							21
22						0.50							22
23													23
24													24
25								0.35					25
26													26
27								0.33					27
28						0.85							28
29													29
30													30
31						0.35							31
Total	0.00	0.00	0.00	0.00	4.05	5.45	0.55	2.98	2.40	1.00	0.00	0.00	
Cum. Total	0.00	0.00	0.00	0.00	4.05	9.50	10.05	13.03	15.43	16.43	16.43	16.43	

Season Total **16.43**

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

Station Name and no. **SLO Airport # 205.4** Season **1999-2000**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1						Daily Rainfall Data Not Recorded							1
2													2
3									0.15				3
4								0.40					4
5									0.65				5
6									0.30				6
7													7
8									0.65		0.05	0.25	8
9									0.25				9
10								0.50					10
11								0.50					11
12								0.70					12
13								0.70					13
14								2.00		1.35			14
15								0.70		0.90	0.05		15
16							0.27	0.20			0.10		16
17							0.30						17
18							1.05						18
19							0.10						19
20							0.10	1.60					20
21							0.10						21
22								1.00					22
23							0.15	1.15					23
24							0.60						24
25							0.65	0.10					25
26							0.15						26
27								0.75					27
28								0.25					28
29													29
30													30
31							0.50						31
Total	0.00	0.00	0.00	0.00	0.00	2.25	3.97	10.55	2.00	2.25	0.20	0.25	
Cum. Total	0.00	0.00	0.00	0.00	0.00	2.25	6.22	16.77	18.77	21.02	21.22	21.47	

Season Total **21.47**

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

Station Name and no. **SLO Airport # 205.4** Season **1998-1999**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1						0.40		0.05					1
2													2
3													3
4													4
5			0.25										5
6						0.40				0.60			6
7								0.25		0.25			7
8								0.15	0.35				8
9								0.45					9
10								0.50					10
11					0.10				0.25	0.40			11
12										0.95			12
13													13
14													14
15									0.50				15
16									0.50				16
17					0.10								17
18													18
19													19
20							0.75		1.35				20
21						0.12	0.10	0.20	0.60				21
22													22
23													23
24					0.10		0.40						24
25				0.30			0.05	0.05	0.80				25
26							0.30		0.05				26
27			0.19				0.25						27
28					0.55								28
29					0.10								29
30					0.20								30
31							0.75		0.10				31
Total	0.00	0.00	0.44	0.30	1.15	0.92	2.60	1.65	4.50	2.20	0.00	0.00	
Cum. Total	0.00	0.00	0.44	0.74	1.89	2.81	5.41	7.06	11.56	13.76	13.76	13.76	

Season Total **13.76**

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

Station Name and no. **SLO Airport # 205.4** Season **1997-1998**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1						0.15		0.05		1.50	0.30		1
2							0.60	2.25		0.10	0.15		2
3								1.25		0.50	0.25		3
4						0.80	0.60	0.50			1.00		4
5						2.00	0.25				0.15		5
6						0.25		1.45	0.40				6
7						0.80							7
8						0.25		1.25					8
9							0.60	0.75					9
10					0.30		0.25	0.05					10
11					0.90					0.60			11
12							0.05	0.10		0.20	0.25		12
13					0.30		0.55	1.35		0.10	0.50		13
14					0.30		0.25	1.40	0.50	0.05			14
15					0.25	0.50							15
16					0.50			1.15					16
17													17
18													18
19					0.60		0.75						19
20					0.30			1.23					20
21								1.25					21
22													22
23								0.55		0.10			23
24								0.24					24
25									2.30				25
26					1.15								26
27									0.65				27
28									0.10		0.50		28
29							0.90						29
30					0.90		0.30		0.30				30
31							0.25		1.25				31
Total	0.00	0.00	0.00	0.00	5.50	4.75	5.35	14.82	5.50	3.15	3.10	0.00	
Cum. Total	0.00	0.00	0.00	0.00	5.50	10.25	15.60	30.42	35.92	39.07	42.17	42.17	

Season Total **42.17**

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

Station Name and no. **SLO Airport # 205.4** Season **1996-1997**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1							0.25						1
2							1.90						2
3							1.20						3
4						0.10	0.25						4
5													5
6						0.30							6
7													7
8													8
9						0.20							9
10						3.05		0.20					10
11						3.10							11
12						0.40							12
13						0.25	0.50						13
14													14
15							1.40						15
16					1.10		0.15						16
17					0.75			0.05					17
18								0.05					18
19					0.25								19
20							0.75						20
21					0.70	1.30	0.60						21
22					0.80	0.30	0.40						22
23					0.50		1.00						23
24													24
25							0.35						25
26				0.10			2.20						26
27						1.60	0.75						27
28													28
29													29
30				2.50		1.25							30
31				0.15		0.70							31
Total	0.00	0.00	0.00	2.75	4.10	12.55	11.70	0.30	0.00	0.00	0.00	0.00	
Cum. Total	0.00	0.00	0.00	2.75	6.85	19.40	31.10	31.40	31.40	31.40	31.40	31.40	

Season Total **31.40**

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

Station Name and no. **SLO Airport # 205.4** Season **1995-1996**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1					0.50			1.05					1
2										0.25			2
3								0.60					3
4								0.55					4
5								1.25	0.20				5
6								0.75	0.50				6
7									0.10				7
8													8
9													9
10													10
11													11
12						0.20			0.55				12
13						2.10			0.20				13
14						0.85			0.10				14
15											0.75		15
16								0.25		0.50			16
17							0.75	0.10					17
18										0.60			18
19							0.25	0.10					19
20								2.60					20
21							0.40	1.00					21
22							0.30	0.35					22
23						0.35		TR					23
24						0.05							24
25						0.05	0.50	0.15					25
26								0.10					26
27								0.25					27
28							0.65	0.25	0.05				28
29								0.25					29
30													30
31													31
Total	0.00	0.00	0.00	0.00	0.50	3.60	2.85	9.60	1.70	1.35	0.75	0.00	
Cum. Total	0.00	0.00	0.00	0.00	0.50	4.10	6.95	16.55	18.25	19.60	20.35	20.35	

Season Total **20.35**

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

Station Name and no. **SLO Airport # 205.4** Season **1994-1995**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1													1
2									1.30		0.10		2
3							1.05		0.40				3
4				0.49			0.60		0.90				4
5				1.15			1.35		0.40				5
6							0.15						6
7							0.50						7
8							0.10	0.50					8
9							0.50		3.75				9
10							3.30		3.25				10
11					0.90		0.85		0.55				11
12							0.75						12
13						0.20	0.25				0.15		13
14							0.50	1.80			0.10		14
15						0.24	0.50				0.25		15
16					0.60		0.25			0.25	0.55		16
17													17
18					0.20					0.05			18
19													19
20													20
21							0.65		1.25				21
22									0.15				22
23							0.70		1.60				23
24							0.90		0.15				24
25						0.60	1.80						25
26							0.10						26
27													27
28			0.49										28
29			1.50			0.10				0.50			29
30													30
31													31
Total	0.00	0.00	1.99	1.64	1.70	1.14	14.80	2.30	13.70	0.80	1.15	0.00	
Cum. Total	0.00	0.00	1.99	3.63	5.33	6.47	21.27	23.57	37.27	38.07	39.22	39.22	

Season Total **39.22**

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

Station Name and no. **SLO Airport # 205.4** Season **1993-1994**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1													1
2													2
3													3
4								0.20					4
5													5
6								0.60					6
7								1.80	0.35				7
8									0.15				8
9													9
10													10
11					1.25	0.05		0.05					11
12	0.20				0.15	1.15							12
13													13
14						0.25							14
15						0.35							15
16	0.15												16
17								1.10			0.20		17
18								0.45			0.20		18
19								1.55			0.05		19
20								0.15					20
21													21
22													22
23							1.25						23
24							0.10			0.25			24
25							1.50		1.25	0.30			25
26							0.20			0.40			26
27													27
28													28
29													29
30					0.75								30
31													31
Total	0.35	0.00	0.00	0.00	2.15	1.80	3.05	5.90	1.75	0.95	0.45	0.00	
Cum. Total	0.35	0.35	0.35	0.35	2.50	4.30	7.35	13.25	15.00	15.95	16.40	16.40	

Season Total **16.40**

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

Station Name and no. **SLO Airport # 205.4** Season **1992-1993**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1													1
2							0.65						2
3						0.10							3
4						0.10							4
5													5
6							0.10	0.25					6
7						3.10	1.25						7
8							0.55	1.80					8
9						0.15	0.05	0.65					9
10							0.90	0.35					10
11						0.55	0.15						11
12	0.10					0.10		0.05					12
13	0.15						0.85						13
14							1.70		0.20				14
15							0.35						15
16							0.15						16
17							0.65		0.10				17
18						0.27	0.85	0.25	0.10	0.10			18
19							0.55	0.50					19
20							0.10	0.30					20
21							0.25	0.40					21
22													22
23								2.20					23
24								0.25	0.30				24
25									1.15		0.25		25
26								0.80	1.75				26
27									0.25				27
28						0.05		0.25	1.07				28
29						1.25							29
30				1.35		0.50							30
31				0.25									31
Total	0.25	0.00	0.00	1.60	0.00	6.17	9.10	8.05	4.92	0.10	0.25	0.00	
Cum. Total	0.25	0.25	0.25	1.85	1.85	8.02	17.12	25.17	30.09	30.19	30.44	30.44	

Season Total **30.44**

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

Station Name and no. **SLO Airport # 205.4** Season **1991-1992**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1									0.15				1
2									0.15				2
3													3
4							0.10						4
5							1.95						5
6							0.90	0.60	0.65				6
7						TR	0.25	0.40	0.24				7
8						0.20	0.35	0.20	0.15				8
9								1.55					9
10								0.30					10
11								1.60					11
12								1.25		0.05			12
13													13
14								0.15					14
15								1.85	0.15				15
16								0.85					16
17								0.15					17
18					1.60								18
19													19
20								0.40	0.28				20
21								0.10	0.30				21
22									0.05				22
23									0.45				23
24													24
25				0.01									25
26				0.50					0.10				26
27													27
28						2.70							28
29						1.05							29
30						0.55							30
31						0.20							31
Total	0.00	0.00	0.00	0.51	1.60	4.70	3.55	9.40	2.67	0.05	0.00	0.00	
Cum. Total	0.00	0.00	0.00	0.51	2.11	6.81	10.36	19.76	22.43	22.48	22.48	22.48	

Season Total **22.48**

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

Station Name and no. **SLO Airport # 205.4** Season **1990-1991**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1									1.00	0.25			1
2									0.30				2
3							0.05	0.20					3
4							0.50		0.65				4
5								0.10	1.75				5
6													6
7													7
8													8
9							0.30						9
10							0.05		0.20				10
11													11
12													12
13									0.25				13
14						TR							14
15						0.40			0.05				15
16									0.25				16
17									1.70				17
18						0.20			2.05				18
19									1.15				19
20						0.45			0.05	0.15			20
21			TR			TR							21
22			0.40										22
23													23
24									1.30				24
25									0.20				25
26									1.00				26
27					0.40			0.25				TR	27
28								1.95				0.40	28
29												0.10	29
30													30
31													31
Total	0.00	0.00	0.40	0.00	0.40	1.05	0.90	2.50	11.90	0.40	0.00	0.50	
Cum. Total	0.00	0.00	0.40	0.40	0.80	1.85	2.75	5.25	17.15	17.55	17.55	18.05	

Season Total **18.05**

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

Station Name and no. **SLO Airport # 205.4** Season **1989-1990**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1								0.20					1
2							0.02						2
3									0.20				3
4								0.70					4
5									0.25				5
6													6
7													7
8													8
9													9
10													10
11									0.20				11
12													12
13							1.10						13
14							0.20						14
15							0.40						15
16			TR										16
17			0.40					1.30		0.10			17
18								0.20					18
19			0.01										19
20													20
21													21
22				0.30									22
23										0.02			23
24				0.80							0.35		24
25				TR									25
26					0.55								26
27													27
28											0.85		28
29			1.10										29
30													30
31													31
Total	0.00	0.00	1.51	1.10	0.55	0.00	1.72	2.40	0.65	0.12	1.20	0.00	
Cum. Total	0.00	0.00	1.51	2.61	3.16	3.16	4.88	7.28	7.93	8.05	9.25	9.25	

Season Total **9.25**

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

Station Name and no. **SLO Airport # 205.4** Season **1988-1989**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1													1
2								TR	0.85				2
3									0.30				3
4								0.80					4
5							0.10						5
6							0.45						6
7													7
8								0.10					8
9								0.90			0.10		9
10								0.10			0.10		10
11													11
12													12
13													13
14					0.60								14
15						1.50							15
16						1.30							16
17					0.15								17
18						0.15							18
19													19
20						0.10							20
21						1.45							21
22													22
23						0.50							23
24					0.50	0.35							24
25					0.50	1.50	0.30		0.30	0.15			25
26						0.01				0.10			26
27													27
28													28
29													29
30													30
31						0.20							31
Total	0.00	0.00	0.00	0.00	1.75	7.06	0.85	1.90	1.45	0.25	0.20	0.00	
Cum. Total	0.00	0.00	0.00	0.00	1.75	8.81	9.66	11.56	13.01	13.26	13.46	13.46	

Season Total **13.46**

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

Station Name and no. **SLO Airport # 205.4** Season **1987-1988**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1									0.80				1
2													2
3													3
4													4
5					0.35	1.10	1.10						5
6						0.05					0.20		6
7						1.20					0.01		7
8											0.10		8
9													9
10													10
11							0.10						11
12													12
13													13
14					0.02					0.20			14
15										0.20			15
16						0.25							16
17							0.68						17
18					0.30		0.50						18
19										0.21			19
20										1.35			20
21										0.10			21
22													22
23				1.30									23
24				0.02									24
25													25
26								0.80					26
27								0.15					27
28				0.20		1.00		2.00					28
29				0.05		0.60							29
30						0.50							30
31				0.02									31
Total	0.00	0.00	0.00	1.59	0.67	4.70	2.38	2.95	0.80	2.06	0.31	0.00	
Cum. Total	0.00	0.00	0.00	1.59	2.26	6.96	9.34	12.29	13.09	15.15	15.46	15.46	

Season Total **15.46**

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

Station Name and no. **SLO Airport # 205.4** Season **1986-1987**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1													1
2													2
3								0.16		0.20			3
4							1.35						4
5						0.70			1.46				5
6							0.08		1.75				6
7							0.89		0.10				7
8													8
9								0.04					9
10								0.35					10
11								0.09	0.05				11
12													12
13								0.70					13
14								0.90					14
15													15
16						0.35							16
17													17
18					0.30								18
19													19
20													20
21								0.16	0.06				21
22									0.14				22
23			0.30			0.03	0.25		0.04				23
24			0.52										24
25													25
26								0.02					26
27													27
28			0.15				0.25						28
29							0.20						29
30										0.25			30
31							0.10						31
Total	0.00	0.00	0.97	0.00	0.30	1.08	3.12	2.42	3.60	0.45	0.00	0.00	
Cum. Total	0.00	0.00	0.97	0.97	1.27	2.35	5.47	7.89	11.49	11.94	11.94	11.94	

Season Total **11.94**

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

Station Name and no. **SLO Airport # 205.4** Season **1985-1986**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1								0.22					1
2						1.25		0.15					2
3						0.45		0.22					3
4							0.35	0.05					4
5							0.50			0.17			5
6							0.05						6
7													7
8			0.01						1.05				8
9									1.10				9
10					0.10				1.10				10
11					1.30				0.50				11
12					0.20			0.22	0.52				12
13								3.70					13
14								1.40					14
15							0.55	1.25					15
16								0.15	1.75				16
17									0.15				17
18								0.40					18
19													19
20	0.03												20
21				0.85	0.05								21
22				0.18									22
23													23
24													24
25					0.60								25
26			0.02										26
27					0.20								27
28													28
29					0.70	0.04							29
30					0.55	0.10	0.25						30
31							0.32						31
Total	0.03	0.00	0.03	1.03	3.70	1.84	2.02	7.76	6.17	0.17	0.00	0.00	
Cum. Total	0.03	0.03	0.06	1.09	4.79	6.63	8.65	16.41	22.58	22.75	22.75	22.75	

Season Total **22.75**

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

Station Name and no. **SLO Airport # 205.4** Season **1984-1985**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1													1
2								0.20					2
3						0.26							3
4													4
5									0.18				5
6						0.12			0.96				6
7							0.05						7
8					0.90		0.82	0.32					8
9								1.25					9
10						1.10	0.02		0.13				10
11				0.21					0.30				11
12				0.15					0.05				12
13					0.70								13
14													14
15		0.05				1.00							15
16					0.04								16
17				0.60	0.15					0.10			17
18					0.06	0.24			0.30				18
19						0.30							19
20					0.08	0.70							20
21										0.05			21
22													22
23													23
24					0.40								24
25					0.40								25
26					0.10								26
27						0.04			0.70				27
28					1.25				0.70				28
29							0.22						29
30													30
31													31
Total	0.00	0.05	0.00	0.96	4.08	3.76	1.11	1.77	3.32	0.15	0.00	0.00	
Cum. Total	0.00	0.05	0.05	1.01	5.09	8.85	9.96	11.73	15.05	15.20	15.20	15.20	

Season Total **15.20**

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

Station Name and no. **SLO Airport # 205.4** Season **1983-1984**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1					0.40	0.03		TR					1
2													2
3						0.28							3
4						0.58							4
5													5
6										0.26			6
7													7
8													8
9						0.40							9
10						0.24		0.20					10
11					1.25	0.03							11
12					0.03	0.50							12
13					0.13								13
14					0.10			0.10					14
15													15
16							0.06	0.12					16
17					0.23		0.03	0.11	0.08				17
18					0.30								18
19		0.50								0.38			19
20		0.10			0.28								20
21					0.17			0.02					21
22													22
23													23
24					0.46								24
25					0.80	2.78							25
26						0.32							26
27													27
28													28
29													29
30		0.03	2.00	0.28									30
31				0.04									31
Total	0.00	0.63	2.00	0.32	4.15	5.16	0.09	0.55	0.08	0.64	0.00	0.00	
Cum. Total	0.00	0.63	2.63	2.95	7.10	12.26	12.35	12.90	12.98	13.62	13.62	13.62	

Season Total **13.62**

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

Station Name and no. **SLO Airport # 205.4** Season **1982-1983**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1						0.85			1.35		0.58		1
2									0.58		0.10		2
3								0.70	0.88				3
4									0.60				4
5									0.02		0.03		5
6								0.35	0.07	0.03			6
7								1.24	0.32				7
8								0.88					8
9					0.65			0.05					9
10					0.96				0.04				10
11					0.35								11
12								0.10					12
13								2.46	0.15				13
14									0.50				14
15			0.15										15
16			0.01					0.04					16
17									0.72				17
18					0.94			0.22	0.62	1.00			18
19							1.35	0.06	0.05	0.18			19
20							0.04			0.35			20
21									0.75	0.38			21
22						2.05							22
23			0.04		0.30	2.00	2.85		0.72				23
24			0.04		0.02		0.90	0.21	0.79	0.32			24
25			0.49	0.01			0.10	0.03	0.15	0.03			25
26				0.71				1.98					26
27		0.30					2.75	1.15					27
28					0.04		0.18	0.44	0.11	0.59			28
29					0.70		0.41						29
30				0.55	2.00		0.03			0.28			30
31				0.17									31
Total	0.00	0.30	0.73	1.44	5.96	4.90	8.61	9.91	8.42	3.16	0.71	0.00	
Cum. Total	0.00	0.30	1.03	2.47	8.43	13.33	21.94	31.85	40.27	43.43	44.14	44.14	

Season Total **44.14**

San Luis Obispo County Public Works

DAILY PRECIPITATION

(inches)

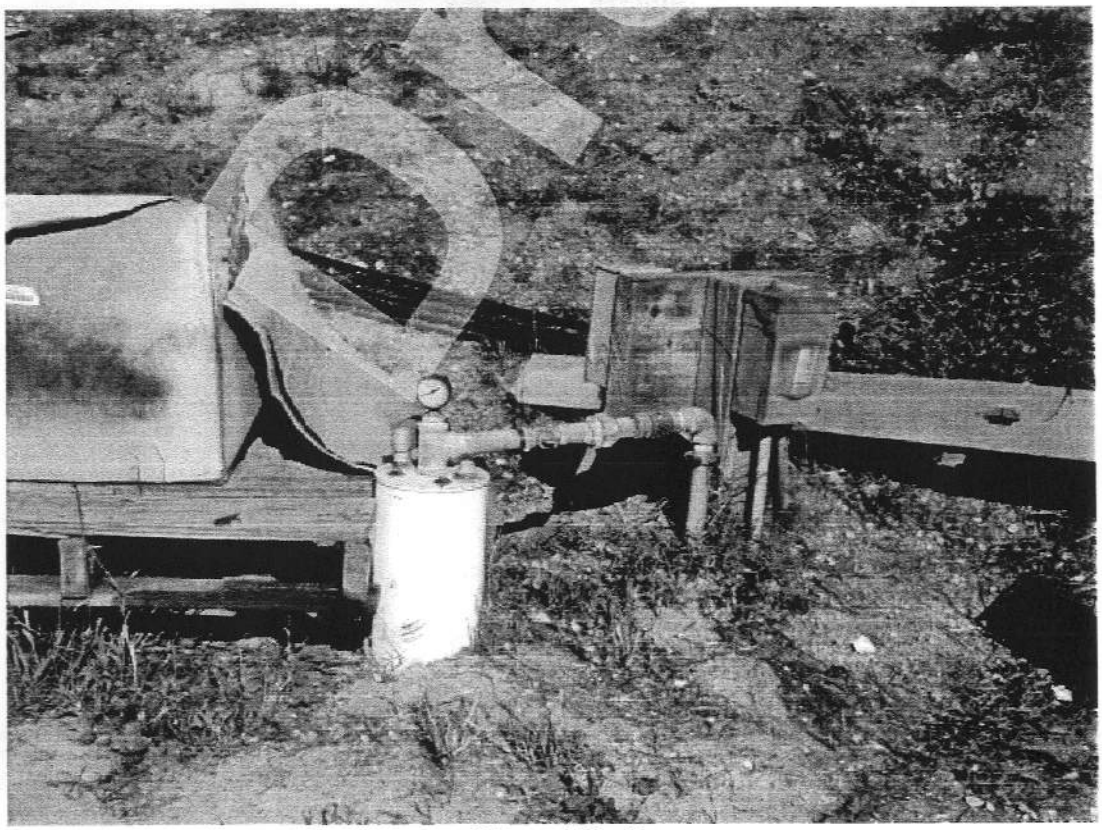
Station Name and no. **SLO Airport # 205.4** Season **1981-1982**

Day	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Day
1							0.50		0.25	1.90			1
2							0.32		1.40	0.18			2
3							0.09		0.20				3
4													4
5					0.02		1.50						5
6							0.04						6
7													7
8									0.04				8
9													9
10						0.03		0.14	0.08	0.38			10
11								0.60		3.28			11
12									0.19	0.15			12
13					0.04	0.01							13
14					1.24			0.03	0.32				14
15					0.02			0.13	0.48				15
16								0.51	0.69				16
17					0.32				1.05				17
18									0.49				18
19							0.18		0.20				19
20						0.36	0.54						20
21							0.92						21
22													22
23													23
24					0.07								24
25													25
26					0.70		0.03		0.40				26
27					0.14		0.04						27
28				0.95			0.22		0.27				28
29				0.60	0.02		0.02		0.64				29
30						0.70			0.58				30
31						0.03			0.19				31
Total	0.00	0.00	0.00	1.55	2.57	1.13	4.40	1.41	7.47	5.89	0.00	0.00	
Cum. Total	0.00	0.00	0.00	1.55	4.12	5.25	9.65	11.06	18.53	24.42	24.42	24.42	

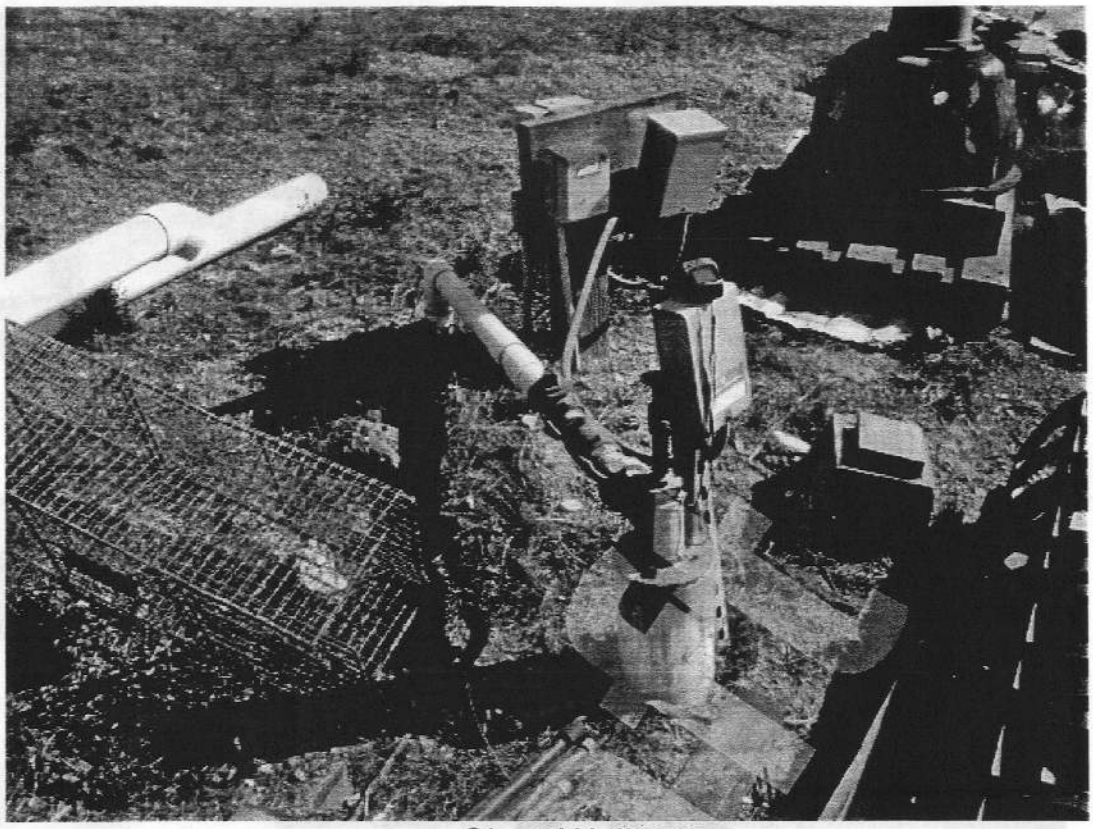
Season Total **24.42**

APPENDIX C
SITE PHOTOGRAPHS

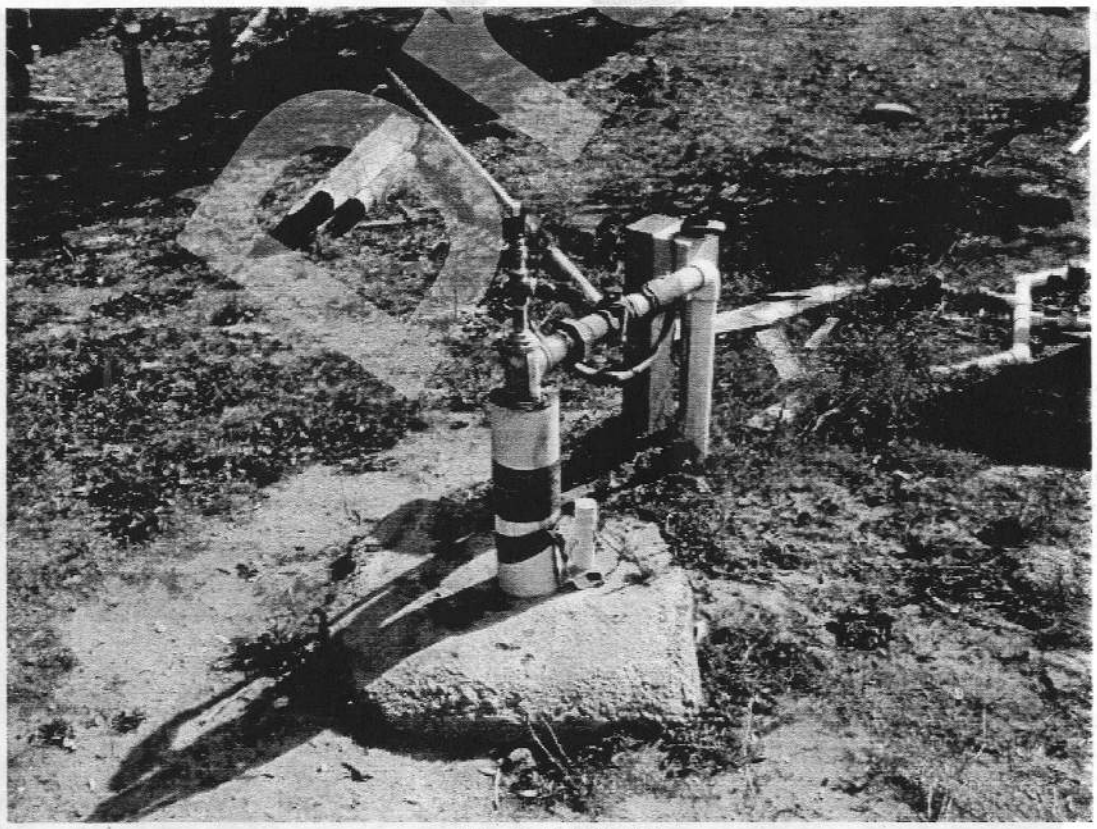
Landfill From West



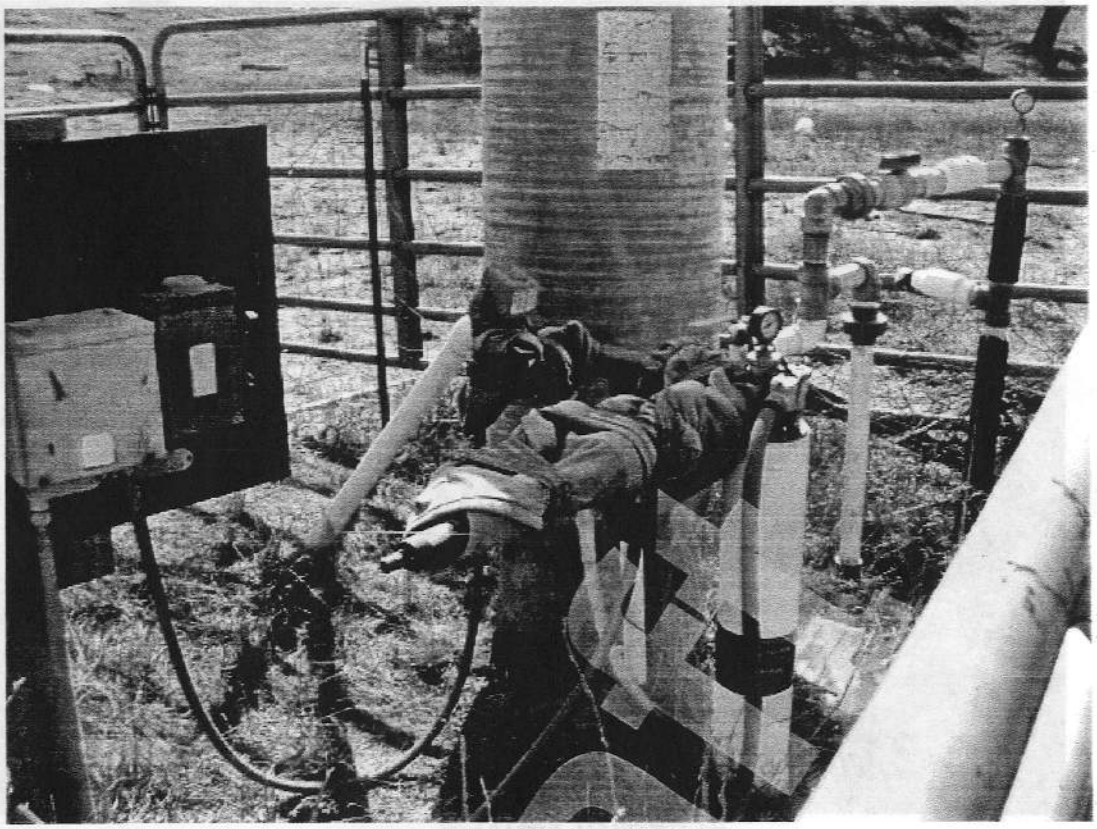
Shop Well



Shop Well



Weir Well #1



Weir Well #2

Weir Well #3

APPENDIX D
ON-SITE WELL INFORMATION

Well site information is confidential, but is available for review by qualified persons at the County of San Luis Obispo.

APPENDIX E
SUMMARY OF RECENT LEACHATE ANALYTICAL RESULTS

Table 3-2
SUMMARY OF RECENT LEACHATE ANALYTICAL RESULTS
Cold Canyon Landfill, San Luis Obispo County

CONSTITUENT	UNITS	2001	2002	2003	2005	2006
Chloride	mg/L	730	810	400	NA	660
Sulfate	mg/L	200	150	120	NA	3.5
Arsenic	mg/L	ND	ND	ND	NA	0.036
Manganese	mg/L	4.8	2.1	1.8	NA	1.4
Acetone	ug/L	NA	NA	NA	9.9	NA
Benzene	ug/L	7.9	8.7	13	0.25	2.5
Toluene	ug/L	14	5.7	1.8	ND	ND
Ethybenzene	ug/L	5.1	5.7	9.2	ND	5.5
m,p-Xylene	ug/L	NA	NA	NA	ND	4.8
o-Xylene	ug/L	NA	NA	NA	ND	12.3
Total Xylenes	ug/L	8.7	7.5	6	ND	NA
MTBE	ug/L	NA	NA	NA	67	40
1,4-Dichlorobenzene	ug/L	ND	ND	ND	0.81	0.8
1,2-Dichloroethane	ug/L	ND	ND	ND	ND	0.6
2-Butanone (MEK)	ug/L	NA	NA	NA	1.6	NA
Chloroethane	ug/L	21	53	15	1.7	0.6
1,1-Dichloroethane	ug/L	27	37	27	0.92	0.6
1,2-Dichloroethane	ug/L	1.3	3.8	8.8	0.41	0.6
1,1-Dichloroethene	ug/L	0.7	ND	ND	ND	ND
cis-1,2-Dichloroethene	ug/L	4.7	5.7	8.1	ND	0.6
Isopropylbenzene	ug/L	ND	0.5	ND	ND	1.6
4-Isopropyl toluene	ug/L	0.5	0.6	ND	ND	ND
Methylene Chloride	ug/L	3.8	7.2	4.9	0.45	ND
1,2,4-Trichlorobenzene	ug/L	ND	ND	1.3	ND	ND
Trichloroethene	ug/L	2.8	1.6	ND	ND	ND
1,2,4-Trimethylbenzene	ug/L	0.9	0.8	ND	ND	1.6
Vinyl Chloride	ug/L	14	ND	ND	7.6	1.4
TOTAL VOCs	*ug/L*	*112.4*	*137.8*	*95.1*	*90.64*	*73.5*

Notes:
1. ND - Not detected.
2. NA - Not analyzed/reported.
3. Table only includes VOCs detected in one or more sampling round.

FUGRO WEST, INC.

4820 McGrath Street, Suite 100
Ventura, California 93003-7778
Tel: (805) 650-7000
Fax: (805) 650-7010

February 8, 2010 (Revised November 4, 2010)
Project No. 3014.035

TECHNICAL MEMORANDUM

To: John McKenzie (County of San Luis Obispo)

From: Timothy A. Nicely, CHg

Copy: David Gardner, Paul Sorensen (Fugro), Keith Miller (SWCA)

Subject: **Technical Memorandum No. 2, Well Pump Test Analysis and Water Demand Audit, Cold Canyon Landfill Expansion Environmental Impact Report**

Fugro is pleased to submit this consolidated technical memorandum (TM) to the County of San Luis Obispo Planning and Building Department, which documents the methods and results of pumping tests of three on-site wells at the Cold Canyon Landfill as well as an audit of water use at the landfill during the first half of 2010. The pumping tests were designed and performed to address several groundwater-related comments received after the circulation of the draft environmental impact report (DEIR) associated with the proposed expansion of the Cold Canyon Landfill. Generally, the DEIR comments related to further definition of the hydrogeology of the area, the pumping capacity of the existing wells at the landfill, use of the wells, and what effects any anticipated additional use of groundwater at the landfill (i.e., groundwater extractions) would have on other wells in the "basin." The well-testing program was developed based on discussion with County of San Luis Obispo staff, and included pumping tests of the existing three landfill wells for durations of up to 72 hours. This work was performed during the latter half of 2009. The scope of the well testing program was presented in our proposal dated May 22, 2009 (revised June 22, 2009), which is included in Appendix A - Supporting Documents.

The June 22, 2009 proposal also included a task to better quantify and understand how groundwater (and any other sources of water at the landfill) was being used for such things as dust control, composting, odor control, and other landfill activities. An initial draft TM discussing the results of the well testing program and water demand analysis was submitted to County of San Luis Obispo staff in early January 2010. The technical memorandum concluded that the amount of groundwater use and landfill water demand could not be accurately determined, largely due to the relatively short time period during which such records were available, inferred seasonal variations in landfill water use and certain deficiencies in the record keeping of these activities by landfill operations staff. During the period from February to May 2010, landfill operations staff subsequently initiated improved record keeping of daily water demand and groundwater use. Based on these additional records, Fugro was requested to provide further analysis of the landfill groundwater use and water demands. Our proposal dated June 1, 2010 (also included in Appendix A) describes the focus of this supplemental work. In July 2010 we

issued a draft TM that discussed the results of the supplemental landfill water supply and demand analysis. This TM was subsequently updated with several additional months of landfill water use data.

This consolidated TM thus provides information and analysis of groundwater use and water demand at the landfill for the period from about June 2009 through August 2010. A discussion of the well testing program and well capacity/interference analysis is provided first, followed by an analysis of the data of groundwater use at the landfill and how this groundwater (and other sources of water) is used. Landfill composting operations have and are anticipated in the future to comprise a significant part of the landfill water demand. A comparison of green waste tonnage accepted at the landfill and composting operations was used to assess seasonal variations in this water demand and to estimate how expansion of the landfill, and possible expansion of composting operations, would affect future water demand.

BACKGROUND

The well-testing program was designed to refine and support (or refute) a number of assumptions and data contained in the DEIR, specifically the capacity and sustainable yield of the existing landfill wells. Based on a survey of the area, two nearby water wells and four on-site monitoring wells, inferred to share hydraulic connection with the landfill wells were identified and instrumented to determine well interference effects.

To fulfill the objectives of the program, the following scope of work was performed:

1. A pre-test field visit was conducted to meet with the landfill operator, identify the status of the wells to be tested, and the ability of those wells to meet the testing criteria (pumping capacity, ability to measure water levels, ability to meter flow, etc.), and also conduct a survey of nearby wells potentially suitable for inclusion in the monitoring network;
2. A brief TM (TM No. 1, Fugro May 22, 2009) was prepared that identified the wells to be pumped and the wells to be monitored, the methods to be used in the pumping tests, anticipated instrumentation needs (meters and ability to measure water levels), and nearby private wells potentially suitable for monitoring;
3. Well capacity tests were performed to confirm the production capacity of each of the three Weir wells;
4. Water level data in the pumping wells, proximate onsite monitoring wells and proximate off-site wells were monitored to better define aquifer storativity, conductivity, and drawdown;
5. The well drawdown and interference effects on two neighboring wells were analyzed;
6. A draft TM was prepared (TM No. 2 dated February 8, 2010) was prepared summarizing the field work performed and the results. It was anticipated that this TM No. 2 would be incorporated in the revised DEIR (to be prepared by SWCA).

As described in Fugro (March, 2008), landfill water demand is met by using several wells, two of which, the so-called Weir wells, are located near the southeast corner of the landfill expansion area. The wells are referred to as Weir Wells No. 1 and 2. As part of this well testing program, a third Weir Well, No. 3, was fitted with an operational pump and placed into active service. Although California Department of Water Resources (DWR) State Well Completion reports do not exist for these wells, landfill staff believe that Weir Well No. 1 was installed around 1956 and Weir Well No. 2 was installed around 1975. Weir Well No. 3 is more recent, but the exact date of construction is unknown. The wells are between 156 feet (Weir Well No. 2) and 244 feet deep (Weir Well No. 3) and produce water from a sandstone aquifer of the Pismo Formation. This aquifer is well-defined in the area, generally trends east-west and is bounded by well-defined features (refer to Golder, 2007; Fugro, 2008). The hydraulic conductivity of the Edna Member of the Pismo Formation, the only member present below the site, was previously determined based on a constant-discharge test within on-site well P-1B to be approximately 0.65 ft/d. The effective porosity of the formation is estimated to be 25 percent (Golder, 2007).

Prior to September 2009, none of the Weir wells were fitted with meters to record either instantaneous flow (in gallons per minute [gpm]) or how much groundwater was being used. For this testing program, each Weir well was instrumented by Farm Supply of Arroyo Grande with an in-line flow meter, a valve to regulate discharge, and an access tube into which a pressure transducer was placed to monitor water-level variations. Coordination with the landfill operations staff was required to perform the tests so that only a single well was pumping during each test, and to ensure that, to the degree possible, the pumping well could be pumped at a constant discharge rate. The produced groundwater was pumped to an on-site pond. After completion of each pumping test, the rate of recovery of water levels in each well was monitored for a period of at least 72 hours, during which all of the Weir wells remained off. The field activities associated with performance of the pumping tests for the well-testing program were performed between Friday, September 18 and Friday, December 11, 2009.

As mentioned above, a related aspect of the supplemental study conducted in the latter half of 2009 was to generally determine how groundwater was being used at the landfill for dust control, compost irrigation, or other uses. To accomplish this, we provided Mr. Bruce Rizzoli with forms on which he was requested to record this information on a daily basis. The results of this initial attempt to determine landfill water use and demand, as well as follow-up work associated with the analysis of landfill water use and demand activity performed largely in June 2010 is described in a draft technical memorandum dated July 8, 2010 contained in Appendix A. The conclusions of that TM are incorporated in this final TM.

WELL TESTING PROGRAM

On-Site Well Survey

On Friday, September 18, 2009, we met with the landfill operations manager, Mr. Bruce Rizzoli at the landfill to assess our ability to perform the testing. The purpose of the meeting was to determine what was required to: 1) perform the pumping tests, and 2) document current water use at the landfill for each landfill activity that required water (composting, materials

recovery facility [MRF], and dust-control). Additionally, Mr. Rizzoli described his understanding of the location of water wells surrounding the landfill for possible inclusion in the testing program.

During our meeting, we visited and documented the condition of 12 on-site monitoring wells, and each of the three Weir wells. Based on that survey, we determined that all of the on-site monitoring wells were suitable for monitoring during the pumping tests and for the installation of water-level pressure transducers. Four of the nearest monitoring wells were selected for inclusion in the program because of their relative proximity to the pumping wells. For inclusion, it was required that each monitoring well be deep enough for it have water within it. The selected on-site monitoring wells were between 90 and 100 feet deep. A monitoring well located closer to Weir Well No. 3 was too shallow and was dry. The other monitoring wells on-site were farther from the pumping wells than the selected monitoring wells. The locations of the monitoring wells are presented on Plate 1 - Well Testing Program Monitoring Network. Photographs of each of the monitoring wells are presented in Appendix B - Site Photographs.

The wellheads of each of the three Weir wells were also inspected. Each Weir well consists of a 5-inch steel casing fitted with an operational submersible electric pump. Based on the inspection, it was determined that each of the three wells required the installation of a McCrometer or similar in-line 2-inch totalizing flow meter, a valve to regulate discharge, and an access tube for installation of the pressure transducers. In addition to the flow meters to be installed at each well head, it was requested that a meter be installed at the outflow to the on-site pond and at the outflow to the tank adjacent to the MRF. The meter to be installed at the pond outflow was placed to quantify the combined outflow from all of the Weir wells at a point where that water enters the pond. Water from the pond is then subsequently pumped into water trucks for use at the composting facility and for dust control purposes on the roads throughout the site. These requested modifications were coordinated by Mr. Rizzoli and completed by Farm Supply of Arroyo Grande by Monday, October 12, 2009.

Neighboring Wells Survey

During the meeting of Friday, September 18, 2009, Mr. Rizzoli directed us to the locations of several active wells surrounding the landfill. The wells surrounding the landfill determined to be appropriate for inclusion in the monitoring network (i.e., appropriate depth and perforated interval) were generally located to the east and south of the landfill, generally surrounding the Weir property (expansion area). The wells located to the north of the landfill were not considered for inclusion in the monitoring network because these wells are located in the Monterey formation, which is a distinctly different aquifer.

In response to letters sent by the County of San Luis Obispo to adjacent landowners, several landowners expressed interest in having their wells included in the monitoring program. On Tuesday, November 3, 2009, we met with several well owners. These owners and their representatives included Bruce Falkenhagen, Sue Barone, Earl Darway and their hydrogeologist Charlie Katherman, and Pat Clements.

Many of the wells surrounding the landfill, which pump water from the same geologic formation as the Weir wells, were not chosen for inclusion in the monitoring network. Typical reasons that the wells were not included in the monitoring network included lack of access for installation of a pressure transducer, and unknown well design information (i.e., depth and perforated interval.) In several cases, wells were excluded because they were known to pump relatively continually or frequently, which would mask any interference effects from pumping of the Weir wells. Field notes related to the meeting of November 3, 2009 are included in Appendix C - Supporting Hydrogeologic Data.

Based on that meeting, several wells were chosen for inclusion: the so-called Gomez well, located on Earl Darway's property approximately 200 feet south of Weir Well No. 1; and the so-called Clements well, which is located south of the landfill and west of the Weir wells at a distance of approximately 1,900 feet. The two wells are of similar depth; the Gomez well is 120 feet deep and the Clements well is 127 feet deep. The pumps in both wells are set at a depth of 100 feet. Both wells produce groundwater from the Pismo formation. The locations of the wells included in the monitoring network are shown on Plate 1. A State of California Well Completion Report for the Gomez well is presented in Appendix C.

Well Instrumentation

On Tuesday, November 3, and Thursday, November 5, 2009, Weir Wells No. 1, 2, and 3, off-site wells (Gomez and Clements) and each of the on-site monitoring wells (B-1, P-6, and P-10, P-12) were instrumented with water-level pressure transducers. The transducers were programmed to read and record water level data at 5 minute intervals. The water levels in all monitoring wells, Weir pumping wells, and off-site wells were recorded to observe background water-level fluctuations and patterns of on-site and off-site well pumpage for a period of 6 days prior to performing well capacity tests.

Background Water Level Conditions

Between Tuesday, November 3 and Thursday, November 5, 2009 all three Weir wells were pumped to fill the pond and tank prior to testing. In accordance with the typical operational procedure, the three Weir wells were pumping concurrently until Weir Wells No. 1 and 3 were switched off to be instrumented on Thursday, November 5, 2009. Weir Well No. 2 was switched off Friday, November 6, 2009.

In order to determine the pumping rate of each well, drawdown effects, aquifer storativity and hydraulic conductivity, each of the three Weir wells were pumped for a period of 72 hours. The field activities associated with performance of the pumping tests for the three Weir wells was performed for approximately 3 weeks between Monday, November 9 and Sunday, November 29, 2009. To perform the tests so that only a single well was pumping during each test, coordination with the landfill operations staff was required. The produced groundwater was pumped to the on-site pond, which was capable of storing the entire volume from all three pumping tests. After completion of each pumping test, the post-test recovery of water level was monitored for a period of 72 hours, during which all on-site wells remained off. Hydrographs for

each well in the monitoring network for the period-of-record are presented in Appendix D - Water Level Hydrographs.

Weir Well No. 1 Pumping Test

Weir Well No. 1 consists of a 5-inch PVC casing installed to a depth of 186 feet. The pump was installed with the intake at a depth of 158 feet. Prior to initiating the pumping test, the stable static water level was approximately 72.4 feet below the top of the casing (btoc). A transducer was installed within the well to the maximum depth possible, which was limited to a depth of approximately 144 feet btoc, or about 14 feet above the pump intake. Installation of the transducer to this depth did not allow observation of water level declines 144 feet btoc. The DEIR-stated pumping rate, based on the understanding of landfill manager Mr. Bruce Rizzoli, was 40 gpm (Fugro, 2008).

On Monday, November 9, 2009 the pumping test of Weir Well No. 1 was initiated at a rate of about 32 gpm. The pump ran continually for the entire 72 hour period. For the first 100 minutes of the test, the well was pumped at an average rate of approximately 30.5 gpm, during which time the water level was entirely above the depth of our water level transducer of 144 feet btoc (or 72 feet below the static water level.) Between 100 minutes after the test began through the end of the 72 hours period, which ended on Thursday, November 12, 2009, the well pumped continually at a decreased average rate of 25 gpm. During this time, the water level had dropped entirely below the depth of the water level transducer. Because the flow-regulation valve was already partially closed at the time of testing, we were not able to regulate discharge to a lower flow rate to keep the water level above the transducer without potentially damaging the pump. On Thursday, November 12, 2009 the pump was switched off. The average pumping rate was 25.6 gpm. The discharge rate and pumping pattern observed appears to be typical of how the well is pumped at the landfill (Appendix D.)

At the end of the test, the pumping water level was below the transducer installed at a depth of about 144 feet btoc. This pumping level is equal to or greater than 71.3 feet of drawdown, which results in a specific capacity value of less than 0.35 gpm/ft. Assuming the water level within the well continued to decline during pumping to the pump intake, the total theoretical drawdown would have been about 85 feet, which would result in a specific capacity value of about 0.3 gpm per foot. Although the drawdown at this pumping rate may be considered a limitation in aquifer analysis, the100 minutes of pumping suggests a transmissivity value of between 300 and 600 gpd/ft, which is similar to previously determined values (Golder, 2007). Following the end of the pumping test, the well was not pumped for a period extending through the end of the testing program, that is, Sunday, November 29, 2009. A hydrograph of the pumping test is presented as Plate 2 - Weir Well No. 1 Three-day Pumping Test Hydrograph.

Weir Well No. 2 Pumping Test

Weir Well No. 2 consists of a 5-inch PVC casing installed to a depth of 156 feet. The pump was installed with the intake at a depth of 144 feet. Prior to initiating the pumping test, the stable static water level was approximately 43.2 feet below the top of the casing. The DEIR-

stated pumping rate, based on the understanding of landfill manager Mr. Bruce Rizzoli was 22 gpm (Fugro, 2008). A transducer was installed within the well to the maximum depth possible given the existing well pump and internal components, which was limited to a depth of approximately 134 feet btoc. This transducer setting allowed for the observation of water level fluctuations to approximately 10 feet above pump. At no time did the water level drop below the transducer depth.

On Monday, November 6, 2009 the pumping test for Weir Well No. 2 was initiated at a rate of about 10 gpm. After about 10 minutes, the pumping rate climbed to approximately 16 gpm for unknown reasons, then moderated to 13 gpm. Subsequently, the pump then ran continually for a period of approximately 2 hours during which the well pumped at an average rate of approximately 12 gpm. After this time, the pump began a cycle of switching on for 5 to 6 minutes approximately three times per hour. During the times of pumping, the well pumped at approximately 12 to 13 gpm. This cycling continued though the end of the testing period of 72 hours through Thursday, November 19, 2009 at which time it had pumped at an average rate of 5.3 gpm. The average pumping rate for the duration of the test was 5.5 gpm.

At the end of the test, the pumping water level was fluctuating between a depth of about 60 and 90 feet below the top of the casing. This range of pumping levels is equal to between 20 and 50 feet of drawdown, which results in an (non-steady state) estimate of a specific capacity value of 0.11 to 0.28 gpm/ft. The rapid drawdown to the pump at relatively low pumping rates did not allow for analysis of the water level data for determination of aquifer properties. The relatively low pumping rates and rapid drawdown indicate that the aquifer has limited water transmitting properties.

Based on water level data from the period before the pumping tests began, this drawdown does not seem to be typical of the operational pattern for the well (refer to Appendix D.) During the period of pumping, which ended on November 6, 2009 and again during the period between November 30 and December 7, 2009 (to be discussed later) the pumping water level typically pumped down to a depth below 135 feet. It is unknown why the water level during this pumping test only pumped down to a maximum depth of 90 feet.

Following the end of the pumping test, the well was not pumped for a period extending through the end of the testing program, that is, Sunday, November 29, 2009. A hydrograph of the pumping test is presented as Plate 3 - Weir Well No. 2 Three-day Pumping Test Hydrograph.

Weir Well No. 3 Pumping Test

Weir Well No. 3 consists of a 5-inch PVC casing installed to a depth of 244 feet. The pump was installed with the intake at a depth of 237 feet. Prior to initiating the pumping test, the stable static water level was approximately 6.9 feet btoc. The DEIR-stated pumping rate, based on the understanding of landfill manager Mr. Bruce Rizzoli was 16 gpm (Fugro, 2008).

On Sunday, November 22, 2009 the pumping test for Weir Well No. 3 was initiated at an initial rate of about 11 gpm. After approximately 35 minutes of pumping, the water meter

indicated that the pumping rate had increased to 18 gpm, which we decreased by manually closing the valve partially over a period of several minutes. After 43 minutes of pumping, the flow rate was regulated back down to 11 gpm. After 44.5 minutes of pumping, while at a steady pumping rate of 11 gpm, the pump switched off.

For the remainder of the test, the pump switched on and off in short cycles of several minutes each. During this time the pumping rate remained constant at 10 to 11 gpm likely due to the diaphragm pressure-regulation tank installed adjacent to the well head. After approximately 2 days of pumping, the average flow was approximately 10 gpm. At that time, we discovered that the valve, which was partially closed, had been opened fully by someone other than Fugro or landfill staff. The reason the valve was adjusted is unknown. After 3 days of pumping the average pumping rate had declined to 4.5 gpm. The pumping was ended on Wednesday, November 25, 2009 after 3 days of pumping, during which time the average pumping rate was 8.5 gpm. At the end of the test, the pumping water level was 67 feet btoc. This pumping level is equal to approximately 60 feet of drawdown, which results in a (non-steady state) specific capacity value of less than 0.14 gpm/ft. The rapid drawdown to the pump at relatively low pumping rates did not allow for analysis of the water level data for determination of aquifer properties. However, the water level data support the conclusion that the aquifer is of limited transmissivity.

Following the end of the pumping test, the well was not pumped through the end of the testing program, that is, Sunday, November 29, 2009. The well was pumped by landfill staff with the other two Weir wells starting on Monday, November 30, 2009. A hydrograph of the pumping test is presented as Plate 4 - Weir Well No. 3 Three-day pumping Test Hydrograph. Note that the water level data for Weir Well No. 3 are not ideal because the transducer became stuck within the well during installation at a depth and manner which damaged the transducer. The transducer was not able to be removed following the completion of testing. The water level data presented for Weir Well No. 3 were measured principally with an electronic water level sounder.

Simultaneous Pumping

Prior to the pumping tests, between Tuesday, November 3 and Wednesday, November 4, 2009 all three Weir wells were switched on and pumped in unison by landfill staff, during which time the combined volume of water pumped totaled approximately 74,000 gallons per day (gpd). Between Wednesday, November 4 and Thursday, November 5, 2009, when the three wells were pumping simultaneously, the combined volume of water pumped equaled approximately 61,000 gpd.

Following completion of the individual pumping tests, the pressure transducers remained installed within all of the on-site and off-site wells and recorded water level data for a period of approximately 2 weeks, through Friday, December 11, 2009. During that period, the wells were operated by landfill staff in response to site demands. The wells were switched on simultaneously for a period of 1 week between Monday, November 30 and Monday, December 7, 2009. At 11 pm on Monday, December 7, 2009 the wells were switched off by landfill staff in response to a series of rain storms. During this week-long pumping period, the wells pumped

approximately 31,000 gpd. A hydrograph of the 7 day pumping period between November 30 and December 7, 2009 is presented as Plate 5 - Weir Wells Simultaneous Pumping Hydrograph.

From December 7, 2009 to January 11, 2010, the wells were pumped infrequently. Based on a reading from the water meter installed at the outfall to the MRF tank on January 11, 2010, a volume of 10,227 gallons was pumped since December 8, 2009. This volume of water is equal to approximately 8 hours of active pumping during the approximately 5-week period (assuming a combined pumping rate equal to 31,000 gpd.) Based on the meter readings we were provided, no water was pumped through the pond gauge during this period. Presumably, the water needs of the entire landfill during this period were met by "pulls" from the pond by water trucks and by draining of the 68,000 gallon tank, which serves the MRF facility.

INTERFERENCE EFFECTS ANALYSIS

During the pumping test program, water levels in the adjacent monitoring wells, the Weir wells and the proximate off-site wells were measured and recorded at 5-minute intervals to determine the degree of well drawdown and interference effects of the pumping wells on the adjacent wells. Hydrographs of the entire period of record for each of the wells in the monitoring network are presented in Appendix D.

During the pumping of Weir Well No. 1, water levels within the adjacent on-site monitoring wells, the Clements well, and Weir Well No. 3 indicated that no drawdown interference had occurred. However, the water level data from Weir Well No. 2, which is located a distance of 312 feet from the pumping well indicated that the water level was drawn down by approximately 0.33 feet during the pumping of Weir Well No. 1. This drawdown reached its maximum depth approximately 1 day after pumping began and moderated (rose) thereafter. Although the water level data from the Gomez well, located approximately 212 feet south the pumping well, indicated that it was pumped regularly during the pumping test, it may be inferred that the pumping level of the Gomez well was drawn down a maximum of 3 to 4 feet during the pumping test. The water levels in other wells indicated that no drawdown occurred due to the pumping of Weir Well No. 1. A hydrograph of the water levels within the monitoring wells is presented as Plate 6 - Weir Well No. 1 Pumping Test, Monitoring Well Hydrographs. A hydrograph of the Gomez well during testing of the Weir Well No. 1 is presented as Plate 7 - Weir Well No. 1 Pumping Test, Gomez Well Hydrograph.

The acquired pump test data were used to estimate the longer-term affects of pumping Weir Well No. 1 for longer durations, at the same approximate discharge rate. A Theis distance-drawdown analysis was performed in a manner similar to that used in the DEIR (Fugro, 2008). In so doing, the predicted affect of pumping the combined wells at 30 gpm for 1 year, assuming 71 percent pumpage (5 of 7 days), the average combined pumping rate would be 21 gpm or 31,000 gpd. Based on our testing, Weir Well No. 1 could provide roughly 64 percent of the anticipated groundwater pumpage demand, or 14 gpm averaged throughout the year. At this rate, the predicted drawdown at the Gomez well, located 212 feet from Weir Well No. 1, would be less than 5 feet after 1 year. At an increased combined pumping rate of 49 gpm, or 50,000 gpd, Weir Well No. 1 would provide an approximately 22 gpm averaged over the entire

year in the same manner. At this pumping rate, the predicted drawdown would be approximately 8 feet at the Gomez Well after 1 year.

During the pumping of Weir Well No. 2, water levels within the adjacent on-site monitoring wells, Weir wells, and off-site monitoring wells indicated that no drawdown interference had occurred. Although the adjacent Gomez well was pumping regularly during the pumping test of Weir Well No. 2, the water level declines did not appear to coincide with the pumping of Weir Well No. 2 and therefore were likely coincident, but not caused by the pumping of Weir Well No. 2. A hydrograph of the water levels within the monitoring wells is presented as Plate 8 - Weir Well No. 2 Pumping Test, Monitoring Well Hydrographs. A hydrograph of the Gomez well during testing of the Weir Well No. 2 is presented as Plate 9 - Weir Well No. 2 Pumping Test, Gomez Well Hydrograph.

During the pumping of Weir Well No. 3, water levels within the adjacent on-site monitoring wells, Weir wells and off-site monitoring wells indicated that no drawdown interference had occurred. Although the Gomez well was pumped irregularly during the pumping test, the water level declines did not seem to coincide with the pumping of Weir Well No. 3. A hydrograph of the water levels within the monitoring wells is presented as Plate 10 - Weir Well No. 3 Pumping Test, Monitoring Well Hydrographs. A hydrograph of the Gomez well during testing of the Weir Well No. 2 is presented as Plate 11 - Weir Well No. 3 Pumping Test, Gomez Well Hydrograph.

During the simultaneous pumping of the wells operated by landfill staff following the end of the pumping program, water levels within all of the wells were measured and recorded. During this time, the water meters for the individual Weir wells were not recorded, but several water-meter readings at the pond outfall meter were recorded. Based on the infrequent cumulative pond water-meter readings and the continuous water level data from each of the wells, it is surmised that all of the Weir wells were pumping in repeated on/off cycles throughout the 7 day period between November 30 and December 7, 2009. Of the off-site and monitoring wells, only the Gomez well appears to be affected by the pumping. Inspection of Plate 5 - Weir Wells Simultaneous Pumping Hydrograph, which presents the water level in Weir Wells No. 1 and 2 along with the Gomez well, indicates that the Gomez well is affected by some pumping stresses, on the order of several feet.

WELL CAPACITY ANALYSIS

Based on our observations of landfill pumping patterns and the individual well pumping tests, a summary of the pumping capabilities of the wells is presented in Table 1 - Summary of Well Pumping Capacities.

Table 1 - Summary of Well Pumping Capacities

Well or Test Name	Test Date(s)	Depth, feet	Static Water Level, feet	Average Pumping Rate, gpm	DEIR PumpingRate, gpm	Groundwater Production, gpd
Simultaneous	11/3 - 11/4	N/A	N/A	52	N/A	74,409
Simultaneous	11/4 - 11/5	N/A	N/A	42	N/A	61,121
Weir No. 1	11/9-11/12	186	72.4	25	40	36,000
Weir No. 2	11/16-11/19	156	43.97	5.5	22	7,920
Weir No. 3	11/22-11/25	244	8.31	8.5	16	12,240
Simultaneous	11/30-12/7	N/A	N/A	21.5	N/A	31,000

As indicated in Table 1, the pumping rates for each of the individual wells were lower than the rates presented earlier (Fugro, 2008). The previous pumping rate values (DEIR pumping rate) were provided by Mr. Rizzoli prior to installation of water meters on each well, which was performed as part of this project. Based on current testing, the production rates from the individual wells range between 25 percent (Weir Well No. 2) to 62 percent of the rates presented in the DEIR (Weir Well No. 1). Weir Well No. 3 appears to be capable of being pumped at approximately half of the rate presented in the DEIR. During the 72 hour pumping tests, the wells produced between 7,900 and 36,000 gpd, which is equal to approximately 5.5 to 25 gpm, on average. Based on the individual pumping test, the summation of the individual pumping rates indicates that the pumping capacity of the three wells is in the range of 56,000 gpd, or 39 gpm on average.

Given the depth of the wells, pump settings, inferred daily operational use (5 days per week), well specific capacity values, and aquifer properties, the estimated average daily groundwater production is possibly 70 percent of the maximum daily production rate. It may be possible that the maximum daily production rate of approximately 56,000 gpd could be achieved by pumping the wells for longer periods, adjusting the valves, and/or reconfiguring the Pump Savers settings.

Based on the combined pumping performed by landfill staff before and after the individual pumping tests, the wells were pumped simultaneously at rates of between 31,000 gpd and 74,000 gpd. The highest simultaneous pumping rate of 74,000 was achieved for a period of a single day before the start of the pumping tests. The lowest simultaneous pumping rate was achieved for a period of 7 days following the individual 72-hour pumping tests. These values bracket the summation of the pumping rates of individual wells, which total approximately 56,000 gpd.

It should be noted that the pumping test for each individual well was performed at a rate pre-determined by the settings of the valves at each well. At Weir Wells No. 1 and No. 3, the pumps were operated without changing the valves; Weir Well No. 1 was pre-set in a partially-closed position, presumably by Farm Supply, and Weir Well No. 3 was opened completely, as it was prior to the start of our testing. At Weir Well No. 2, the flow rate was adjusted downward

during the early part of the test to approximately 10 to 12 gpm to preclude the water level from drawing down to the pump too rapidly.

Although each test was started at a constant pumping rate, in accordance with standard (ideal) methods of well and aquifer testing, the greatest portion of the pumping tests for Weir Wells No. 2 and 3 consisted of cycle of short periods of pumping followed by short periods of recovery. This condition was controlled by the presence of a properly functioning, industry-standard "Pump Saver" which were installed in the electrical panels to prevent the well motors from pumping the well dry, thereby destroying the motors. Whether the Pump Savers and valves were adjusted to maximize the pumping duration and volume from each well is not known by us or the landfill operator.

Inspection of Table 1 indicates that the combined groundwater production from the wells was decreasing over the period of our observation, from a 1-day high of 74,000 gpd, down to another 1-day total of 61,000 gpd. After the testing, the volume of produced groundwater declined further to approximately 31,000 gpd, which was maintained for each of the following 7 days of pumping. The reasons for this decline are unknown. However, the decline in production after completion of the pumping program may be attributed to many factors, which may include inadvertent changes made during testing to the pumping system such as valves or pump electrical switches.

The current relatively dry hydrologic conditions experienced in California in general over the past several years should be considered as it relates to the production capacity of the wells and the groundwater basin. The current hydrologic condition is associated with generally lower groundwater levels within the basin and potentially decreased production capacity of each well. It is not known whether the production capacity of the Weir wells as tested is lower than the DEIR-stated capacity due to hydrologic conditions or due to incomplete knowledge about the optimal operation of the wells. It should also be noted that the Weir wells are relatively old and likely suffer from low overall well efficiencies relative to flow rate and observed drawdown. These inferred low well efficiencies are related to typical head losses at and immediately surrounding the wells due to aquifer, gravel pack, and well screen clogging and due to scale and incrustation. Regardless of the severity of the losses due to well inefficiencies, the pump tests document an aquifer of limited transmissivity and production capacity due to the semi-consolidated nature of the Pismo Formation, the relatively shallow wells depths and aquifer saturated thickness, and a basin of small size (about 1,600 acres) with well-defined boundary conditions.

During the simultaneous pumping of the three Weir wells, approximately 31,000 to 74,000 gpd was pumped from the wells, which constitutes a reasonable range of production capacity values for the three Weir wells. It can be concluded that since as early as 2002, the three Weir wells have been able to meet the facility water demands. Given the range of daily water usage documented in this study from about 31,000 gpd to as high as 74,000 gpd, we conclude that on-site water demand is presently on the order of about 50,000 gpd and that this demand can be met by the three Weir wells. This inferred average daily water demand, taken over a 5 day per week of landfill operation, equates to a facility groundwater use of about 40

acre-feet per year. None of the landfill water use results in recharge to the basin as a return flow (i.e., deep infiltration of applied water).

SWCA (2009) noted that the future demand for water at the landfill will likely be higher than the estimate presented in the DEIR, and may be as high as 121.5 afy. The maximum future water demand estimate of 121.5 afy is based on the understanding that the compositing operation, the largest component of demand, may expand significantly from the current size, which currently is reported to process approximately 100 to 120 tons of compost, to as much as 450 tons per year. This increase in the tonnage of compost processing would increase the water demand from the current maximum DEIR-stated water demand of 35 afy to a future demand of as much as 121.5 afy. The three Weir wells, as currently configured and based on the results of this testing, are capable of producing about 40 AFY and are not capable of meeting this increased demand.

Again, based on the above we conclude that the existing Weir wells are capable of providing at about 50,000 gpd for 5 of the 7 days per week. Obviously there are daily and seasonal variations in actual groundwater production from the three Weir wells, which vary around this estimated average daily supply capability. A reasonable best estimate of the amount of pumping that will occur during the normal operation of the wells includes pumping patterns similar to those observed during this program appears to range from about 31,000 gpd to as high as 74,000 gpd. The reader should be aware however that, based on this study, the higher level of groundwater pumping appears to be restricted to short-term periods, (i.e., on the order of a day).

ON-SITE WATER DEMAND

To quantify the volume of water supplied to each of the on-site water uses, the operator was requested to maintain records of the on-site water use. To facilitate this data collection, we provided the landfill staff with forms to record the meter readings for each of the three Weir wells, and for a meter installed at the outfall to the pond and another at the 68,000 gallon tank adjacent the MRF Sort Facility. In addition, forms were provided for each of the water trucks to document the number of loads each "pulls" from the pond filling station for use at the landfill and composting site for irrigation and dust control purposes. These forms were provided to the landfill operator in mid-September 2009, data entries began in early November 2009.

Subsequent to the issuance of our draft TM in February 2010, we were provided with additional information compiled by landfill staff for the period from January through July 2010. Relative to groundwater production, these data consist of more or less daily meter readings from each of the Weir wells and the meter at the pond. The data were compiled and then transferred to excel spreadsheets. The manner of data collection, the data entry process, and quality control associated with the collection of these data by landfill operations staff were discussed with Mr. Lacy Ballard at a meeting on June 15, 2010.

A review of the supplied data related to water supply and demand at the Cold Canyon Landfill for the period of January through mid-June 2010 was initially performed based on an interview with Lacy Ballard, site manager for Cold Canyon Landfill of June 9, 2010, and on

electronic and handwritten notes provided to us by the landfill staff. We understand that water supply and demand records do not exist for the period of November and December 2009. Based on the availability of data, we were able to perform our analysis of water supply and demand for the period between January and August 2010. A summary of the water supply and demand on a monthly basis is presented on Table 2. The data table represents a summary of data from water-truck logs, flow meter readings, and handwritten notes from landfill staff not presented here for simplicity.

Table 2 - Summary of On-Site Water Supply and Demand

Cold Canyon Landfill Supply and Demand Summary
January to July 2010

	Groundwater Supply		Surface Water Supply		Water Demand		Total Supply	Total Demand		
Month	Weir Wells Gal/Mo	Shop Well Gal/Mo	Module 8 Gal/Mo	Sediment Pond Gal/Mo	Compost Gal/Mo	Dust Control Gal/Mo	Total Gal/Mo	Total Gal/Mo	ETo, Inches	Precip, Inches
January 2010	Unknown	0	0	0	91,200	15,200	Unknown	122,683	1.96	6.15
February 2010	Unknown	3,800	11,400	0	72200	26600	Unknown	115,997	2.07	4.46
March 2010	33,393	15,200	155,800	0	127,950	151,050	204,393	311,899	3.96	0.66
April 2010	207,142	23,400	76,000	163,400	141,200	231,800	469,942	411,382	4.62	1.90
May 2010	258,013	66,500	209,950	30,400	255,400	287,850	564,863	591,020	5.75	0.20
June 2010	509,214	11,400	216,650	0	448,100	315,450	737,264	763,550	6.11	0.00
July 2010	716,924	0	0	0	400,900	330,600	716,924	731,500	5.58	0.00
Minimum	33,393	0	0	0	72,200	15,200	204,393	115,997	1.96	0.00
Maximum	716,924	66,500	216,650	163,400	448,100	330,600	737,264	763,550	6.11	6.15
Average	344,937	17,186	95,686	27,686	219,564	194,079	538,677	435,433	4.29	1.91

CIMIS 52 Cal Poly

Currently, the sources of groundwater supply at the site are the Weir wells (1, 2 and 3) and the so-called Shop well. The Weir wells are fitted with totalizing flow meters; the Shop well is not. The sources of surface water supply consist of the Main Sediment Pond, constructed in about 1990, and the Module 8 Pond both of which collect runoff from the site. The pond adjacent the compost facility, which has previously been referred to simply as “the pond” is filled principally by the Weir wells and is used as storage for the pumped groundwater from those wells.

On-site water is used to satisfy the following demands: compost use (irrigation, odor control, and dust control), dust control on landfill roads, and evaporation and percolation of water from the pond adjacent the compost facility. Evaporation from the pond was calculated based upon CIMIS evapotranspiration data from a nearby station and the known surface area of the pond. Percolation of water from the unlined pond adjacent to the compost facility is not known but is considered minor relative to total water use and the understanding of the prior landfill manager that the pond bottom is relatively fine-grained and coated with biological growth. Because the pond is located within the Pismo geologic formation, as are the Weir wells, the percolated water would likely return to the groundwater as recharge and result in no net use.

During calendar year 2010 to mid-June, significant rainfall occurred during each month between January and April. Minor rainfall occurred during May 2010 (0.27 inches). June 2010 constituted the first month of the year without rainfall.

Data Analysis

During January 2010, meter records documenting groundwater production from the Weir wells were not available from the landfill staff. However, water use as documented by in-truck logs of water provided by the MRF tank and pond adjacent the composting facility totaled 106,400 gallons. During January 2010, as recorded on the truck-field logs documenting water use, no water was pumped from the Shop well, Module 8 Pond, or the main sedimentation pond. Total site demand during January was 122,700 gallons, which was relatively low for the site, largely due to the approximately 7 inches of rainfall, which fell at the nearby CIMIS rainfall gauge. During the month, approximately 75 percent of the water demand was related to compost uses. The remaining 25 percent of demand was divided relatively evenly between dust control for the landfill roads and evaporation from the pond adjacent the composting facility.

During February 2010, no meter records existed for groundwater supply from the Weir wells. However, water use as documented by in-truck logs indicated that water pulled from the Module 8 pond, the Shop well and pond adjacent the composting facility totaled 98,800 gallons. During February, a total of 3,800 gallons of water was supplied by the shop well (which is not fitted with a flow meter) and a total of 11,400 gallons was supplied by the Module 8 Pond. No water was supplied by the main sedimentation pond. A total of 83,600 gallons was supplied by the Compost pond. Total water supply was not documented due to a lack of records of water meter readings from the Weir wells. Total site demand was 116,000 gallons.

March 2010 was the first month of 2010 with records of meter readings from the Weir wells, the pond adjacent the compost facility, and the MRF tank. During the month the Weir wells pumped a total of 33,000 gallons; the shop well provided an additional 15,000 gallons equaling a total of 48,000 gallons from groundwater. Surface water sources supplied a total of 156,000 gallons from the Module 8 Pond. Water supply totaled 204,000 gallons. Water demand exceeded supply during March by approximately 52 percent, totaling 312,000 gallons. The reasons for the discrepancy between water demand water supply volumes are not known.

During April 2010 groundwater supply totaled just over 250,000 gallons, of which 207,000 gallons was from the combined Weir wells. Surface water supply totaled approximately 239,000 gallons. Water supply totaled 470,000 gallons. During April total water demand was slightly less than supply at approximately 411,000 gallons. The reasons for the discrepancy are not known.

During May 2010 total groundwater supply was equal to approximately 325,000 gallons. Surface water sources, principally the Module 8 and Sedimentation Ponds provided an additional 240,000 gallons, to provide a total supply to the site of 565,000 gallons. During the month water demand was slightly higher than supply at 591,000 gallons.

During June 2010 total groundwater supply was equal to approximately 520,000 gallons. Surface water supply totaled approximately 216,000 gallons entirely from the Moule 8 pond, for a combined water supply of 737,000 gallons. During the same period, site water demand was slightly higher at 763,000 gallons.

Discussion

During July 2010, total groundwater supply was calculated based solely on the Pond meter at 716,000 gallons. No surface water supply was used during July. Total site demand was slightly higher than the supply at 731,000 gallons.

The results of our analysis indicate that during the months between May through July 2010 supply and demand, estimated based on various sources including meter readings and field logs of water-truck usage, were within 5 percent. During the wetter months of March and April 2010, the supply and demand estimates varied more widely; during March supply was 34 percent lower than water demand, and during April supply was 14 percent greater than demand. Because meter data do not exist for January and February 2010, a similar comparison is not available for those months. Based on this, it seems that this estimation of supply and demand is prone to some error during periods of significant precipitation, which acts to capture runoff for reuse at the site. The reasons why supply and demand are disparate during periods of precipitation are not known, but may be associated with operational procedures not accounted for by either the in-truck field logs or meter readings.

Because green waste processing constitutes the largest water use at the site we requested records of daily tonnage of green waste accepted at the site to determine the relationship between green waste acceptance and water use. Records of green waste tonnage were provided to us on a daily basis for the period of March 2005 through May 2010. During that period, monthly averages of green waste tonnage acceptance averaged approximately 100 tons per day. The monthly averages for green waste acceptance varied between 67 and 128 tons per day. These values were compared with the records for water used for green waste processing for the period between January and May of 2010, the period of these records. The results of the analysis, presented on the plates and tables in Appendix E, show the daily water use for compost processing varied between approximately 2,500 (February) and 8,200 (May) gpd during 2010. The final plate shows that for the 5 months with both sets of data there appears to be no obvious relationship between green waste acceptance and associated water use. This analysis is limited by the short period of record for metered water use data, and includes only a single month without significant rainfall (May 2010), which appears to decrease water use related to green waste processing.

Preliminary Comparison with Previous Demand Estimate Data

Estimates of current groundwater demand were estimated to be approximately 35 afy in our previous study of the site (Fugro, 2008.) Those estimates were based solely on the understanding of the landfill manager, and were not supported by actual measurements of water use (water meters). Water meters were installed as documented in our draft technical memorandum dated January 15, 2010. That report documented the data from the in-truck field

logs, which were provided to the water truck drivers to estimate the quantity of on-site water demand. Based on the relatively short timeframe of that study, which included pumping tests of the Weir wells, we concluded that the Weir wells were capable of providing at least 31,000 gpd, or 25 afy.

Based on the 2010 data through July, if we assume that water supply and demand during the months of August and September will be equal to that of July, and assign appropriately tapering values for the remainder of the calendar year, total site demand may be equal to less than 18 afy. This demand obviously reflects site activities and water use for a short period based on the dates we were provided. Of the supply, during May and June of 2010, approximately 66 percent of the demand was met by groundwater supplies. During July, based on our estimations of site demand and groundwater supply for the remainder of calendar year 2010 based on the acquired data, we estimate that approximately 65 percent of the site demand will be satisfied by groundwater supplies. Therefore, it is reasonable to assume that the annual demand can be reduced by the volume of surface water supplies. The result of this calculation indicates that annual groundwater demand may be on the order of 11 afy.

Precipitation during the current water year (September 2009 through August 2010) as measured at the Cal Poly, San Luis Obispo campus has totaled 18.7 inches, which is equal to approximately 90 percent of the normal rainfall. Because this rainfall is roughly equivalent to the long term annual rainfall, it is reasonable to assume that a roughly similar amount of surface water will be available during all but the driest years. Note that the use of surface water in lieu of groundwater at the site has not been documented previously and constitutes a new water source, which has not been considered as part of the Project Description for the EIR.

SUMMARY AND CONCLUSIONS

Based on the above discussion, the following conclusions are provided:

- **Record well yield**. The results of the pumping tests indicate that Weir Well No. 1 pumped on average 36,000 gpd; Weir Well No. 2 pumped 7,920 gpd; and Weir Well No. 3 pumped 12,240 gpd. When pumped together, the wells produced between 31,000 gpd (7 day period) and 74,400 gpd (1 day period). This is our best estimate given the time of year and duration of the study. During the period of March through July 2010, pumping for the Weir wells averaged between 33,000 (March) and 716,000 gallons per month (July). This is equal to an average of between 1,500 (March) and 33,000 gallons per day (July), assuming pumping would be performed during 5 of the 7 days. Our best estimate of average daily groundwater pumped to meet the current landfill water demands is on the order of 50,000 gpd. We further conclude that the three existing Weir wells, as currently configured and operated, can meet this average daily water demand. It should be noted that modification to the pump settings and operation of the Weir wells could result in greater daily groundwater production. However, given the well depths, aquifer properties, and groundwater basin size, significant increases in groundwater production are not considered feasible. Our best estimate of a "significant" increase in production from the wells would be for very short durations (i.e., no more than several days) at

combined rates no greater than about 10 percent of the documented single day combined pumping rate of about 74,000 gpd.

- **Record well drawdown and interference effects.** The pumping of Weir Well No. 1 during a period of 3 days caused a maximum of 4 feet of drawdown in the nearest proximate off-site well, the Gomez well, which is located a distance of 212 feet away. Similar interference effects were apparent during a 7 day period of pumping by landfill staff, during which 3 feet of drawdown were recorded in the Gomez well. Weir Well No. 1 caused 0.33 feet of drawdown in the proximate Weir Well No. 2, which is located 312 feet from Weir Well No. 1. No other interference effects were evident in any well during the pumping tests. It is our opinion that the landfill well production rates, range of drawdown, aquifer properties and distances between the landfill wells and offsite private wells sufficiently mitigates significant interference created by the landfill wells on offsite wells. This is because the landfill well yields simply cannot sufficiently stress the aquifer to create large distance interference effects.
- **Refine and support (or refute) the capacity and sustainable yield of the existing landfill wells.** Based on the pumping tests, landfill-operated pumping before and after our tests, and documented use between March and July of 2010, the wells can likely supply between 31,000 and 56,000 gpd to the landfill. Using 31,000 gpd for 5 days per week as a current estimated average groundwater production, on an annualized basis this equates to a total volume of 25 afy. The existing wells may not supply sufficient water to meet the future demand for this facility as described in the DEIR. Furthermore, as noted above, the aquifer does not appear capable of supplying a greater volume of groundwater than the current supply.
- **Better define the basin aquifer properties and the basin boundaries.** The data from the pumping tests did not generate any new information that can be used to improve or refine our understanding of the basin aquifer properties and basin boundaries. The conceptual hydrogeology of the area, aquifer properties, and general well yield capabilities were confirmed based on the well testing performed as part of this study.
- Water demand for the entire site for the period of January to July 2010 ranged between 116,000 (February) and 763,000 gallons per month (June). The average total site demand was 435,000 gallons per month. During the same period compost-related water use ranged between 72,000 (February) and 448,000 gallons per month (June). Average compost-related water use was 219,000 gallons per month. Absent composting activities, total demand at the site would have ranged between 31,000 and 335,000 gallons per month, and averaged 216,000 gallons per month. The wells, as currently operated, are capable of meeting this demand.

REFERENCES

Fugro West (2008), Water Resources Assessment for the Cold Canyon Landfill Expansion Environmental Impact Report, Dated March.

Golder Associates (2007), Hydrogeologic Characterization, Proposed Expansion Area, Cold Canyon Landfill, Prepared for Shaw Environmental, dated January.

SWCA (2009), Cold Canyon Landfill Expansion Draft EIR - Water Resources Assessment/Response to Comments Update, letter dated April 24.

ATTACHMENTS

Plates
Appendix A - Supporting Documents
Appendix B - Site Photographs
Appendix C - Supporting Hydrogeologic Data
Appendix D - Water Level Hydrographs
Appendix E - Green Waste Data

PLATES

M:\Drafting\JOBFILES\2010\3014\3014.035\Drawings\A3014.035-01.dwg 01-15-2010 - 9:34am

BASE MAP SOURCE: Aerial photograph from Google Earth Pro (2007).

LEGEND

P-12 Groundwater monitoring well

Gomez Off-site well

3 Weir well

WELL TESTING PROGRAM
MONITORING NETWORK
Cold Canyon Landfill Expansion
San Luis Obispo County, California

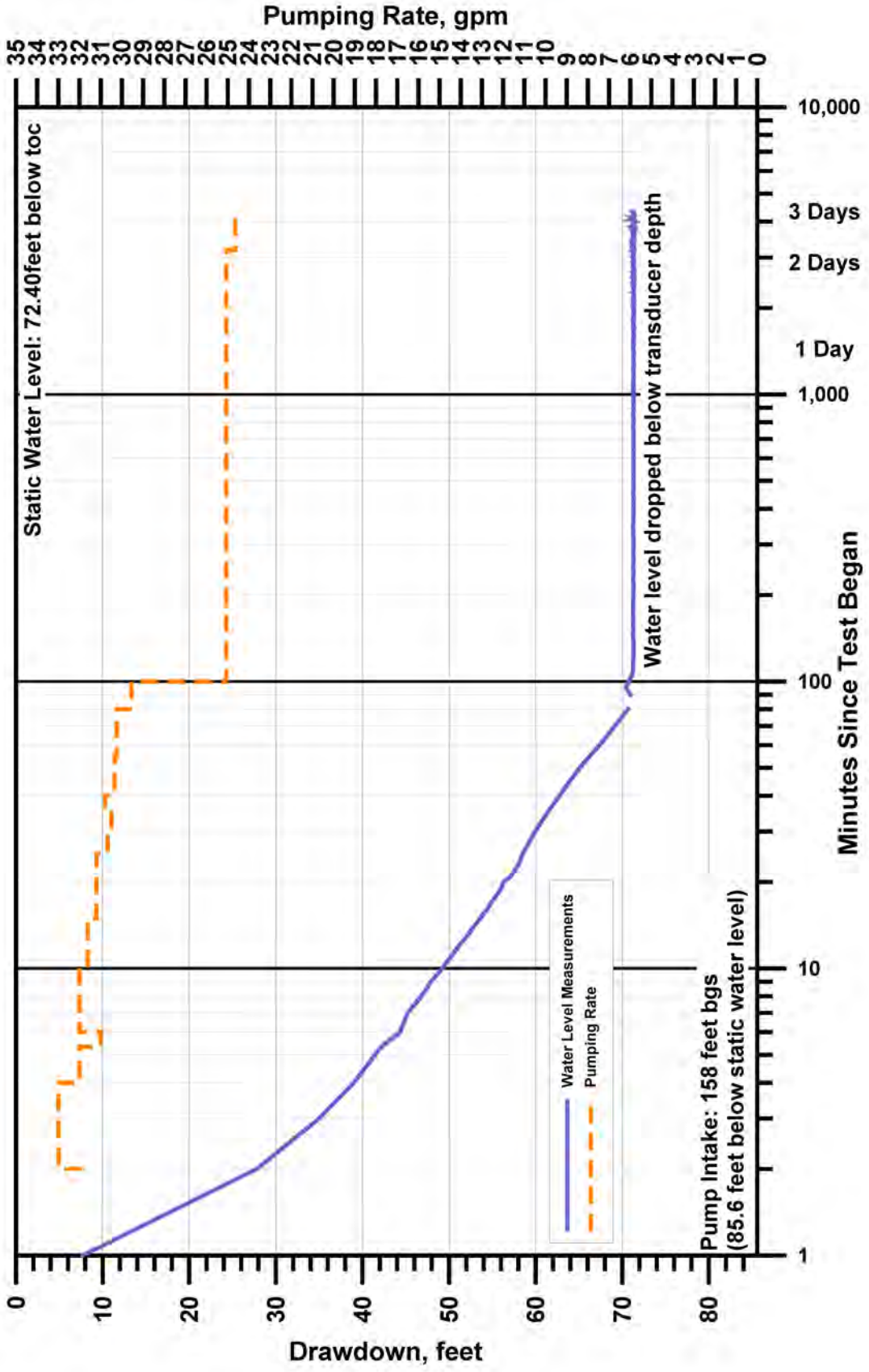
NORTH

0 500

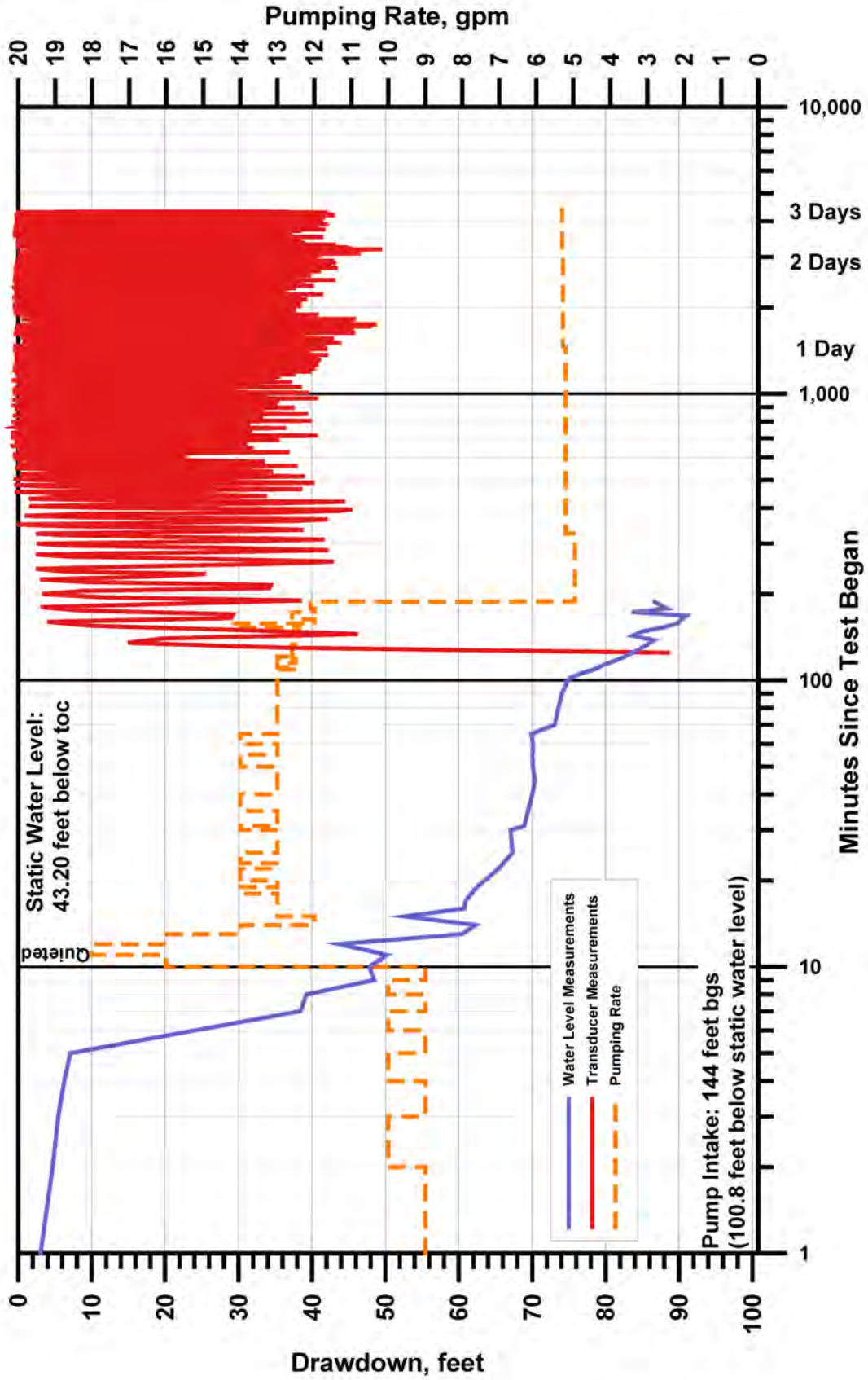
FEET

County of San Luis Obispo
Project No. 3014.035

PLATE 1



WEIR WELL No.1 THREE-DAY PUMPING TEST HYDROGRAPH
Cold Canyon Landfill Expansion
San Luis Obispo County, California



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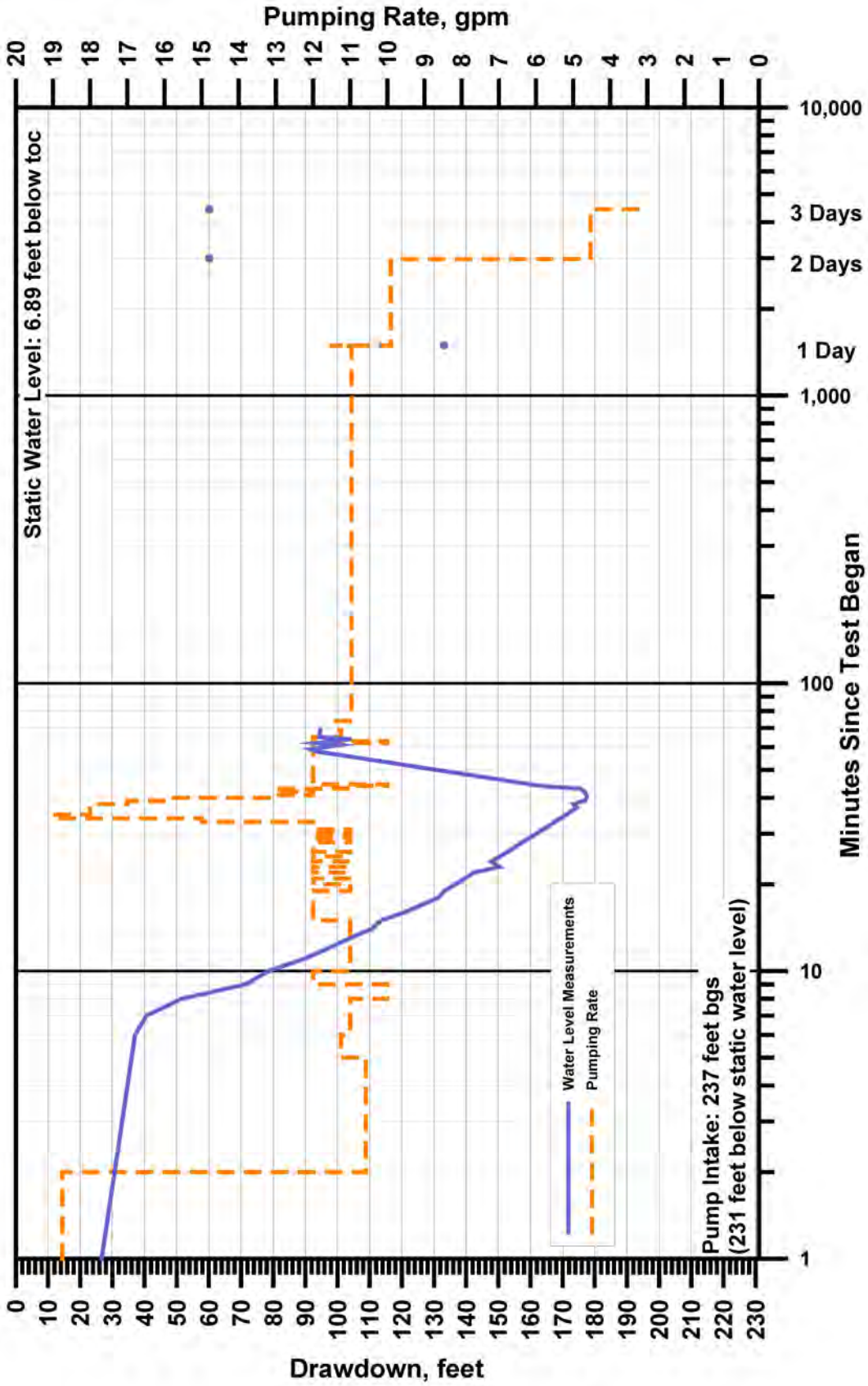
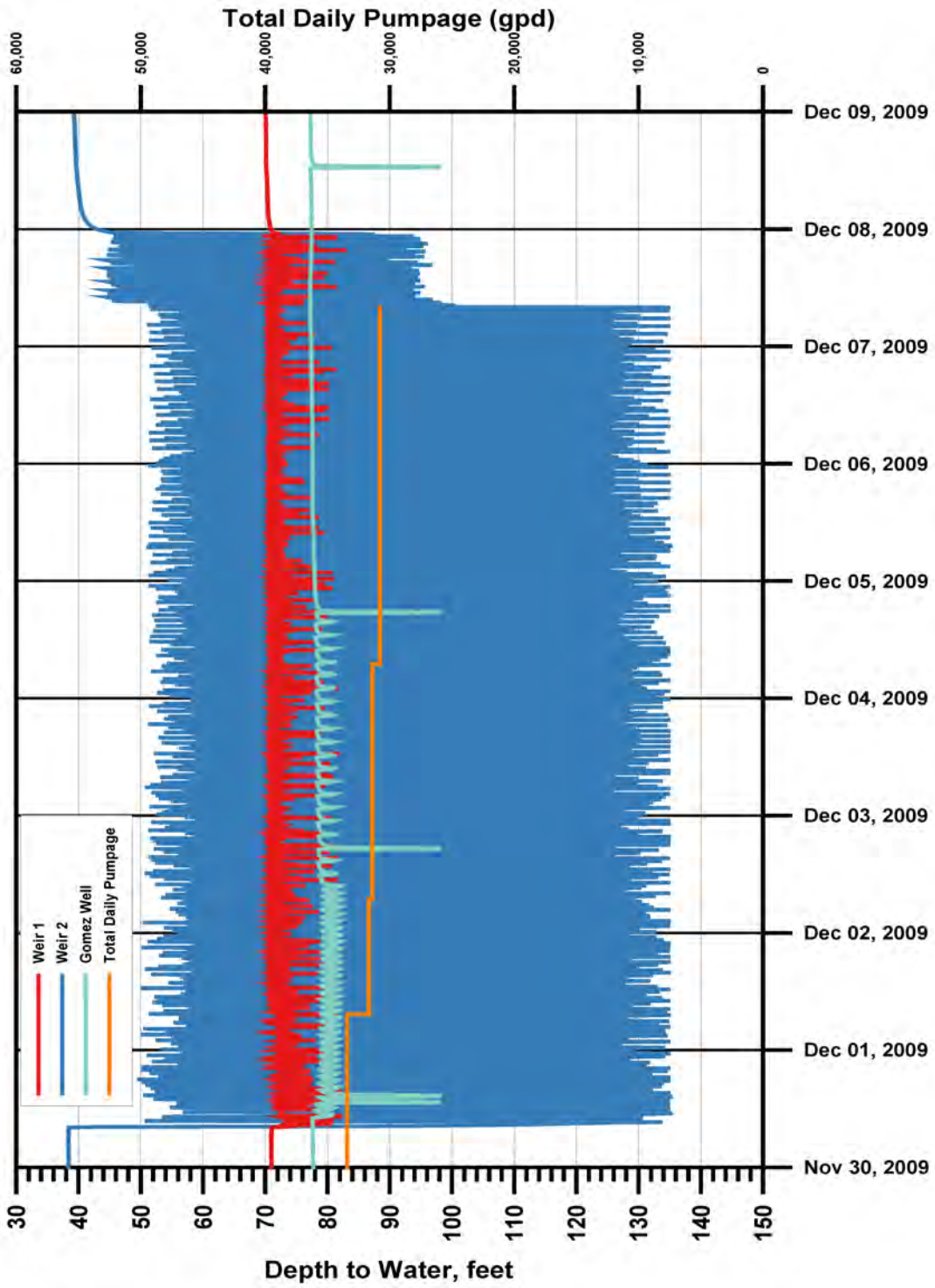
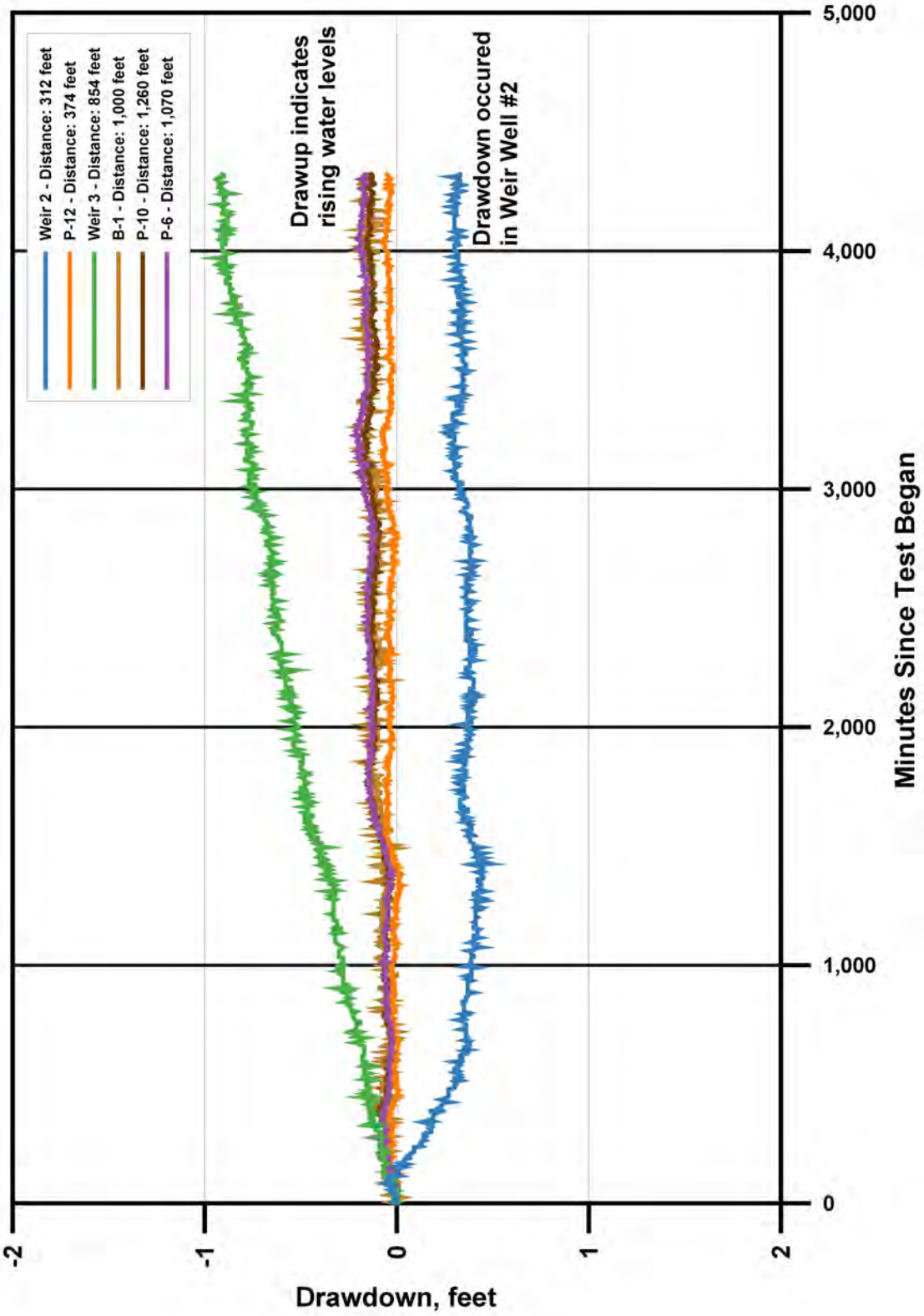
Cold Canyon Landfill Expansion
San Luis Obispo County, California



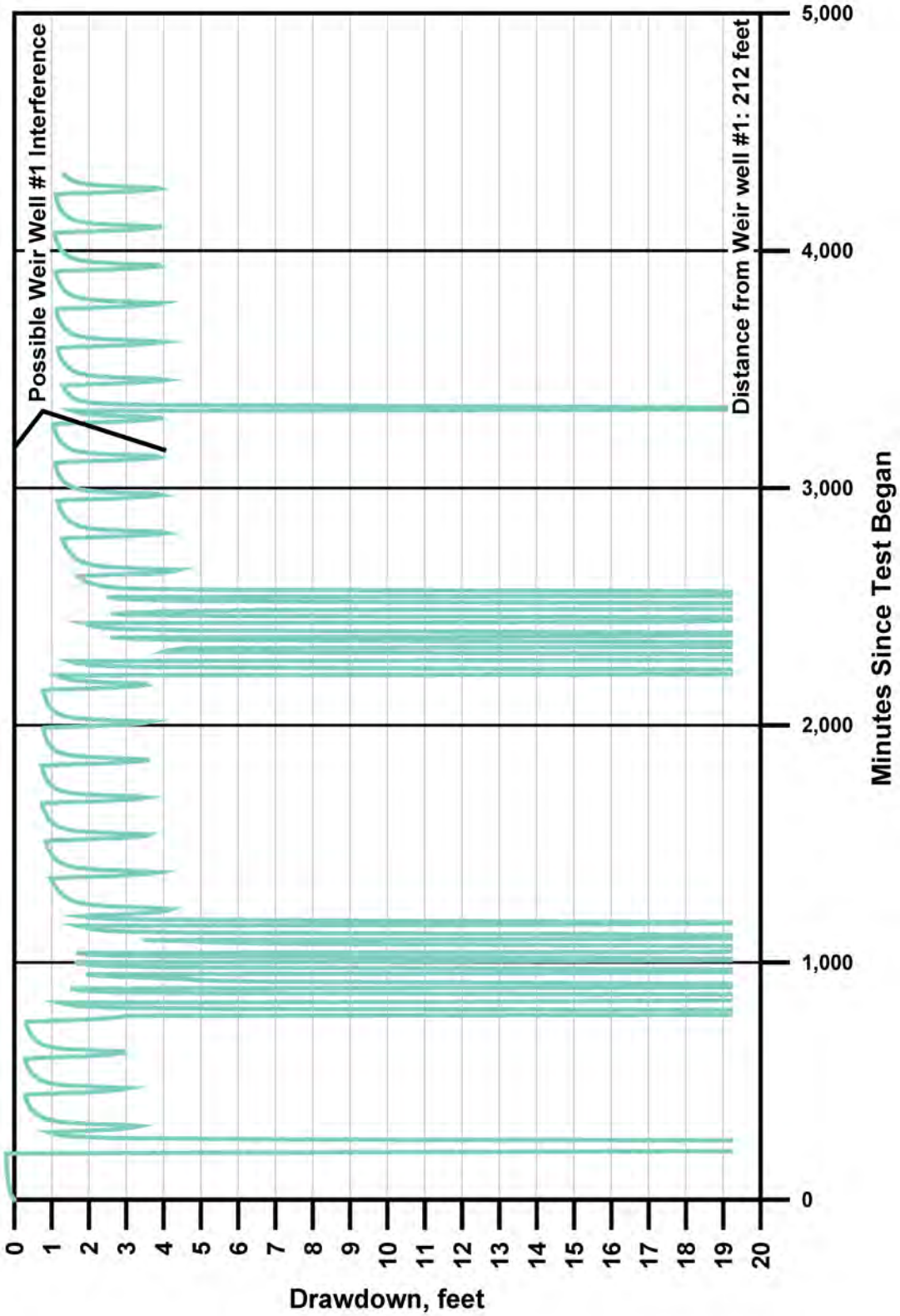
WEIR WELL No.3 THREE-DAY PUPMING TEST HYDROGRAPH
Cold Canyon Landfill Expansion
San Luis Obispo County, California



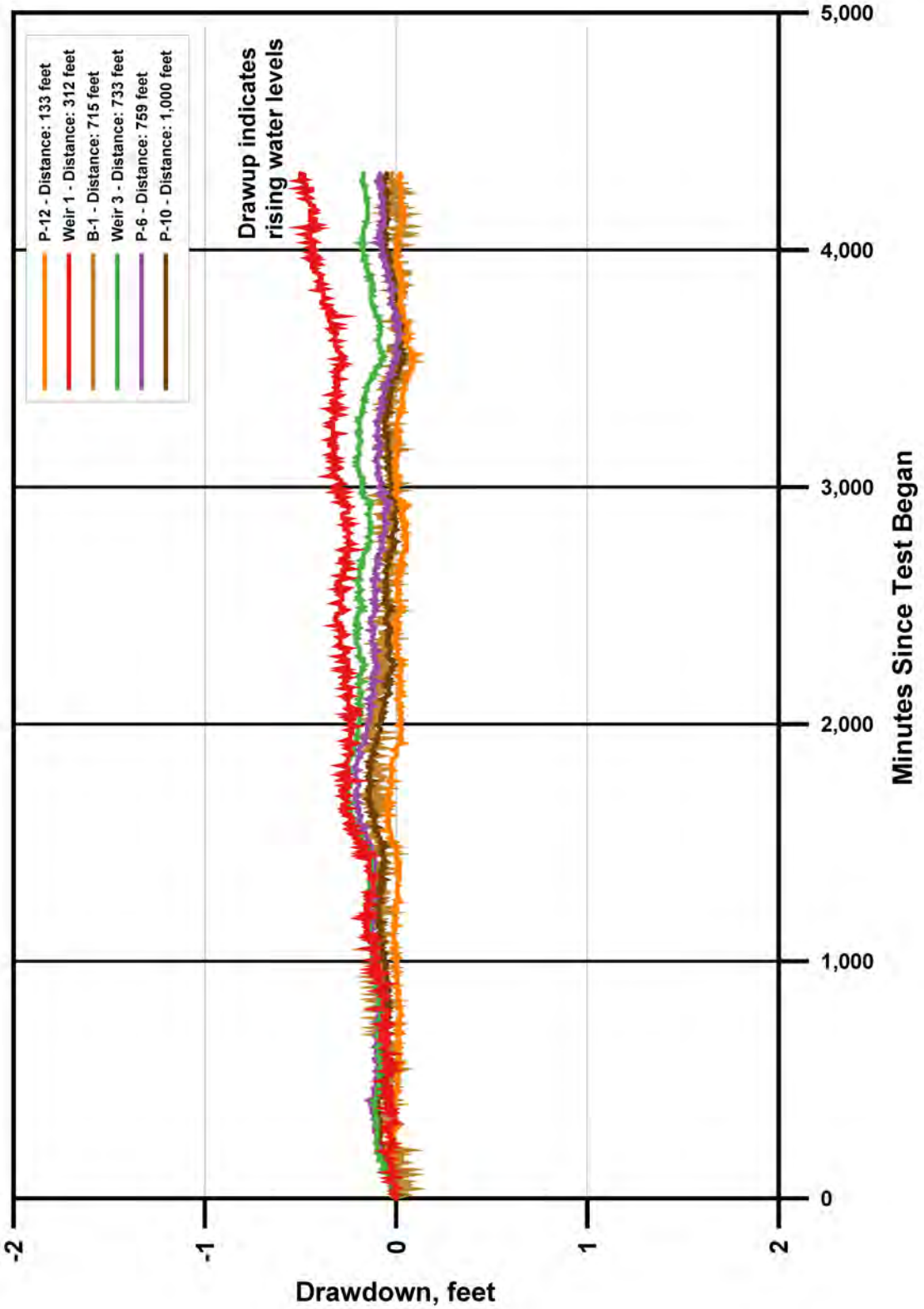
WEIR WELLS SIMULTANEOUS PUMPING HYDROGRAPH
Cold Canyon Landfill Expansion
San Luis Obispo County, California



WEIR WELL No.1 PUMPING TEST, MONITORING WELL HYDROGRAPHS
Cold Canyon Landfill Expansion
San Luis Obispo County, California



WEIR WELL No.1 PUMPING TEST, GOMEZ WELL HYDROGRAPH
Cold Canyon Landfill Expansion
San Luis Obispo County, California



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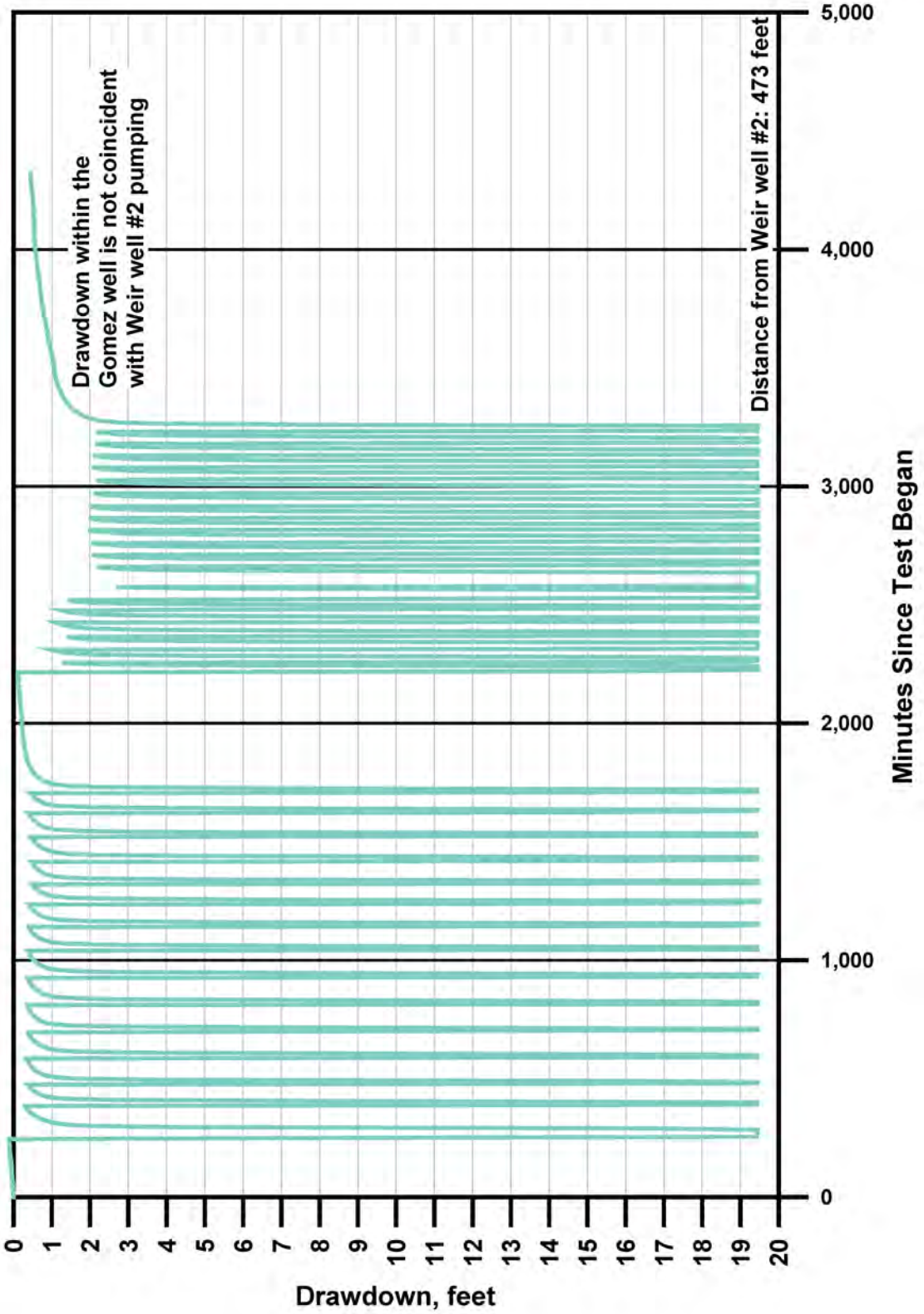
Cold Canyon Landfill Expansion
San Luis Obispo County, California



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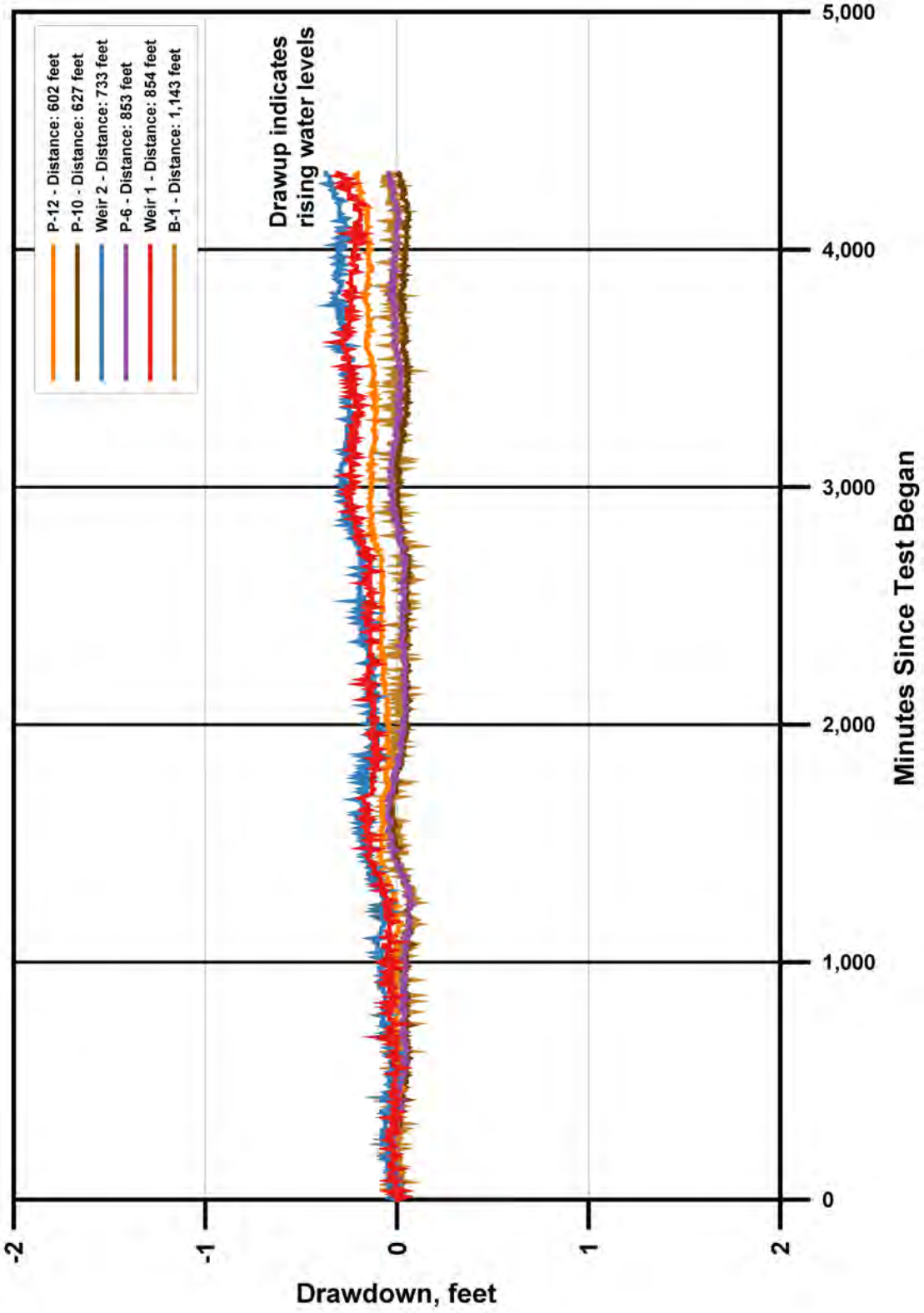
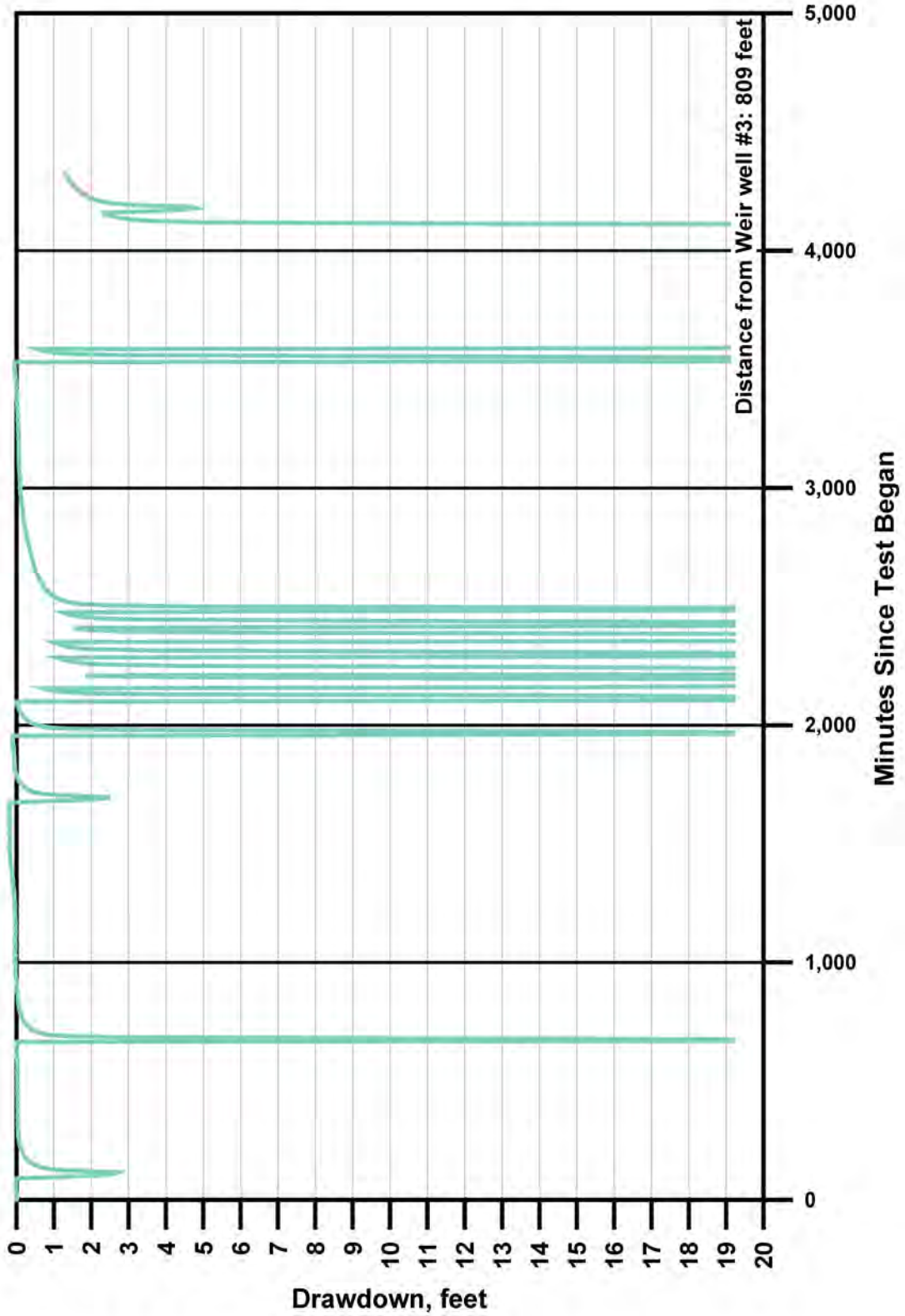
Cold Canyon Landfill Expansion
San Luis Obispo County, California



WEIR WELL No.3 PUMPING TEST, MONITORING WELL HYDROGRAPHS
Cold Canyon Landfill Expansion
San Luis Obispo County, California



WEIR WELL No.3 PUMPING TEST, GOMEZ WELL HYDROGRAPH
Cold Canyon Landfill Expansion
San Luis Obispo County, California

APPENDIX A
SUPPORTING DOCUMENTS

MORRO GROUP
A DIVISION OF SWCA

April 24, 2009

Mr. John McKenzie
Planning and Building Department
County of San Luis Obispo
County Government Center, Room 300
San Luis Obispo, CA 93408

SUBJECT: *Cold Canyon Landfill Expansion Draft EIR – Water Resources Assessment/Response to Comments Update*

Dear Mr. McKenzie;

This memo is intended to update you on our progress responding to comments received on the Cold Canyon Landfill Draft EIR. It focuses on water resources issues, as the responses we will need to prepare may significantly alter the conclusions in the EIR regarding groundwater impacts.

To calculate the potential future water demand of the proposed project, first the existing demand was determined for each project component. Then, increased demand totals resulting from the proposed project were added to the existing demand totals. The net result equaled the potential total future demand associated with the proposed project. The water demand of existing uses was determined by our Water Resources sub-consultant (Fugro) based on their interviews with the Landfill's onsite manager, Mr. Bruce Rizzoli.

To determine the amount of water used by the Compost Operation, Mr. Rizzoli provided an amount of water necessary on a per day and "per windrow" of compost basis. Fugro calculated existing demand to be approximately 27 acre feet per year (afy), and assumed that the Compost Operation was operating at full permitted capacity, which is 300 tons per day (tpd). To calculate future water use, the 27 afy was multiplied by the 50% proposed capacity increase of the Compost Operation (from 300 tpd to 450 tpd). Therefore, the resulting future water use evaluated in the DEIR for the Compost Operation was calculated to be approximately 40 afy.

However, it has come to our attention subsequent to the publishing of the DEIR that the Compost Operation is not currently operating at its full permitted capacity. Based on 2006 receipts provided by the applicant (Table 1 from the applicant-submitted Project Description),

the Landfill accepted 33,140 tons into the Compost Operation. Assuming a 360 day per year operation schedule, that would equal approximately 92 tpd. Even if the operation accepted increased volumes in 2007, it is not likely it was considerably over 100 tpd. Therefore, given an actual processing rate of approximately 100 tpd versus the 300 tpd estimated in the DEIR, potential future water supply demand associated with the proposed Compost Operation expansion would increase by 450%, not 50%, to approximately 121.5 afy (up from 27.0 afy).

Considering the recharge in the basin from which the Landfill draws water is calculated to be 391 afy, and existing available groundwater from wells utilized by the Landfill was calculated to be approximately 49 afy, we now conclude that the proposed project, specifically the Compost Operation, would result in significant impacts to the groundwater basin. It should be noted that Morro Group has found little evidence that significant water savings can be achieved through alternate composting strategies, such as Aerated Static Piles. It should also be noted that if the Landfill increased the Compost Operation to its existing authorized/permitted 300 tpd limit, the operation would require an additional 54 afy of water, which is also beyond the projected quantity of available groundwater of 49 afy. *In other words, as a means of mitigating groundwater supply impacts, the EIR may be required to be revised to recommend that the capacity of the Compost Operation be limited to less than what is currently permitted.*

We realize that this information has significant ramifications from a project and EIR processing standpoint. At minimum it would result in a new significant impact, which would be unavoidable if the proposed Compost Operation capacity remains at 450 tpd. We also recognize that the Compost Operation is a significant component of the proposed project, provides solid waste reduction and landfill sustainability benefits for the region, and that the applicant may want to pursue the maximum supportable limit given the groundwater limitations.

In order to move forward from this point with the most defensible EIR possible, we would propose that additional testing be performed to confirm or disprove the groundwater characteristics of the identified groundwater basin, subsequent to further conversations with the project applicant. These tests may include a 72-hour pump test of the proposed water supply wells on the project site to measure their capacity and confirm the aquifer's transmissivity. These tests may also assist in refining the limits of the groundwater basin, although this cannot be guaranteed due to the relatively complex local geology.

In addition, because the proposed project demand exceeds the known supply, and because the groundwater basin is known to have significant limitations due to its size and other characteristics, we would also recommend that Fugro expand on the relatively general "water balance" they previously prepared. This may include additional field work or research to

refine the percolation/infiltration rate for the basin, and the precise geologic boundaries of the basin. These factors play a substantial role in determining potential recharge of the groundwater basin. This work, in connection with the testing described above would allow for a more defensible, revised Water Resources section and adequate responses to the comments received on the Draft EIR.

Please contact us if you have any questions in regards to this memo.

Sincerely,

SWCA/MORRO GROUP, INC.

Keith Miller
Project Manager

Table 1

Site Tonnage Summary [1]
Cold Canyon Landfill

Year	Total Inbound Tonnage [2]	Resource Recovery Park	Compost Facility	Soil [3]	Material Recovery Facility	Disposal Tonnage: Incoming Waste	Disposal Tonnage: Residuals	Disposal Tonnage: Total	Total Diverted	Percentage
2001	192,339	2,137 [4]	15,820 [5]	1,870		172,512 [6]		172,512	19,827	10.3%
2002	197,498	4,595 [4]	20,873 [5]	1,845		170,186 [6]		170,186	27,312	13.8%
2003	243,561	6,697 [4]	25,553 [5]	3,977	29,418 [7]	177,917 [6]		177,917	65,644	27.0%
2004	243,251	18,833 [8]	20,924 [5]	5,230	30,431 [7]	166,292 [9]	4,500 [10]	170,792	72,459	29.8%
2005	262,728	22,375 [11]	29,970 [12]	4,961	31,012 [13]	172,759 [14]	6,651 [15]	179,410	83,318	31.7%
2006	255,558	25,997 [11]	33,140 [12]	5,340	31,545 [13]	159,536 [14]	11,221 [15]	170,756	84,801	33.2%

[1] Based on site records.
[2] Total of all inbound tonnage. Does not include residuals from the resource recovery park, compost facilty, or materials recovery facility.
[3] Tonnage of clean soil used as daily/intermediate cover or for other on-site use.
[4] Tonnage of diverted metal and construction and demolition debris
[5] Tonnage of diverted green waste.
[6] Total tonnage disposed, including incoming waste and residuals.
[7] Tonnage of recyclable material recovered at materials recovery facility.
[8] Tonnage of incoming loads directed to the resource recovery park before diversion of recoverable materials.
[9] Tonnage of incoming waste loads directed to the landfill and residuals from the resource recovery park.
[10] Tonnage of residuals from the resource recovery park.
[11] Tonnage of incoming loads directed to the resource recovery park.
[12] Tonnage of incoming loads with green waste.
[13] Tonnage of incoming loads from curbside recycling programs directed to materials recovery facility.
[14] Tonnage of incoming loads directed to the landfill and residuals from the materials recovery facility.
[15] Tonnage of residuals from resource recovery park, compost facility, and wood waste operation.

Table 2

2006 Site Tonnage Data [1]
Cold Canyon Landfill

Average Incoming Tonnage

Day	January	February	March	April	May	June	July	August	September	October	November	December	Average
Sunday	132	118	124	129	124	122	148	152	120	142	115	91	126
Monday	894	803	843	927	923	1,037	1,080	1,023	902	973	846	860	926
Tuesday	904	882	831	934	959	967	889	932	956	952	941	819	914
Wednesday	950	864	794	896	1,027	998	1,011	947	925	891	895	766	914
Thursday	914	822	808	880	905	952	949	986	911	855	798	788	881
Friday	933	846	812	942	945	1,094	1,042	959	953	950	870	823	931
Saturday	228	237	176	217	266	227	246	280	224	279	198	246	235
Weekday Average	919	844	817	916	952	1,010	994	969	929	924	870	811	913
Daily Average	721	653	644	668	758	788	740	774	705	717	678	596	704
Daily Average $_5$	983	915	868	1,002	1,022	1,075	1,092	1,043	1,007	1,011	925	894	987
Peak Day	1,090	917	921	1,108	1,108	1,141	1,169	1,120	1,027	1,113	1,091	923	
Date	1/9/06	2/14/06	3/21/06	4/24/06	5/31/06	6/23/06	7/31/06	8/24/06	9/11/06	10/30/06	11/6/06	12/15/06	

Average Disposal Tonnage

Day	January	February	March	April	May	June	July	August	September	October	November	December	Average
Sunday	77	80	65	66	83	102	92	145	90	99	84	48	86
Monday	651	576	597	640	646	744	784	745	659	673	511	600	652
Tuesday	584	590	529	608	625	646	577	628	652	621	590	557	601
Wednesday	596	587	515	557	671	658	656	637	621	579	560	509	596
Thursday	600	543	521	553	575	614	601	635	628	522	479	465	561
Friday	666	566	539	606	626	778	699	616	645	615	574	571	625
Saturday	166	176	106	128	207	195	193	194	183	173	161	174	171
Weekday Average	619	573	540	593	629	688	663	652	641	602	543	540	607
Daily Average	486	446	421	427	506	545	499	526	491	468	429	396	470
Daily Average $_5$	663	624	568	641	681	743	737	709	702	660	585	595	659
Peak Day	760	645	633	786	807	833	834	792	751	683	764	624	
Date	1/9/06	2/21/06	3/27/06	4/24/06	5/31/06	6/9/06	7/17/06	8/7/06	9/11/06	10/30/06	11/3/06	12/18/06	

[1] Based on site records for 2006

Table 3

Site Vehicle Data [1]
Cold Canyon Landfill

	Average Vehicles per Day [2]												
Day	January	February	March	April	May	June	July	August	September	October	November	December	Average
Sunday	173	188	166	155	178	211	221	213	199	188	174	71	178
Monday	307	266	282	269	271	374	407	363	288	333	319	298	315
Tuesday	327	330	265	302	334	382	312	376	354	340	314	307	329
Wednesday	333	328	292	283	358	401	377	362	338	317	317	284	332
Thursday	327	323	306	300	331	361	380	374	341	322	270	283	326
Friday	374	335	271	317	351	407	399	350	358	345	313	333	346
Saturday	267	261	185	233	282	282	303	283	261	238	213	190	250

	Average Vehicles per Hour [2]												
	January	February	March	April	May	June	July	August	September	October	November	December	Average
6 am - 7 am	0	1	0	0	0	0	0	1	0	0	0	0	0
7 am - 8 am	5	6	5	5	6	6	6	6	5	6	5	5	6
8 am - 9 am	28	28	25	26	30	36	35	32	28	27	27	23	29
9 am - 10 am	31	33	29	27	33	38	35	35	32	31	30	28	32
10 am - 11 am	39	35	30	32	38	44	43	42	41	36	34	30	37
11 am - 12 pm	42	37	31	32	39	46	46	45	41	39	36	33	39
12 pm - 1 pm	40	38	35	36	40	45	47	45	40	39	38	33	40
1 pm - 2 pm	53	51	47	44	49	53	51	53	49	50	47	43	49
2 pm - 3 pm	57	50	45	48	54	64	61	61	58	57	50	43	54
3 pm - 4 pm	11	9	8	11	12	15	14	14	12	11	8	8	11
4 pm - 5 pm	1	1	1	1	1	2	1	1	1	1	1	0	1
5 pm - 6 pm	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	307	289	256	262	302	349	339	335	307	297	276	246	298

[1] Site vehicle data based on records for 2006.
[2] Includes vehicles delivering wastes to site (landfill, resource recovery park, compost facility, materials recovery facility) and vehicles transporting recovered materials from the site.

Table 4

Site Operations Personnel
Cold Canyon Landfill

Area	Position	Existing Number	Proposed Number
Administration			
	Site Manager	1	1
	Site Engineer	0	1
	Office Manager	0	1
	Support Staff	1	2
Scalehouse			
	Attendant	4	6
Landfill			
	Operator	4	5
	Mechanic	1	1
	Spotter/Laborer	2	2
Resource Recover Park			
	Operator/Laborer	7	12
	Mechanic	0	1
HHWCF		2	4
EWPRF		4	6
Compost Facility			
	Operator/Laborer	3	4
	Mechanic	1	1
Materials Recovery Facility			
	Supervisor/Foreman	1	2
	Facility Manager	1	1
	Office Support	1	2
	Operator	4	6
	Mechanic	0	1
	Laborer	15	21
		52	80

HHWCF = Household hazardous waste collection facility
EWPRF = Electronic waste processing and recovery facility

Table 5

Site Operating Hours
Cold Canyon Landfill

Operation	Existing	Proposed
Landfill - Franchise and Contract Haulers	7:00 am - 4:30 pm	7:00 am - 5:00 pm
Landfill - General Public	8:00 am - 3:00 pm	7:00 am - 5:00 pm
Resource Recovery Park	7:30 am - 4:30 pm	7:00 am - 5:00 pm
HHWCF and EWPRF	11:00 am - 3:00 pm	7:00 am - 5:00 pm
Compost Facility - Material Receipt	8:00 am - 3:00 pm	7:00 am - 5:00 pm
Compost Facility - Processing	7:30 am - 4:30 pm	7:00 am - 5:00 pm
Material Recovery Facility - Material Receipt	7:30 am - 4:30 pm	7:00 am - 5:00 pm
Material Recovery Facility - Processing [1]	7:30 am - 4:30 pm	7:00 am - 10:00 pm

HHWCF = Household hazardous waste collection facility
EWPRF = Electronic waste processing and recovery facility
[1] Equipment maintenance can occur 24 hours per day (indoor only).
& material transport limited to 7:00 am to 5 pm.

Table 6

Landfill Capacity, Service Life, and Earthwork
Cold Canyon Landfill

	Currently Remaining [1]	Proposed Expansion [1, 2]
Air Space (cubic yards)	2,721,200	15,828,900
Earthwork (cubic yards)		
Daily and Intermediate Cover [3]	428,300	2,742,700
Final Cover [4]	365,400	604,600
Liner [5]	0	89,800
Earthfill	0	85,100
Total	793,700	3,522,200
Available Soil		
Existing Stockpiles [6]	644,300	644,300
Excavation	0	3,234,300
Total	644,300	3,878,600
Drainage Layer (imported) [7]	0	49,900
Fill Capacity [8]		
Cubic Yards	2,355,800	15,084,600
Tons [9]	1,531,300	9,805,000
Landfill Service Life (years)		
Disposal Tonnage based on Population [10]	9	48
Disposal Tonnage based on Existing Growth [11]	8	26
Disposal Tonnage based on Proposed Project [12]		33

[1] As of January 3, 2007
[2] Includes currently permitted landfill, entrance area, and Weir Ranch.
[3] Based on a 4.5-to-1 waste-to-soil ratio
[4] Assumes an additional 3 feet of final cover over the top deck and sideslope areas.
[5] Assumes use of geosynthetic clay liner for the low-permeabilty layer. Includes 1-foot thick soil operations layer on the base and 2-foot thick soil operations layer on the sideslopes.
[6] Does not include Stockpile 2, which is permanent.
[7] Assumes 12-inch thick granular layer
[8] Fill Capacity = waste + daily and intermediate cover
[9] Assumes a capacity utilization of 0.65 tons per cubic yard
[10] Assumes annual disposal tonnage increase based on population projections from Department of Finance
[11] Assumes disposal tonnage based on 2001 - 2006 average annual increase
[12] Based on annual increase to an $average_5$ of 2,111 in 2031.

Table 7

Landfill Equipment
Cold Canyon Landfill

Model	Description	Quantity	
		Existing	Proposed
Caterpillar 120G	Motor Grader	1	1
Caterpillar D8N	Bulldozer	2	2
Caterpillar D7R	Bulldozer	1	1
Al Jon 81K	Landfill Compactor	1	1
Al Jon 525	Landfill Compactor	1	1
Caterpillar 615C	Scraper	1	1
Caterpillar 627F	Scraper	1	1
Kenworth	Water Truck (4,000 gallons)	1	1
Volvo	Service Truck	1	1

Note: Specific equipment used at Cold Canyon Landfill may vary from that listed above, based on equipment maintenance and replacement, or other factors, such as technological advances in equipment. At all times, sufficient numbers and types of equipment will be provided to operate the landfill in accordance with applicable permits, approvals, and industry standards.

Table 8

Groundwater Monitoring Program Summary
Cold Canyon Landfill

Sample Location	Monitoring Program			VOC [2] Monitoring Frequency	Inorganic Parameter [3] Monitoring Frequency
	Detection	Evaluation	Other [1]		
MW-1 [4]	X	X		Quarterly	Quarterly
MW-2		X		Quarterly	Semi-annually
MW-3	X	X		Quarterly	Semi-annually
MW-5	X			Quarterly	Quarterly
P-1A			X	Annually (alternating between high and low groundwater)	Annually (alternating between high and low groundwater)
P-1B	X			NA [5]	Quarterly
P-2			X	Every 3 years (alternating between high and low groundwater)	Every 3 years (alternating between high and low groundwater)
P-3A	X	X		Quarterly	Semi-annually
P-3B	X			NA	Quarterly
P-4			X	Annually (alternating between high and low groundwater)	Annually (alternating between high and low groundwater)
P-5	X			Quarterly	Quarterly
P-6			X	Annually (alternating between high and low groundwater)	Annually (alternating between high and low groundwater)
P-7	X	X		Quarterly	Quarterly
P-8	X			Quarterly	Quarterly
P-9	X			Quarterly	Quarterly

VOC = Volatile organic compounds
[1] This program is similar to detection monitoring, but is sampled at less frequent intervals.
[2] Volatile Organic Compounds: USEPA Method 8260
[3] Inorganic parameters:
Field: Ph, EC, temperature, turbidity, dissolved oxygen
Laboratory: chloride, sulfate, dissolved arsenic, dissolved manganese
[4] Wells MW-1, MW-3, P-3A, and P-7 are in detection monitoring for VOCs and evaluation monitoring for inorganic parameters.
[5] NA = Not Analyzed

Table 9

Typical Landfill Gas Composition
Cold Canyon Landfill

Landfill Gas Components	Percentage of Gas *
Methane	45
Carbon Dioxide	35
Nitrogen	20
Oxygen	<1

* Based on May 2007 values

Table 10

Current Resource Recovery Park Equipment
Cold Canyon Landfill

Model	Description	Quantity
Caterpillar IT-18B	Loader	1
Caterpillar IT-14G	Loader	1
Caterpillar 312C	Excavator	1
White	Roll-off truck	1
GMC	Roll-off truck	1

Table 11

Compost Facility Equipment
Cold Canyon Landfill

Equipment	Type	Existing Number	Proposed Number
Rubber-tired loader	Cat IT 28	2	2
Roll-off truck	Freightliner	1	1
Roll-off truck	International	1	1
Water truck	Kenworth	2	2
Grinder	Morbark 1200 XL	1	
Grinder	Peterson 2400		1
Trommel screen	Wildcat	1	1
Service truck	GMC	1	1
Compost turner	Scarab 18HYD/450/RT	1	1
Water truck	Volvo	1	1
ASP blower [1]	Electric		TBD

cy = cubic yard
TBD = To be determined
[1] Only needed if ASP technology is used

Table 12

Typical Construction and Demolition Debris Composition
Cold Canyon Landfill

Material Type	Percentage by Weight
Wood Waste	20 - 30
Alternative Daily Cover Fines	10 - 20
Concrete/Asphalt	5 - 15
Green Material/Brush	5 - 10
Cardboard	3 - 7
Scrap Metal	3 - 5
Dry Wall	1 - 5
Plastic	2 - 4
CRV Containers	<1
Residual	25 - 50

Table 13

Construction and Demolition Processing Facility Equipment
Cold Canyon Landfill

Equipment	Type	Number	Function
Rubber-tired loader w/grappling bucket	John Deere 644 with JRB grappler	1	Load C&D material onto feed conveyor and commodity bins
Roll-off bins		30	Store sorted commodities under sort line and commodities before further processing
Portable processing line	Super Ptarmigan, or equivalent	1	Process up to 30 tons per hour of C&D material
Hopper/loader	72" wide x 15'-9" long, double-beaded steel pan	1	Load C&D material
Incline conveyor	72" wide x 29'-6" long	1	Elevate C&D material to the disc screen and sort line
Disc screen	BHS 72" wide x 12" long with 2" opening	1	Screen C&D material to remove 2" minus fines for use as ADC
Electric magnet		1	Remove ferrous metal
ADC conveyor	36" wide x 20' long with magnet	1	Convey ADC from disc screen to roll-off bin and remove ferrous metal
Truck loading bin	CSL 42-Unit 155 cubic yard storage bin	1	Stores ADC in an elevated storage bin for truck load-out
Sort line	72" wide x 82' long sliderbed conveyor with 9 sort bays	1	Sort line with 20 work stations for sorters
Takeaway conveyor	72" wide x 20' long troughing-style sliderbed conveyor	1	Conveys residuals from end of sort line to a transfer trailer
Rubber-tired loads	John Deere, or equivalent	3	Load wood waste into grinder and load wood chips in transfer trailer
Skip loader	John Deere 304, or equivalent	1	Floor sorting

C&D = Construction and demolition debris
ADC = Alternative daily cover

FUGRO WEST, INC.

660 Clarion Court, Suite A
San Luis Obispo, California 93401
Tel: (805) 542-0797
Fax: (805) 542-9311

May 22, 2009 (Revised June 22, 2009)
Project No. 3014.035

County of San Luis Obispo
Department of Planning & Building
County Government Center
976 Osos Street, Room 300
San Luis Obispo, CA 93408

Attention: Mr. John Nall

Revised Proposal for Hydrogeologic Services
Field Activities and Pumping Tests
Cold Canyon Landfill Expansion EIR,

Dear Mr. Nall:

As requested by SWCA, Fugro is pleased to submit this proposal to the County Planning and Building Department to perform hydrogeologic services related to the preparation of the environmental impact report (EIR) associated with the proposed expansion of the Cold Canyon Landfill. We understand that in response to comments received after the circulation of the Draft EIR that additional work is necessary to better define the hydrogeology of the area, including the capacity of the existing wells at the landfill, their current use, and the effects of increased use (i.e., groundwater extractions) on other wells in the "basin." You have apparently discussed with SWCA and the project applicant how such additional work would be performed, at least conceptually, and we understand that the landfill operator will cooperate with Fugro in using their wells to record well yield, drawdown, and interference effects during an extended aquifer test. We anticipate that such testing will need to be performed over several days, possibly for durations of up to 72-hours for each well to be tested. Initial coordination with the operations manager of the landfill will be an important first step in assessing the ability to do this, and how the overall testing program would be accomplished. Elements of the testing program are described below as well as estimated costs to perform and document the work.

A second aspect of work that SWCA has asked that we provide assistance relates to establishing a budget for Fugro to participate in anticipated public hearings associated with the EIR, preparing responses to comments received after circulation of the Draft EIR (specifically those received from Mr. Falkenhagen), and time to respond to a second round of comments related to hydrogeology that will be received after circulation of a revised Draft EIR. Estimated fees to perform these separate but related work tasks are provided below.

Task 1 - Well Testing Program

The goal of the well testing program will be to refine and support (or refute) a number of assumptions and data contained in the DEIR, specifically the capacity and sustainable yield of the existing landfill wells and the anticipated effect of the current and anticipated future use of

the wells on other existing users in the basin. The program is also intended to better define the basin aquifer properties and basin boundaries. We understand, and indeed the program will necessitate, that the project applicant cooperate in the well testing work. To the extent possible and subject to the cooperation of nearby landowner(s) we may instrument several nearby water wells that share an inferred hydraulic connection with the landfill wells (subject to confirmation of well design information) to better determine well interference effects. Although we may be limited to using the existing on-site landfill wells as observation wells throughout the testing program, the effectiveness and credibility of the work would be enhanced if neighboring wells can be enlisted to participate. A survey of active wells in the defined basin will be conducted, again subject to cooperation and assistance of nearby landowners. It should be understood that we do not know at this time if any offsite, private wells will be available for monitoring, or suitable for monitoring. Use of such wells for observation of water levels during the testing of the landfill wells will enhance understanding of the local hydrogeology and, to the extent possible, monitoring of up to three (3) additional private wells (subject to certain limitations as described below) will be included in the field work. To conduct these efforts, it is anticipated that the following scope of work will be performed:

1. Conduct a pre-test field visit to meet with the landfill operator, identify the status of the wells to be tested and the ability of those wells to meet the minimum testing criteria (pumping capacity, ability to measure water levels, ability to meter flow, etc.). At this time, we will also conduct a modified survey of nearby wells that may be suitable candidates for inclusion in the monitoring network;

2. Prepare a brief Technical Memorandum (TM #1) that will include the wells to be pumped and the wells to be monitored, the methods to be used in the pumping tests, anticipated instrumentation needs (meters, pumps, ability to measure water levels, etc.), and nearby private wells potentially suitable for monitoring. If the proposed scope of work needs to be revised based on the results of the pre-test field meeting, those necessary changes will be outlined for review and approval by the County.

3. Conduct well capacity tests, if possible, to confirm the production capacity of the Weir wells to be tested. We understand that only two of the three Weir wells are functional. Should the landfill operator restore functionality to the third well (i.e., ability to pump at a constant rate for up to 72-hours with ability to measure water levels and record discharge), we will also test the third well;

4. Monitor and record water level data in other accessible proximate onsite wells and/or observation wells to confirm aquifer storativity, conductivity, and drawdown;

5. Analyze the potential well drawdown and interference effects on up to three (3) neighboring wells subject to the presence and location of nearby wells, the well depth, and owner cooperation. If neighboring wells can be used, we would instrument the additional wells in the area to document the interference effects from the pumping of such neighboring wells and the landfill wells, and;

6. Prepare a Technical Memorandum (TM #2) summarizing the field work performed and the results. The TM #2 would be suitable for incorporation in the revised Draft EIR (to be prepared by SWCA).

We propose to install pressure transducers in two of the three Weir wells and perform a 72-hour constant discharge pumping test in each well. Prior to performing the tests we would meet with the landfill operations staff to inspect the wells and coordinate the program. Potential offsite well(s) suitable for monitoring would also be identified (again, we have assumed that we would monitor up to three offsite wells). It would be the responsibility of the County to contact the owners of the wells that we identify and mutually agree to include in the monitoring network and obtain permission to use the wells as part of the aquifer test program. These wells will be identified in the TM #1.

Each well will need to be instrumented with an in-line flow meter, a valve to regulate discharge, and possibly an access tube into which a pressure transducer can be placed to monitor water level variations. Coordination with the landfill operations staff is required to perform the tests so that only a single well is pumping during each test, and to ensure that the pumping well can be pumped at a constant discharge rate. We anticipate that the produced groundwater would be pumped to an 86,000-gallon capacity steel tank behind the Sort Facility (65,000 gallons of which are maintained for fire suppression), to a pond adjacent to Well P-14, or to waste. If the produced water is pumped to waste, it is possible that a RWQCB discharge permit may be required. After completion of each pumping test, the rate of recovery of water levels in the well would be monitored for a period of up to 72 hours, during which each well would need to remain off.

The field activities associated with performance of the pumping tests for the well testing program will require at least a week to perform. Following completion of the pumping tests, we will prepare a Technical Memorandum (TM #2) summarizing the field activities, and compare the acquired aquifer parameter and conclusions relative to any refinements to the basin hydrogeologic properties to the results contained in the DEIR. We will issue a draft copy of TM #2 to both the County and SWCA for review. We will, as appropriate, incorporate comments received and then issue a final TM.

We expect our fees to conduct these tests described in Task 1 to be $33,080, to be billed monthly in accordance with our current fee schedule. A detailed breakdown of the costs and our current Fee Schedule, which will form the basis of compensation, is attached. We assume the County will issue a Blanket Purchase Order to authorize the work, subject to the same general terms and conditions for work that Fugro has recently performed associated with the peer reviews for the Oasis Vineyard and Laetitia Agricultural Cluster projects. Please note that the proposed pumping tests are not intended to address groundwater quality issues nor will we will be collecting water samples for chemical analysis. Should such sampling be desired it would be at additional cost.

This work task, assuming full cooperation from the landfill operator as discussed above will require about a month to complete, exclusive of any well head modifications necessary to the wells that will be the responsibility of the landfill operator. It is important to note that the results of the pumping tests may not significantly alter the content of the hydrogeologic analysis contained in the Draft EIR. The pumping test results will likely not change the application of the small-scale drawdown effects to the regional aquifer system, simply because the inferred well yields may not sufficiently stress the aquifer to create large distance drawdown effects. The

proposed program should however verify the production capacities of the existing onsite wells, as well as possible limitations in sustainable supply.

Task 2 – Public Hearings and Responses to DEIR Comments

As requested by SWCA, work under this task will include preparation for and attendance at two public hearings, preparing responses to comments related to hydrogeology received after circulation of the Draft EIR (largely those received from Mr. Falkenhagen), and additional time to respond to comments that will be received after circulation of the revised Draft EIR. It is important to note that we will not respond to comments received on the current Draft EIR until we have completed Task 1, above. Estimated costs to complete the Task 2 efforts are $16,860, and will be billed on a monthly basis in accordance with the attached Fee Schedule. The costs for this task will include time to prepare for and attend a project team meeting in San Luis Obispo (to be attended by Paul Sorensen), and time for up to two (2) public hearings (also attended by Paul Sorensen). Such meetings will be compensated for on a time and materials basis. We assume the Blanket Purchase Order mentioned above will be the basis for conducting work under this task.

Assumptions

Assumptions that we have made in preparing this proposal and cost estimate include:

- It is unknown whether the RWQCB will allow open discharge of the produced water from the pumping tests to the stream or to waste without obtaining a low-threat discharge permit. If such a permit is necessary and if water sampling and laboratory analyses of the produced water are required (one sample from each of the three tested wells), the cost of the laboratory analyses will be additional. Past experience with low-threat discharge water quality analyses are that the lab costs can be as much as $4,000 to $5,000 per sample.

- The cost to install water meters on the landfill wells and any necessary wellhead modification, including hiring a pump contractor for installation of test pumps, if necessary, will be contracted directly by and paid for by the landfill operator. We will work with County staff and the landfill operator to identify specific needs for each well prior to conducting the tests.

- The landfill operator will be responsible for providing temporary piping or hoses to discharge the produced water at a mutually acceptable discharge site.

- The County will contact and prepare right-of-entry agreements with neighbors for access to their wells for monitoring. We will work with County staff and the landfill operator to identify potential wells to monitor. The cost proposal is based on the assumption that we will monitor no more than three neighboring wells, in addition to the on-site Weir wells.

- The landfill operator will, upon installation of meters on the landfill wells, keep a daily log of use for each well with a description of how the water is being used. We will provide

the operator with the daily use report forms. The logs of daily use should be started as soon as possible, and maintained for up to 60 days following termination of the pumping tests.

- As indicated earlier as well as in previous conversations with SWCA, it should be noted that the results of the testing may not be conclusive relative to the long-term basin supply.

- The costs provided on the attached Fee Estimate spreadsheet are estimates, not firm fixed fee costs. The County will be billed on a Time and Expense basis; the cost of the field investigation may be revised up or down, depending on the results of the pre-test field meeting, but the estimated fees will not be exceeded without mutual agreement and prior authorization.

We appreciate the opportunity to continue to work on this project. If you have any questions, please do not hesitate to call.

Sincerely,

FUGRO WEST, INC.

Paul A. Sorensen, PG, CHg.
Principal Hydrogeologist

David A. Gardner, PG, CHg.
Principal Hydrogeologist
Senior Vice-President

Enclosures: Fee Schedule 2009

Copies: (1-Pdf) Addressee
(1-Pdf) Keith Miller, SWCA

FUGRO WEST, INC.

660 Clarion Court, Suite A
San Luis Obispo, California 93401
Tel: (805) 542-0797
Fax: (805) 542-9311

June 1, 2010
Project No. 3014.035.03

County of San Luis Obispo
Department of Planning & Building
County Government Center
976 Osos Street, Room 300
San Luis Obispo, California 93408

Attention: Mr. John McKenzie

Subject: Cold Canyon Landfill Expansion EIR

Dear Mr. McKenzie:

As requested, Fugro is pleased to submit this proposal for hydrogeologic services related to the proposed expansion of the Cold Canyon Landfill. As discussed in a conference call held on May 25, 2010 with San Luis Obispo county staff and representative of the Cold Canyon landfill, we understand that the focus of the hydrogeologic services required will focus on the review of various water demand information that have been compiled over the last three months by operations personnel at the landfill. These water demand data and related well use records appear to be a continuation of the compilation of such water demand data that was initiated at the landfill in the fall of 2009, which were presented in a supplemental report prepared by Fugro dated February 8, 2010. This supplemental report remains in draft form.

The purpose of this additional work will be to compare the recently compiled water demand and well production information with that previously compiled by Fugro to better refine the categories of landfill water demand (i.e., for composting activities, dust control, materials recycling, daily cover, etc.) and the seasonal variations in such water demand. Given that the composting operations at the landfill use a significant amount of water, we understand that the proposed landfill expansion project may consider a cap on the future average daily tonnage that will be accepted (an annual average of 150 tons per day). We understand that daily records of green waste tonnage received at the landfill for composting are available for the last 5 years, and we will review these records relative to providing the current estimated water demand for this activity v. daily tonnage accepted, and estimated past seasonal water demands for this activity. The compilation of water production and demand data at the landfill is to be an ongoing daily activity, and our analysis will include additional data that we will be provided through June 30, 2010. From these data, existing and future potential water demands at the landfill (both daily and annually) will be developed.

We understand that the month of June 2010 will be considered representative of the period of highest water demand at the facility, both with regards to landfill dust control and compost operations. Because the highest portion of water use at the facility is related to

composting, records of daily compost tonnage collected during the last 5 years will be integral to this analysis.

We will also review recently compiled information on the production capacities of the three wells at the landfill. These data have also been more or less compiled by landfill staff over the last several months. As with the water demand information, we will compare these data with information that Fugro compiled previously on wells production capacity to provide, if possible, a better estimate of well production capacities and limitations.

An important aspect of this supplemental work will be to validate the methods and implied accuracy in the data we have been provided. We note that the various data we have been provided have been compiled in various spreadsheets. We will need to visit the landfill, briefly speak to the individuals that have compiled the data, review their field records of the daily tabulations, evaluate the accuracy of the water demand estimates, inspect the wells and other water meters at the landfill, and document other related water demand and well production activities. Several such spot visits to the landfill are anticipated.

The data and our analysis will be presented in report format that will be a final revised version of the draft report submitted on February 8, 2010. We will provide an opinion on landfill water demand (daily and annual amounts by category of water demand), as well as an opinion on our level of confidence in the water demand figures and how such water demands are affected by, for example, different daily tonnages of composting activities. The revised estimated water demand figures will be compared to our prior analysis of how such landfill related water demands could affect offsite wells (interference affects). This supplemental work is not anticipated to include a significantly revised discussion or re-evaluation of the overall water balance and water supply capability of the local groundwater basin, or comparison of that supply availability to future build-out projections. This is because we are not aware of any new data related to this issue that would affect our earlier analysis.

Costs for the work outlined above are $13,500 and will be billed on a monthly basis in accordance with the hourly rates indicated on the attached Fee Schedule. Pending timely authorization for the work by the County of San Luis Obispo and receipt of the data discussed above, we would plan to submit our report the County of San Luis Obispo on or before July 16, 2010.

We appreciate the opportunity to continue work on this project. Should you have any questions, please do not hesitate to call.

Sincerely,

FUGRO WEST, INC.

Paul A. Sorensen, P.G., CH.g.
Principal Hydrogeologist

David Gardner, P.G., C.H.g.
Senior Vice President

Copies Submitted: (Pdf) Addressee

FUGRO WEST, INC.

4820 McGrath Street, Suite 100
Ventura, California 93003-7778
Tel: (805) 650-7000
Fax: (805) 650-7010

July 8, 2010
Project No. 3014.035

PROJECT MEMORANDUM

To: **Mr. John McKenzie**

From: **Timothy Nicely, C. Hg. and David Gardner, C.Hg.**

Subject: **Cold Canyon Landfill Supply and Demand Analysis, January to mid-June 2010**

Draft

We have completed our review of the supplied data related to the water supply and demand at the Cold Canyon Landfill for the period of January through mid-June 2010. This summary is based on the results of our interview with Lacy Ballard, site manager for Cold Canyon Landfill of June 9, 2010, and on electronic and handwritten notes provided to us by the landfill staff. We understand that water supply and demand records do not exist for the period following our previous analysis which included November and December 2009. Based on the availability of data, we were able to perform our analysis of water supply and demand for the period between January and June 2010. A summary of the water supply and demand on a monthly basis is presented on the appended table. The data table represents a summary of data from water trucks logs, flow meter readings, and handwritten notes from landfill staff not presented here for simplicity.

Currently, the sources of groundwater supply at the site are the Weir wells (1, 2 and 3) and the so-called Shop Well. The Weir wells are fitted with totalizing flow meters; the shop well is not. The sources of surface water supply, consist of the Main Sediment Pond, constructed in about 1990, and the Module 8 Pond both of which collect runoff from the site. The pond adjacent the compost facility, which has previously been referred to simply as “the pond” is filled principally by the Weir wells and is used as storage for the pumped groundwater from those wells.

On-site water is used to satisfy following the demands: compost use (irrigation, odor control, and dust control), dust control on landfill roads, and evaporation and percolation of water from the pond adjacent the compost facility. Evaporation from the pond was calculated based upon CIMIS evapotranspiration data from a nearby station and the known surface area of the pond. Percolation of water from the unlined pond adjacent to the compost facility is not known but may be considered minor relative to total water use, because of the relatively small size of the pond, the understanding of the prior landfill manager that the pond bottom is relatively fine-grained and coated with biological growth. Because the pond is located within the Pismo geologic formation, as are the Weir wells, the percolated water would likely return to the groundwater as recharge and result in no net use. Note that during calendar year 2010 to mid-June, significant rainfall has occurred during each month between January and April. Minor

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ISO9001 WCS Certificate No. 6451 OHSAS 18001 WCS Certificate No. OH 1253

rainfall occurred during May 2010 (0.27 inches). June 2010 constituted the first month of the year without rainfall.

Data Analysis

During January 2010, meter records documenting groundwater production from the Weir wells were not able available from the landfill staff. However, water use as documented by in-truck logs of water provided by the MRF tank and pond adjacent the composting facility totaled 106,400 gallons. During January 2010, as recorded on the truck field logs documenting water use, no water was pumped from the Shop Well, Module 8 Pond, or the main sedimentation pond. Total site demand during January was 122,700 gallons, which was relatively low for the site, largely due to the approximately 7 inches of rainfall which fell at the nearby CIMIS rainfall gauge. During the month approximately 75% of the water demand was related to compost uses. The remaining 25% of demand was divided relatively evenly between dust control for the landfill roads and evaporation from the pond adjacent the composting facility.

During February 2010, no meter records existed for groundwater supply from the Weir wells. However, water use as documented by in-truck logs indicated that water pulled from the Materials Recovery Facility (MRF) tank and pond adjacent the composting facility totaled 83,600 gallons. During February, a total of 3,800 gallons of water was supplied by the shop well (which is not fitted with a flow meter) and a total of 11,400 gallons was supplied by the Module 8 Pond. No water was supplied by the main sedimentation pond. Total water supply was not documented due to a lack of records of water meter readings from the Weir wells. Total site demand was 116,000 gallons.

March 2010 was the first month of 2010 with records of meter readings from the Weir wells, the pond adjacent the compost facility, and the MRF tank. During the month the Weir wells pumped a total of 33,000 gallons; the shop well provided an additional 15,000 gallons equaling a total of 48,000 gallons from groundwater. Surface water sources supplied a total of 156,000 gallons from the Module 8 Pond. Water supply totaled 204,000 gallons. Water demand exceeded supply during March by approximately 52 percent, totaling 312,000 gallons. The reasons for the discrepancy between water demand water supply volumes are not known.

During April 2010 groundwater supply totaled just over 250,000 gallons, of which 207,000 gallons was from the combined Weir wells. Surface water supply totaled approximately 239,000 gallons. Water supply totaled 470,000 gallons. During April total water demand was slightly less than supply at approximately 411,000 gallons. The reasons for the discrepancy are not known.

During 2010 total groundwater supply was equal to approximately 325,000 gallons. Surface water sources, principally the Module 8 Pond provided an additional 240,000 gallons, to provide a total supply to the site of 565,000 gallons. During the month water demand was slightly higher than supply at 591,000 gallons.

Based on the partial record through June 14, total groundwater supply was equal to approximately 280,000 gallons. Surface water supply totaled approximately 178,000 gallons,

Draft

for combined water supply of 458,000 gallons. During the same period site water demand was equal to 436,000 gallons, slightly less than the estimated supply.

Discussion

The results of our analysis indicate that during the months of May and June 2010 (to date) supply and demand, estimated based on various sources including meter readings and field logs of water truck usage, were within 5 percent. During the wetter months of March and April 2010, the supply and demand estimates varied more widely; during March supply was 34% lower than water demand, and during April supply was 14% greater than demand. Because meter data do not exist for January and February 2010, a similar comparison is not available for those months. Based on this, it seems that this estimation of supply and demand is prone to some error during periods of significant precipitation, which acts to capture runoff for reuse at the site. The reasons why supply and demand are disparate during periods of precipitation are not known, but may be associated with operational procedures not accounted for by either the in-truck field logs or meter readings.

Because green waste processing constitutes the largest water use at the site we requested records of daily tonnage of green waste accepted at the site to determine the relationship between green waste acceptance and water use. Records of green waste tonnage were provided to us on a daily basis for the period of March 2005 through May 2010. During that period, monthly averages of green waste tonnage acceptance averaged approximately 100 tons per day. The monthly averages for green waste acceptance varied between 67 and 128 tons per day. These values were compared with the records for water used for green waste processing for the period between January and May of 2010, the period of these records. The results of the analysis, presented on the appended plates and table show the daily water use for compost processing varied between approximately 2,500 (February) and 8,200 (May) gallons per day during 2010. The final plate shows that for the five months with both sets of data there appears to be no obvious relationship between green waste acceptance and associated water use. This analysis is limited by the short period of record for metered water use data, and includes only a single month without significant rainfall (May 2010), which appears to decrease water use related to green waste processing.

Preliminary Comparison with Previous Demand Estimate Data

Estimates of current groundwater demand were estimated to be approximately 35 acre feet per year (afy) in our previous study of the site (Fugro, 2008.) Those estimates were based solely on the understanding of the landfill manager, and were not supported by actual measurements of water use (water meters.) Water meters were installed as documented in our draft technical memorandum dated January 15, 2010. That report documented the data from the in-truck field logs, which were provided to the water truck drivers to estimate the quantity of on-site water demand. Based on the relatively short timeframe of that study, which included pumping tests of the Weir wells, we concluded that the Weir wells were capable of providing at least 31,000 gpd, or 25 afy annually.

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Based on the 2010 data, if we assume that water supply and demand during the months of June, July, August and September will be equal to that of May, and assign appropriately tapering values for the remainder of calendar year, total site demand may be equal to less than 15 afy. This demand obviously reflects site activities and water use for a very short period based on the dates we were provided. Of this supply, during May and June of 2010, approximately 66 percent of the demand was met by groundwater supplies. Based on our estimations of site demand and groundwater supply for the remainder of calendar year 2010 based on the acquired data, we estimate that approximately 55 percent of the site demand will be satisfied by groundwater supplies. Therefore, it is reasonable to assume that the annual demand can be reduced by the volume of surface water supplies. The results of this calculation indicate that annual groundwater demand is on the order of 8 afy.

Precipitation during the current water year (September 2009 to August 2010) has totaled 17.46 inches, which is equal to approximately 84% of the normal rainfall as measured at the Cal Poly, San Luis Obispo. Because this rainfall is roughly equivalent to the normal, it is reasonable to presume that a roughly similar amount of surface water will be available during all but the driest years. Note that the use of surface water in lieu of groundwater at the site has not been documented previously and constitutes a new water source which has not been considered as part of the Project Description for the EIR.

Recommendations

Based on this review, we recommend the following:

1. Because relatively close agreement between supply and demand is only acceptably close during periods without precipitation, and because the records only include one or two such dry months, we suggest that the period of data collection continue for an additional three months, through September 2010, in order to confirm that the estimates of supply and demand are accurate. Based on the data, we cannot conclude whether the agreement between supply and demand during May and June 2010 is actual, or coincidental.

2. Because the so-called shop well currently provides the landfill with a nontrivial volume of water, we recommend that the well be fitted with a flow meter in a manner similar to the other wells.

3. Because a majority of the demand is satisfied by water from the pond adjacent the compost facility, we suggest that a flow meter be installed at the pond filling station to confirm the accuracy of the in-truck field logs.

4. The design capacity and expected operational surface water supply volume related to the Module 8 Pond should be provided by Golder, who designed the pond.

5. Given the uncertainties discussed in this interim analysis, we recommend that another 3 months of water use data be compiled. After compilation of water

Draft

supply and demand data through September 2010, we are prepared to revise the February 8, 2010 revised draft report.

References

Fugro West (2008), *Water Resources Assessment for the Cold Canyon Landfill Expansion Environmental Impact Report* prepared for the Morro Group, March 4.

Draft

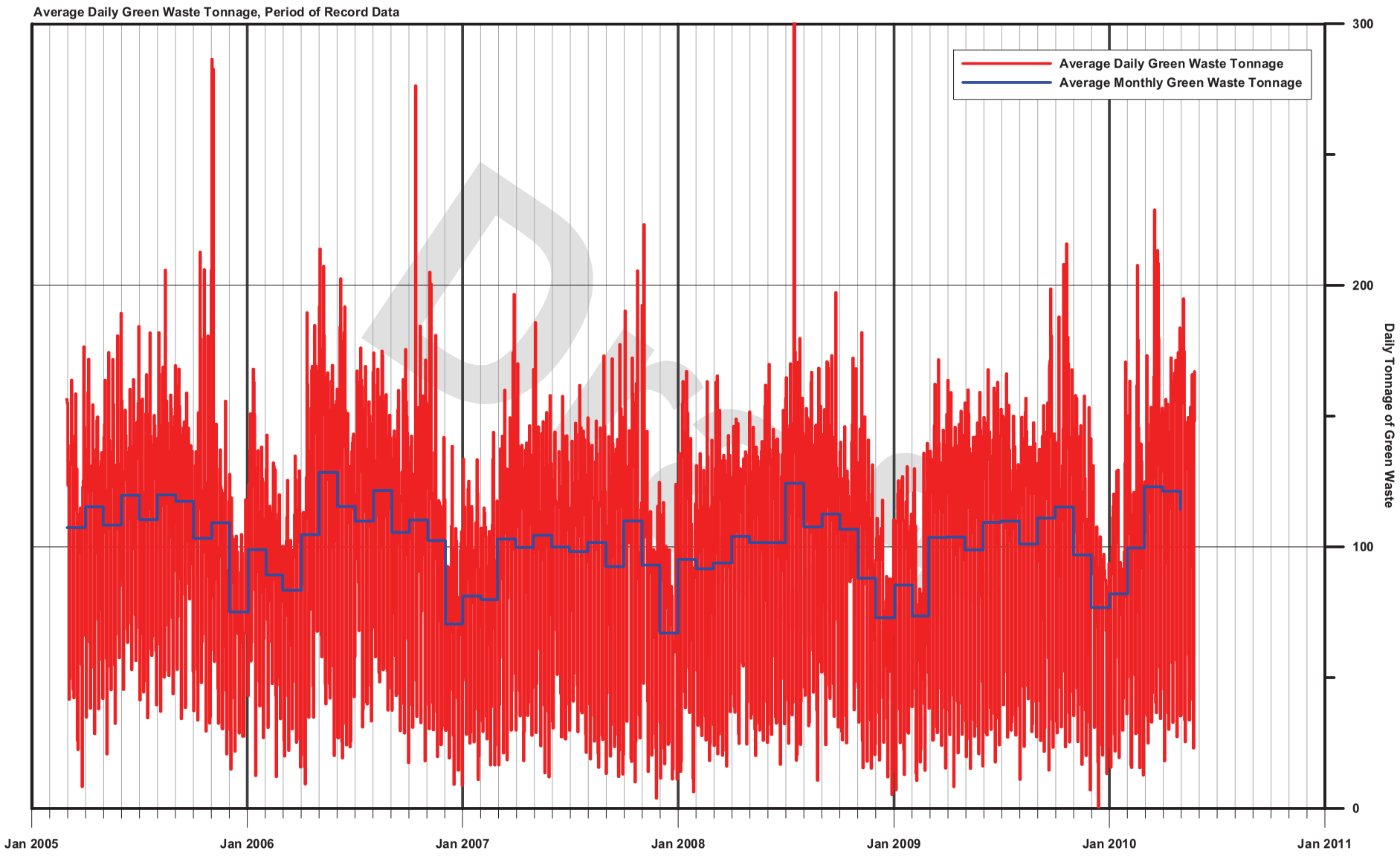
Cold Canyon Landfill Supply and Demand Summary
January to mid-June 2010

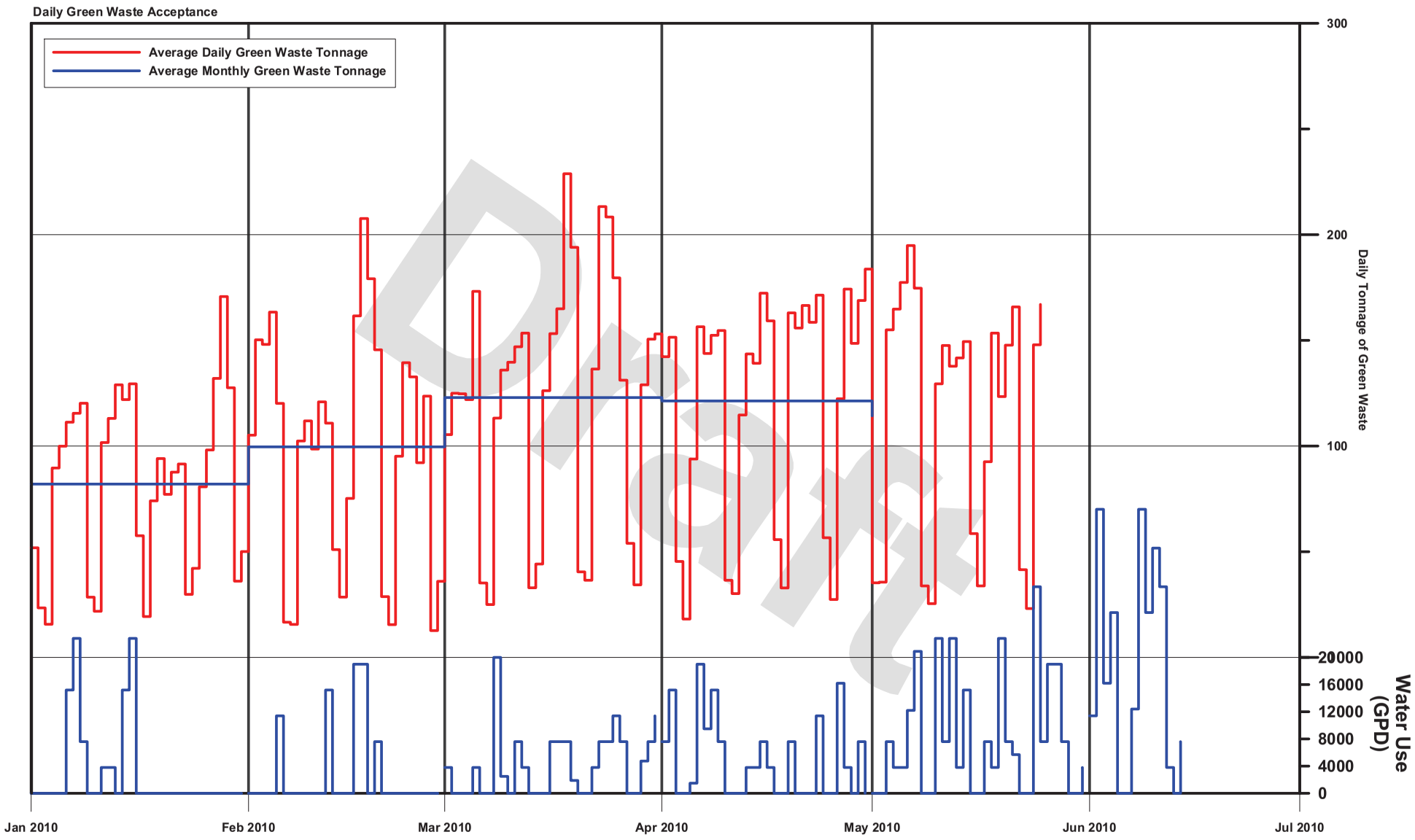
	Groundwater Supply		Surface Water Supply		Water Demand				Total Supply	Total Demand		
Month	Weir Wells Gal/Mo	Shop Well Gal/Mo	Module 8 Gal/Mo	Sediment Pond Gal/Mo	Pond Percolation Gal/Mo	Pond Evaporation Gal/Mo	Compost Gal/Mo	Dust Control Gal/Mo	Total Gal/Mo	Total Gal/Mo	ETo, Inches	Precip, Inches
January 2010	Unknown	0	0	0	Unknown	16,283	91,200	15,200	Unknown	122,683	1.96	6.15
February 2010	Unknown	3,800	11,400	0	Unknown	17,197	72200	26600	Unknown	115,997	2.07	4.46
March 2010	33,393	15,200	155,800	0	Unknown	32,899	127,950	151,050	204,393	311,899	3.96	0.66
April 2010	207,142	23,400	76,000	163,400	Unknown	38,382	141,200	231,800	469,942	411,382	4.62	1.90
May 2010	258,013	66,500	209,950	30,400	Unknown	47,770	255,400	287,850	564,863	591,020	5.75	0.20
June 2010	268,894	11,400	177,650	0	Unknown	Unknown	254,700	181,450	457,944	436,150	--	0.00
Minimum	33,393	0	0	0	Unknown	16,283	72,200	15,200	204,393	115,997	1.96	0.00
Maximum	268,894	66,500	209,950	163,400	Unknown	47,770	255,400	287,850	564,863	591,020	5.75	6.15
Average	191,861	20,050	105,133	32,300	Unknown	30,506	157,108	148,992	424,286	331,522	3.67	2.23

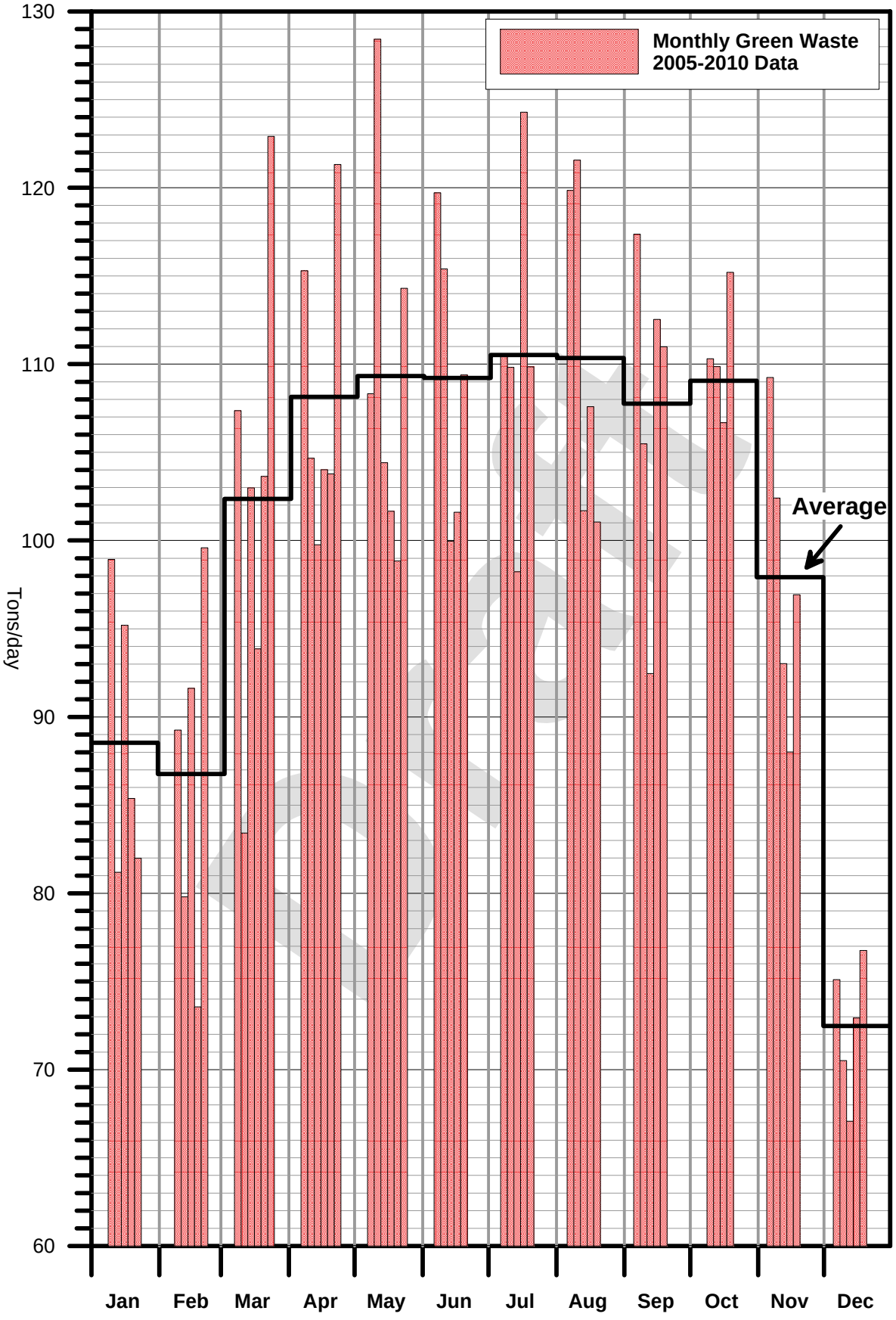
Note: June data is incomplete. Data is for review only

CIMIS 52 Cal Poly

Draft


Average Daily Green Waste Tonnage, Period of Record Data
Average Daily Green Waste Tonnage
Average Monthly Green Waste Tonnage
Daily Tonnage of Green Waste
300
200
100
0
Jan 2005
Jan 2006
Jan 2007
Jan 2008
Jan 2009
Jan 2010
Jan 2011


Daily Green Waste Acceptance
Average Daily Green Waste Tonnage
Average Monthly Green Waste Tonnage
Daily Tonnage of Green Waste
300
200
100
0
Water Use (GPD)
20000
16000
12000
8000
4000
0
Jan 2010
Feb 2010
Mar 2010
Apr 2010
May 2010
Jun 2010
Jul 2010
Draft


Monthly Green Waste
2005-2010 Data
Average
Tons/day
130
120
110
100
90
80
70
60
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

Cold Canyon Landfill Green Waste and Water Use
January to May 2010

Month	Green Waste Tons/Day	Compost Water Use Gallons/Day
January 2010	82	2,942
February 2010	100	2,579
March 2010	123	4,127
April 2010	121	4,707
May 2010	114	8,239

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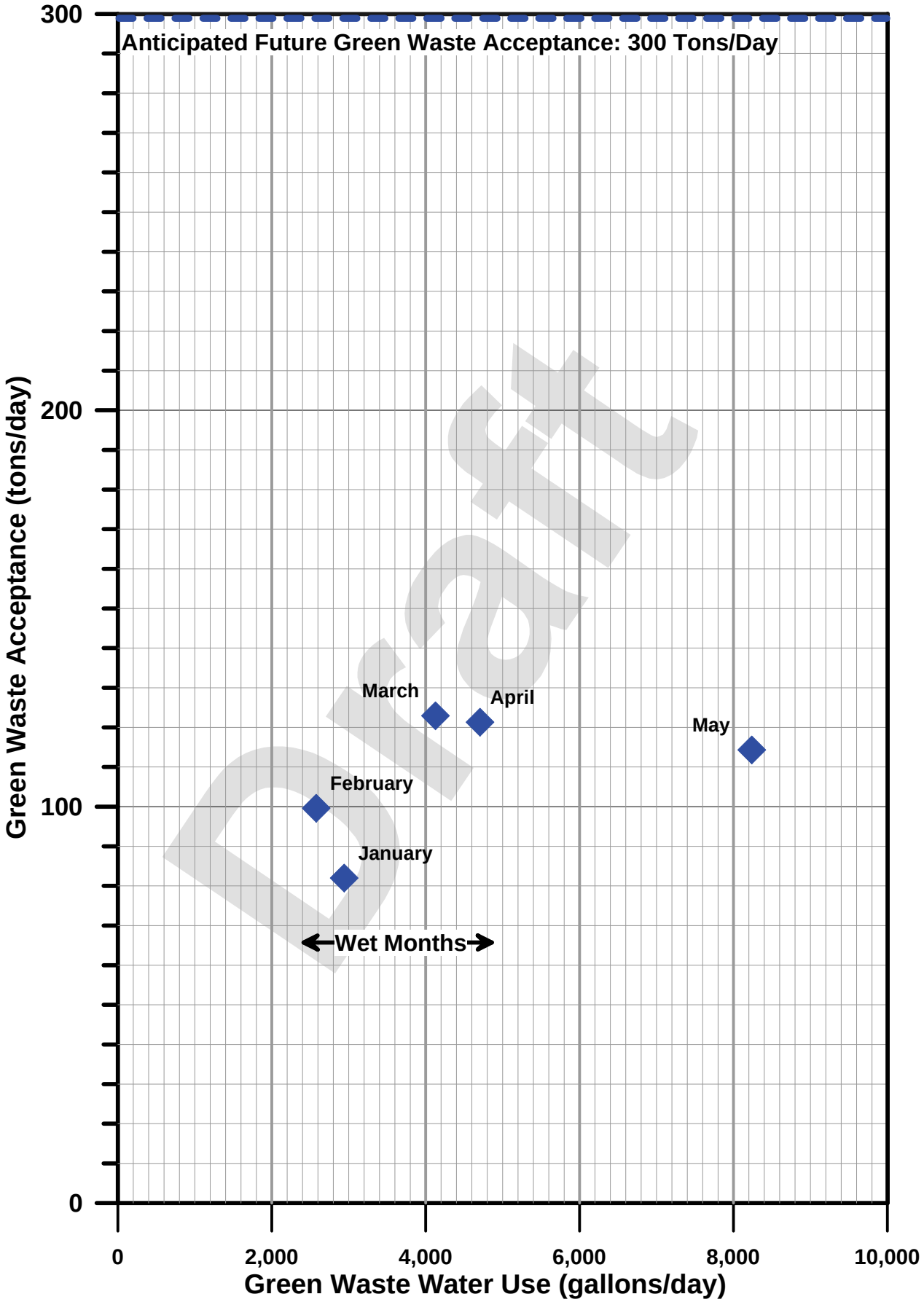

Anticipated Future Green Waste Acceptance: 300 Tons/Day
300
200
100
0
Green Waste Acceptance (tons/day)
March
April
May
February
January
Wet Months
0
2,000
4,000
6,000
8,000
10,000
Green Waste Water Use (gallons/day)
Draft

APPENDIX B
SITE PHOTOGRAPHS

Weir Well 1 Overview

Weir Well 1 Wellhead

Weir Well 2 Piping

Weir Well 2 Wellhead

Weir Well 3 Wellhead

Weir Well 3 Sounding Hole

Weir Well 3 Piping

Monitoring Well P-1A

Monitoring Well P-1B

Monitoring Well P-1A Wellhead

Monitoring Well P-6

Monitoring Well P-6 Wellhead

Monitoring Well P-8

P-5 and MW-2

Compost Windrows

Monitoring Well P-14

Pond

Pond Filling Station

Pond Outflow

Pond Outflow Valve

Tank Inflow

Monitoring Well P-13

Monitoring Well B-1

Monitoring Well B-1

Monitoring Well P-6 ?

Monitoring Well P-10

Monitoring Well P-11

B-3 or P-12

APPENDIX C
SUPPORTING HYDROGEOLOGIC DATA

ORIGINAL
File with DWR

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATER WELL DRILLERS REPORT

Do not fill in

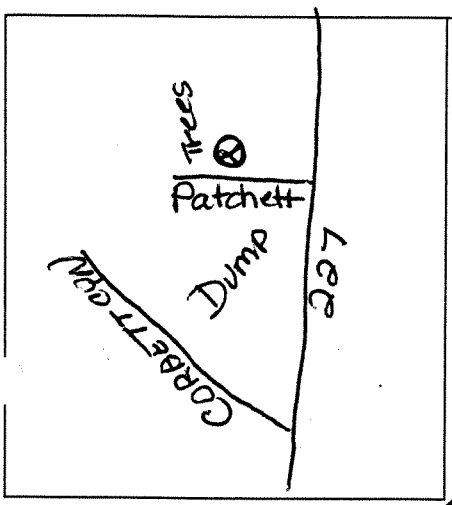
No. 266376

Notice of Intent No. _____
Local Permit No. or Date _____

State Well No. _____
Other Well No. _____

(1) OWNER: Name Tony Gomez (Derway Property)
Address 475 Corrida Dr.
City San Luis Obispo, CA ZIP 93401

(2) LOCATION OF WELL (See instructions):
County San Luis Obispo Owner's Well Number 1
Well address if different from above _____
Township 31S Range 13E Section ~~29~~ 33R
Distance from cities, roads, railroads, fences, etc.
APN 044-261-41



WELL LOCATION SKETCH

(3) TYPE OF WORK:
New Well ☒ Deepening ☐
Reconstruction ☐
Reconditioning ☐
Horizontal Well ☐
Destruction ☐ (Describe destruction materials and procedures in Item 12)

(4) PROPOSED USE:
Domestic ☒
Irrigation ☐
Industrial ☐
Test Well ☐
Municipal ☐
Other ☐
(Describe)

(5) EQUIPMENT:
Rotary ☒ Reverse ☐
Cable ☐ Air ☐
Other ☐ Bucket ☐

(6) GRAVEL PACK:
Yes ☒ No ☐ Size Sandpac
Diameter of bore 12 1/4
Packed from 50 to 120 ft.

(7) CASING INSTALLED:
Steel ☐ Plastic ☒ Concrete ☐

From ft.	To ft.	Dia. in.	Gage or Wall
0	120	6	200

(8) PERFORATIONS:
Type of perforation or size of screen

From ft.	To ft.	Slot size
80	120	1/8

(9) WELL SEAL:
Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth 50 ft.
Were strata sealed against pollution? Yes ☐ No ☒ Interval _____ ft.
Method of sealing Bentonite & Cement

(10) WATER LEVELS:
Depth of first water, if known 80 ft.
Standing level after well completion 80 ft.

(11) WELL TESTS:
Was well test made? Yes ☒ No ☐ If yes, by whom? _____
Type of test Pump ☐ Bailer ☐ Air lift ☒
Depth to water at start of test _____ ft. At end of test _____ ft.
Discharge 25 gal/min after _____ hours Water temperature _____
Chemical analysis made? Yes ☐ No ☒ If yes, by whom? _____
Was electric log made Yes ☐ No ☒ If yes, attach copy to this report

(12) WELL LOG: Total depth 120 ft. Completed depth 120 ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	20	Clay, shale, sandstone
20	60	Tan sandstone
60	100	Tan & grey sandstone
100	120	Tan sandstone, soft layers

Work started 3-9 19 89 Completed 3-10 1989

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signed _____ (Well Driller)
NAME Rauch Drilling Co. Inc.
(Person, firm, or corporation) (Typed or printed)
Address P.O. Box 524
City Templeton, CA ZIP 93465
License No. 445016 Date of this report 3-15-89

CONFIDENTIAL
NOT FOR PUBLIC USE
WATER CODE SEC. 13752

FIELD LOG OF EXPLORATORY BORING

EMCON ASSOCIATES

PROJECT No. 0142-001-1R DATE 6-30-93
CLIENT COLD CANYON LANDFILL INC
LOCATION SAN LUIS OBISPO
LOGGED BY D.V.M.

BORING No. P-6
Sheet 1 of 3

Field location of boring: 35' from fence ⊂ fence
⊙ P-6
≈650 from P-1A
P-1A
P-1B
MAIN ROAD

Ground Elev. ≈290' MSL Datum

Drilling Co. H-F DRILLING
Drill rig model B-53
Drilling method AIR ROTARY
Hole dia.

Boring completion data DRILLED TO 110 WITH 6.5" TRICONE
CORED TO 110 WITH 4.5 DIAMOND; REAMED TO 111' WITH 9⅞ TRICONE

Depth to ▽	101'	Depth to ▼	92.8'	92.8'
Time	3:25	Time	3:43	10:23
Date	6/30/93	Date	7/1/93	7/2/93

TIME	Pocket Penetrometer (TSF)	Blows/6 in. and/or Pressure (PSI)	Type of Sampler	Recovery (ft/ft)	Sample Number and Container Type	Depth	Sampled Interval	Well Detail	Soil/Rock Symbol	Graphic Log	DESCRIPTION
12:15						0					PISMO FORMATION: Fine to very fine-grained sandstone; 10 to 20 percent silt and clay; Pale yellowish brown (10YR 6/2) poorly consolidated; moist.
						2					
						4			SS		
						6					
						8					
						10					
						12					Grab sample @ 10' as above
						14					
						16					
						18					
						20					
						22					
						24					
						26					
						28					
						30					
						32					
						34					
						36					Grab sample @ ≈40' As above, dark greenish yellow (10Y 6/6)
						38			SS		
12:40						40					

Reviewed by: _____ Date: _____

Form F-9 Rev. 10/90

FIELD LOG OF EXPLORATORY BORING

EMCON ASSOCIATES

PROJECT No. 0142-001.18 DATE 6/30/93
CLIENT Cold Canyon Land Fill Inc
LOCATION San Luis Obispo, Cold Canyon Landfill
LOGGED BY DVM

BORING No. P-6
Sheet 2 of 3

Field location of boring:

Drilling Co. H-F Drilling
Drill rig model B-53
Drilling method AIR ROTARY
Hole dia.

Boring completion data

Ground Elev. 290 Datum MSL

Depth to ▽		Depth to ▼			
Time		Time			
Date		Date			

	Pocket Penetrometer (TSF)	Blows/6 in. and/or Pressure (PSI)	Type of Sampler	Recovery (ft/ft)	Sample Number and Container Type	Depth	Sampled Interval	Well Detail	Soil/Rock Symbol	Graphic Log	DESCRIPTION
						40					
						42					
						44			Ss		
						46					
						48					Grab sample @ 50' as above
						50					
1:15						52					
						54					
						56					
						58					
						60					
						62					
						64					
						66					
						68					
						70			Ss		
						72					
						74					
						76					@ 80' WATER PAUSE, NO FORMATION WATER
						78					CONTINUE DRILLING @ 2:12
											light olive to dark greenish yellow (10Y 5/4 10Y 4/4)
2:05						80					

Reviewed by: Date:

Form F-9 Rev. 10/90

FIELD LOG OF EXPLORATORY BORING

EMCON ASSOCIATES

PROJECT No. 0142-001 18 DATE 6/30/93
CLIENT COLD CANYON LANDFILL INC.
LOCATION SAN LUIS OBISPO
LOGGED BY DVM

BORING No. P-6
Sheet 3 of 3

Field location of boring:

Ground Elev. ±290 MSL Datum

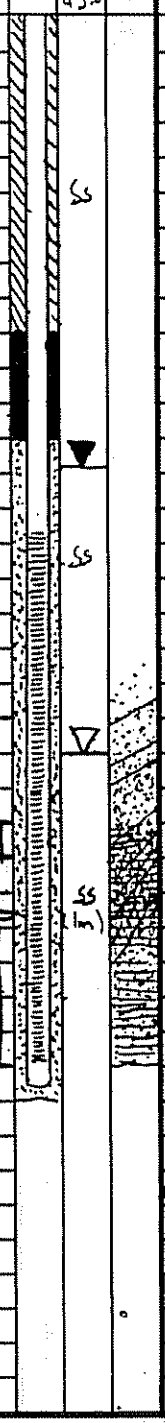
Drilling Co. H-F DRILLING
Drill rig model 8-53
Drilling method AIR ROTARY ; CORED LAST 10' Bent split spoon sampler Hole dia.

Boring completion data Reamed hole with 9 7/8 inch-diameter tricone to 111.0 feet BGS

Depth to ▽	101.0'	Depth to ▼	92.8	92.8
Time	3:25	Time	3:43	10:23
Date	6/30/93	Date	7/1/93	7/2/93

	Pocket Penetrometer (TSF)	Blows/6 in. and/or Pressure (PSI)	Type of Sampler	Recovery (ft/ft)	Sample Number and Container Type	Depth	Sampled Interval	Well Detail	Soil/Rock Symbol	Graphic Log	DESCRIPTION
WATER PAUSE 1st						80			93.6		
						82					
						84			SS		
						86					@ 90' ; WATER PAUSE NO WATER 290
						88					COLOR AS ABOVE
2nd	2:22					90					
	2:28										@ 95 ; WATER PAUSE ; NO WATER
						92					COLOR AS ABOVE
						94					
3rd	2:35		7/1/93	3:43							
	2:44			92.8		96			SS		@ 100' ; WATER PAUSE ; NO WATER
			6/30/93	3:25		98					COLOR CHANGE DUSKY YELLOW GREEN (5GY 5/2) DRILLER BELIEVES HE'S "SITTING ON WATER"
water pause 4th			FIRST ENCOUNTERED @ ±101'								START CORING @ 100'
	2:50					100					
	3:06										@ 100' PISMO FORMATION ; Fine to very fine-grained
				2.8 of 3.0		102					sandstone ; 10 to 15 percent fines (silt and clay)
	3:21										massive ; fracture spacing 0.3 to 1.5 feet apart
	3:29			0.6 of 1.0		104					moderate hard ; saturated ; sharp color changes at
	3:45			1.8 of 1.8					SS (m)		101 & 101.5 feet ; fractures closed ; filled with
	4:15					106					calcium carbonate ≈ 0.05 to 0.10 inches thick
				2.7 of 3.2		108					Color 100 to 101 dusky yellow green (5GY 5/2)
											101 to 101.5 ; dark greenish gray (5GY 4/1) and 101.5 to
	5:10					110					103, olive black (5Y 2/1) (Recovered 2.8 of 3.0 run)
											(fractures inclined 70 degrees to core axis)
											@ 103 to 104 ; As above ; very hard calcified
						112					@ 104 to 105.8 ; As above ; very hard calcified
											@ 105.8 to 106.5 ; As above ; very hard calcified
						114					@ 106.5 to 110 ; As above ; soft Sandstone interbedded ~~sand layers~~ with layers of silty clay ; silty clay
						116					layers are ≈ 0.1 inch thick and spaced 0.3 to 0.4 inches apart
						118					Core photographed and sampled every 2 feet
						120					Boring terminated @ 110' sufficient information obtained (REAMED TO 111')

REAMED TO 60' 6/30/93
OFF SITE 7:00 PM
REAMED TO 111' 9:12 6/31/93
MEASURED DEPTH TO GW @ 4:43 7/1/93
96.6 - 2.8 STICKUP = 92.8'
TAG BOTTOM @ 111.0' - 2.8 = 108.2
2.4' SILT



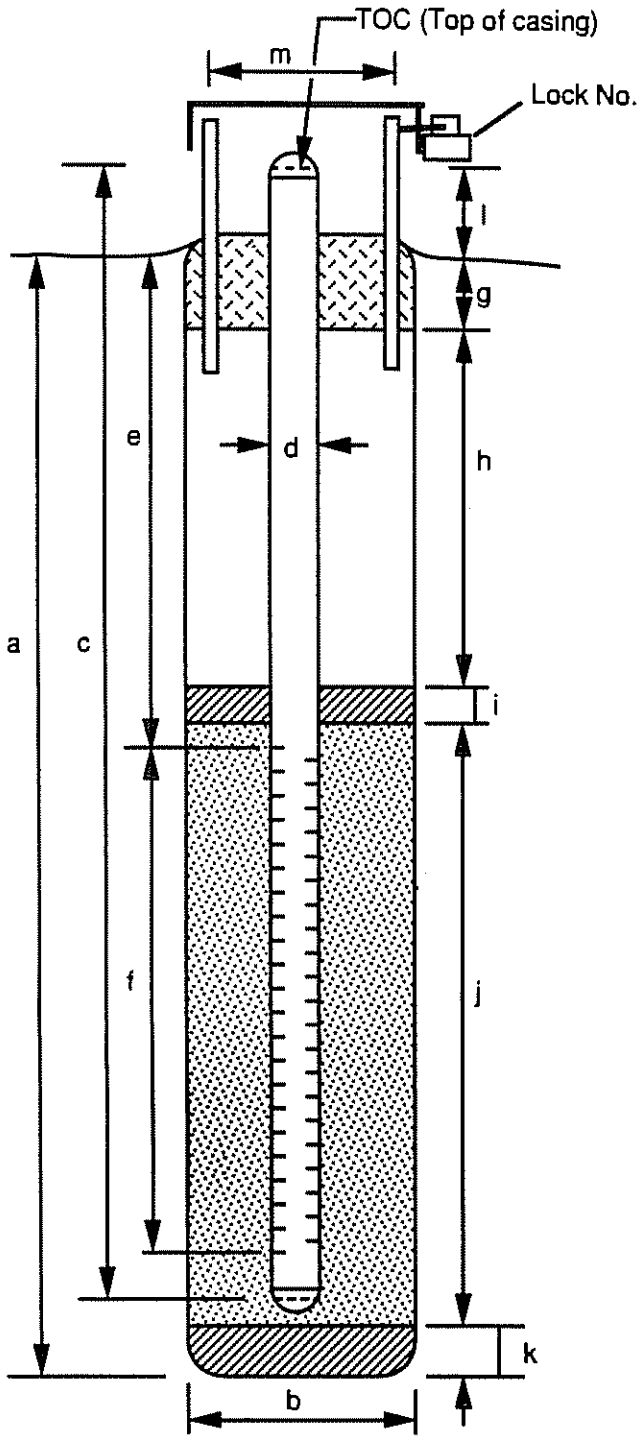
Reviewed by: _____ Date: _____

Form F-9 Rev. 10/90

WELL DETAILS

PROJECT NUMBER 0142-001.18
PROJECT NAME Cold Canyon Landfill
LOCATION San Luis Obispo
WELL PERMIT NO. 93-MW-112

BORING / WELL NO. P-6
TOP OF CASING ELEV. 292.93 ft.
GROUND SURFACE ELEV. 290.34 ft.
DATUM MSL
INSTALLATION DATE 07/01/93



EXPLORATORY BORING

a. Total depth cored 110.0 ft. reamed 111.0 ft.
b. Diameter reamed 10.0 in.
Drilling method Air-rotary with water misting

WELL CONSTRUCTION

c. Total casing length 113.4 ft.
Material Schedule 40 PVC
d. Diameter 4.5 in.
e. Depth to top perforations 94.8 ft.
f. Perforated length 15.0 ft.
Perforated interval from 94.8 to 109.8 ft.
Perforation type Machine-slotted
Perforation size 0.020 in.
g. Surface seal (0-2.0') 2.0 ft.
Material concrete
h. Backfill (2.0'-89.0') 87.0 ft.
Material Volclay grout
i. Seal (89.0' - 92.0') 3.0 ft.
Material Bentonite pellets
j. Sand pack 19 ft.
Sand pack interval from 92.0 to 111.0 ft.
Material #2/12 Lonestar Sand
k. Bottom seal/fill NA ft.
Material NA
l. Casing stickup 2.6 ft.
m. Protective casing diameter 8 in.

Well Constructed by DVM

Golder Associates

Exploratory Boring Log

Boring No. P-10
Well No. P-10
Sheet 1 of 2

Site:	Cold Canyon Landfill Weir Parcel	Ground Elevation:	233.5 ft MSL Presurvey
Client:	Shaw/EMCON for Waste Connections	T.O.C. Elevation:	235.22 ft
Project Number:	CCL102 / 0537467	Coordinates:	N4692.04 E 5379.26
Date(s) Drilled:	6-20-05	Drilling Method:	Air Rotary, HQ3 core
Date(s) Installed:	6-20 & 21-05	Borehole Total Depth:	89 feet
Drilling Co./Driller:	Spectrum Exploration	Final Borehole Diameter:	7-inch nominal

Drilling Summary: Drill with 4.5" down-hole hammer to 27'. Switched to 6½" claw bit. Begin coring at 68.5' with Longyear HQ3 wire line coring system. Cored 20 feet. Reamed borehole with 6½ inch claw bit to 89'. Installed 25 ft slot, a 0.67 ft thread converter and 65 ft of blank. Tremie washed in 2/12 sand. Tremie one bucket ¼-inch bent pellets. Neat grout (~6 gal/sack type II/V) tremie to surface.

Time		Sample No.	Blows / 6 in	RQD	Core Run	Recovery	Depth (ft)	Well Detail	Soil/Rock Symbol	Graphic Log	LITHOLOGY/REMARKS
12:00									SS		PISMO FORMATION: EDNA MEMBER Sandstone, yellowish gray (5Y 7/2), 90% fine to v. fine sand, well sorted, trace silt and clay, friable iron oxide staining, damp. Primarily qtz + feldspar grains < 5% mafic minerals. Sand is subrounded to subangular — very little hammering to 9'
							5				
12:20											
							10				@10: as above, damp
							15				@15: as above, intermittent hammering
12:35							20				@20: as above
							25				@25': yellowish brown, harder layer more hammering
12:55											@27': rock too soft for down-hole hammer, switching to claw tooth bit
1:15							30				@28-29': dark gray, friable to low hardness
											@33': light to medium gray; increase to ~5-10% mafic minerals; damp
							35				
1:20							40				

Logged by: TLV

Date checked: 10/10/05

Golder Associates

Project No.: CCL102 / 0537467
Client: Shaw/EMCON for Waste Connection
Site: Cold Canyon Landfill Weir Parcel

Boring No. P-10
Well No. P-10
Sheet 2 of 2

Time		Sample No.	Blows / 6 inch	RQD	Core Run (HQ3)	Recovery	Depth (ft)	Well Detail	Soil/Rock Symbol	Graphic Log	LITHOLOGY/REMARKS
		Cuttings							Ss		PISMO FORMATION; SANDSTONE, continued
							45		6.22		@45': driller notes decrease in dust
									6/21		
1:30							50				
							55				@55': driller thinks water-dust gone, some balling of cuttings sandstone is fine to very fine grained; matrix very fine to silt size; <1% clay @59': water pause - no water
1:40 1:45							60				
							65				@2:10 water at 68' below collar (~66 ft bgs); no odor @2:30 " " 66' " "
		HQ3 Coring							6-20		@68': same as above - some balls water pause: 5 minutes - wet sand, begin coring
1:50 1:55							70				
		68.5-73.5		100%		5/5				calc	SANDSTONE, medium gray fine to very fine sand, well sorted, massive (0.3', 1.3', 0.5', 0.8', 0.9', 0.7', 0.6') moderately fractured (frac spacing ↗) low hardness; no HCl reaction
3:05											
							75				@71': moderately hard, slight HCl reaction @73.5-78.5': as above, fracs (0.3', 0.1', 0.1', 0.4', 0.1', 0.2', 1.1', 0.7', 0.4', 1.2', 0.4); no HCl reaction, no odor to water
		73.5-78.5				4.7/5					
3:35											
							80				@78.5-83.5: as above; no HCl reaction (Frac 0.4', 3.5', 1.1')
		78.5-83.5		100%		5/5					
4:00											
							85				@83.5-88.5': as above (Frac 1.5', 1.0', 1.1', 1.1', 0.3') no HCl reaction.
		83.5-88.5		100%		5/5					
											Bottom of Boring at 89', terminated, target depth reached.

Logged by: TLV

Date checked: 10/10/05

WELL CONSTRUCTION DETAILS

Golder Associates

BORING DESIGNATION: P-10

INSTALLATION

DATE: 6/20-21/05 BY: Spectrum Exploration Tom Vercontere

DIMENSIONS

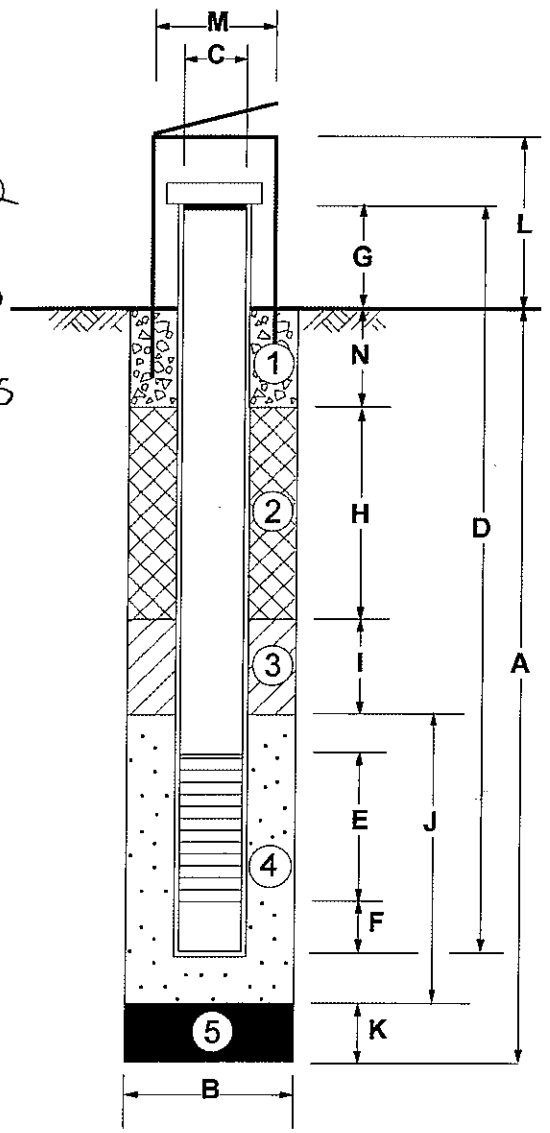
A	Total Depth of Boring (ft.)	89
B	Borehole Diameter (in.)	7
C	Well Casing Diameter (in.)	2
D	Well Casing Length (ft.)	90.7
E	Well Casing Slotted Interval (ft.)	24.15
F	Well Casing End Cap or Sump (ft.)	0.8
G	Well Casing Height (ft.)	1.7
H	Annular Seal Interval (ft.)	59.5
I	Annular Seal Interval (ft.)	1.5
J	Sand Pack Interval (ft.)	27
K	Bottom Material Interval (ft.)	NA
L	Protective Cover Height (ft.)	2.5
M	Protective Cover Diameter (in.)	8
N	Annular Seal Interval (ft.)	1
	Well Centralizer Depth(s) (ft.)	30, 64, 89

MATERIALS DATA

Monument Footing	1	Concrete
Annular Seal	2	Neat cement
Annular Seal	3	Bentonite, 1/4" pellets
Sand Pack	4	Lapis Luster #2/12 sand
Bottom Material	5	NA
Slotted Casing		0.020-inch
Well Casing		Sch 40 PVC
Well Centralizers		Stainless Steel
Protective Cover		mild steel

WELL DESIGNATION
P-10

DEPTH/HEIGHT (FT)	ELEV. (FT MSL)
2.5	236
1.7	235.2
0	233.5
1	232.5
60.5	170.3
62	171.5
63.6	169.9
88.2	145.3
89	144.5
89	144.5
89	144.5



SECTION VIEW
(not to scale)

NOTES: Sump is end cap (0.3') plus unslotted casing (0.5'). Elevations from survey stakes provided by Cold Canyon Landfill, Inc. Well drilled with air rotary equipment

SITE: Cold Canyon Landfill
PROJ. NO: 053-7467
N. 4286.28 E. 5809.92
WELL PERMIT NO: 2005-MW-184
T.O.C. ELEV: 235.22

Golder Associates

Exploratory Boring Log

Boring No. P-11
Well No. P-11
Sheet 1 of 1

Site:	Cold Canyon Landfill Weir Parcel	Ground Elevation:	194.3 ft
Client:	Shaw/EMCON for Waste Connections	T.O.C. Elevation:	196.14 ft MSL
Project Number:	CCL102 / 0537467	Coordinates:	N4286.28 E 5809.92
Date(s) Drilled:	6-21	Drilling Method:	Air Rotary HQ3 core
Date(s) Installed:		Borehole Total Depth:	29 ft
Drilling Co./Driller:	Spectrum Exploration	Final Borehole Diameter:	6.5 inch Nominal

Drilling Summary: Drilled to 9 ft with 6.5-inch claw tooth bit. Cored from 9 to 28 feet with HQ3 core system. Reamed borehole to 29' with 6.5" claw bit. Lowered 20 ft of 2-inch Sch 40 .020 slot and 10.8 feet of blank. Place 5½ sacks 2/12 sand. Air jet @ ~32 cfm for 10 min. to clean and tighten filter pack.

Time		Sample No.	Blows / 6 in	RQD	Core Run	Recovery	Depth (ft)	Well Detail	Soil/Rock Symbol	Graphic Log	LITHOLOGY/REMARKS
11:10		Grab cuttings							SM		SILTY SAND (SM) dark yellowish brown (10YR 4/2) 30-45% non plastic fines; 55-70% fine sand; moist
											PISMO FORMATION, EDNA Member
							5		6/21		SANDSTONE, yellowish gray (5Y 7/2), 5 to 10 percent silt, sand is fine to very fine grained, well sorted; trace mafic, mostly qtz + feldspar.
									SS		
									6/21		@9': wet. switching to core
11:30		HQ3 Core									SANDSTONE, mottled yellowish gray (5Y 8/1), moderate greenish yellow (10Y 7/4) and light brown (5YR 5/6); fine to very fine sand, 5-10% silt; moderately fractured; bedded, poorly defined, inclined ~60-70° to core axis; low to moderate hardness. Iron oxide stains add to mottling. Frac spacing 0.4, 0.5, 0.7, 0.5, 0.7, 0.4'). No HCl reaction
1:00				>95%		3.1/4	10				
		9-13'									
1:20											
		13-18'		>95%		4.8/5	15				@13 to 14.5': as above
											@14.5 to 18: light gray (N7), massive. No HCl reaction (Frac 0.1, 0.7, 0.6, 1.3, 1.3, 0.5, 0.4')
1:30											
				>95%							@18-20.2': as above, light gray
		18-23'				4.6/5	20				@20.2-20.9': medium dark gray (N4)
											@20.9-23: as above @14.5-18'. Light gray
1:45											
		23-28'				5/5	25				@23-28', as above, Light gray Some light brown (5YR 5/6) iron oxide mottling at 24'.
2:00											
							30				BOTTOM OF BORING, TARGET ACHIEVED.
							35				
							40				

Logged by: TLV

Date checked: 10/10/05

Golder Associates

Exploratory Boring Log

Boring No. P-12
Well No. P-12
Sheet 1 of 2

Site:	Cold Canyon Landfill Weir Parcel	Ground Elevation:	212 ft
Client:	Shaw/EMCON for Waste Connections	T.O.C. Elevation:	214.06 ft MSL
Project Number:	CCL102 / 0537467	Coordinates:	N 4660.75 E 6324.81
Date(s) Drilled:	6-21/6-22	Drilling Method:	Air Rotary
Date(s) Installed:	6-22/6-23	Borehole Total Depth:	55 ft
Drilling Co./Driller:	Spectrum Exploration	Final Borehole Diameter:	6 1/2 inch

Drilling Summary: Drilled with 6.5-inch claw bit to 39 feet. Switched to HQ3 core system and cored to 53 feet. Over cored 55 ft with 5-inch barrels to retrieve HQ3 system. Used 1 sack bentonite in ~75 gal water to hold heaving sand. Casing broken during construct. Redrilled new borehole to 55 feet. Sand sloughed to 43 ft between time rods pulled and casing inserted. Constructed well at 43' bottom.

Time		Sample No.	Blows / 6 in	RQD	Core Run	Recovery	Depth (ft)	Well Detail	Soil/Rock Symbol	Graphic Log	LITHOLOGY/REMARKS
4:15		Cuttings							SM		SILTY SAND (SM), dark yellowish brown (10YR 4/2); 30-40% fines 60-70% fine to medium sand; dry to damp.
									SS		PISMO FORMATION, EDNA MEMBER SANDSTONE, yellowish gray (5Y, 7/2), 5-10% silt; very fine to fine grained with 5-10% medium to coarse; damp.
							5				@ 8': no coarse sand
							10				
											@ 13': dusky yellow (5Y 6/4); damp
4:30							15				
											@ 19': medium light gray (N5)
							20				@ 20: as above; dusky yellow (5Y 6/4)
											@ 24: 6" interval of hard drilling
							25				
4:45											@ 29': moist - water pause - 10 min - no water
							30				
									6/23 6/21		=10 minutes after first fine of water
							35				@ 36': medium dark gray (N4); moist
4:55									6/21		@ 39': very moist to wet sand - leaves hand wet when squeezed
5:25		Run 1			T	HQ3	45				switching to core 5 minute water pause - water

Logged by: TLV

Date checked: 10/10/05

Golder Associates

Project No.: CCL102 / 0537467
Client: Shaw/EMCON for Waste Connection
Site: Cold Canyon Landfill Weir Parcel

Boring No. P-12
Well No. P-12
Sheet 2 of 2

Time		Sample No.	Blows / 6 inch	RQD	Core Run	Recovery	Depth (ft)	Well Detail	Soil/Rock Symbol	Graphic Log	LITHOLOGY/REMARKS
									SS		PISMO FORMATION (Continued) Edna Member Sandstone
		39'-43'		0		0.8/4					Driller notes soft material
5:40											@ 39-43': Medium gray (N-5), trace silt
			HQ3								
			core				45				Driller notes no rotation for core run - material very loose
		43-48'				0/5					in 43-48' interval - no recovery. Weight of core rods with
											0 down pressure
6:05											Driller notes at 48-49 got hard again
											@ 48-49': hard, well cemented, no HCl reaction
							50				
		48-53'				1.2/5					@ 50-55': cutting as above
6:20											BORING TERMINATED, EQUIPMENT STUCK,
											OVER DRILLED to RETRIEVE CORE EQUIPMENT
6:20											TO 55 Feet. BOREHOLE SLOUGHED TO 43 Ft
							55				
							60				
							65				
							70				

Logged by: TV

Date checked: 10/10/03

WELL CONSTRUCTION DETAILS

Golder Associates

BORING DESIGNATION: P-12

INSTALLATION

DATE: 6-22-05 BY: Spectrum Explor. Tom Vercoutere

DIMENSIONS

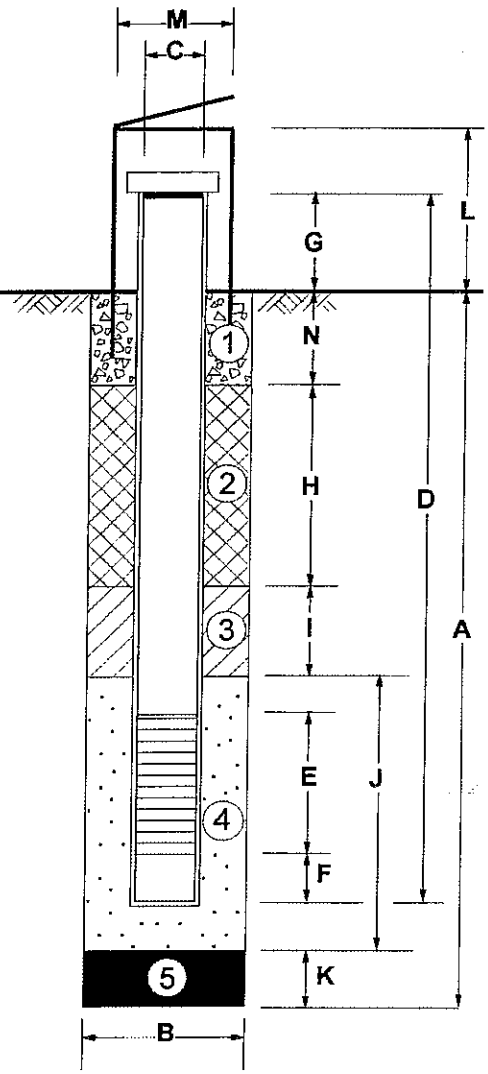
A	Total Depth of Boring (ft.)	55
B	Borehole Diameter (in.)	6½
C	Well Casing Diameter (in.)	2
D	Well Casing Length (ft.)	45.6
E	Well Casing Slotted Interval (ft.)	18.7
F	Well Casing End Cap or Sump (ft.)	0.8
G	Well Casing Height (ft.)	1.9
H	Annular Seal Interval (ft.)	19
I	Annular Seal Interval (ft.)	1
J	Sand Pack Interval (ft.)	21
K	Bottom Material Interval (ft.)	12
L	Protective Cover Height (ft.)	2.5
M	Protective Cover Diameter (in.)	8
N	Annular Seal Interval (ft.)	1
	Well Centralizer Depth(s) (ft.)	12, 23, 43

MATERIALS DATA

Monument Footing	1	Concrete
Annular Seal	2	Cement-bentonite
Annular Seal	3	¼-inch bentonite pel
Sand Pack	4	2/12 Lapis Lustre sand
Bottom Material	5	Native slough
Slotted Casing		0.020-inch
Well Casing		Sch 40 PVC
Well Centralizers		Stainless Steel
Protective Cover		mild steel pipe.

WELL DESIGNATION
P-12

DEPTH/HEIGHT (FT)	ELEV. (FT MSL)
2.5	214.6
1.9	214.06
0	212.2
1	211.2
20	192.2
22	190.2
24.3	187.9
43.0	169.2
43.7	168.5
43.0	169.2
55	157.2



SECTION VIEW
(not to scale)

NOTES: Bottom sump is end cap plus unslotted pipe. Borehole sloughed from 55 to 43 feet before casing installed. Pushed casing into fill 0.7 feet

SITE: Cold Canyon Landfill
PROJ. NO: 0537467
N. 4660.75 E. 6324.81
WELL PERMIT NO: 2005-MW-187
T.O.C. ELEV: 214.06 ft MSL

Golder Associates

Exploratory Boring Log

Boring No. P-13
Well No. P-13
Sheet 1 of 2

Site:	Cold Canyon Landfill Weir Parcel	Ground Elevation:	232 ft
Client:	Shaw/EMCON for Waste Connections	T.O.C. Elevation:	233.35 ft MSL
Project Number:	CCL102 / 0537467	Coordinates:	N 5471.20 E 6838.27
Date(s) Drilled:	6/23/05	Drilling Method:	Air Rotary
Date(s) Installed:	6/23-24/05	Borehole Total Depth:	59'
Drilling Co./Driller:	Spectrum Exploration	Final Borehole Diameter:	6 1/2 inch

Drilling Summary: Drilled upper borehole with 6 1/2-inch claw tooth bit. Encountered wet sand at approximately 36 ft. Cored with HQ3 core system to 58 Ft. Installed 40 feet of blank and 25 feet of screens (5-ft sticks). Tremie washed 2/12 sand, tremied 1 pale 1/4-inch bentonite pellets. Neat cement grout (~6 gal/sack type II/IV) tremied to surface.

Time		Sample No.	Blows / 6 in	RQD	Core Run	Recovery	Depth (ft)	Well Detail	Soil/Rock Symbol	Graphic Log	LITHOLOGY/REMARKS
1:30		Cuttings							SM		SILTY SAND (SM) brownish black (5YR 7/1)
							5				
									SS		PISMO FORMATION, EDNA MEMBER SANDSTONE: grayish orange (10YR 7/4) to yellowish gray (5Y, 7/2); 10-15% silt; 85-90% fine to very fine grained, damp
1:40							10				@ 10' as above
							15				
1:50											@ 19' as above, with iron oxide
							20		SS c		@ 19.5-20': light olive gray (5Y 6/1); hard, carbonate (HCl)
									SS		@ 20': dark greenish gray (5GY 4/1)
											@ 20' - sulfur smell
							25				@ 25: hard layer ~6" thick - silty sandstone, as above
									SS		@ 25-27': slight petroleum odor
2:10							30				@ 30: petroleum odor - dark greenish gray as above at 20'
							35				@ 35': moist to wet; fingers show wetness capillary water pause 15 minutes, no free water.
									6/23 2:35		← water level 5 minutes after reaching 39'
2:30											@ 39': petroleum odor; moist to wet switching to core
2:40			HQ3								

Logged by: TV

Date checked: 10/14/05

Golder Associates

Project No.: CCL102 / 0537467
Client: Shaw/EMCON for Waste Connection
Site: Cold Canyon Landfill Weir Parcel

Boring No. P-13
Well No. P-13
Sheet 2 of 2

Time		Sample No.	Blows / 6 inch	RQD	Core Run	Recovery	Depth (ft)	Well Detail	Soil/Rock Symbol	Graphic Log	LITHOLOGY/REMARKS
		@ 41'							SS		PISMO FORMATION (Continued)
		HQ3	39-43			2.5/4					SILTY SANDSTONE, grayish olive green (5GY 3/2), 15-20% silt; 80-85% fine to very fine grained sand, massive bedding; fracture spacing (0.2, 0.6, 0.7, 0.6, 0.4); low hardness fractures closed, may be mechanical; no staining or coatings
2:47				90%							
2:57											
		@ 45'					45		Ss		@ 43-44.5 as above w/ increasing silt content
		oil infrac	43-48	90%		4.5/5					@ 44.5-47': Sandy Siltstone, grayish olive green; 50-60% silt and some clay; 40-50% very fine sand; gradational contacts; massive to thickly bedded; moderate to insensely fractures with crude oil blebs in fractures, spacing 0.3 to 0.6' inclined ~ 50 to 65° to core axis; moderately hard.
3:12									SS		
3:22											
							50				
		@ 50'		90%		4.6/5					@ 48': SILTY SANDSTONE; 30-40% silt; moderately hard
3:40											
3:50											@ 53': as above, Frac spacing 0.2, 0.6, 1.0, 0.5, 1.0, 0.6, 0.1 appears to be oil sheen in some fractures in lower half of core.
							55				
		@ 56'		<50%		4/5					@ 53 to 58': as above, no oil sheen; intensely fractured in lower half.
4:18											
											BOTTOM OF BORING AT 59 FEET. TERMINATED, ACHIEVED TARGET.
							60				Reamed borehole with 6½ inch claw bit to 59 ft
							65				

Logged by: TLV

Date checked: 10/11/05

WELL CONSTRUCTION DETAILS

Golder Associates

BORING DESIGNATION: P-13

INSTALLATION

DATE: 6-23-2005 BY: Spectrum Exploration Tom Vercontere

DIMENSIONS

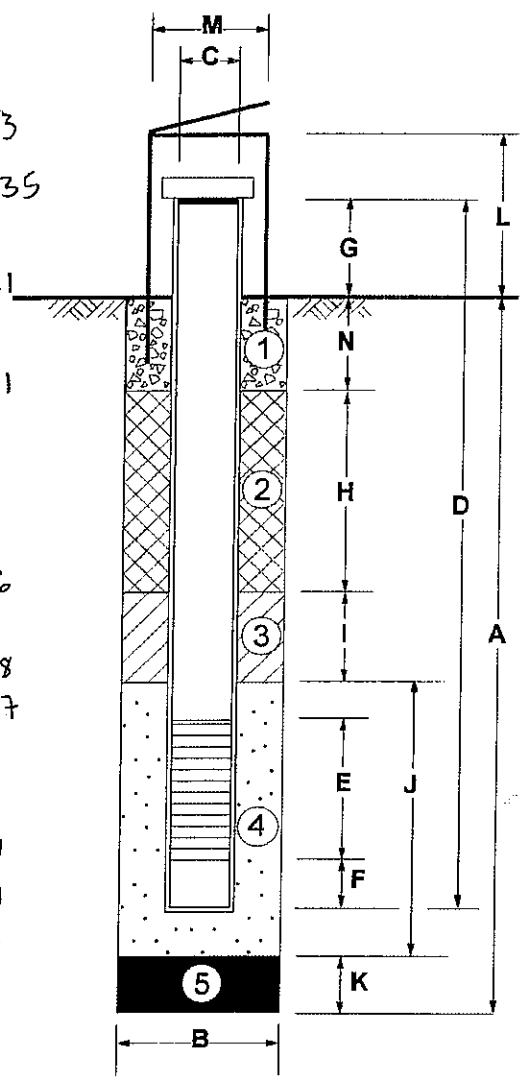
A	Total Depth of Boring (ft.)	59
B	Borehole Diameter (in.)	6 1/2
C	Well Casing Diameter (in.)	2
D	Well Casing Length (ft.)	60.3
E	Well Casing Slotted Interval (ft.)	23.9
F	Well Casing End Cap or Sump (ft.)	0.8
G	Well Casing Height (ft.)	1.3
H	Annular Seal Interval (ft.)	24.5
I	Annular Seal Interval (ft.)	5.8
J	Sand Pack Interval (ft.)	26.7
K	Bottom Material Interval (ft.)	NA
L	Protective Cover Height (ft.)	2.2
M	Protective Cover Diameter (in.)	8
N	Annular Seal Interval (ft.)	2
	Well Centralizer Depth(s) (ft.)	14, 39, 59

MATERIALS DATA

Monument Footing	1	Concrete
Annular Seal	2	Type II/V neat cement
Annular Seal	3	1/4-inch bentonite pellets
Sand Pack	4	2/12 Lapis Luster sand
Bottom Material	5	NA
Slotted Casing		0.020-inch
Well Casing		Sch 40 PVC
Well Centralizers		Stainless steel
Protective Cover		Mild steel pipe

WELL DESIGNATION
P-13

DEPTH/HEIGHT (FT)	ELEV. (FT MSL)
2.2	234.3
1.3	233.35
0	232.1
2	230.1
26.5	205.6
32.3	197.8
34.4	197.7
58.2	173.9
59	173.1
59	173.1
59	173.1



SECTION VIEW
(not to scale)

NOTES: Sump is end cap plus unslotted casing. Elevation from survey stake provided by Cold Canyon Landfill, Inc. Well drilled with air rotary equipment.

SITE: Cold Canyon Landfill, Inc.
PROJ. NO: 053 7467
N. 5471.20 E. 6838.27
WELL PERMIT NO:
T.O.C. ELEV: 233.35 ft MSL

Golder Associates

Exploratory Boring Log

Boring No. P-14
Well No. P-14
Sheet 1 of 2

Site:	Cold Canyon Landfill Weir Parcel	Ground Elevation:	261.0 ft
Client:	Shaw/EMCON for Waste Connections	T.O.C. Elevation:	262.95 ft msl
Project Number:	CCL102 / 0537467	Coordinates:	35°11.146N 120°35.456W
Date(s) Drilled:	12-6-05	Drilling Method:	Air Rotary 450 Schram
Date(s) Installed:	12-7-05	Borehole Total Depth:	90 ft
Drilling Co./Driller:	Woodward Drilling Company	Final Borehole Diameter:	7 1/4 inch nominal

Drilling Summary: Drilled upper borehole with 3 7/8-inch tricone roller bit; logged cuttings. Cored from 66 to 86 feet with HQ3 wireline. Reamed borehole with 7 1/4 inch roller bit to 90 feet. Installed 25 ft of 0.010-inch slot. Sanded annulus from 90 to 59 ft with RMC 2/12 sand. Placed bentonite chips 59 to 57.5 ft. Grouted through tremie pipe to ground surface. Set locking stovepipe in concrete

Time		Sample No.	Blows / 6 in	RQD	Core Run	Recovery	Depth (ft)	Well Detail	Soil/Rock Symbol	Graphic Log	LITHOLOGY/REMARKS
8:00									SM		SILTY SAND (SM), dark yellowish brown (10YR 3/2) damp to dry.
							5		SS		PISMO FORMATION - EDNA MEMBER SANDY SILTSTONE to SILTY SANDSTONE, light olive brown (5Y 5/6); 40-60% very fine to fine sand, 95% quartz + feldspar, 5% mafic, some FeOx staining; damp.
8:15							10				@11': as above w/ increase in sand to 60-70%
							15				@15': light olive gray (5Y 5/2)
		P-14 15'	bag								
8:30							20				@19': as above
											@22': driller notes slightly harder layer, more dust.
9:00							25				@26': as above, yellowish gray (5Y 7/2)
		P-14 29'	bag				30		SS		SANDY SILTSTONE, grayish olive (10Y 4/2); 25-30% very fine sand; damp.
									SS		SILTY SANDSTONE; olive gray (5Y 3/2); 65-75% very fine sand; damp
9:15							35				
							40				@40': olive gray (5Y 3/2), as above

Logged by: TV

Date checked: 2-20-06

Golder Associates

Project No.: CCL102 / 0537467
Client: Shaw/EMCON for Waste Connection
Site: Cold Canyon Landfill Weir Parcel

Boring No. P-14
Well No. P-14
Sheet 2 of 2

Time		Sample No.	Blows / 6 inch	RQD	Core Run	Recovery	Depth (ft)	Well Detail	Soil/Rock Symbol	Graphic Log	LITHOLOGY/REMARKS
									SS		SILTY SANDSTONE (continued)
9:40							45		12-8-2005		@46': 20 minute water pause while driller pull rods because of lost circulation. No water. Began misting to bring cuttings to surface. Total of 70 gallons added between 46 and 66 feet. Appears most came back out during drilling.
							50				
11:00							55		12-6-2005		@56': as above, 15 minute water pause – no water. (Blew borehole dry for 5 minutes before pause) @57': water rose to 57 ft from 66 ft during 1 hour break. Switched to HQ3 coring at 66 ft.
							60		SS		
11:30							65		12-6-2005		@66: water appears to be entering borehole (<0.1 gal/min) draining. Lunch break and water pause (see note at 57 ft)
2:00		P-14 67'	bag	0		1.8/2.1			SS		SANDY SILTSTONE, olive gray (5Y 4/1), 55-65% silt, 35-45% very fine sand; massive bedding; fractured by coring; low hardness, Some fissle partings in lower half of core. No staining, no HCl reaction.
		P-14 71'	bag	59		5/5	70				@68-73': intensely fractured at 70° and 20° angles from core axis. low hardness, few or no coatings or stains on fractures; fracs are closed, smooth surfaces; some fissle bedding in crushed zones. Frac spacing [0.2', 0.3, 0.3, <0.1, 0.2, 0.1, 0.3, 0.4, 0.2].
2:45											
		P-14 76'	bag	79		5/5	75				@73-78': Fracs subparallel to core axis, spacing [0.6, 0.1, 0.3, 0.3 0.2, 0.2, 0.2, 0.7, 0.3, 0.4, 0.3, 0.1, 0.2, 0.3, 0.1, 0.5]
3:05											@78-83': as above, frac spacing [0.15, 0.2, 0.4, 0.4, 0.3, 0.4, 0.1, 0.2, 0.3, 0.2]
				36		5/5	80				
		P-14 83'	bag								@83-86': as above, frac spacing [0.1, 0.2, 0.1, 0.1, 0.3, 0.1, 0.2, 0.4]
				26		2.7/2.3	85				
3:50											Bottom of boring at 86 ft. Terminated, objective achieved. Reamed 90 ft and constructed well
							90				

Logged by: TV

Date checked: 2-20-06

WELL CONSTRUCTION DETAILS

Golder Associates

BORING DESIGNATION: P-14

INSTALLATION

DATE: 12-7-05 BY: Woodward Drilling Co Tom Vercoutere

DIMENSIONS

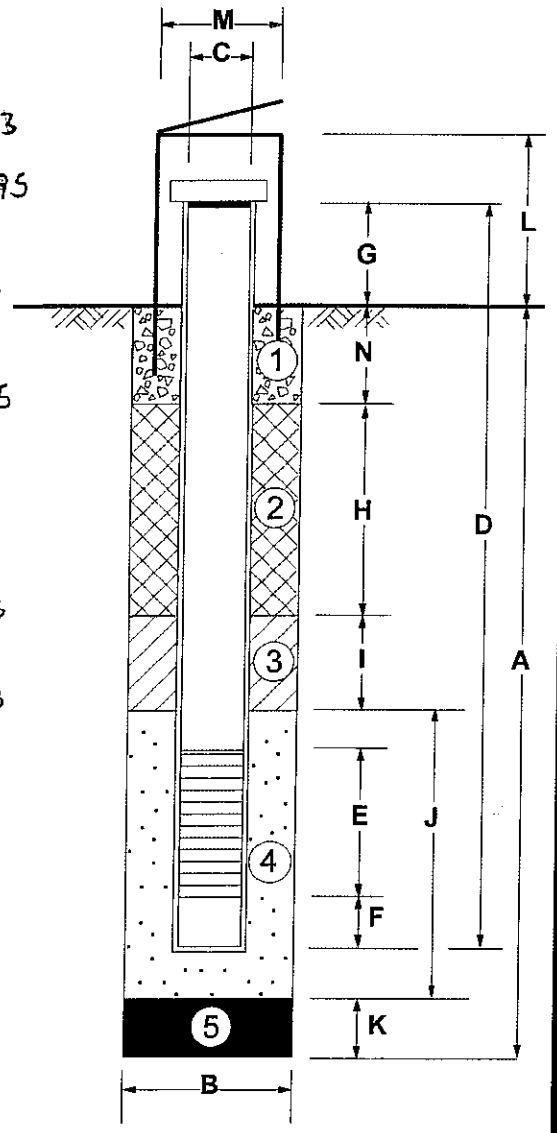
A	Total Depth of Boring (ft.)	90
B	Borehole Diameter (in.)	7 1/4
C	Well Casing Diameter (in.)	2
D	Well Casing Length (ft.)	91.7
E	Well Casing Slotted Interval (ft.)	25
F	Well Casing End Cap or Sump (ft.)	0.8
G	Well Casing Height (ft.)	2
H	Annular Seal Interval (ft.)	56
I	Annular Seal Interval (ft.)	1.5
J	Sand Pack Interval (ft.)	30.7
K	Bottom Material Interval (ft.)	0.3
L	Protective Cover Height (ft.)	2.35
M	Protective Cover Diameter (in.)	6
N	Annular Seal Interval (ft.)	1.5
	Well Centralizer Depth(s) (ft.)	30, 60, 89

MATERIALS DATA

Monument Footing	1	Concrete
Annular Seal	2	Bentonite Grout
Annular Seal	3	Bentonite chips
Sand Pack	4	RMC #2/12 sand
Bottom Material	5	native
Slotted Casing		0.010-inch
Well Casing		Sch 40 PVC
Well Centralizers		Stainless Steel
Protective Cover		mild steel

WELL DESIGNATION
P-14

DEPTH/HEIGHT (FT)	ELEV. (FT MSL)
2.35	263.3
2.0	262.95
0	261.0
1.5	259.5
57.5	203.5
59	202.0
65	196.0
88.9	172.1
89.7	171.3
89.7	171.3
90	171.0



SECTION VIEW
(not to scale)

NOTES: Sump is end cap plus unslotted section of casing. Elevations from survey stakes provided by Cold Canyon Landfill, Inc. Well drilled with air-rotary equipment

SITE: Cold Canyon Landfill
PROJ. NO: 053-7467
N. 6037.66 E. 6750.98
WELL PERMIT NO: 2005-MW-430
T.O.C. ELEV: 262.95 ft MSL

Golder Associates

Exploratory Boring Log

Boring No. B-1
Well No. B-1
Sheet 1 of 3

Site:	Cold Canyon Landfill Weir Parcel	Ground Elevation:	281 ft
Client:	Shaw/EMCON for Waste Connections	T.O.C. Elevation:	283.3 ft
Project Number:	CCL102 / 0537467	Coordinates:	35°11.033N 120°35.594W
Date(s) Drilled:	12-7 to 8-2005	Drilling Method:	Rotary wash
Date(s) Installed:	12-8-2005	Borehole Total Depth:	98 feet
Drilling Co./Driller:	Woodward Drilling Company	Final Borehole Diameter:	7 1/4 inches nominal

Drilling Summary: Drilled to 70 feet with 3 7/8-inch tricone roller bit using approximately 8,000 pounds of hydraulic down pressure. Performed standard penetration tests at 70, 75, and 80 feet with above-ground hydraulic hammer. Reamed borehole to 98 feet with roller bit and constructed PVC well. Borehole logged by cuttings and split-spoon samples.

Time		Sample No.	Blows / 6 in	RQD	Core Run	Recovery	Depth (ft)	Well Detail	Soil/Rock Symbol	Graphic Log	LITHOLOGY/REMARKS
11:00									SS CS		PISMO FORMATION - EDNA MEMBER Silty to Clayey Sandstone, yellowish brown (10YR 4/2); 55-65% fine to very fine sand, trace medium sand-sized mafic rock fragments. Fines appear to be mostly silt.
							5				
							10				
							15				@ 15 ft: as above
		cuttings					20				
							25				@ 22 ft: 65-75% very fine sand. Clays flocculate and settle quickly into a partially suspended layer in settling jar. @ 23 ft: driller notes harder layer with slower drilling. @ 24 ft: quicker drilling again.
11:20							30				@ 33 ft: driller notes harder layer and slower drilling.
11:30							35				@ 36 ft: quicker drilling again.
							40				

Logged by: TV

Date checked: 2/22/06

Golder Associates

Project No.: CCL102 / 0537467
Client: Shaw/EMCON for Waste Connection
Site: Cold Canyon Landfill Weir Parcel

Boring No. B-1
Well No. B-1
Sheet 2 of 3

Time		Sample No.	Blows / 6 inch	RQD	Core Run	Recovery	Depth (ft)	Well Detail	Soil/Rock Symbol	Graphic Log	LITHOLOGY/REMARKS
									SS		SILTY to CLAYEY SANDSTONE (continued)
									CS		
11:40							45				@ 46': as above
							50				
		Cuttings									
11:50							55				@ 56': as above
							60				
12:00							65				@ 66': as above; yellowish gray (5Y, 7/2) to grayish yellow (5Y 8/4)
			SPT								SWITCHED to SPT at 70 feet.
1:00		B-1 70'	50/3.5 inches				70		SS		SILTY SANDSTONE, dusky yellow (5Y 6/4), coarse silt to very fine sand, very well sorted, 98% quartz and feldspar, trace to 2% mafics; very little clay; low hardness, not cemented, no staining. Estimate 30% silt and 70% very fine sand. No bedding seen in sample. Almost all material settles in 2" of water in ~4 minutes; 90% in < 10 seconds.
			SPT								
1:30		B-1 75'	50/4 inches				75				@ 75': as above. Mottled yellowish gray (5Y 7/2) and dark yellowish orange (10YR 6/6) iron oxide staining.
			SPT								
3:15			50/4 inches				80				@ 80': as above; mottled light olive brown (5Y 5/6) and light gray (N7).
5:45		B-1 80'									Reamed borehole to 80 ft with 7 1/4 inch tricone roller bit. Quit for day.
							85				Lost 20 feet of borehole overnight
		Cuttings									
							90				@ 90': as above. Color change to medium dark gray (N4)

Logged by: TV

Date checked: 2/22/06

Golder Associates

Project No.: CCL102 / 0537467
Client: Shaw/EMCON for Waste Connection
Site: Cold Canyon Landfill Weir Parcel

Boring No. B-1
Well No. B-1
Sheet 3 of 3

Time		Sample No.	Blows / 6 inch	RQD	Core Run	Recovery	Depth (ft)	Well Detail	Soil/Rock Symbol	Graphic Log	LITHOLOGY/REMARKS
									SS		SILTY SANDSTONE (continued)
		cuttings									
7:45							95				@95': very hard layer, drilling slows substantially medium dark gray (N4)
8:45											@98': still very hard layer, 1/2 hour for last 8 inches with 12,000 pounds down pressure.
							100				BOTTOM OF BORING AT 98 ft. Terminated Drilling - color suggests water.

Logged by: TU

Date checked: 2/22/06

WELL CONSTRUCTION DETAILS

Golder Associates

BORING DESIGNATION: B-1

INSTALLATION

DATE: 12-8-2005 BY: Woodward Drilling Co. Tom Vercoutere

DIMENSIONS

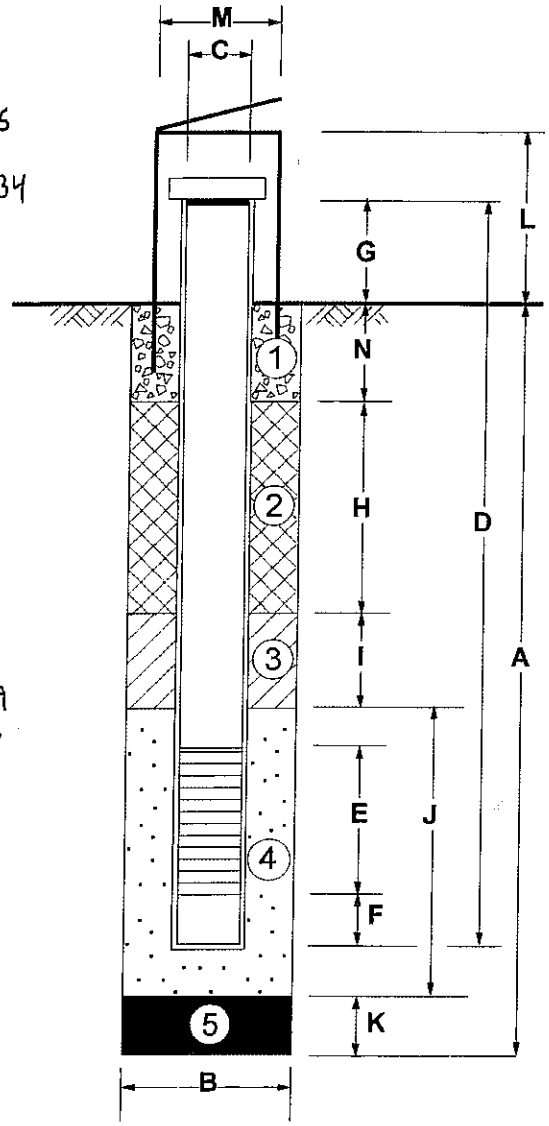
A	Total Depth of Boring (ft.)	98
B	Borehole Diameter (in.)	7 1/4
C	Well Casing Diameter (in.)	2
D	Well Casing Length (ft.)	100.4
E	Well Casing Slotted Interval (ft.)	20
F	Well Casing End Cap or Sump (ft.)	0.65
G	Well Casing Height (ft.)	2.4
H	Annular Seal Interval (ft.)	65.8
I	Annular Seal Interval (ft.)	4.7
J	Sand Pack Interval (ft.)	26
K	Bottom Material Interval (ft.)	NA
L	Protective Cover Height (ft.)	2.6
M	Protective Cover Diameter (in.)	6
N	Annular Seal Interval (ft.)	1.5
	Well Centralizer Depth(s) (ft.)	30, 78, 90

MATERIALS DATA

Monument Footing	1	Concrete
Annular Seal	2	Bentonite Grout
Annular Seal	3	Bentonite Chips
Sand Pack	4	RMC # 2/12 sand
Bottom Material	5	NA
Slotted Casing		0.010-inch
Well Casing		Sch 40 PVC
Well Centralizers		Stainless steel
Protective Cover		mild steel

WELL DESIGNATION
B-1

DEPTH/HEIGHT (FT)	ELEV. (FT MSL)
2.6	283.5
2.4	283.34
0	280.9
1.5	279.4
67.3	213.6
72	200.9
78.3	202.6
97.4	183.5
98	182.9
98	182.9
98	182.9



SECTION VIEW
(not to scale)

NOTES: Sump is end cap plus unslotted section of casing. Elevations from survey stake provided by Cold Canyon Landfill, Inc. Well drilled with rotary wash techniques.

SITE: Cold Canyon Landfill
PROJ. NO: 053-7467
N. 5350.62 *E.* 6081.97
WELL PERMIT NO: 2005-MW-428
T.O.C. ELEV: 283.34

Golder Associates

Exploratory Boring Log

Boring No. B-2
Well No. B-2
Sheet 1 of 3

Site:	Cold Canyon Landfill Weir Parcel	Ground Elevation:	262.9 ft
Client:	Shaw/EMCON for Waste Connections	T.O.C. Elevation:	265.32 ft MSL
Project Number:	CCL102 / 0537467	Coordinates:	N5055.93 E5726.46
Date(s) Drilled:	12-8&9-2005	Drilling Method:	Rotary wash
Date(s) Installed:	12-9-2005	Borehole Total Depth:	101.2 ft
Drilling Co./Driller:	Woodward Drilling Company	Final Borehole Diameter:	7 1/2 inch nominal

Drilling Summary: Drilled to 60 feet with 7 1/4-inch tricone roller bit using approximately 8000 pounds of hydraulic downpressure. Performed standard penetration tests at 60, 65, and 70 feet with above-ground hydraulic hammer. Continued drilling to 102.1 feet. Circulated EZ mud polymer, then finished borehole and constructed well.

Time		Sample No.	Blows / 6 in	RQD	Core Run	Recovery	Depth (ft)	Well Detail	Soil/Rock Symbol	Graphic Log	LITHOLOGY/REMARKS
3:45									SS		PISMO FORMATION - EDNA MEMBER SILTY SANDSTONE, yellowish brown (10YR 4/2) 60-70% fine to very fine sand, moist. Fines mostly silt. Chips harden when sun dried - contains some clay
							5				
							10				@10': as above
							15				
4:00							20				@20': as above
		Cuttings					25				
4:10							30				@30': as above
							35				
											@38': harder drilling
4:15							40		SS		

Logged by: TV

Date checked: 2/22/06

Golder Associates

Project No.: CCL102 / 0537467
Client: Shaw/EMCON for Waste Connection
Site: Cold Canyon Landfill Weir Parcel

Boring No. B-2
Well No. B-2
Sheet 2 of 3

Time		Sample No.	Blows / 6 inch	RQD	Core Run	Recovery	Depth (ft)	Well Detail	Soil/Rock Symbol	Graphic Log	LITHOLOGY/REMARKS
									SS		SILTY SANDSTONE (Continued)
											@40-60': Driller say material is harder than above
4:20							45				
							50				@50' as above
		Cuttings									
							55				
5:00		B-2 60'	50/3.5"			SPT	60				SILTY SANDSTONE, dusky yellow (5Y 6/4) to light olive brown (5Y 6/8); 20-35% coarse silt, 65-80% very fine sand, 98% quartz + feldspar, trace to 2% mafic minerals; minor clay; very well sorted, no bedding observed in drive sample
5:55											
		B-2 65'	50/3"			SPT	65				@65': as above, light olive brown (5Y 5/6) with some light brown (5YR 5/6) iron oxide staining. 90% of sample settles in 10 seconds thru 2-inch water column, nearly all in 4 minutes.
8:30	12/9	B-2 70'	50/3"			SPT	70				@70': as above, no staining
							75				@77': medium dark gray (N4)
9:00							80	12-10 2005			
		Cuttings					85				
							90		SS		

Logged by: [illegible]

Date checked: 2/22/06

Golder Associates

Project No.: CCL102 / 0537467
Client: Shaw/EMCON for Waste Connection
Site: Cold Canyon Landfill Weir Parcel

Boring No. B-2
Well No. B-2
Sheet 3 of 3

Time		Sample No.	Blows / 6 inch	RQD	Core Run	Recovery	Depth (ft)	Well Detail	Soil/Rock Symbol	Graphic Log	LITHOLOGY/REMARKS
									SS		SILTY SANDSTONE (continued)
9:20		Cuttings					95				@95: medium gray (N5)
9:35							100		SS		BOTTOM OF BORING AT 101.2 FEET. Boring Terminated, objective Achieved.
							105				

Logged by: TV

Date checked: 2/22/06

WELL CONSTRUCTION DETAILS

Golder Associates

BORING DESIGNATION: B-2

INSTALLATION

DATE: 12-9-2005 BY: Woodward Drilling Co. Tom Vercoutere

DIMENSIONS

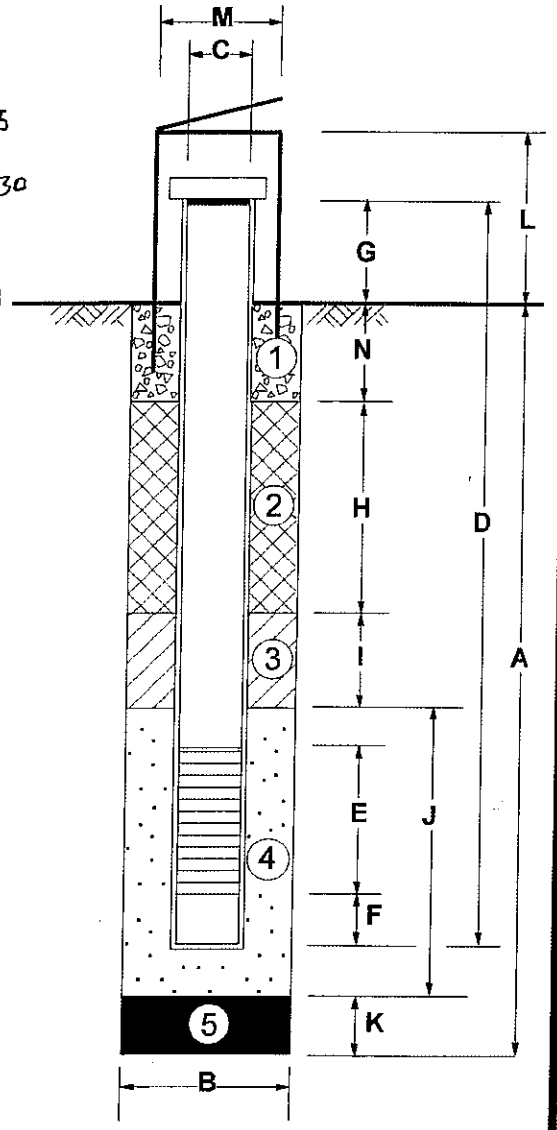
A	Total Depth of Boring (ft.)	101.2
B	Borehole Diameter (in.)	7 1/4
C	Well Casing Diameter (in.)	2
D	Well Casing Length (ft.)	102.6
E	Well Casing Slotted Interval (ft.)	20
F	Well Casing End Cap or Sump (ft.)	0.65
G	Well Casing Height (ft.)	2.4
H	Annular Seal Interval (ft.)	71.6
I	Annular Seal Interval (ft.)	3.4
J	Sand Pack Interval (ft.)	24.7
K	Bottom Material Interval (ft.)	NA
L	Protective Cover Height (ft.)	2.6
M	Protective Cover Diameter (in.)	6
N	Annular Seal Interval (ft.)	1.5
	Well Centralizer Depth(s) (ft.)	41, 81, 101

MATERIALS DATA

Monument Footing	1	Concrete
Annular Seal	2	Bentonite grout
Annular Seal	3	Bentonite chips
Sand Pack	4	RMC #2/12 sand
Bottom Material	5	NA
Slotted Casing		0.010-inch
Well Casing		Sch 40 PVC
Well Centralizers		Stainless Steel
Protective Cover		mild steel

WELL DESIGNATION
B-2

DEPTH/HEIGHT (FT)	ELEV. (FT MSL)
2.6	265.5
2.4	265.30
0	262.9
1.5	261.4
73.1	189.8
76.5	186.4
80.0	182.9
99.6	163.3
100.2	162.7
101.2	162.7
101.2	162.7



SECTION VIEW
(not to scale)

NOTES: Sump is end cap plus unslotted section of casing. Elevations from survey stake provided by Cold Canyon Landfill, Inc. Well drilled with rotary wash techniques

SITE: Cold Canyon Landfill
PROJ. NO: 053 7467
N.35°10.990 E.120°35.664
WELL PERMIT NO: 2005-MW-429
T.O.C. ELEV: 266.3 feet

Golder Associates

Exploratory Boring Log

Boring No. B-3
Well No. —
Sheet 1 of 2

Site: Cold Canyon Landfill Weir Parcel
Client: Shaw/EMCON for Waste Connections
Project Number: CCL102 / 0537467
Date(s) Drilled: 5-26-06 Friday
Date(s) Installed:
Drilling Co./Driller: ~~Spectrum Exploration~~ Woodward

Ground Elevation: ~ -1.5 of P-12
T.O.C. Elevation: NA
Coordinates: NA
Drilling Method: Auger to 20- rotary wash to
Borehole Total Depth: 60'
Final Borehole Diameter: 3 7/8"

Drilling Summary: Augers to 20 ft switch to mud inside augers. Drove SPT at 5-foot intervals to 160 ft. Pounded with rig-mounted hydraulic hammer. Drilled between SPT runs with 3 7/8-inch tricone roller bit. Mud made with bentonite Quick-Gel. Lowered tremie and grouted borehole to surface with Bentonite grout.

Time		Sample No.	Blows / 6 in	RQD	Core Run	Recovery	Depth (ft)	Well Detail	Soil/Rock Symbol	Graphic Log	LITHOLOGY/REMARKS
									SM		SILTY Sand (SM) dark yellow brown (10YR 4/2)
			17				5				silty sand yellowish gray 5Y 7/2)
9:31			26								
			40								
			9				10				
			35								
			50/5"								
			20				15				mottled dusky yellow 5Y 6/4 and very pale orange 10YR 8/2 damp
			50/5"								
			21				20				yellowish gray 5Y 7/2 fine to vf sand, trace silt (water settle), damp switching to rotary inside auger which are left at 20 ft.
10:30			50/5.5"								
			50				25				@25 as above
			50/0.5"								
10:50			50/5"				30				@30' as above
11:03											
11:05			50/5"				35				
11:18											
											@39.5: driller noted slightly harder layer
11:20							40				

Logged by: TD

Date checked:

Golder Associates

Project No.: 053 7467
Client: Shell/Equilon
Site: Cold Canyon

Boring No. B-3
Well No.
Sheet 2 of 2

Well Construction Details	Sample No.	Sample Type	Blows/Run	Recovery	Sampler	Water Level	Depth (ft)	Graphic Log	LITHOLOGY/REMARKS
	11:31		50/4.5"				40		Pismo Edna Sand
									@ 40': color change to dark gray (N 3)
									f to vf sand - same as above (water test)
	11:34		50/4"				45		@ 45: as above
	11:36								
									switched rig opperator - not pushing as hard
									driller says he thought it was gravelly ??
	11:59		50/2"				50		@ 50': as above
	12:21								
	12:23		50/4"				55		@ 55': as above
	12:40								
	12:42		50/5"				60		Boring terminated at 60'

Logged by: PV

Checked by:

Date checked:

REPORT OF FIELD OBSERVATIONS

Job No.: 3014.035	Date: 11/3/2009	M T **X** W T F S S
Client: County of San Luis Obispo	Project: Cold Canyon Landfill Weir Wells Pumping Tests	
Location: CCLF Property (Weir), Darway and Clements Properties	Weather: Clear	
Observer: T. Nicely	Observation Period: Start: Stop:	

Description:

6:45 am. Left office.

Gathered supplies at Lowes for instrumentation of up to 10 wells: 3 Weir wells, 4 on-site MWs, up to 3 off site wells

10:00 am. I met with land owners of properties surrounding landfill at Earl Darway's property. Present were Earl Darway (APNs 044-261-038 though -041), Sue Barone (property further to the southeast), Charlie Katherman, who is their hydrogeologist, and Bruce Falkenhagen. We discussed the planned pumping tests on the Weir wells, which should take up to three weeks (3 days on, 3 days off for each of the three Weir wells, individually.) We inspected several of Earl Darway's wells,

- as close as the so-called Gomez Well (APN 044-261-41, DWR WCR No. 266376, total depth of well: 120 feet, influenced by pumping of Weir wells 1 and 2, difficult to sound due to gel within well, "18 gpm", pump at 100 feet),
- another well about 40 feet east on other side of building of similar construction and depth, did not sound, pump is installed,
- abandoned well "Patchett 45-33", concreted to surface,
- a disused well of unknown depth at 531 Patchett in open field (difficult to sound, perhaps 90 feet deep),
- a well at 541 Patchett (DWR WCR No. 322773, total depth of well: 505 feet, pump depth unknown, serves two residences, has 5,000 gallon tank and can be pumped irregularly, difficult to sound due to gel within well, originally 20 gpm well),
- another well north of Earl Darway's property at the southeast corner of the Cold Canyon Landfill, which seems to pump "all the time" according to Mr. Darway, has a 3-inch drop pipe and was running at the time. Nothing more is known of the well.

We concluded with the understanding that I may instrument up to two of his wells and was given permission to enlarge a hole on the top of those wells to about 1-inch diameter. Earl Darway requested that a test be performed involving the pumping of Weir wells 1 and 2 in unison, as occurs during the summer months, which affects his closest wells. They recommend I call Ben at Farm Supply to discuss the viscous gel and the pump information for Diane Mead's well (see below).

12:00 pm. Earl coordinated with Diane Mead, who owns a well on APN 044-301-016, south of Carpenter Canyon Rd on the equestrian property, for my access to her well for this project. She gave me her permission to instrument her well and faxed her well completion report and a recent well service card from Farm Supply indicating that her well was dry.

12:30 pm. I met with Bruce Rizzoli. He does not understand / like reading meters at the three Weir wells, the pond and the MRF tank daily. I indicated that it is important. We developed a schedule for testing as follows:

- Pump Weir Well 1 between Monday, November 9 and Thursday, November 12. Shut off all wells on Thursday, November 12 through Monday, November 16.
- Pump Weir Well 2 between Monday, November 16 and Thursday, November 19. Shut off all wells on Thursday, November 19 through Monday, November 16.
- Pump Weir Well 3 between Sunday, November 22 and Wednesday, November 25. Shut off all wells on Wednesday, November 25 through at earliest, Saturday November 28.

Bruce gave me a key to the monitoring wells. Bruce plans to pump all wells together, a pumping operation schedule I didn't understand was performed, starting today to fill his tank in anticipation of our testing.

1:30 pm. I met with Mr. Clement, whose well is under an old windmill. His well can be instrumented by enlarging a hole in the top of his casing to 1-inch diameter.

Mileage: miles

COPY SENT TO CLIENT: Yes No	CONTINUED ON NEXT PAGE	SHEET 1 OF 2

REPORT OF FIELD OBSERVATIONS

Job No.: 3014.035	Date: 11/3/2009	M T **X** W T F S S
Client: County of San Luis Obispo	Project: Cold Canyon Landfill Weir Wells Pumping Tests	
Location: CCLF Property (Weir), Darway and Clements Properties	Weather: Clear	
Observer: T. Nicely	Observation Period: Start: Stop:	

Description:

I left site to get a drill bit to enlarge holes in off site wells to 1-inch.

2:30 I returned to site to instrument wells. I started with Weir well 1, the hole in the side of which is not large enough to accommodate our MiniDiver. I install a 50m pressure range transducer on 158 feet or so on stainless steel wire, but will not likely be able to remove it without the help of a pump contractor. Need to call Ben at Farm Supply to determine how to handle this. I may need to install our MicroDivers on 80 meter down-hole cables. This was quite time-consuming.

I installed a 50 m MiniDiver in Weir well 2 to 144 feet through the angled access hole and a 20 meter MiniDiver in the neighboring monitoring well to 46 feet, the total depth.

I measured and created the cable for Weir Well 3 to 236 feet. However, the 50 meter MiniDiver could not be installed past the elbow at the point the angled 1-inch tube meets the casing. The well will need to be modified by a pump contractor to continue.

6:00 pm. Off site.

Mileage: miles

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REPORT OF FIELD OBSERVATIONS

Job No.: 3014.035	Date: 11/5/2009	M T W T **X** F S S
Client: County of San Luis Obispo	Project: Cold Canyon Landfill Weir Wells Pumping Tests	
Location: CCLF Property (Weir), Darway and Clements Properties	Weather: Clear	
Observer: T. Nicely	Observation Period: Start: Stop:	

Description:

6:15 am. I left office for CCLF to instrument:

Weir 3, with Farm Supply

Weir 1, with Farm Supply

P-10 or 11, 100 feet

B-6 100 feet

B-1 100 feet

Clement, 100 ft

Darway Gomez, 100 feet

Darway 541 Patchett

8:30 drilled hole in top of Clement well. Recharged battery and left to measure total depth of Weir property monitoring wells. To instrument P-10 instead of P-11, which is too shallow at 30 feet.

10:15 Started 20 meter transducer in Clement at 5 minute intervals. Transducer at 98 feet.

11:30 Started transducer in Darway's Gomez well at 11:15 at 5 minute intervals. Transducer at 98 feet.

12:00 pm Started 20 meter transducer in P-6 (B-2) at 5 minute intervals. Transducer at bottom of hole at 110 feet.

12:15 pm Started 20 meter transducer in P-10 at 5 minute intervals. Transducer at bottom of hole at 90 feet.

1:00 pm Started 100 meter transducer in B-1 at 5 minute intervals. Transducer at bottom of hole at 98 feet.

1:15 pm. At Weir well 3 neither the larger MiniDiver nor the smaller MicroDiver fit in angled 1-inch access tube. Well is still pumping at 14.5 gpm according to new flow meter.

1:30 pm. Weir well 1 is still pumping; rate is 25 gpm. Removed carefully the transducer in the well.

2:05 Switched off well. Meter 80,307 gallons. The meter has four white digits (0080) and two black digits (30). The sing gallon is read by the needle.

Started at 1 minute intervals at 2:30 pm. Under 95-33 (62) feet of water, about 10 feet above 155 feet due to obstruction (pump?). Perhaps pump is shallower than 156 feet? 1/2 inch tube goes to 148.

2:30 met Farm Supply staff, John, at Weir 3. 2:49 switched pump off. Meter: 87,241 gallons.

John drilled hole in side of casing. I installed the transducer to 164 feet (201 feet according to transducer) below 40 feet: 204 feet btoc. Static is higher than anticipated by 40 feet.

3:40 pm. SWL is 37.80 feet btoc and rising. (Recorded value is 200.57, near max pressure of 201.77.) I will keep the transducer where is until Monday.

The Mead Well is too heavily pumped to instrument and the 541 Patchett well is too viscous and deep to instrument. The Patchett wells are known to be viscous by Farm Supply staff, who have significant problems sounding the well with a ¼-inch diameter sounder. Likewise, I decided that I couldn't do it with a ¾-inch transducer. The on-site wells, Gomez and Clement wells are all instrumented.

Mileage: miles

COPY SENT TO CLIENT: Yes No	CONTINUED ON NEXT PAGE	SHEET 1 OF 1

REPORT OF FIELD OBSERVATIONS

Job No.: 3014.035	Date: 11/9/2009	M **X** T W T F S S
Client: County of San Luis Obispo	Project: Cold Canyon Landfill Weir Wells Pumping Tests	
Location: CCLF Property (Weir), Darway and Clements Properties	Weather: Clear	
Observer: T. Nicely	Observation Period: Start: Stop:	

Description:

6:00 am. Left office for Cold Canyon Landfill.

8:00 am. On site at Weir Well 1 to conduct CRT.

Measured water levels in all wells prior to starting testing (Clement, Gomez, Weir wells and four on-site monitoring wells).

10:20 am. Started CRT in Weir well 1. See data sheet. Observed testing through 100 minutes. Pumping rate was initially 32 gpm, which moderated to 25 gpm. The pumping test will not likely continue beyond 300 to 400 minutes, but should cycle on and off thereafter. Per discussion with a colleague (Peter Leffler), the pumping test may provide aquifer parameters (Transmissivity and Storativity) and will provide a feel for the long-term capacity of the well.

Note that the pumping rate as tested so far (30 gpm) is less than the EIR-stated, estimated rate (source: Bruce Rizzoli) of 40 gpm.

Fugro staff, Noah Lehr, will read the meter daily Tuesday through Thursday. He will end the testing on Thursday, November 12.

Left site at noon.

Mileage: miles

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REPORT OF FIELD OBSERVATIONS

Job No.: 3014.035	Date: 11/16/2009	M **X** T W T F S S
Client: County of San Luis Obispo	Project: Cold Canyon Landfill Weir Wells Pumping Tests	
Location: CCLF Property (Weir), Darway and Clements Properties	Weather: Clear	
Observer: T. Nicely	Observation Period: Start: Stop:	

Description:

6:00 am. Left office for Cold Canyon Landfill.

8:00 am. On site with Noah Lehr at Weir Well 2 to conduct CRT at planned rate of 20 gpm.

9:35 am. Started Weir well 2 pumping test. See data sheet. Note that the tested rate of 12 to 13 gpm is less than the EIR-stated, estimated rate (source: Bruce Rizzoli) of 22 gpm.

Left at noon. Noah will perform all observation of this test and all but the first day of the following pumping test. The next pumping test will be started within Weir well 3 on Sunday, November 22.

Mileage: miles

COPY SENT TO CLIENT: Yes No	CONTINUED ON NEXT PAGE	SHEET 1 OF 1

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REPORT OF FIELD OBSERVATIONS

Job No.: 3014.035	Date: 11/17/2009	M T **X** W T F S S
Client: County of San Luis Obispo	Project: Cold Canyon Landfill Weir Wells Pumping Tests	
Location: CCLF Property (Weir), Darway and Clements Properties	Weather: Clear	
Observer: T. Nicely	Observation Period: Start: Stop:	

Description:

9:20 am. Per Noah Lehr, Weir well 2 is pumping at as low a rate as the valve will allow. As of this morning, the pump was turning on for 5 to 6 minutes at 13 to 14 gpm, then switching off for 14 minutes. When Noah attempted to decrease the pumping rate by closing the valve slightly, the pump would rapidly switch on and off. Noah opened the valve until the current pumping cycles were maintained.

Meter readings are summarized in electronic pumping well data sheet.

Mileage: miles

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	Pond	Weir 1	Wier 2	Wier 3	Tank	Time
11/3/2009	184500				7614	1:47P
11/4/2009	244079				7614	9:00A
11/5/2009	305200				7614	9:00A
11/6/2009	330800				7614	1:46 PM
11/7/2009						
11/8/2009						
11/9/2009	330800				7614	7:44A
11/10/2009	369300	116880			7636	8:59A
11/11/2009	405800	151030			7636	7:20A
11/12/2009	444400	186350			7636	7:15A
11/13/2009	449275	191104			7636	7:15A
11/14/2009						
11/15/2009						

COLD CANYON LANDFILL
DAILY COMPOSTING FORM

Truck Route: Composting

Location: Composting

Water Use: Compost Irrigation

Date	Time	Driver	Truck Volume (gallons)	Number of Loads (Tally marks)	Comments
11/9	8:00	TW	3800	1	Dust Control
11/9	10:30	Ruben	3800	1	Dust Control
11/9	2:30	TW	3800	1	Dust control
11/10	8:00	TW	3800	1	Dust Control
11/10	8:30	TW	3800	4	Compost Rows
11/10	11:00	TW	3800	1	Dust Control
11/12	8:00	TW	3800	1	Dust Control
11/12	2:00	Ruben	3800	1	Dust Control
11/13	9:00	TW	3800	1	Dust Control
11/16	8:00	TW	3800	2	Dust Control
11/17	8:00	TW	3800	2	Dust Control
11/18	8:00	TW	3800	2	Dust Control
11/18	8:00	TW	3800	2	Compost
11/19	8:00	TW	3800	2	Dust Control
11/19	9:00	TW	3800	4	Compost

COLD CANYON LANDFILL
DAILY DUST CONTROL FORM

Truck Route: Dust Control

Location: Landfill

Water Use: Dust Control and Daily Cover

Date	Time	Driver	Truck Volume (gallons)	Number of Loads (Tally marks)	Comments
11/17		Joe	3800	3	Dust control/ Pond
11/17		Joe	3800	1	Dust Control/ Shop
11/18		Joe	3800	4	Dust Control/Pond
11/19		Joe	3800	2	Dust Control/Shop
11/19		Joe	3800	2	Dust Control/Pond
11/20		Joe	3800	2	Dust Control/Pond
11/20		Joe	3800	1	Dust Control/Shop
11/21		Joe	3800	2	Dust Control/ Shop
11/22		Joe	3800	1	Dust Control/ Shop
11/23		Joe	3800	1	Dust Control/Pond
11/23		Joe	3800	2	Dust Control/ Shop

COLD CANYON LANDFILL
DAILY POND WATER METER FORM

Meter No: Pond Meter

Location: Outflow to Pond

Water Use: Composting and Dust Control

Date	Time	Observer	Meter Reading (gallons)	Flow Rate (gpm)	Comments
11/3	1:47	Bruce	184500		
11/4	9:00	Bruce	244079		
11/5	9:00	Bruce	305200		
11/6	1:45	Bruce	330800		
11/9	7:44	Bruce	330800		
11/10/09	8:44	Bruce	369300		
11/11	7:14	Bruce	405800		
11/12	7:17	Bruce	444400		
11/13	7:21	Bruce	449275		
11/16	7:15	Bruce	449275		
11/17	9:00	Bruce	459360		
11/18	7:35	Bruce	467970		
11/19	9:00	Bruce	477455		
11/20	7:19	Bruce	477455		
11/23	7:49	Bruce	492150		

COLD CANYON LANDFILL
DAILY POND WATER METER FORM

Meter No: Pond Meter

Location: Outflow to Pond

Water Use: Composting and Dust Control

Date	Time	Observer	Meter Reading (gallons)	Flow Rate (gpm)	Comments
11/24	8:46	Bruce	511220		

COLD CANYON LANDFILL
DAILY WELL MEASUREMENT FORM

Well Name: Weir Well No. 1

Well Reference Point Elevation:

Well Depth (feet): 186

Pump Setting (depth in feet) 158

Perforated Interval (depth in feet) Unknown

Well Location (GPS)

Date	Time	Observer	Well Status On/Off	Meter Total Reading (gallons)	Flow Rate (gpm)	Water Level (feet)		Comments
						Depth	Elevation	
11/10	0844	BR		116880				
11/11	0714	BR		151030				
11/12	0717	BR		186350				
11/13	0707	BR		191104				
11/16	0710	BR		191104				
11/20	0720	BR		191085				

COLD CANYON LANDFILL
DAILY WELL MEASUREMENT FORM

Well Name: Weir Well No. 2

Well Reference Point Elevation:

Well Depth (feet): 156

Pump Setting (depth in feet) 144

Perforated Interval (depth in feet) Unknown

Well Location (GPS)

Date	Time	Observer	Well Status On/Off	Meter Total Reading (gallons)	Flow Rate (gpm)	Water Level (feet)		Comments
						Depth	Elevation	
11/17	0840	BR		80610				
11/18	0735	BR		87778				
11/20	0719	BR		96039				
11/30	0810	BR		96029				

COLD CANYON LANDFILL
DAILY WELL MEASUREMENT FORM

Well Name: Weir Well No. 3

Well Reference Point Elevation:

Well Depth (feet): 244.5

Pump Setting (depth in feet) 237

Perforated Interval (depth in feet) Unknown

Well Location (GPS)

Date	Time	Observer	Well Status On/Off	Meter Total Reading (gallons)	Flow Rate (gpm)	Water Level (feet)		Comments
						Depth	Elevation	
11/23	0815	BR		100250				
11/24	0845	BR		115110				
11/25	0718	BR		123974				
11/27	0800	BR		125039				
11/30	0815	BR		125039				

Bruce Rizzoli's meter data per telephone conversation of January 11, 2010

Pond November 30: 535,420 at 8:30 am

Pond December 1: 567,210 at 7:20 am

Pond December 2: 598,225 at 6:50

Pond December 4: 661,230 at 7:01

Pond December 7: 754,800 at 8:00 am

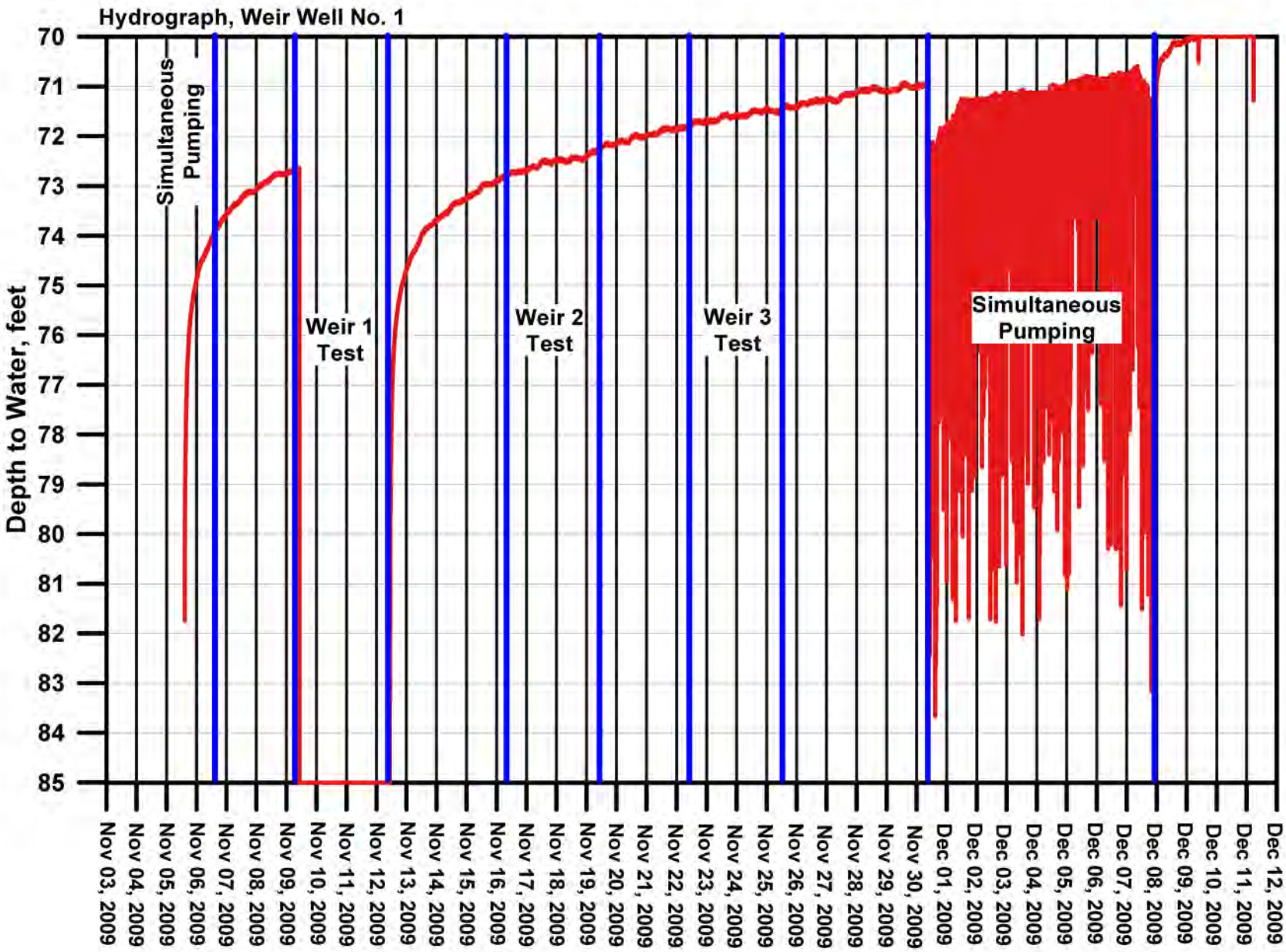
Tank November 20: 7636

Tank on December 8: 24,105 at 9:10

Tank January 11: 34,382 at 9:54 am

Pond January 11: 754,945 at 9:56 am

APPENDIX D
WATER LEVEL HYDROGRAPHS


Hydrograph, Weir Well No. 1
Depth to Water, feet
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
Simultaneous Pumping
Weir 1 Test
Weir 2 Test
Weir 3 Test
Simultaneous Pumping
Nov 03, 2009
Nov 04, 2009
Nov 05, 2009
Nov 06, 2009
Nov 07, 2009
Nov 08, 2009
Nov 09, 2009
Nov 10, 2009
Nov 11, 2009
Nov 12, 2009
Nov 13, 2009
Nov 14, 2009
Nov 15, 2009
Nov 16, 2009
Nov 17, 2009
Nov 18, 2009
Nov 19, 2009
Nov 20, 2009
Nov 21, 2009
Nov 22, 2009
Nov 23, 2009
Nov 24, 2009
Nov 25, 2009
Nov 26, 2009
Nov 27, 2009
Nov 28, 2009
Nov 29, 2009
Nov 30, 2009
Dec 01, 2009
Dec 02, 2009
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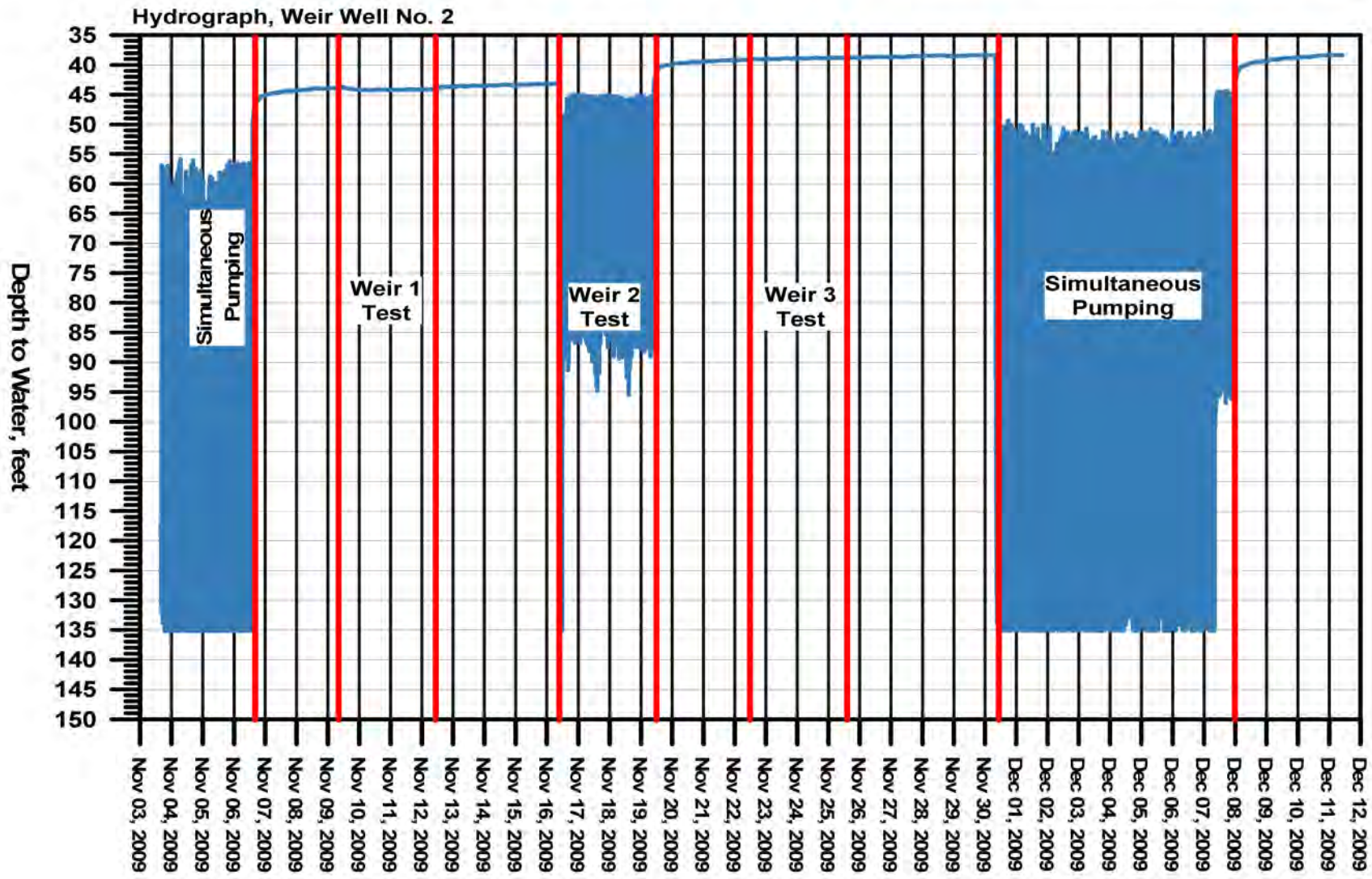
Dec 10, 2009
Dec 11, 2009
Dec 12, 2009


Hydrograph, Weir Well No. 2
Depth to Water, feet
35
40
45
50
55
60
65
70
75
80
85
90
95
100
105
110
115
120
125
130
135
140
145
150
Simultaneous Pumping
Weir 1 Test
Weir 2 Test
Weir 3 Test
Simultaneous Pumping
Nov 03, 2009
Nov 04, 2009
Nov 05, 2009
Nov 06, 2009
Nov 07, 2009
Nov 08, 2009
Nov 09, 2009
Nov 10, 2009
Nov 11, 2009
Nov 12, 2009
Nov 13, 2009
Nov 14, 2009
Nov 15, 2009
Nov 16, 2009
Nov 17, 2009
Nov 18, 2009
Nov 19, 2009
Nov 20, 2009
Nov 21, 2009
Nov 22, 2009
Nov 23, 2009
Nov 24, 2009
Nov 25, 2009
Nov 26, 2009
Nov 27, 2009
Nov 28, 2009
Nov 29, 2009
Nov 30, 2009
Dec 01, 2009
Dec 02, 2009
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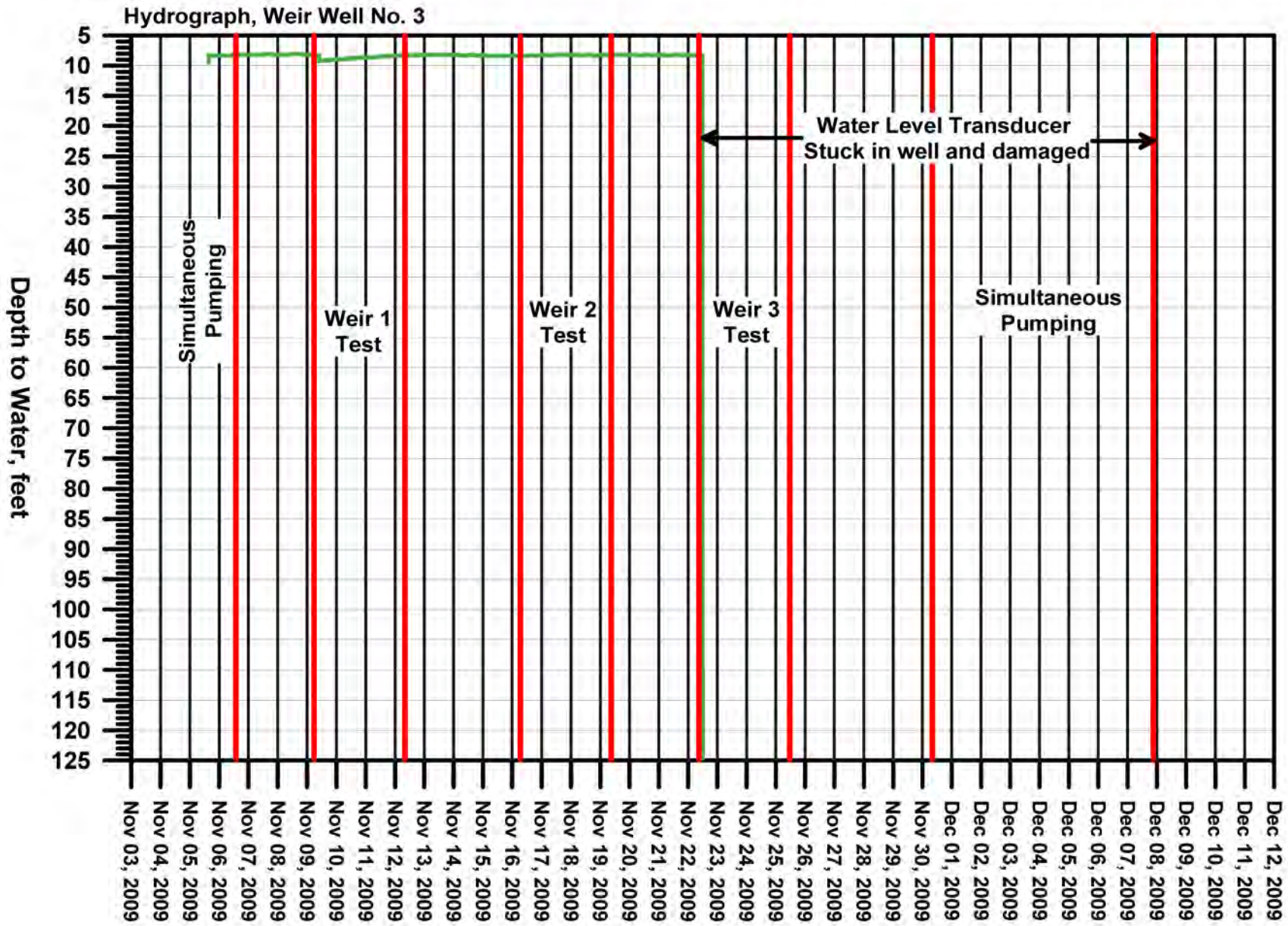
Dec 10, 2009
Dec 11, 2009
Dec 12, 2009


Hydrograph, Weir Well No. 3
Depth to Water, feet
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
105
110
115
120
125
Simultaneous Pumping
Weir 1 Test
Weir 2 Test
Weir 3 Test
Water Level Transducer Stuck in well and damaged
Simultaneous Pumping
Nov 03, 2009
Nov 04, 2009
Nov 05, 2009
Nov 06, 2009
Nov 07, 2009
Nov 08, 2009
Nov 09, 2009
Nov 10, 2009
Nov 11, 2009
Nov 12, 2009
Nov 13, 2009
Nov 14, 2009
Nov 15, 2009
Nov 16, 2009
Nov 17, 2009
Nov 18, 2009
Nov 19, 2009
Nov 20, 2009
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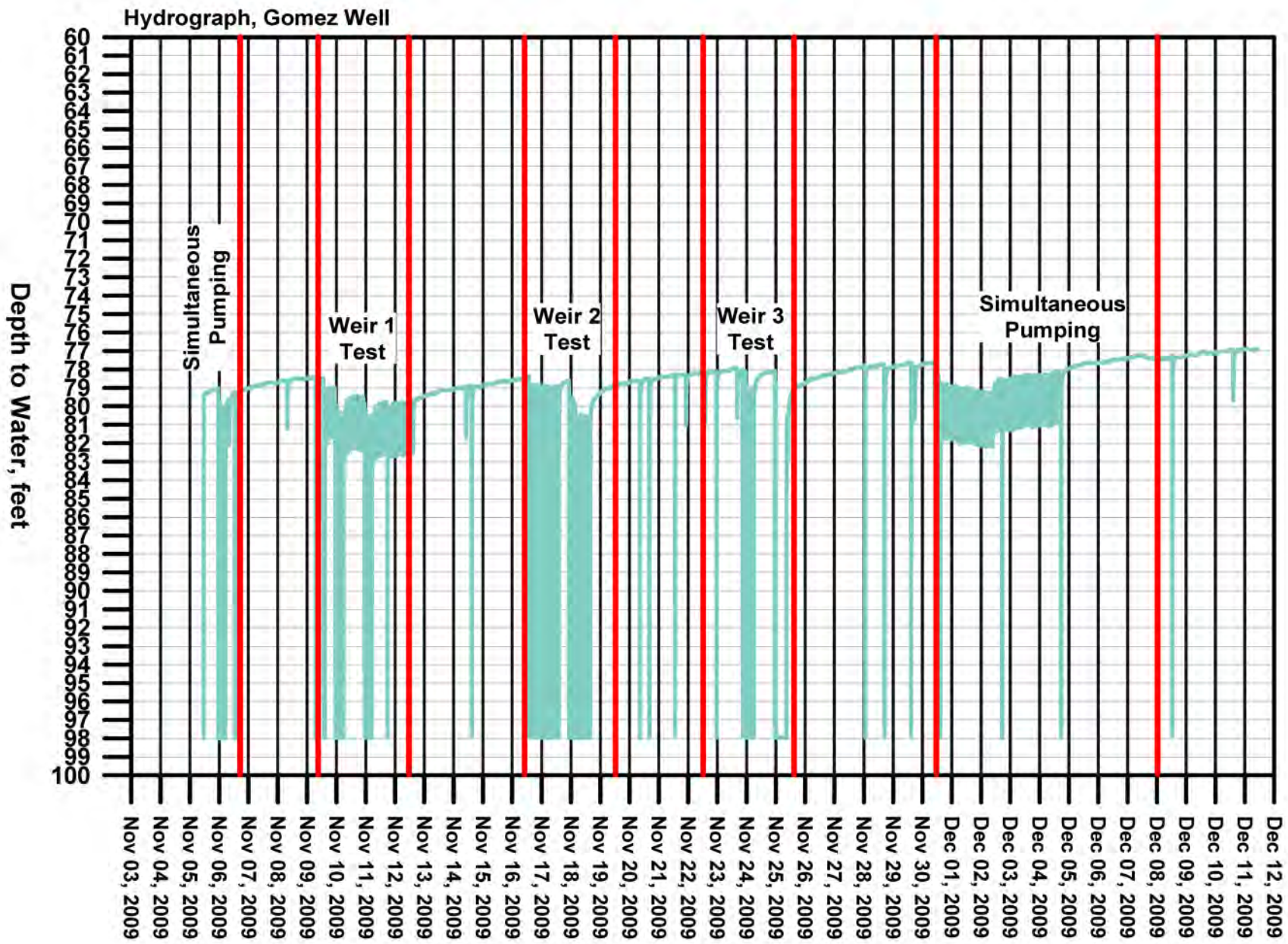
Dec 10, 2009
Dec 11, 2009
Dec 12, 2009


Hydrograph, Gomez Well
Depth to Water, feet
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
Simultaneous Pumping
Weir 1 Test
Weir 2 Test
Weir 3 Test
Simultaneous Pumping
Nov 03, 2009
Nov 04, 2009
Nov 05, 2009
Nov 06, 2009
Nov 07, 2009
Nov 08, 2009
Nov 09, 2009
Nov 10, 2009
Nov 11, 2009
Nov 12, 2009
Nov 13, 2009
Nov 14, 2009
Nov 15, 2009
Nov 16, 2009
Nov 17, 2009
Nov 18, 2009
Nov 19, 2009
Nov 20, 2009
Nov 21, 2009
Nov 22, 2009
Nov 23, 2009
Nov 24, 2009
Nov 25, 2009
Nov 26, 2009
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Nov 30, 2009
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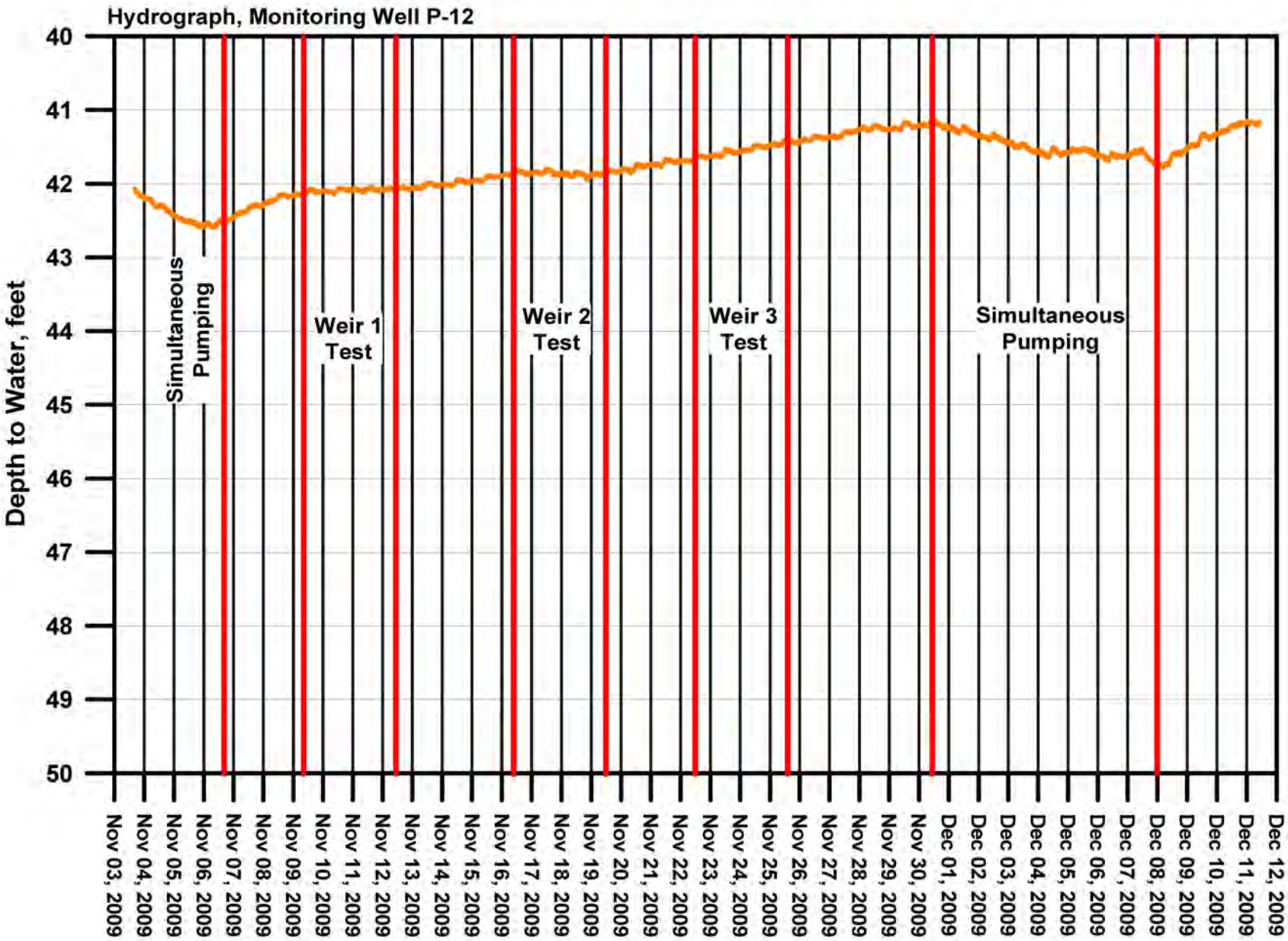
Dec 10, 2009
Dec 11, 2009
Dec 12, 2009


Hydrograph, Monitoring Well P-12
Depth to Water, feet
40
41
42
43
44
45
46
47
48
49
50
Simultaneous Pumping
Weir 1 Test
Weir 2 Test
Weir 3 Test
Simultaneous Pumping
Nov 03, 2009
Nov 04, 2009
Nov 05, 2009
Nov 06, 2009
Nov 07, 2009
Nov 08, 2009
Nov 09, 2009
Nov 10, 2009
Nov 11, 2009
Nov 12, 2009
Nov 13, 2009
Nov 14, 2009
Nov 15, 2009
Nov 16, 2009
Nov 17, 2009
Nov 18, 2009
Nov 19, 2009
Nov 20, 2009
Nov 21, 2009
Nov 22, 2009
Nov 23, 2009
Nov 24, 2009
Nov 25, 2009
Nov 26, 2009
Nov 27, 2009
Nov 28, 2009
Nov 29, 2009
Nov 30, 2009
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Dec 02, 2009
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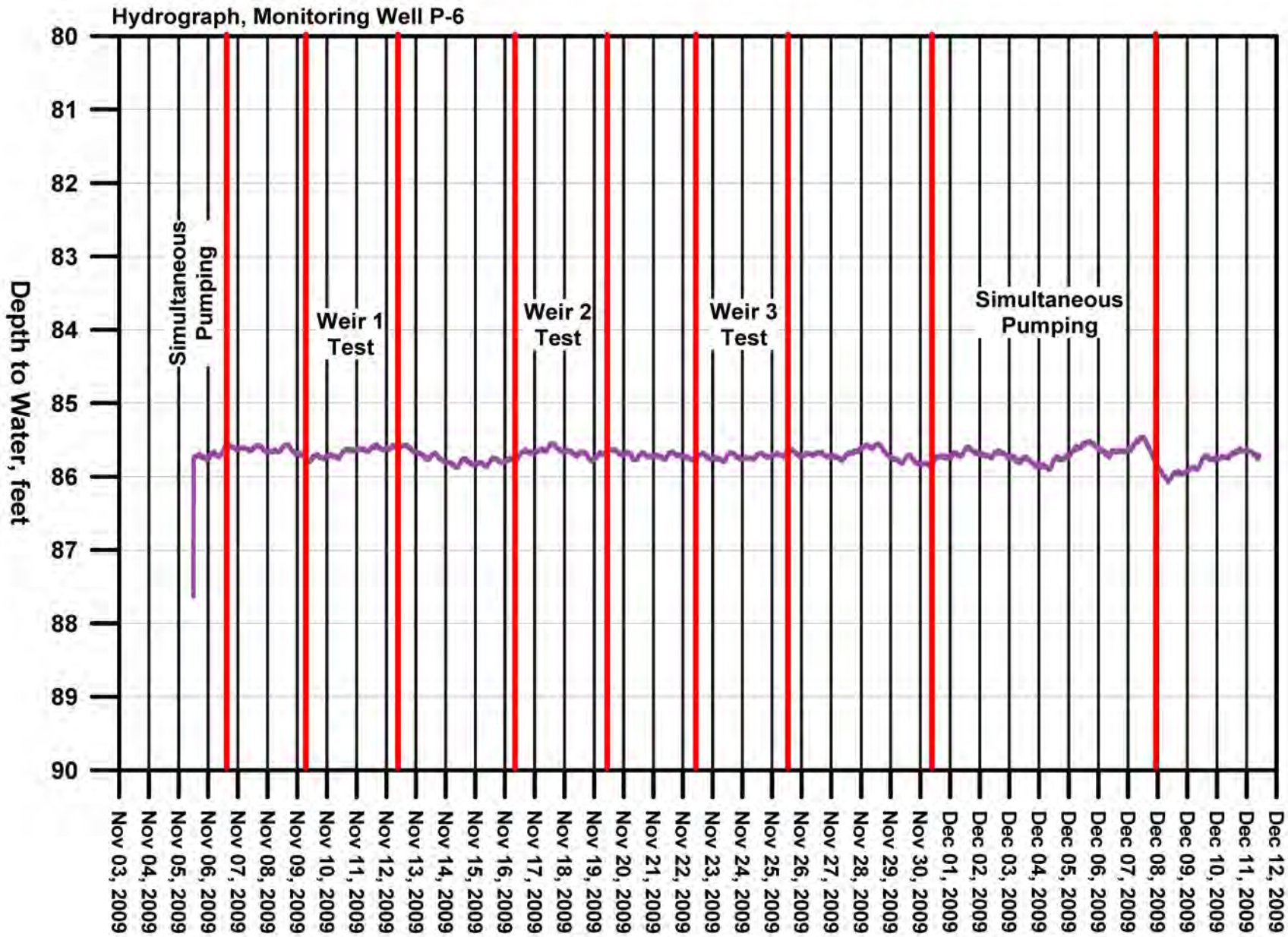
Dec 10, 2009
Dec 11, 2009
Dec 12, 2009


Hydrograph, Monitoring Well P-6
Depth to Water, feet
80
81
82
83
84
85
86
87
88
89
90
Simultaneous Pumping
Weir 1 Test
Weir 2 Test
Weir 3 Test
Simultaneous Pumping
Nov 03, 2009
Nov 04, 2009
Nov 05, 2009
Nov 06, 2009
Nov 07, 2009
Nov 08, 2009
Nov 09, 2009
Nov 10, 2009
Nov 11, 2009
Nov 12, 2009
Nov 13, 2009
Nov 14, 2009
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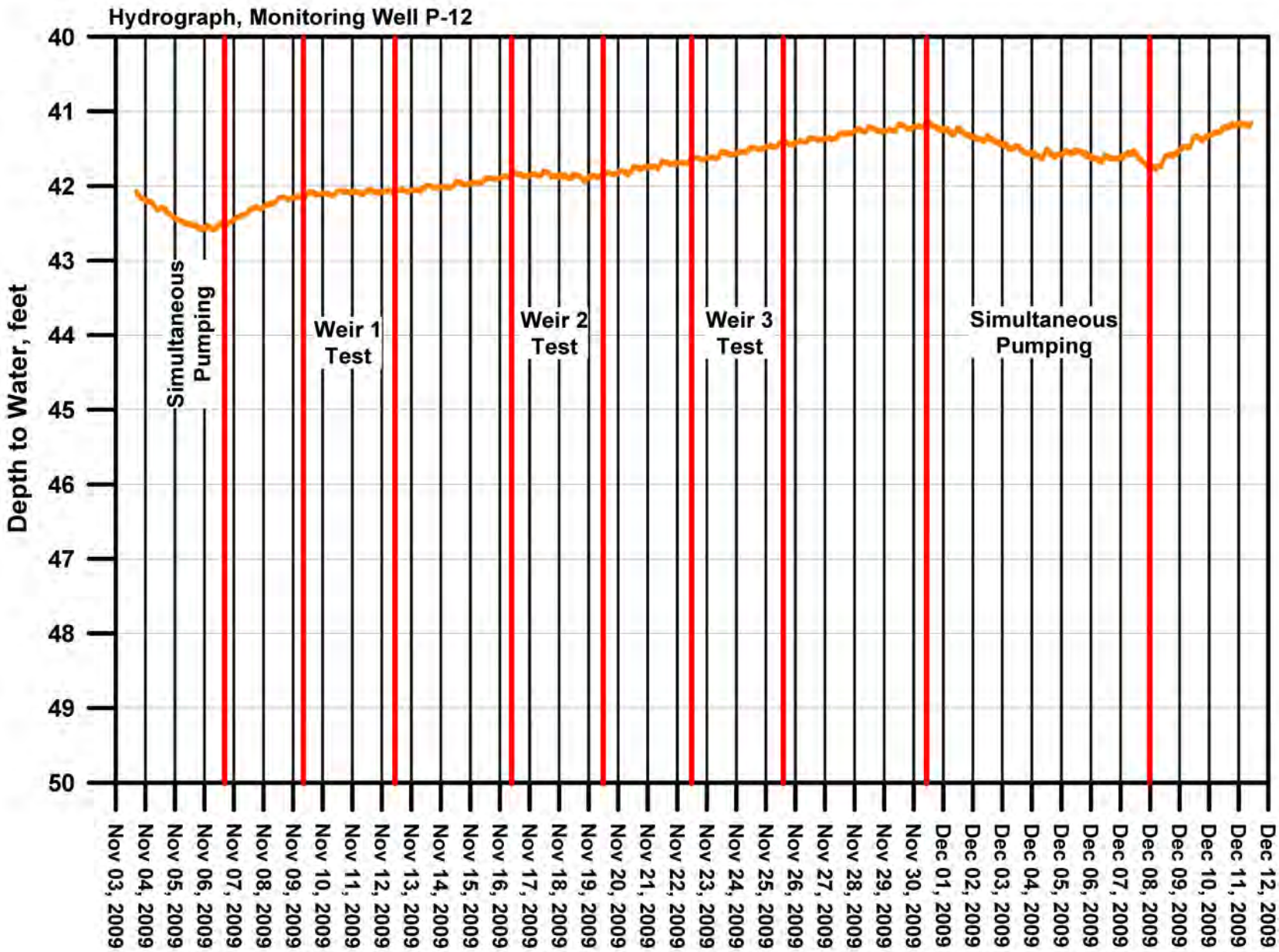
Dec 11, 2009
Dec 12, 2009


Hydrograph, Monitoring Well P-12
Depth to Water, feet
40
41
42
43
44
45
46
47
48
49
50
Simultaneous Pumping
Weir 1 Test
Weir 2 Test
Weir 3 Test
Simultaneous Pumping
Nov 03, 2009
Nov 04, 2009
Nov 05, 2009
Nov 06, 2009
Nov 07, 2009
Nov 08, 2009
Nov 09, 2009
Nov 10, 2009
Nov 11, 2009
Nov 12, 2009
Nov 13, 2009
Nov 14, 2009
Nov 15, 2009
Nov 16, 2009
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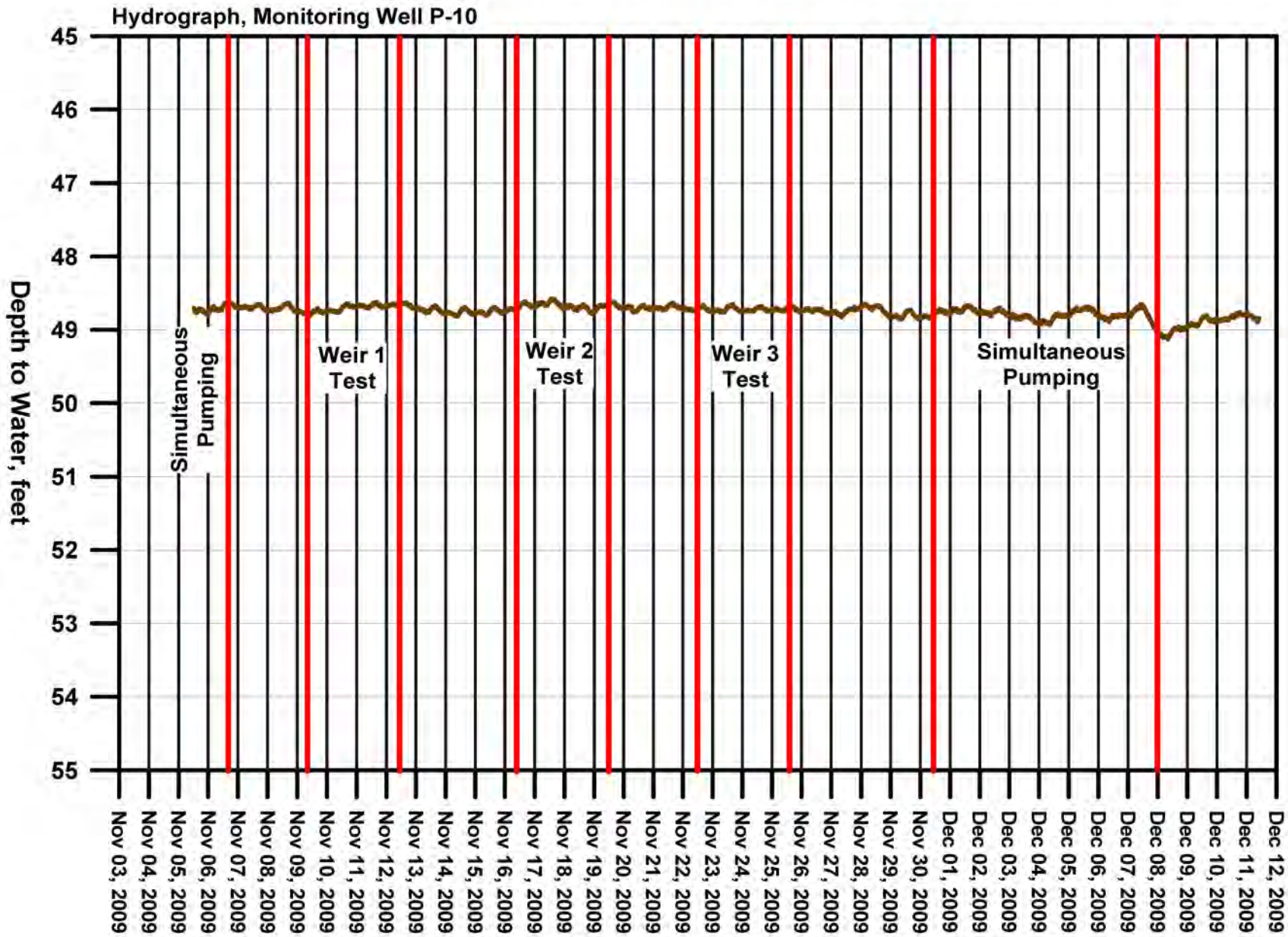
Hydrograph, Monitoring Well P-10
Depth to Water, feet
45
46
47
48
49
50
51
52
53
54
55
Simultaneous Pumping
Weir 1 Test
Weir 2 Test
Weir 3 Test
Simultaneous Pumping
Nov 03, 2009
Nov 04, 2009
Nov 05, 2009
Nov 06, 2009
Nov 07, 2009
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Nov 09, 2009
Nov 10, 2009
Nov 11, 2009
Nov 12, 2009
Nov 13, 2009
Nov 14, 2009
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Nov 16, 2009
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Nov 23, 2009
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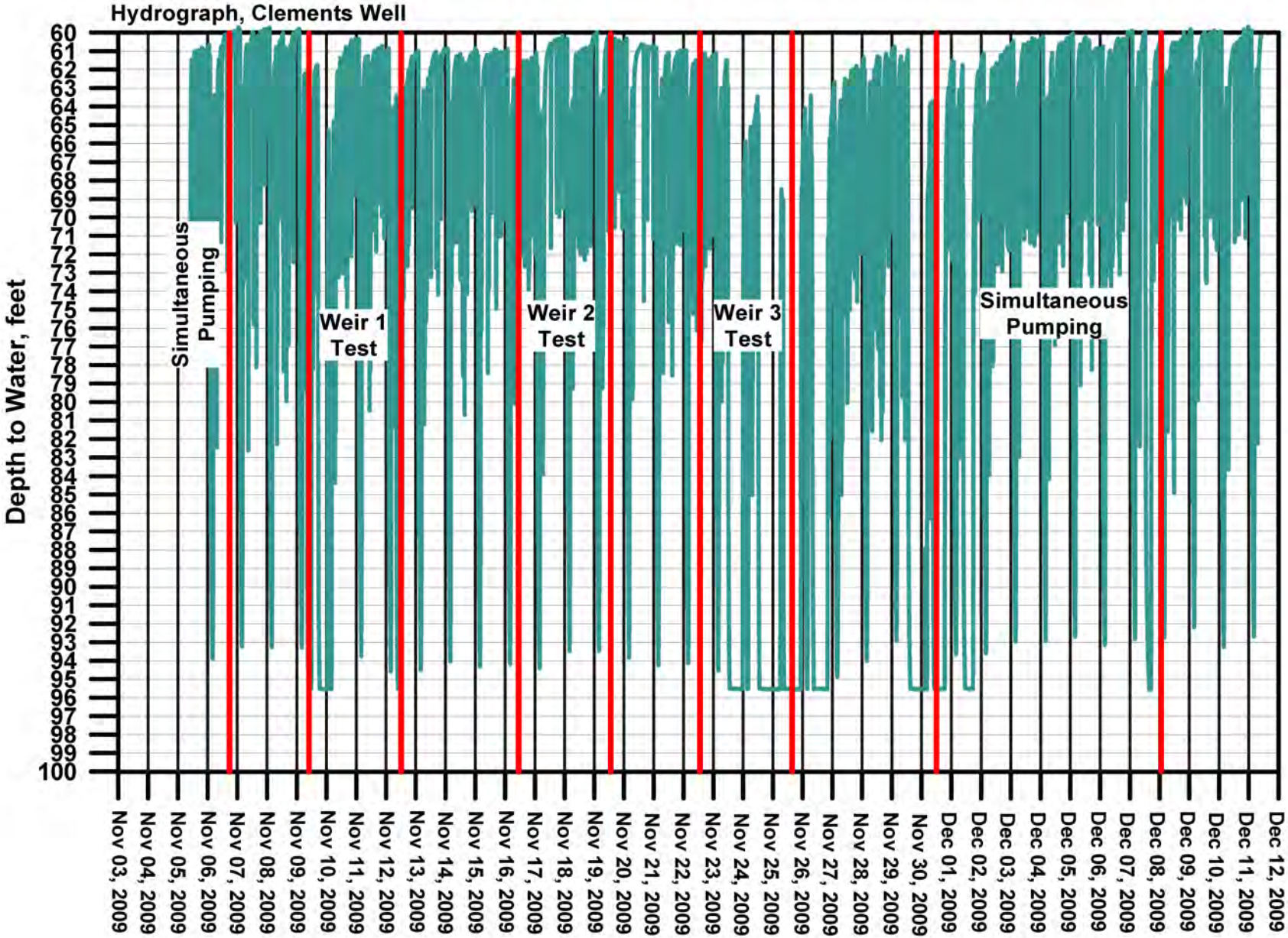
Dec 12, 2009


Hydrograph, Clements Well
Depth to Water, feet
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
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85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
Simultaneous Pumping
Weir 1 Test
Weir 2 Test
Weir 3 Test
Simultaneous Pumping
Nov 03, 2009
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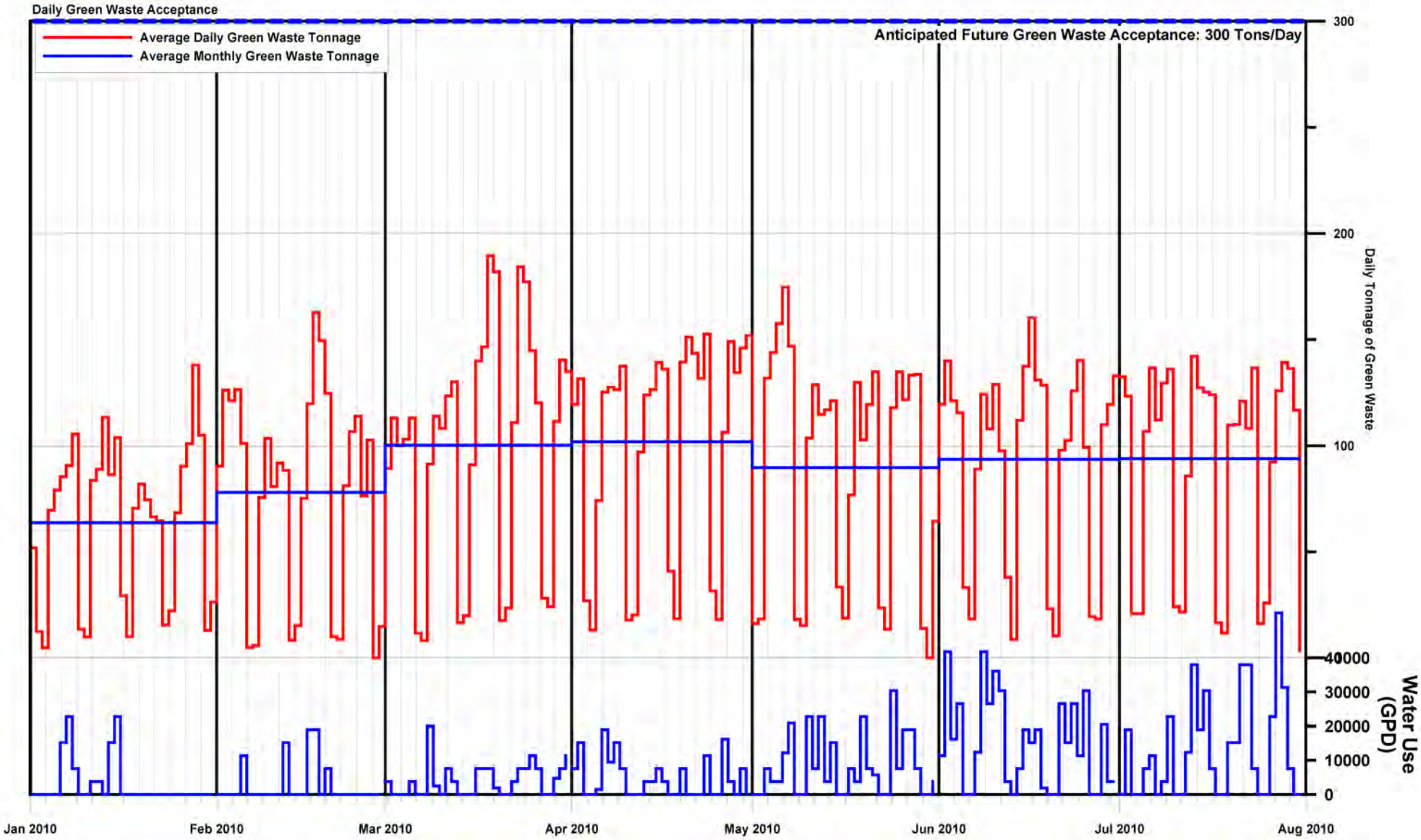
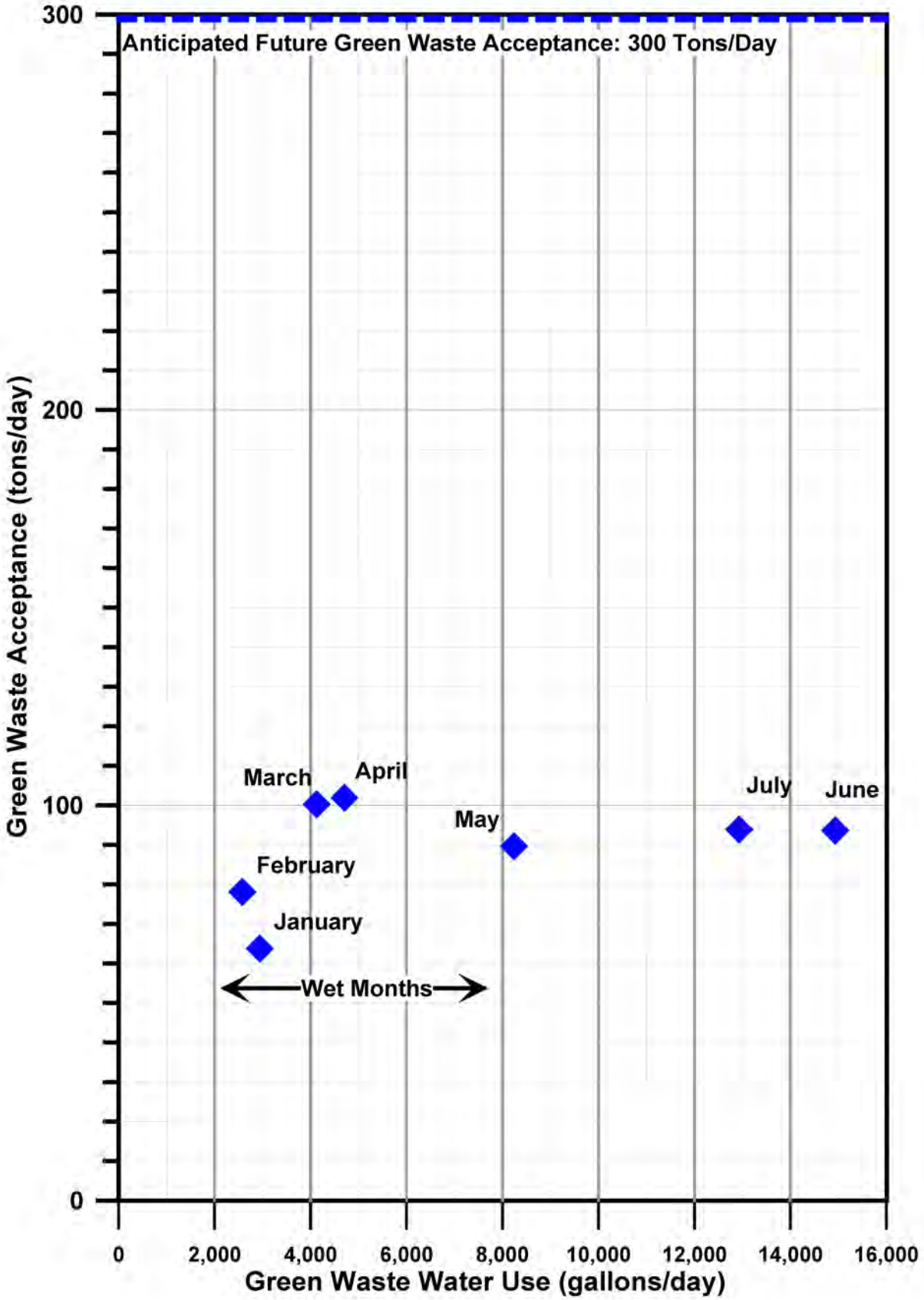
Dec 12, 2009

APPENDIX E
GREEN WASTE DATA

Cold Canyon Landfill Green Waste and Water Use
January to July 2010

Month	Green Waste Tons/Day	Compost Water Use Gallons/Day
January 2010	64	2,942
February 2010	78	2,579
March 2010	100	4,127
April 2010	102	4,707
May 2010	90	8,239
June 2010	94	14,937
July 2010	94	12,932


Daily Green Waste Acceptance
Average Daily Green Waste Tonnage
Average Monthly Green Waste Tonnage
Anticipated Future Green Waste Acceptance: 300 Tons/Day
300
200
100
Daily Tonnage of Green Waste
40000
30000
20000
10000
0
Water Use (GPD)
Jan 2010
Feb 2010
Mar 2010
Apr 2010
May 2010
Jun 2010
Jul 2010
Aug 2010


Anticipated Future Green Waste Acceptance: 300 Tons/Day
300
200
100
0
Green Waste Acceptance (tons/day)
March
April
May
July
June
February
January
Wet Months
0
2,000
4,000
6,000
8,000
10,000
12,000
14,000
16,000
Green Waste Water Use (gallons/day)

STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION
81 Higuera Street, Suite 200
San Luis Obispo, CA 93401-5411

REVISED WASTE DISCHARGE REQUIREMENTS ORDER NO. R3-2002-0065

Waste Discharger Identification No. 3 400310001

FOR

COLD CANYON CLASS III LANDFILL
San Luis Obispo County

The California Regional Water Quality Control Board, Central Coast Region (hereafter Regional Board) finds that:

SITE OWNER AND LOCATION

1. Waste Connections, Inc. owns Corral de Piedra Land Company, Inc. which owns the Cold Canyon Class III Landfill, which is operated by Cold Canyon Landfill, Inc. For the purposes of this Order, Waste Connections Inc., Corral de Piedra Land Company, Inc., and Cold Canyon Landfill Inc., are hereafter referred to collectively as "Discharger" and the Cold Canyon Class III Landfill is hereafter referred to as "Landfill".

2. The 121-acre site includes a 14-acre unlined closed Class III area, and a permitted Class III landfill footprint of 74-acres. In addition to landfilling, the Discharger occasionally composts greenwaste on the Landfill.

3. The Landfill is eight miles south of San Luis Obispo along State Highway 227, in Sections 28, 29, 32, and 33, Township 31 south, Range 13 east, Mount Diablo Base and Meridian as shown on the attached **Figure 1**. The address of the Landfill is 2268 Carpenter Canyon Road, San Luis Obispo, CA 93401. The Landfill latitude is 35° 11 and the longitude is 120° 35.

4. The site is comprised of one parcel, with Assessor Parcel Number:
   - 044-171-012 – Class III Landfill

PURPOSE OF ORDER

5. The Discharger is currently regulated by Waste Discharge Requirements Order No. 93-051 (hereafter "Order 93-051") and Waste Discharge Requirements Order No. 93-83 (Landfill Super Order). The purpose of Order No. R3-2002-0065 (Hereafter "Order" or "Order No. R3-2002-0065") is to revise and update requirements for discharge of waste to land.

6. The Discharger submitted a Joint Technical Document (JTD) on April 17, 2002. The JTD was submitted at the request of the Central Coast Regional Water Quality Control Board, to facilitate the review and revision of Order 93-051. This revision includes the following key elements:

   - A detailed review of the entire 121-acre Landfill site.
   - Review and revision of Monitoring and Reporting Program 93-051 (MRP 93-051), which includes landfill gas, groundwater and surface water monitoring.
   - Bring the Landfill into compliance with California Code of Regulations Title 27, Solid Waste, effective July 18, 1997 (CCR Title 27); and, 40 CFR Parts 257 and 258 Solid Waste Facility Disposal Criteria, Final Rule, as promulgated October 9, 1991 (40CFR 257 and 258).

LANDFILL SITE DESCRIPTION AND HISTORY

7. Cold Canyon Landfill Inc. began landfilling operations at the current location in 1965. The Landfill is located on land leased from Corral de Piedra Land Company.

   The Landfill is situated on the eastern flank of Canada Verde. Site elevations vary from 200 feet mean sea level (msl) at the site entrance to 500 feet msl at the sites northern bounds. Slopes range from five percent at the site's southern area to twenty-five percent on eastern slopes. A site map is included as **Figure 2**. For the purposes of this Order, the Landfill can be divided into two basic areas:

   ❶ **Closed Area**: This portion of the site is comprised of 14-acres. Landfill operations began in 1965 until closure in 1996. The area received an engineered alternative final cover, consisting of two feet of foundation layer soil overlain by a geosynthetic clay blanket overlaid by one foot of vegetative cover. The closed area is shown on the attached **Figure 2.**

   ❷ **Active Area**: The Active Area consists of unlined and lined modules. Approximately 7.3 million cubic yards of waste have been landfilled in both areas. A majority of the active area was not constructed with a bottom liner or leachate collection system. A lateral and vertical expansion was permitted in 1993. The horizontal expansion consists of Modules Six, Seven and Eight. The vertical expansion consists of Module Nine, which will be located on top of Modules Six, Seven, and Eight. This expansion increased the Landfill's capacity to 10.9 million cubic yards (waste + cover material). Based on January 4, 2002 capacity estimates, the Landfill has approximately 3.6 million cubic yards of remaining capacity in all active modules. The individual modules are shown on the attached **Figure 2** and are described below:

   - **Existing Modules 1-5** are closed, at final grades or have minimal capacity. Active landfilling currently takes place in Module Five. Module Five has approximately six to eight months of capacity remaining.
   - **Existing Module No. 6** has a capacity of 135,100 cubic yards. Filling of Module Six is nearly complete. However, once Modules Seven and Eight are complete, Module Nine will overlap this module.
   - **Module No. 7** will have a capacity of 390,400 cubic yards. The Module Seven design report was found acceptable to the Executive Officer on June 3, 2002. Module Seven construction is expected to be completed by November 2002.
   - **Module No. 8** will have a capacity of 1,700,700 cubic yards. Construction of Module Eight is anticipated in 2004.
   - **Module No. 9** will have a capacity of 1,129,500 cubic yards. Module 9 will overlap Modules Six through Eight. The maximum elevation of module 9 is approximately 490 feet (JTD, 2002).

8. The landfill property is zoned Public Facilities (PF) on the Land Use Element Map of the San Luis Obispo County General Plan. In December 1991, the San Luis Obispo County Planning Commission found the landfill project was consistent with the San Luis Obispo County General Plan.

9. Land within 1000 feet of the Landfill is used for: cattle grazing, composting, a material recovery facility, vineyards, a winery bottling plant, and scattered domestic residences. Nearby residences utilize private wells for domestic water supply.

WASTE TYPE & CLASSIFICATION

10. Currently, the Landfill receives municipal and solid waste from Pismo Beach, San Luis Obispo, Arroyo Grande, Los Osos, Cayucos, Cambria, San Simeon, Morro Bay, and surrounding unincorporated areas. The Landfill received approximately 172,500 tons of waste in 2001. An average of 474 tons are disposed daily, based on 364 operating days per year.

11. Wastes received are classified as nonhazardous solid wastes or inert wastes using the criteria set forth in California Code of Regulations, Title 27 (CCR Title 27). The Landfill is also permitted to receive non-hazardous sludge and treated medical waste.

12. Wastes are disposed of utilizing the area disposal method. Refuse lifts average 15 feet in thickness. Wastes are placed and compacted in two foot layers with maximum perimeter slope steepness of 3:1 (horizontal:vertical).

13. The Discharger's current plans indicate the existing permitted disposal area will reach capacity in 2011. This is based on the Discharger's assumptions of an 8:1 refuse to soil ratio, 2.3percent population growth, and a waste density of 1,150 pounds per cubic yard.

14. The currently permitted, unlined modules do not meet CCR Title 27, Section 20260 (b)(1) siting criteria with regard to "geologic setting". Considering the size of the waste management unit, permeability and transmissivity of underlying soils, depth to groundwater, background quality of groundwater, current and anticipated use of groundwater, and annual precipitation, the native underlying soils do not ensure protection of groundwater or surface water quality.

15. The permitted horizontal expansion Modules have or will have engineered containment system based on the geologic setting criteria in **Finding 14**. The CCR Title 27 prescriptive containment requirements are outlined in **Specification 20**.

GEOLOGY

16. **Setting** – The site is located in the southernmost part of Edna Valley between the San Luis Range to the west and the Santa Lucia Range to the east. The Landfill is located on the eastern flank of Canada Verde and lies along the southern margin of the Upper Pismo and eastern margin of the Lower Pismo groundwater basins (California Dept. of Water Resources, 1958) as shown on **Figure 3**.

17. **Topography** - Landfill topography is hilly. Topography ranges from gentle 5 percent slopes to steeper 25 percent slopes at the sites eastern margin. Historic landfill operations near the northwestern boundary have altered topography to 33 percent on side slopes and 5 percent on top deck areas. As landfill expansion continues, site topography in the site's southern portion will be altered to accommodate Modules Seven and Eight. There is approximately 300 feet of elevation change across the length of the site.

18. **Stratigraphy** – Three geologic units have been mapped at the site: the Monterey Formation, Pismo Formation, and surficial deposits. The Monterey Formation underlies approximately 90 percent of the unlined portion of the Landfill, while the Pismo Formation underlies most of the lateral expansion area.

19. Where exposed, the Monterey Formation consists of approximately 52 percent siltstone, 27 percent claystone and 21 percent fine- to very fine- grained sandstone with a total stratigraphic thickness of 630 feet in the site's central area. Where exposed, the Pismo Formation consists of approximately 82 percent fine- to very fine-grained sandstone, 9 percent claystone, 9 percent siltstone and some conglomerate. The beds trend to the northwest, consistent with regional geology.

20. Bedrock fracture data indicates that the Pismo Formation is less fractured than the Monterey formation and that there are two dominant sets of bedrock fractures. Both sets trend north south sub-parallel to groundwater flow. Highly fractured and crushed zones in both formations typically occur within silty sandstone units cemented with calcium carbonate. Fracturing and connectivity increase from south to north towards the Indian Knob fault zone. The Indian Knob fault zone is located in the northern Landfill area as shown on **Figure 5**.

21. Surficial deposits are considered un-cemented or weakly cemented earth materials that have been reworked by natural and artificial means. They include refuse fill in the sites northern

and central portion, and alluvial deposits that commonly mantle slopes and ridges.

22. **Structure** – Earthquake evaluations have been performed to determine the Maximum Probable Earthquake (MPE) event for a near Landfill fault. Based on past studies by the Discharger, the maximum probable earthquake (MPE) event could result from any of three faults, the Indian Knob fault, San Simeon-Hosgri Fault or the San Andreas Fault.

23. The Indian Knob Fault and Edna Fault are located near the site's northern boundary, as shown on **Figure 6**. The Indian Knob Fault is capable of generating a magnitude 6.3 MPE with a mean peak bedrock acceleration of 0.65g. However, the Discharger certified in an October 1989, "Activity of the Indian Knob Fault..." report that the Indian Knob Fault and Edna Fault have not been active during the Holocene Period. The San Simeon-Hosgri Fault is located approximately 8.7 miles west and is capable of generating a magnitude 7.7 MPE with a mean peak bedrock acceleration of 0.46g. The San Andreas Fault is located 35 miles to the northeast and is capable of generating a magnitude 8.3 MPE with a mean peak bedrock acceleration of 0.2g.

GROUND, STORM & SURFACE WATER

24. **Groundwater** - Based on the site characterization reports submitted by the Discharger[1], groundwater at the site occurs in both the Pismo and Monterey formations with the hydraulic head elevation ranging from approximately 190 feet above mean sea level (MSL) at the sites' southern edge to approximately 300 MSL at the northern edge. Depth to groundwater measured in on-site monitoring wells ranges from approximately 56 feet below ground surface southwest of the Landfill, to 208 feet below ground surface north of the Landfill.

25. Groundwater at the site flows generally from northeast to southwest under a relatively uniform hydraulic gradient through the undifferentiated member of the Pismo Formation, Indian Knob Fault Zone, Monterey Formation, and Edna Member of the Pismo Formation. Although the Indian Knob Fault zone is less permeable than the Pismo and Monterey Formations, it has little influence on groundwater flow[1].

26. The Monterey Formation's groundwater horizontal gradient is approximately 0.05 foot/foot. Additionally, there is a downward vertical gradient, ranging in magnitude from 0.01 to 0.05 feet/foot. The Discharger has determined that groundwater velocity within the Monterey Formation is approximately 15 feet per year. This is based on a mean hydraulic conductivity of 6.3×10^{-5} centimeters per second (cm/sec) and an effective porosity of 20 percent.

27. As the groundwater enters the Edna member of the Pismo Formation, the gradient flattens to approximately 0.01 feet/foot. This is related to the more permeable nature of the massive sandstones of the Edna member. The Discharger has determined that groundwater velocity within this area is approximately 25 feet per year. This is based on a mean hydraulic conductivity of 2.3×10^{-4} (cm/sec) and an effective porosity of 25 percent.

28. Regional groundwater flow direction is typically towards the southwest. The Landfill is located hydraulically downgradient from the Upper Pismo Groundwater Basin and upgradient of the Lower Pismo Groundwater Basin. **Figure 3** shows the Landfill location in relation to both basins.

29. **Wells** - There are 50 water supply wells within one mile of the Landfill. The closest well, well PW-2, is located near the Landfill scale house, and is used for site operations. Wells within one mile of the site are shown on **Figure 4**.

30. **Springs** – There are five springs located within one mile of the site. Three of the springs occur upgradient along the Edna Fault. A fourth spring feeds the intermittent stream that flows within a canyon immediately northeast of the site. The fifth spring feeds Canada Verde approximately 0.8 miles southwest of the

[1] *Hydrogeologic Site Characterization, Cold Canyon Sanitary Landfill, San Luis Obispo County, California,* EMCON Associates, February 1992

Landfill. The Canada Verde Spring is shown on **Figure 4**.

31. **Groundwater Separation** – According to the Discharger's JTD, separation between waste in the expansion area modules and groundwater will be at least 10 feet. This value is based on the highest recorded groundwater levels site wide. The minimum separation between groundwater and waste, for expansion modules, is five feet.

32. **Groundwater Quality** – Groundwater has been monitored at the Landfill since 1987. Historically, Volatile Organic Compounds (VOC) have been detected. Landfill gas was suspected of being the source of VOC detections. In response the Discharger installed a landfill gas extraction system. Since installing the system, VOC have been detected intermittently, but have never been verified in follow up testing. Landfill gas is discussed in 44.

33. Statistical evaluation of inorganic water-quality in wells MW-2 and MW-3 indicate a release has occurred. The Discharger installed wells P-8 and P-9 to determine the lateral and vertical extent of the release at Wells MW-2 and MW-3. During this evaluation it was determined that the release has not migrated beyond wells MW-2 and MW-3.

34. An Amended Report of Waste Discharge was submitted in March 2002 to address a confirmed inorganic release in well P-7. Test results from well P-7 showed chloride and sulfate concentrations were statistically significant and were an indication of a release. The Discharger will be performing further evaluation of this release as required by MRP R3-2002-0065 and this Order.

35. **Storm Water** –On March 13, 1992, the Discharger submitted a "Notice of Intent" to comply with the "State Water Resources Control Board Water Quality Order No. 97-03-DWQ National Pollutant Discharge Elimination System General Permit No. CAS000001 Waste Discharge Requirements for Discharge of Storm Water Associated with Industrial Activities Excluding Construction Activities". Regulation of storm water discharge is covered under that permit.

36. Rainfall is seasonal with the majority of the precipitation falling between November and April. The annual average precipitation recorded at the San Luis Obispo Poly station is 23.4 inches. The 100-year, 24 hour storm at the San Luis Obispo Poly station is 6.74 inches (DWR, 1976).

37. **Surface Water** – Runoff from the Landfill is collected in ditches and over side drains and routed to a permanent sedimentation basin. As part of Module Seven construction, the Discharger will be installing a second basin. Surface water is then discharged to offsite drainage ways adjacent to highway 227. Storm water run-on is intercepted by perimeter collection ditches, routed around the Landfill, and discharged to onsite drainage ways.

38. The site is not located in a 100-year flood plain according to the Federal Emergency Management Agency maps for San Luis Obispo County.

MONITORING PROGRAMS

39. **Groundwater Monitoring** – Groundwater was first monitored in 1987 and has been monitored continuously since 1989. The first wells, MW-1, MW-2, MW-3, MW-4 and MW-5, were installed to complete the Solid Waste Assessment Test Report. Subsequently MW-4 was abandoned because of Landfill expansion. Over time, additional wells have been added to the monitoring network. The present monitoring systems consists of 15 wells, which are sampled according to a schedule specified in the attached Monitoring and Reporting Program. One additional well is used for non-potable water supply. See **Figure A-1** attached to MRP R3-2002-0065, for monitoring well locations.

40. **Leachate Monitoring** – There is a limited leachate recovery system in the unlined class III area. The Discharger installed a pipe in Excavation Cell C that collects leachate and diverts it to Module Seven's leachate collection system. Leachate collection is not required in other unlined areas. The

discharger conducted an investigation in 1989 to determine if unlined areas contained leachate. Leachate was not found in large quantities; therefore, leachate extraction in unlined areas was not pursued. Module Six and all future modules will be equipped with leachate collection and disposal systems. Leachate from the expansion area will be monitored according to the approved Monitoring and Reporting Program attached to these Waste Discharge Requirements.

41. **Surface Water Monitoring** – Surface water is monitored at six locations around the Landfill. Surface water monitoring requirements are stipulated in MRP R3-2002-0065. Additionally, storm water is monitored according to the State's NPDES storm water discharge general permit.

42. **Vadose Zone Monitoring** – California Code of Regulations Title 27, Section 20415, requires vadose zone monitoring unless demonstrated by representative soil suction curves that soil pore liquid cannot be extracted. An Unsaturated Zone Monitoring Report was submitted in November of 1994 which detailed the infeasibility of unsaturated zone monitoring at this landfill. The Discharger installed a pan lysimeter under the leachate sump in Module Six for leak detection purposes. Order R3-2002-0065 and MRP R3-2002-0065 require the discharger to monitor this lysimeter.

43. **Landfill Gas Monitoring** – Landfill gas is collected via wells and trenches in active and closed Landfill areas. Primarily, the landfill gas is sold to an offsite user. Additionally, an onsite gas flare is installed and available if offsite demand is curtailed for any reason. Landfill gas is sampled and analyzed according to MRP R3-2002-0065. Landfill gas is a potential source of groundwater contamination at this site.

BASIN PLAN

44. The Water Quality Control Plan, Central Coast Basin (Basin Plan), was adopted by the Regional Board on September 8, 1994, and approved by the State Water Resources Control Board on November 17, 1994. The Basin Plan incorporates statewide plans and policies by reference and contains a strategy for protecting beneficial uses of State Waters. This Order implements the water quality objectives of the Basin Plan.

45. The beneficial uses of surface water in the vicinity of the Landfill include:
    - Domestic and Municipal Supply
    - Agricultural Supply
    - Groundwater Recharge
    - Water Contact Recreation
    - Non-Contact Water Recreation
    - Wildlife Habitat
    - Warm Freshwater Habitat
    - Cold Freshwater Habitat
    - Industrial Service Supply
    - Fish Migration
    - Fish Spawning

46. The beneficial uses of groundwater in the vicinity of the Landfill are:
    - Domestic and Municipal Supply
    - Agricultural Supply
    - Industrial Supply.

CALIFORNIA ENVIRONMENTAL QUALITY ACT

47. The San Luis Obispo County Planning Commission certified a final Environmental Impact Report on December 2, 1991, in accordance with the California Environmental Quality Act (Public Resources Code Section 21000 et. seq.). The Findings, Prohibitions, Specifications, and Provisions of this Order are consistent with the certified final Environmental Impact Report.

48. The final Environmental Impact Report found that the Landfill and Landfill activity could have significant impacts on water quality and may degrade water quality unless appropriate measures are taken. The potential significant impacts are intended to be mitigated or avoided by a series of design measures to control erosion and provide containment of waste and leachate by the use of liners, leachate collection and removal systems, grading, planting, drainage systems, and limits on the physical dimension of the Landfill. The mitigation measures are described in the

Dischargers application and these Waste Discharge Requirements.

GENERAL FINDINGS

49. Discharge of waste is a privilege, not a right, and authorization to discharge waste is conditioned upon the Discharger complying with provisions of Division 7 of the California Water Code and with any more stringent limitations necessary to implement the Basin Plan, to protect beneficial uses, and to prevent nuisance. Compliance with this Order should assure conditions are met and mitigate any potential changes in water quality caused by the project.

50. The Landfill operates under the following Permits:

    - Development Plan Permit No. D860156D issued by the San Luis Obispo County Planning Commission on December 2, 1991.
    - Permit to operate No.37 (Title V Permit) issued by the San Luis Obispo County Air Pollution Control District on October 23, 1998.
    - Solid Waste Facilities Permit No. 40-AA-0004, issued in January 2002 by the San Luis Obispo County, Environmental Health Department with concurrence from the Integrated Waste Management Board.

51. This Order implements the prescriptive standards and performance goals of CCR Title 27, as approved on July 18, 1997.

52. On **August 5, 2002**, the Regional Board notified the Discharger and interested agencies and persons of its intention to update the Landfill Waste Discharge Requirements and has provided them with a copy of the proposed Order and an opportunity to submit views and comments.

53. After considering all comments pertaining to this discharge during a public hearing on **November 1, 2002** this Order was found consistent with the above findings.

IT IS HEREBY ORDERED pursuant to authority in Section 13263 of the California Water Code, Waste Connections, Inc., Corral de Piedra Land Company, Inc., and Cold Canyon Landfill, Inc., their agents, successors, and assigns may discharge wastes at the Cold Canyon Class III Landfill, providing compliance is maintained with the following:

A. COMPLIANCE WITH OTHER REGULATIONS, ORDERS AND STANDARD PROVISIONS

1. Discharge of waste shall comply with all applicable requirements contained in the California Code of Regulations Title 27, Division 2, Solid Waste (CCR Title 27) and Title 40 CFR Parts 257 and 258 (40 CFR) Solid Waste Facility Disposal Criteria. If any applicable regulation requirements overlap or conflict in any manner, the most water quality protective requirement shall govern in all cases, unless specifically stated otherwise in this Order, or as directed by the Executive Officer.

2. This Landfill is no longer subject to this Regional Board's Order No. 93-84 "Waste Discharge Requirements Amendment for All MSW Landfills in the Central Coast Region" (Super Order). The Super Order updated all Region 3 landfill WDRs to comply with the updated federal landfill regulations, 40 CFR Parts 257 and 258. Through compliance with CCR Title 27 and 40 CFR Parts 257 and 258 as required above in A.1, the Discharger will satisfy requirements identical to those within Order No. 93-84.

3. The Discharger shall monitor potential releases from the Landfill related to storm water runoff by complying with all requirements contained in the "State Water Resources Control Board Water Quality Order No. 97-03-DWQ National Pollutant Discharge Elimination System General Permit No. CAS000001 Waste Discharge Requirements for Discharge of Storm Water Associated with Industrial Activities Excluding Construction Activities".

B. PROHIBITIONS

1. Discharge of waste to areas outside the Active Landfill Area identified in **Figure 2** is prohibited.

2. Discharge of waste to areas within the Active Landfill Area that have not previously received waste is prohibited unless a composite liner system as described in **Specification 20**, is installed and accepted by the Executive Officer.

3. Discharge of the following types of wastes is prohibited;

   a. Radioactive wastes.
   b. Designated waste.
   c. Hazardous waste.
   d. Wastes that have the potential to reduce or impair the integrity of containment structures or which, if commingled with other wastes in the unit, could produce violent reaction, heat or pressure, fire or explosion, toxic by-products, or reaction products.
   e. Wastes that require a higher level of containment than provided by the Landfill.
   f. Wastes that are restricted hazardous wastes, or wastes which impair the integrity of containment structures.

4. Discharge of liquid or semi-solid waste (i.e., waste containing less than 50 percent solids by weight) other than dewatered sewage or water treatment sludge as described in Discharge **Provision E. 11**, and Landfill leachate and gas condensate as described in Discharge **Specification C. 23**, is prohibited.

5. Discharge of solid or liquid waste or leachate to surface waters, ponded water from any source, surface water drainage courses, or groundwater is prohibited.

6. Discharge of waste within 50 feet of the property line or within 100 feet of surface waters or domestic supply wells is prohibited.

7. Disposal of wastes within five (5) feet of the highest anticipated elevation of underlying groundwater, including the capillary fringe, is prohibited.

C. SPECIFICATIONS

General Specifications

1. All technical and monitoring reports submitted pursuant to this Order are required pursuant to Section 13267 of the California Water Code. Failure to submit reports in accordance with schedules established by this Order, attachments to this Order, or failure to submit a report of sufficient technical quality to be acceptable to the Executive Officer, may subject the Discharger to enforcement action pursuant to Section 13268 of the California Water Code. The Regional Board will base all enforcement actions on the date of Order adoption.

2. The Discharger shall implement the attached Monitoring and Reporting Program No. R3-2002-0065 (MRP No. R3-2002-0065) in order to detect, at the earliest opportunity, any unauthorized discharge of waste constituents, or any unreasonable beneficial use impairment associated with and or caused by the discharge of waste.

3. The discharge 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 beyond natural background levels.
   d. The creation or contribution of visible, floating, suspended, or deposited oil or other products of petroleum origin.
   e. The introduction or increase in concentration of toxic or other pollutants/contaminants resulting in unreasonable impairment of beneficial uses of waters of the State.

4. The discharge shall not cause an increase in concentration of waste constituents in soil-pore gas, soil-pore liquid, perched water, groundwater or geologic materials outside of the Point of Compliance (as defined by CCR Title 27).

5. The Discharger shall conduct intake load checking as specified by the 2002 JTD, Appendix C "Waste Control Program" and shall monitor for radioactive materials in the incoming waste.

6. The Discharger shall remove and relocate any wastes discharged in violation of these requirements.

7. All Landfill facilities shall be designed and constructed to prevent damage during the maximum probable earthquake.

8. Refuse shall be covered daily by at least six inches of soil cover material or an Executive Officer accepted alternative daily cover. Daily cover shall promote lateral runoff of rainfall away from the active disposal area.

9. Water used over areas underlined by waste within unlined Landfill areas shall be limited to the minimum amount necessary for dust control and construction.

10. Surface drainage from tributary areas and internal site drainage from non-landfill surface or subsurface sources shall not contact or percolate through wastes.

11. To prevent erosion and percolation through the waste, drainage ditches crossing over Landfill areas shall be lined with either a synthetic liner or at least a one-foot-thick layer of soil having an in-place hydraulic conductivity of 1×10^{-6} cm/sec or less.

12. Regional Board staff shall be notified within 24 hours by phone, with a written report to follow within seven days, of any slope failure or leachate seep occurring at the Landfill. Any leachate seep or any failure, which threatens the integrity of containment features or the Landfill, shall be promptly corrected and the methods shall be so stated in the written report.

Wet Weather

13. By **October 1** of each year, all necessary runoff diversion and erosion prevention measures shall be implemented. All necessary construction, maintenance, or repairs of precipitation and drainage control facilities shall be completed to prevent erosion or flooding of the Landfill and to prevent surface drainage from contacting or percolating through wastes.

14. **Throughout the rainy season of each year,** a compacted intermediate soil cover designed and constructed to minimize percolation of precipitation through wastes, shall be maintained over the entire Waste Management Unit. The soil cover shall be in-place by **October 1 of each year.** The thickness and permeability of the intermediate cover shall be based primarily on site specific conditions including, but not limited to: length of exposure time; volume of underlying material; permeability, thickness and composition of existing cover; amount of yearly rainfall; depth to groundwater; beneficial uses of underlying groundwater; site specific geologic and hydrogeologic conditions; existing groundwater impacts and effectiveness of existing monitoring system.

    The only exception to this specification is the working face. The working face shall be confined to the smallest area practicable based on the anticipated quantity of waste discharged and required waste management facility operations. Landfill areas which have been provided with an Executive Officer approved vegetative layer as of the adoption date of this Order, shall not be required to satisfy this requirement. Based on site-specific conditions, the Executive Officer may require a thicker soil cover for any portion of the active WMU prior to the rainy season.

15. By **October 1 of each year,** vegetation shall be planted and maintained as necessary to minimize erosion on interim cover slopes and on slopes at final elevation. Vegetation shall be selected to require a minimum of irrigation and maintenance and shall have a rooting depth not in excess of the vegetative layer thickness. Upon written Executive Officer approval, non-hazardous sewage sludge may be utilized as a soil amendment to promote vegetation. Soil amendments and fertilizers (including wastewater sludge) used to establish vegetation shall not exceed the vegetation's agronomic

rates (i.e., annual nutrient needs), unless approved by the Executive Officer.

16. All Landfill surfaces and working faces shall be graded and operated to minimize rainfall infiltration into wastes, to prevent ponding of water, and to resist erosion.

17. Drainage facilities shall be designed and constructed to accommodate anticipated precipitation and peak surface runoff flows from a 100-year, 24-hour rainstorm event.

18. Storage facilities associated with precipitation and drainage control systems shall be emptied immediately following each storm, or otherwise managed, to maintain the design capacity of the system. A minimum of two feet of freeboard shall be maintained in all storm water/sediment containment ponds.

Design Criteria

19. Waste management units, containment structures and drainage facilities shall be designed and constructed under the direct supervision of a California Registered Civil Engineer or a Certified Engineering Geologist, and shall be certified by that individual as meeting the prescriptive standards and performance goals of all state and federal landfill regulations including, but not limited to, CCR Title 27 and 40 CFR parts 257 and 258, prior to waste discharge.

20. Wastes shall not be discharged to new modules within the Active Landfill Area unless equipped with a containment system, which meets either a. or b. below:
    a. A composite liner and a leachate collection and removal system consisting of the following components:
        - A well-prepared subgrade, engineered to support the Landfill and associated structures.
        - Lower Component: a minimum two-foot layer of compacted soil with a hydraulic conductivity of no more than $1X10^{-7}$ cm/sec:
        - Upper Component: a minimum 60-mils high-density polyethylene (HDPE). The upper component must be installed in direct and uniform contact with the lower component.
        - A Leachate Collection and Removal System (LCRS), designed such that leachate gravity drains to a collection point/sump and is removed through either gravity or pumping to a holding tank or sanitary sewer for volume measurement, testing and disposal.
        - A protective soil layer or operations layer shall be placed above the LCRS and liner system. This layer shall be a minimum of 12 inches thick; or

    b. An engineered alternative liner design, approved by the Executive Officer. Engineered alternative designs must satisfy the performance criteria in 40 CFR Section 258.40(a)(1) and (c), and satisfy the criteria for an engineered alternative to the above Prescriptive Design, as provided by CCR Title 27 Section 20080(b). Performance of the alternative composite liners' components, in combination, shall equal or exceed the waste containment capability of the Prescriptive Design, outlined above.

21. A preferential leachate pathway layer shall be installed between the existing unlined areas and new cells. This layer shall be constructed so that leachate generated in new waste placed over the overlapped side slopes of those unlined areas flows to the lined portion of the Landfill for collection and disposal.

22. The leachate collection and removal system shall:

    - Be designed and constructed to prevent more than 12 inches of static hydraulic head on the liner.
    - Convey to a sump, or other appropriate collection area, all leachate, which reaches the liner. The depth of fluid in any collection sump shall be kept at the minimum needed to ensure efficient pump operation.
    - Be designed so that short and long term system performance can be monitored and evaluated [CCR Tile 27, Section 20340 (d)].

- Storage facilities shall have a secondary containment system sized to hold 110 percent of the primary containment system capacity.
- Be constructed with double lined sump with leak detection capability.

23. Discharge of condensate or leachate shall comply with the following:

    - Liquids returned to only a waste management unit equipped with a containment system that meets or exceeds the performance standards of CCR Title 27, 40 CFR, Part 258.40(a)(2), or in this Order, whichever is more protective of water quality.
    - Liquids measured by volume and recorded on a monthly basis. These monthly volumes shall be included as a part of monitoring submittals as required in MRP R3-2002-0065.
    - No discharge of leachate within 48 hours of any forecasted rain event, during any rain event, or 48-hours after any rain event, unless a site specific Leachate Application Plan acceptable to the Executive Officer, is submitted.
    - Have an approved alternate method of leachate disposal (e.g., wastewater treatment plant) that is acceptable to the Executive Officer.

Closure

24. Areas at final elevations shall receive final cover pursuant to Title 27, Section 21090 which meets either a. or b. below:

    a.
    - Minimum two-foot foundation layer placed over waste, compacted to maximum density obtainable at optimum moisture conditions (CCR Title 27, Section 21090 (a)(1)).
    - For units that have not been equipped with a Subtitle D composite liner system, a low hydraulic conductivity layer, consisting of compacted clay with a hydraulic conductivity of 1X10-6 cm/sec. Compacted clay will not be considered for sites with VOC detections in point of compliance wells. In such cases a geosysnthetic clay layer or geomembrane will be proposed.
    - For units that have been equipped with a Subtitle D composite liner system, a low hydraulic conductivity layer equal to or less than the hydraulic conductivity of the bottom liner system.
    - At least one foot of soil capable of supporting vegetation, resisting erosion, and protecting the underlying low hydraulic conductivity layer.

    b. An engineered alternative design, approved by the Executive Officer, will be considered for final cover areas. Engineered alternative designs must satisfy the performance criteria in 40 CFR Parts 257 and 258, and satisfy the criteria for an engineered alternative to the above Prescriptive Design, as provided by CCR Title 27. Performance of the alternative composite cover's components, in combination, shall equal or exceed the waste containment capability of the prescriptive design, outlined above.

D. WATER QUALITY PROTECTION STANDARDS

1. Discharge of waste shall not cause the concentration of any Constituents of Concern (COC) or Monitoring Parameter to exceed its respective background value in any monitored media (i.e., soil, or groundwater) at any Monitoring Point pursuant to MRP No. R3-2002-0065.

2. Constituents Of Concern and monitoring parameters for groundwater and surface water are listed in MRP No. R3-2002-0065. Monitoring points and background monitoring points for Detection and Corrective Action monitoring shall be those specified in MRP No. R3-2002-0065.

3. The discharge of waste shall not cause a statistically significant difference in water quality over background concentrations or Concentration Limit for each COC or Monitoring Parameter (per MRP No. R3-2002-0065) at the Point of Compliance. The Concentration Limits shall be maintained for as long as the waste poses a threat to water quality. Discharge of waste shall not adversely impact the quality of State waters.

4. Discharge of waste shall not cause a violation of any applicable water quality standard for receiving waters adopted by the Regional Board or the State Water Resources Control Board.

5. Discharge of waste shall not cause concentrations of chemicals and radionuclides in groundwater down-gradient of the point of compliance to exceed the State Department of Health Services latest recommended Drinking Water Action Levels or Maximum Contaminant Levels of the California Code of Regulations Title 22, Division 4, Chapter 15, Article 5.5.

6. The Discharger is responsible for containment of waste and monitoring as long as the waste poses a threat to water quality.

7. The Monitoring Parameters for samples include those listed in the Monitoring and Reporting Program. Monitoring Parameters will be subjected to the most appropriate statistical or non-statistical test, as required by the attached Monitoring and Reporting Program.

8. The Dischargers shall, in a timely fashion, install any additional groundwater, soil pore liquid, soil pore gas, surface water, and leachate monitoring devices as required by the Executive Officer

E. PROVISIONS

General Provisions

1. Order No. 93-51, *Waste Discharge Requirements for Corral De Piedra Land Company and Cold Canyon Landfill, Inc.*, adopted by the Board on July 9, 1993, is hereby rescinded.

2. Two weeks prior to and during construction of each module (e.g., preparing foundation, installing liner, install leachate collection and removal system, placing operations layer, etc.), the Discharger shall provide a schedule of construction activities. Schedules shall be updated on a weekly basis.

3. A Construction Quality Assurance Plan, acceptable to the Executive Officer, must be implemented by a third party (e.g., unrelated to the Discharger, Landfill operator, project designer, contractor) prior to starting construction.

4. Prior to beginning discharge of waste into any newly constructed waste management unit, the Discharger must receive a final site inspection, submit a final construction Quality Assurance report, and receive written permission from the Executive Officer [CCR Title 27, Section 20324(d)(1)(C).]

5. The Discharger shall maintain a copy of this Order at the facility and make it available at all times to regulatory agency personnel and to facility operating personnel (who shall be familiar with its contents).

6. The Discharger shall comply with all other applicable provisions of CCR Title 27 and 40 CFR Parts 257 and 258 that are not specifically referred to in this Order. If any applicable requirements overlap or conflict in any manner, the most restrictive requirement shall govern in all cases, unless specifically stated otherwise in this Order, or as directed by the Executive Officer.

7. The Discharger shall have a continuing responsibility to assure protection of usable waters, from discharged wastes and from gases and leachate generated by discharged waste, during the Landfill's active life, closure, and post-closure maintenance periods and during subsequent use of the property for other purposes.

8. The Discharger shall maintain waste containment facilities and precipitation and drainage controls, and shall continue to monitor, as appropriate, groundwater, vadose zone, liquid and gas, surface waters, and leachate from waste management units throughout the post-closure monitoring and maintenance period.

9. Methane and other landfill gases, generated as a result of waste disposal, shall be adequately vented, removed from the Landfill, or

otherwise controlled to prevent the danger of explosion, adverse health effects, nuisance conditions, and the degradation of water quality.

10. The Regional Board will review this Order periodically and will revise these requirements when necessary.

11. Sewage sludge or water treatment sludge with greater than 50 percent moisture content may be discharged to the waste management unit if all the following criteria are met:
    - Sludge shall be discharged only to lined modules that have a LCRS, designed such that leachate gravity drains to a collection point/sump and is removed through either gravity or pumping to a holding tank or sanitary sewer for volume measurement, testing and disposal.
    - A daily minimum solids-to-sludge ratio of 5 to 1, based on weight, shall be maintained when co-disposing sludge with solid waste.
    - Primary and mixtures of primary and secondary sewage sludge shall contain at least 20 percent solids by weight.
    - Secondary sewage sludge and water treatment sludge shall contain at least 15 percent solids by weight.

Reporting Provisions

12. All technical and monitoring reports submitted pursuant to this Order are being requested pursuant to Section 13267 of the California Water Code. Failure to submit reports in accordance with schedules established by this Order or attachments to this Order, or failure to submit a report of sufficient technical quality to be acceptable to the Executive Officer may subject the Discharger to enforcement action pursuant to Section 13268 of the California Water Code.

13. Discharger shall notify Board staff, within 24 hours by telephone and within seven days in writing, of any noncompliance potentially or actually endangering health or the environment. Any noncompliance which threatens the Landfill's containment integrity shall be promptly corrected. Correction schedules are subject to the approval of the Executive Officer, except when delays will threaten the environment and/or the Landfill's integrity (i.e., emergency corrective measures). Corrections initiated prior to Executive Officer approval shall be so stated in the written report. The written report shall contain a description of the noncompliance and its cause; the period of noncompliance including exact dates and times or anticipated duration; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. This provision includes, but is not limited to:
    - Violation of a discharge prohibition.
    - Violation of any Water Quality Protection Standard.
    - Slope failure.
    - Leachate seep occurring on, or in proximity to, the Landfill.

14. Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any compliance schedule, shall be submitted within 14 days following each scheduled date unless otherwise specified within the Order. A report shall be submitted within 14 days of achieving full compliance.

15. Design reports shall be submitted 180 days in advance of any planned changes in the permitted facility or any activity, which could potentially or actually result in noncompliance.

16. The Discharger shall submit a report of Wet Weather Preparedness. The report shall detail preparedness actions taken to ensure discharges to surface or groundwater do not occur during the impending rainy season, and ensure all other relevant CCR Title 27 and 40 CFR criteria have been implemented. **REPORT DUE DATE:** October 1 yearly

17. The Dischargers shall obtain and maintain Financial Assurance Instruments (Instruments), which comply with CCR Title 27 and 40 CFR parts 257 and 258. The Dischargers shall submit a report every five years that either validates the instrument's ongoing viability or proposes and substantiates any needed changes [e.g., a documented increase in the monitoring systems' ability to provide reliable early detection of a release

can cause a decrease in the Instrument's financial coverage].
REPORT DUE DATE: December 20, 2002.

18. The Discharger shall submit a letter report providing survey coordinates for the edge of Class III Area Boundary (see Figure 2). Survey coordinates shall also be established for the perimeter of each Expansion Area Module.
REPORT DUE DATE:
Active lined and unlined areas- April 15, 2003
Newly lined areas- 30 days after construction of each cell.

19. For the protection of water quality, the Executive Officer may require partial and or final closure of any Waste Management Unit and/or Module regardless of whether the unit has reached final capacity. Such a requirement will be requested in writing and in accordance with CCR Title 27, Section 22190.

20. The Discharger shall submit a Joint Technical Document pursuant to CCR Title 27, Section 21710, to the Executive Officer. The JTD shall contain, but is not limited to, the following:
    - Information on waste characteristics, geologic and climatologic characteristics of the Landfill and the surrounding region, installed features, operation plans for waste containment, precipitation and drainage controls, and closure and post closure maintenance plans, in accordance with CCR Title 27 Sections 21740, 21750, 21760, and 21769.
    - A completed SWRCB JTD Index, in accordance with CCR Title 27, Section 21585(b), with your JTD addendum.
    - A Discussion of whether, in the Discharger's opinion, there is any portion of this Order that is incorrect, obsolete, or otherwise in need of revision.
    - Any technical documents needed to demonstrate continued compliance with this Order and all pertinent State and Federal requirements.
    - Detailed information regarding regulatory considerations; design, construction and operating provisions; environmental monitoring; and closure and post-closure.
    - A Fill Sequencing Plan which includes detailed maps. The Fill Sequencing Plan should describe in detail the overall development of the entire Landfill.
    - A detailed description of the lateral and vertical extent of refuse within all existing Modules. It must include an accurate estimate of waste volumes within each existing Landfill module and an approximation of the remaining volume and years of capacity for each existing module and all new proposed modules within currently permitted Landfill boundaries. It must also describe all existing available space within currently permitted Landfill areas (i.e., modules where refuse has been placed in the past, but have not reached final permitted elevation and modules or portions of modules where refuse has never been placed).
    - A discussion of any plans/proposals to close or partially close any modules or portions of modules, any proposed liner systems and respective design components, any proposed plans for long-term intermediate cover for Landfill areas which may remain inactive for long periods of time.

    REPORT DUE DATE: April 15, 2007

21. The Discharger shall submit to the Regional Board an updated closure and post-closure maintenance plan (Closure Plan). The Closure Plan shall describe the methods and controls to be used to assure protection of the quality of surface and groundwater during partial and final closure operations and during any proposed subsequent use of the land. The Closure Plan shall include:
    - A description of the final cover, designed in accordance with all applicable State and Federal regulations and the methods and procedures to be used to install the cover.
    - An estimate of the largest area of Waste Management Unit requiring a final cover at any time during the active life.
    - An estimate of the maximum inventory of wastes on-site over the active life of the Landfill.
    - A schedule for completing all activities necessary to satisfy all closure criteria as

required by CCR Title 27 and 40 CFR Parts 257 and 258 regulations.

- An estimate of closure and post closure maintenance costs.
- A proposal for a trust fund or equivalent financial arrangement to provide sufficient funding for closure and post-closure maintenance.
- The amount to be deposited in the trust fund or equivalent financial arrangement each year.

The Closure Plan shall be prepared by or under the supervision of a California Registered Civil Engineer or Certified Engineering Geologist. Updates of the plan are required whenever substantial changes occur or five years has elapsed since the last major revision. The method, identified for each Module's closure and protection of the quality of surface and groundwater, shall comply with this Order. The Closure Plan report shall be consistent with all applicable state and federal regulations, including CCR Title 27 and 40 CFR Parts 257 and 258.
REPORT DUE DATE: August 18, 2006

22. The Discharger shall submit a technical report providing the design of liner components for the Expansion Modules. This design report shall include, but is not limited to, all waste containment and design elements included above in **Specification 20**. This report shall also include evaluation of all landfill-siting criteria, including liquefaction potential and elevated groundwater conditions. A proposed schedule for construction activities with real calendar dates shall be included with this report. The liner system design report shall be acceptable to the Executive Officer, prior to installation.
REPORT DUE DATE: 180 Days prior to construction.

23. The Discharger shall submit a technical report providing detailed procedures for leachate collection and removal system testing. This design report shall address the requirements of CCR Title 27, Section 20340 (d). The leachate collection and removal system testing report shall be acceptable to the Executive Officer, prior to implementation.
REPORT DUE DATE: April 15, 2003

24. The leachate collection and removal system shall be tested annually to demonstrate proper operation. The results of the test shall be compared with previous tests and included in the Compliance Report.

25. The Regional Board considers the Discharger to have a continuing responsibility for correcting any problems, which may arise in the future as a result of this waste discharge. This responsibility continues as long as the waste poses a threat to water quality.

26. The Discharger shall notify the Regional Board in writing of any proposed change in ownership or responsibility for construction or operation of the Landfill in accordance with CCR Title 27, Section 21710 (c)(1). Failure to submit the notice in writing shall be considered a violation of §13264 of the Water Code. The written notice shall be given at least 90-days prior to the effective date of change in ownership or responsibility and shall:
    - Be accompanied by an amended Report of Waste Discharge and any technical documents that are needed to demonstrate continued compliance with these Waste Discharge Requirements.
    - Contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Regional Board.
    - Contain a statement indicating that the new owner or operator assumes full responsibility for compliance with this Order.

    Request for change in ownership or responsibility may be approved or disapproved in writing by the Executive Officer. In the event of any change in ownership of this Landfill, the Discharger shall notify the succeeding owner or operator, in writing, of the existence of this Order. A copy of that notification shall be sent to the Executive Officer.

27. At any time, the Discharger may file a written request (including appropriate supporting

documents) with the Regional Board Executive Officer, proposing appropriate modifications to the Monitoring and Reporting Program. The Executive Officer either shall reject the proposal for reasons listed, or shall incorporate it into a revised Monitoring and Reporting Program. The Discharger shall implement any changes in the Monitoring and Reporting Program proposed by the Executive Officer upon receipt of a revised Monitoring and Reporting Program.

28. The Discharger shall notify the Executive Officer at least 180 days prior to beginning any partial or final Landfill closure activities. The notice shall include a statement that all closure activities will conform to the most recently approved Closure Plan and that the Plan provides for closure in compliance with all applicable State and Federal regulations. If there is no approved Closure Plan, the Discharger must submit a complete Closure Plan at least 240 days prior to beginning any Landfill closure activities.

29. The Regional Board shall be allowed, at any time and without prior notification:
    - Entry upon the Landfill or where records must be kept under the conditions of this Order and MRP No. R3-2002-0065.
    - Access to copy any records that must be kept under the conditions of this Order and MRP No. R3-2002-0065.
    - To inspect any facility, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order and MRP No. R3-2002-0065.
    - To photograph, sample, and monitor for the purpose of showing compliance with this Order.

30. Except for data determined to be confidential under Section 13267 (b) of the California Water Code, all reports prepared in accordance with this Order are considered public record and shall be sent to the appropriate contact at the Integrated Waste Management Board and County Environmental Health Department. All report shall be signed as follows:
    - For a public agency - by either a principal executive officer or ranking elected official*.
    - For a partnership or sole proprietorship - by a general partner or the proprietor, respectively*.
    - For a corporation - by a principal executive officer of at least the level of vice president*.
    - For **engineering reports** and monitoring reports- by a California Registered Civil Engineer or Certified Engineering Geologist.

*or their "duly authorized representative."

31. Any person signing a report makes the following certification, whether its expressed or implied:

    "I certify under penalty of perjury I have personally examined and am familiar with the information submitted in this document and all attachments and, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

32. Any person who violates Waste Discharge Requirements and/or who intentionally or negligently discharges waste or causes or permits waste to be deposited where it is discharged into waters of the State is liable for civil and/or criminal remedies, as appropriate, pursuant to Section 13350, 13385, and 13387 of the California Water Code.

33. Provisions of this Order are severable. If any provision of this Order is found invalid, the remainder of this Order shall not be affected.

34. This Order does not authorize commission of any act causing injury to the property of another, does not convey any property rights of any sort, does not remove liability under federal, state, or local laws, and does not guarantee a capacity right.

35. The Discharger must comply with all conditions of these Waste Discharge Requirements. Violations may result in enforcement actions, including Regional Board orders or court orders requiring corrective action or imposing civil monetary

liability, or in modification or revocation of these Waste Discharge Requirements by the Regional Board. [CWC Section 13261, 13263, 13265, 13267, 13268, 13300, 13301, 13304, 13340, 13350].

The Discharger shall comply with the following submittal and implementation schedule for all tasks and/or reports required by this Order:

REPORT AND TASK IMPLEMENTATION DATE SUMMARY

REPORT/TASK	IMPLEMENTATION DATE
Wet Weather Preparedness Report [Provision No. E.16]	**October 1**, of each year
Financial Assurance Report [Provision No. E.17]	**December 20, 2002** and every five years thereafter
Survey Coordinate Report [Provision No. E.18]	**April 15, 2003** for Active lined and unlined areas **30 days** after completion of construction
Joint Technical Document [Provision No. E.20]	**April 15, 2007**
Closure Plan [Provision No. E.21]	**August 18, 2006**
Liner Design Report [Provision No. E.22]	**180 days** prior to construction
Leachate Collection and Removal System Testing Report. [Provision No. E.23]	**April 15, 2003**

I, Roger W. Briggs, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Coast Region, on November 1, 2002.

Executive Officer

Figures: Figure 1 – Vicinty Map
Figure 2 – Site Map & Expansion Areas
Figure 3 – Groundwater Basin Map
Figure 4 – Well & Spring Location Map
Figure 5 – Fault Location Map
Attachment: Attachment A –Monitoring and Reporting Program No. R3-2002-0065

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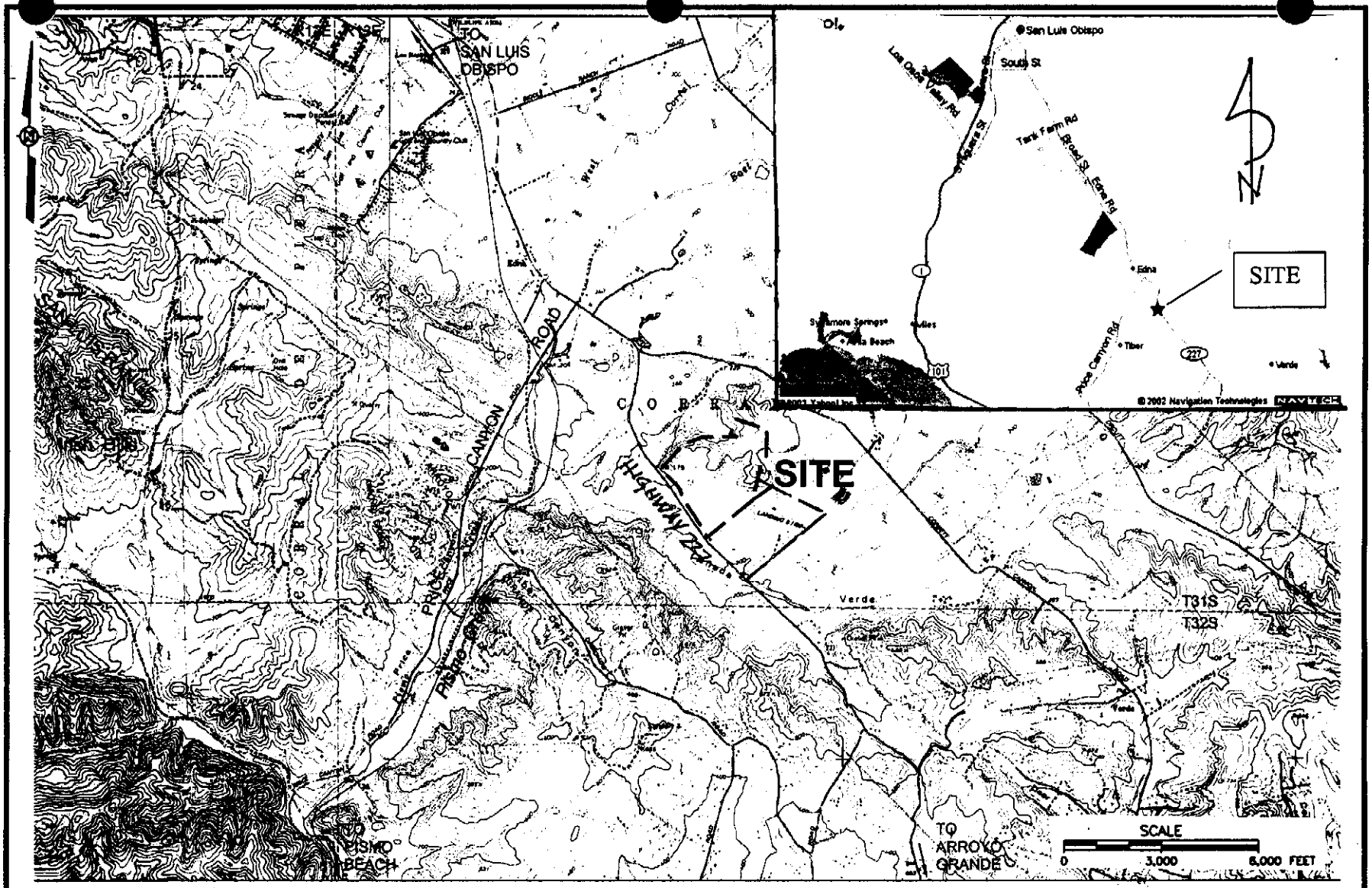

LAND DISPOSAL UNIT
CENTRAL COAST REGIONAL WATER QUALITY CONTROL BOARD

COLD CANYON LANDFILL
COUNTY OF LUIS OBISPO, CALIFORNIA

VICINITY MAP

FIGURE

1

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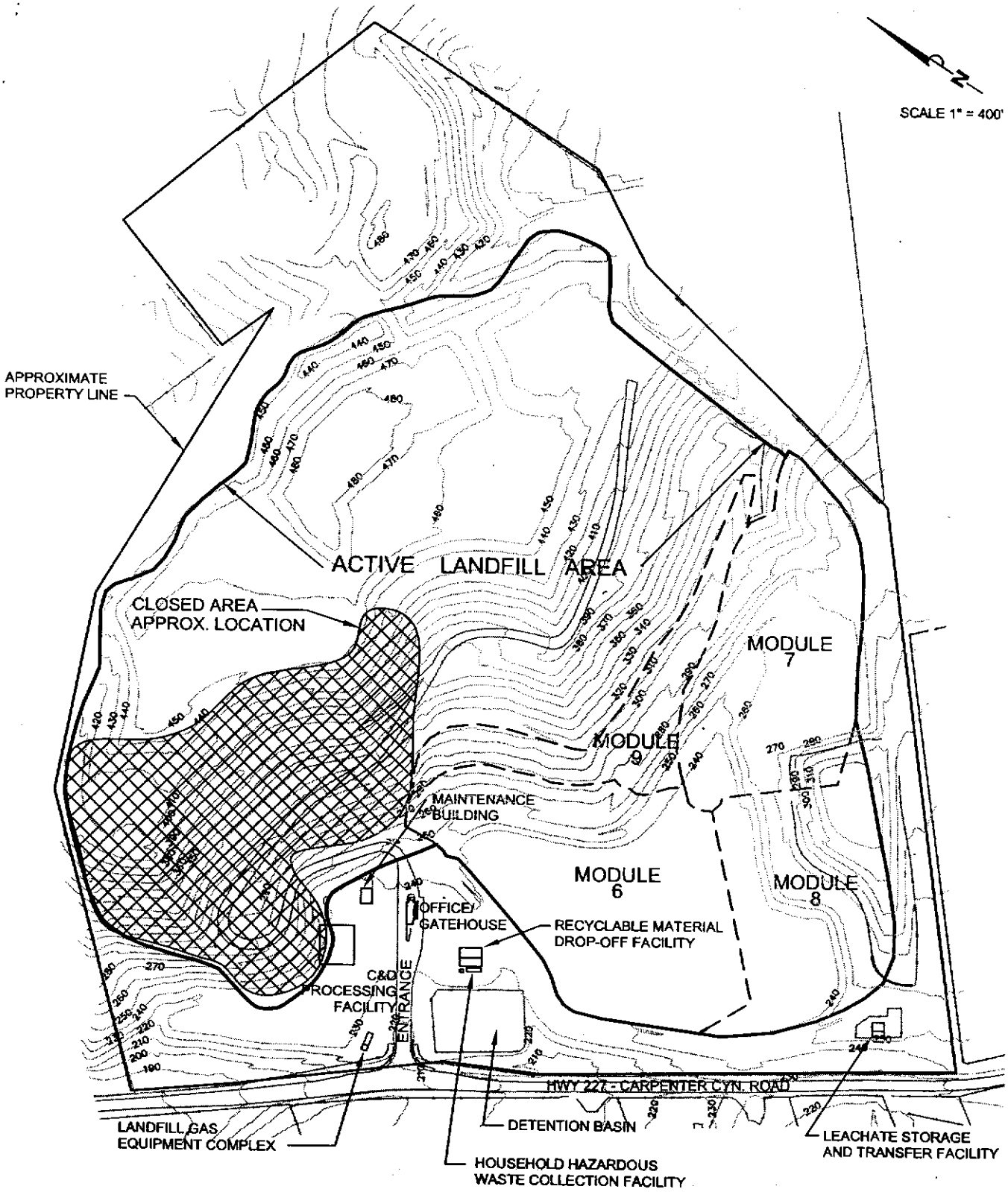

Cold Canyon Class III Landfill
County of San Luis Obispo

SITE MAP & EXPANSION AREAS

FIGURE
2

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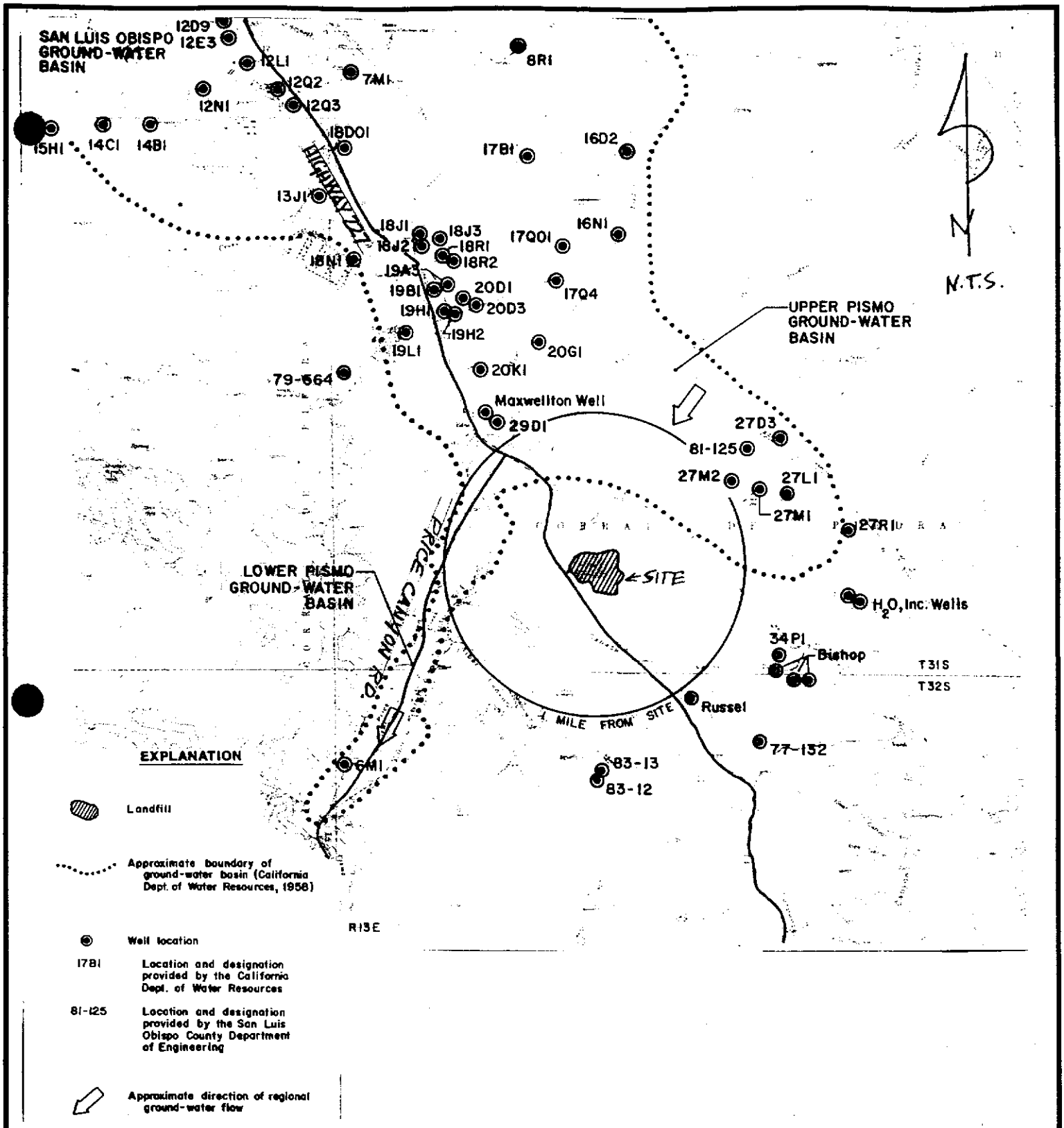

LAND DISPOSAL UNIT
CENTRAL COAST REGIONAL WATER QUALITY CONTROL BOARD

Cold Canyon Class III Landfill
County of San Luis Obispo

GROUNDWATER BASIN MAP

FIGURE 3

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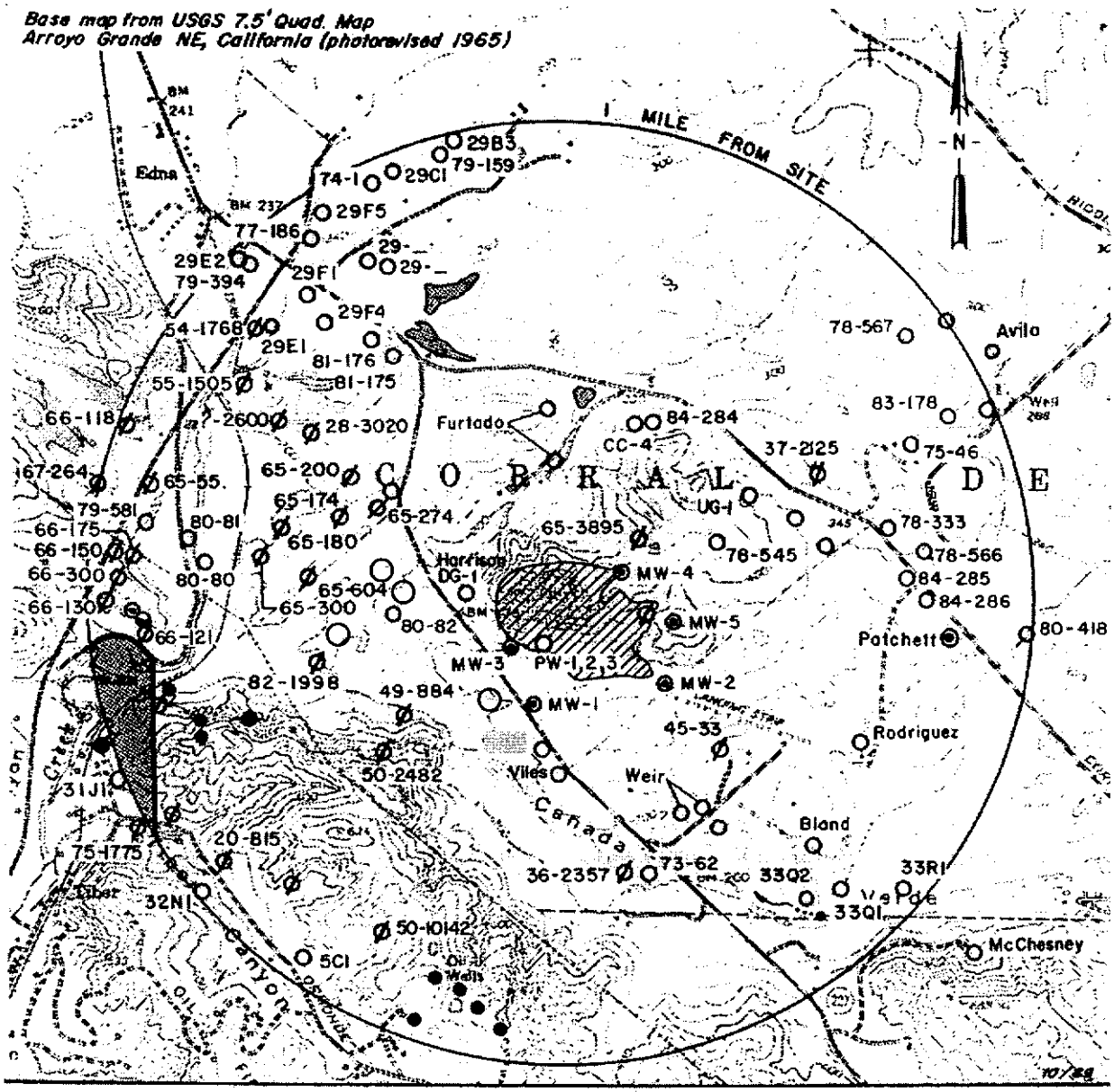

EXPLANATION

- Monitoring well
- Water production well
- 29E1 Designation and location provided by the California Dept. of Water Resources
- 80-82 Designation and location provided by the San Luis Obispo Co. Department of Engineering
- Oil well, active
- Oil well, under construction
- Plugged and abandoned dry hole
- Plugged and abandoned oil well
- All oil well designations and locations provided by the California Dept. of Oil and Gas
- Spring
- Spring-fed pond
- Arroyo Grande Oil Field; shaded area contains 26 active oil wells, 5 wells under construction, and 6 steam injection wells
- Landfill operations

Scale: 0 — 2000 Feet

Cold Canyon Class III Landfill
County of San Luis Obispo

WELL & SPRING LOCATION MAP

FIGURE 4

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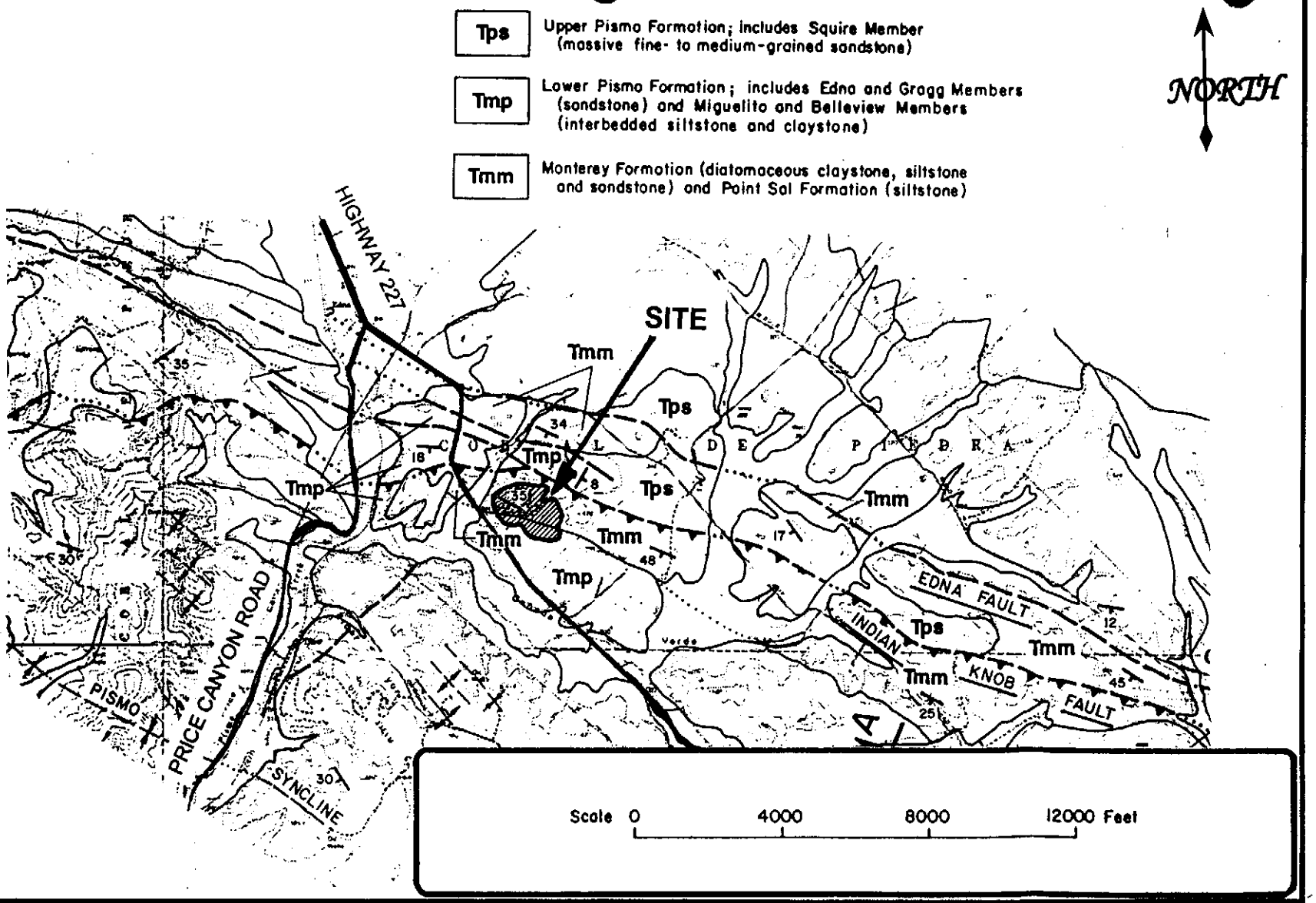

LAND DISPOSAL UNIT
CENTRAL COAST REGIONAL WATER QUALITY CONTROL BOARD

COLD CANYON LANDFILL
COUNTY OF LUIS OBISPO, CALIFORNIA

FAULT LOCATION MAP

FIGURE
5

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STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION
81 Higuera Street, Suite 200
San Luis Obispo, CA 93401-5427

REVISED MONITORING AND REPORTING PROGRAM NO. R3-2002-0065

Waste Discharger Identification No. 3 400310001

FOR

COLD CANYON CLASS III LANDFILL

San Luis Obispo County

PART I: MONITORING AND OBSERVATION SCHEDULE

Unless otherwise indicated, all monitoring and observations shall be reported as outlined in Part IV.

A. SITE INSPECTIONS

The Discharger shall inspect the Landfill in accordance with the following schedule, and record, at a minimum, Standard Observations.

Site Inspection Schedule:

1. During the wet season (October through April), following each storm which produces storm water discharge, with inspections performed at least monthly.
2. During the dry season a minimum of one inspection every three months.

B. INTAKE MONITORING

The Discharger shall maintain a daily record of the waste stream. The record shall include the following:

1. Weight and volume of waste received.
2. Running totals of volume received, volume remaining for waste placement, and Landfill life expectancy.
3. Current fill area.
4. Log of random load checking program. The log shall contain a record of refused loads, including the type of waste refused, and the date, name, address, and phone number of the party attempting to dispose of the waste.

C. LEACHATE AND DRAINAGE SYSTEMS INSPECTIONS

1. The Discharger shall inspect leachate systems and record the following information:
   a. Weekly; leachate containment system integrity, record volume of leachate collected and disposal method used.
   b. Quarterly; pumping system operational check; Annually; leachate collection and removal system testing as required by CCR Tile 27, Section 20340 (d), and an Executive Officer accepted monitoring plan. The absence or presence of biofouling shall be addressed in the inspection report.
   c. At sites where leachate is used for dust control, testing that shows the leachate is non-hazardous shall be submitted annually.

2. The Discharger shall inspect drainage control systems following each Storm and record the following information:

a. Condition of facilities and liners, whether storm storage basins and drainage ditches contain liquids;
b. Any apparent seepage from storage basins.
c. Steps taken to correct any problems found during inspection and date(s) when taken.

D. RAINFALL DATA

The Discharger shall record the following information;

1. Total precipitation during the Monitoring Period.
2. Number of Storms received during Monitoring Period.
3. Return rating of most intense 24 -hour storm (25 year, 100 year, and so on).

E. ANALYTICAL MONITORING

1. Sampling, Analyses, and Reporting Schedule: The Discharger shall monitor the site's media in accordance with the following schedule(s). Monitoring locations are shown on **Figure A-1**. Sampling, analyses, and reporting are also discussed in and shall comply with Parts II, III, and IV.
   a. Detection and Evaluation Monitoring: See Table 2 below.
   b. Constituent of Concern Monitoring: The Constituent of Concern (COC) parameter includes constituents listed in Table 1 below. Monitoring for COC shall encompass only those Constituents of Concern that do not also serve as Monitoring Parameters. Analysis of Constituents of Concern shall be carried out once every five years at each of the site's groundwater monitoring points, unless required more frequently due to indication of release (Part IV.C.4). Wells that have not previously been sampled for COC or not sampled within the past 54 months, shall be sampled and analyzed for all COC within six months of this program becoming effective.

2. Groundwater Flow Rate and Direction:
   For each monitored groundwater body, the Discharger shall measure the water level in each well, at least quarterly, including the times of expected highest and lowest elevations of the water level, and determine the presence of horizontal and vertical gradients, and groundwater flow rate and direction for the respective groundwater body.

3. Sample Procurement Limitation for any given monitored medium, the samples taken from Monitoring Points to satisfy the data analysis requirements for a given Monitoring Period shall be taken within a span not exceeding 30 days, and shall be taken in a manner that ensures sample independence to the greatest extent feasible [CCR Title 27, Section 20415(e)(12)(B)]. Sampling for successive monitoring periods shall occur at least 30 days apart.

Table 1.
Constituents Of Concern

CONSTITUENTS	METHOD[1]	UNITS
Antimony	6010	mg/l
Arsenic	7060	mg/l
Barium	6010	mg/l
Beryllium	6010	mg/l
Cadmium	6010	mg/l
Chromium	6010	mg/l
Cobalt	6010	mg/l
Copper	6010	mg/l
Cyanide	9010	mg/l
Lead	7421	mg/l
Mercury	7470	mg/l
Nickel	6010	mg/l
Selenium	7740	mg/l
Silver	6010	mg/l
Sulfide	9030	mg/l
Thallium	7841	mg/l
Tin	6010	mg/l
Vanadium	6010	mg/l
Zinc	6010	mg/l
Chlorophenoxy Herbicides	8150	µg/l
Organochlorine Pesticides	8081	µg/l
PCBs	8082	µg/l
Organophosphorus Pesticides	8141	µg/l
Semi-Volatile Organic Compounds	8270	µg/l
Volatile Organic Compounds, Appendix II*	8260	µg/l

[1] The Discharger shall analyze for all constituents using the USEPA analytical methods indicated above or the most recently approved SW-846 USEPA method or other equivalent USEPA method.
* Includes MTBE.

TABLE 2
Detection and Corrective Action Monitoring

Sample Location	Monitoring Program			VOC[2] Monitoring Frequency	Inorganic-Parameter[3] Monitoring Frequency
	Detection	Corrective Action	Other		
MW-1*	X			Quarterly	Quarterly
MW-2		X		Quarterly	Semi-Annually
MW-3*	X	X		Quarterly	Semi-Annually
MW-5	X			Quarterly	Quarterly
P-1A			X	Annually (alternating between high and low groundwater)	Annually (alternating between high and low groundwater)
P-1B	X			N/A	Quarterly
P-2			X	Every 3 Years (alternating between high and low groundwater)	Every Three Years (alternating between high and low groundwater)
P-3A*	X	X		Quarterly	Semi-Annually
P-3B	X			N/A	Quarterly
P-4			X	Annually (alternating between high and low groundwater)	Annually (alternating between high and low groundwater)
P-5, P-8, P-9	X			Quarterly	Quarterly
P-6			X	Annually (alternating between high and low groundwater)	Annually (alternating between high and low groundwater)
P-7*	X			Quarterly	Semi-Annually
Sump Lysimeter	X			Yearly (when liquid is present)	Yearly (when liquid is present)
DB-1, HD-1, HD-2	X			N/A	Twice during wet season
COMP-1, RES-1	X			N/A	Twice during wet season
Leachate	X			Yearly (from the tank)	Yearly (from the tank)
LF Gas[1]	X			Annually	N/A

* Wells MW-1,3, P-3A and P-7 are in detection monitoring for VOCs and evaluation monitoring for inorganic parameters, media types are listed on Table 3.

[1] Sample collection port at gas collection system header

[2] Volatile Organic Compounds: USEPA method 8260(b) for groundwater, method TO-14 for landfill gas (or approved EPA method)

[3] **Groundwater** inorganic parameters: Laboratory: chloride, arsenic, manganese, sulfate
Field: pH, EC, temperature, turbidity, dissolved oxygen

Storm Water inorganic parameters:
Laboratory: pH, total suspended solids, EC, and total organic carbon or O&G, iron, turbidity, pesticides (COMP-1 only).

Table 3
Media Monitoring Points

Monitoring Point	Media Monitored
MW-1	Groundwater
MW-2	Groundwater
MW-3	Groundwater
MW-5	Groundwater
P-1A	Groundwater
P-1B	Groundwater
P-2	Groundwater
P-3A	Groundwater
P-3B	Groundwater
P-4 through P-9	Groundwater
DB-1, HD-1, HD-2	Storm Water
COMP-1, RES-1	Storm Water
LF Gas	Landfill Gas
Sump & Lysimeter	Leachate

PART II: SAMPLE COLLECTION AND ANALYSIS

A. SAMPLING AND ANALYTICAL METHODS

Sample collection, storage, and analysis shall be performed according to the most recent version of Standard USEPA Methods (USEPA publication "SW-846"), and in accordance with a sampling and analysis plan acceptable to the Executive Officer. A State of California approved laboratory shall perform water analysis. Specific methods of analysis must be identified. The director of the laboratory whose name appears on the certification shall supervise all analytical work in his/her laboratory and shall sign reports of such work submitted to the Board. In addition, the Discharger is responsible for seeing that the laboratory analysis of samples from Monitoring Points meets the following restrictions:

1. The methods of analysis and the detection limits used must be appropriate for the expected concentrations. For detection monitoring of any constituent or parameter that is found in concentrations which produce more than 90% non-numerical determinations (i.e., Trace) in historical data for that medium, the SW-846 analytical method having the lowest Method Detection Limit (MDL) shall be selected.

2. Trace results (results falling between the MDL and the Practical Quantitation Limit (PQL)) shall be reported as such.

3. Method Detection Limits and Practical Quantitation Limits shall be derived by the laboratory for each analytical procedure, according to State of California laboratory accreditation procedures. Both limits are defined in Part V and shall reflect the detection and quantitation capabilities of the specific analytical procedure and equipment used by the laboratory. If the laboratory suspects that, due to a change in matrix or other effects, the true detection limit or quantitation limit for a particular analytical run differs significantly from the laboratory-derived values, the results shall be flagged accordingly, and an estimate of the limit actually achieved shall be included.

4. Quality assurance and quality control (QA/QC) data shall be reported along with the sample results to which it applies. Sample results shall be reported unadjusted for blank results or spike recovery. The QA/QC data submittal shall include:
   a. The method, equipment, and analytical detection limits.
   b. The recovery rates, an explanation for any recovery rate that is outside the USEPA-specified recovery rate.
   c. The results of equipment and method blanks.
   d. The results of spiked and surrogate samples.
   e. The frequency of quality control analysis.
   f. The name and qualifications of the person(s) performing the analyses.

5. QA/QC analytical results involving detection of common laboratory contaminants in any sample shall be reported and flagged for easy reference.

6. Non-targeted chromatographic peaks shall be identified, quantified, and reported to a reasonable extent. When significant unknown peaks are encountered, second column or second method confirmation procedures shall be performed in an attempt to identify and more accurately quantify the unknown analyte(s).

B. CONCENTRATION LIMIT DETERMINATION

1. For the purpose of establishing Concentration Limits for COC and Monitoring Parameters detected in greater than ten percent of a medium's samples the Discharger shall:
   a. Statistically analyze existing monitoring data (Part III), and propose, to the Executive Officer, statistically derived Concentration Limits for each Constituent of Concern and each Monitoring Parameter at each Monitoring Point for which sufficient data exists.
   b. In cases where sufficient data for statistically determining Concentration Limits does not exist the Discharger shall collect samples and analyze for Constituent(s) of Concern and Monitoring Parameter(s) which require additional data. Once sufficient data is obtained the Discharger shall submit proposed Concentration Limit(s) to the Executive Officer for approval. This procedure shall take no longer than two calendar years.
   c. Sample and analyze new Detection Monitoring Points, including any added by this Order, until sufficient data is available to establish a proposed Concentration Limit for all COC and Monitoring Parameters. Once sufficient data is obtained the Discharger shall submit the proposed Concentration Limit(s) to the Executive Officer for approval. This procedure shall take no longer than two calendar years.

2. The Discharger shall review Concentration limits annually. The past years data will be reviewed for application to revision of concentration limits. When appropriate, new concentration limits shall be proposed.

C. RECORDS TO BE MAINTAINED

Analytical records shall be maintained by the Discharger or laboratory, and shall be retained for a minimum of five years. The period of retention shall be extended during the course of any unresolved litigation or when requested by the Executive Officer. Such records shall show the following for each sample:

1. Identity of sample and the actual Monitoring Point designation from which it was taken, along with the identity of the individual who obtained the sample.
2. Date and time of sampling.
3. Date and time that analyses were started and completed, and the name of personnel performing each analysis.
4. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used.
5. Results of analyses, and Method Detection Limit and Practical Quantitation Limit for each analysis.

PART III: STATISTICAL AND NON-STATISTICAL ANALYSIS OF DATA

A. STATISTICAL ANALYSIS

1. For Detection Monitoring, the Discharger shall use statistical methods to analyze COC and Monitoring Parameters that exhibit concentrations that equal or exceed their respective MDL in at least ten percent of applicable historical samples. The Discharger may propose and use any statistical method that meets the requirements of California Code of Regulations, Title 27, §20414(e)(7). All statistical methods and programs proposed by the Discharger are subject to Executive Officer approval.
2. For wells in Corrective Action, The Discharger shall use the Mann Kendall trend analysis to evaluate changes in inorganic water-quality data or another method acceptable to the Executive Officer.

B. NON-STATISTICAL METHOD

The Discharger shall use the following non-statistical method for analyzing constituents, which are detected in less than 10% of applicable historical samples. This method involves a two-step process:

1. From constituents to whom the method applies, compile a specific list of those constituents, which exceed their respective MDL. The list shall be compiled based on either data from the single sample or in cases of multiple independent samples, from the sample, which contains the largest number of constituents.
2. Evaluate whether the listed constituents meet either of two possible triggering conditions. Either the list from a single well contains two or more constituents, or contains one constituent, which equals or exceeds its Practical Quantitation Limit. If either condition is met, the Discharger shall conclude that a release is tentatively indicated and shall immediately implement the appropriate re-test procedure under Part III.C.

C. RE-TEST PROCEDURE

1. In the event that the Discharger concludes that a release has been tentatively indicated, the Discharger shall carry out the reporting requirements of Part IV.C.2 and, within 30 days of receipt of analytical results, collect two new suites of samples for the indicated COC or Monitoring Parameter(s) at each indicating Monitoring Point, collecting at least as many samples per Monitoring Point as were used for the initial test.
2. Analyze each of the two suites of re-test analytical results using the same statistical method (or non-statistical comparison) that provided the tentative indication of a release. If the test results of either (or both) of the re-tested data suites confirm the original indication, the Discharger shall conclude that a release has been discovered and shall carry out the requirements of Part IV.C.

   Re-tests shall be carried out only for the Monitoring Point(s) for which a release is tentatively indicated, and only for the COC or Monitoring Parameter(s) which triggered the indication. When an analyte of the VOC composite parameter is re-tested the results of the entire VOC composite shall be reported.

PART IV: REPORTING

A. MONITORING REPORT

A written Monitoring Report shall be submitted semi-annually by January 31 and July 31 of each year. Monitoring Reports will be submitted in an electronic format, with text, tables, figures, laboratory analytical data, and appendices placed on a compact disc in PDF or JPEG format. Accompanying the electronic version of the report will be a hard copy transmittal letter, with signatures of preparers and submitters, (in accordance with requirements stated in Waste Discharge Requirements Order No. R3-2002-0065), along with an executive summary of the report text. Additionally, monitoring reports shall be prepared and signed by a registered civil engineer or geologist. The Monitoring Report shall address all Landfill monitoring facts. Reports shall include, but should not be limited to, the following:

1. Letter of Transmittal

A letter transmitting the essential points shall accompany each report. Such a 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. If the Discharger has previously submitted a detailed time schedule for correcting said requirement violations, a reference to the correspondence transmitting such schedule will be satisfactory. If no violations have occurred since the last submittal, this shall be stated in the letter of transmittal. Monitoring reports and the letter transmitting the monitoring reports shall be signed by a principal executive officer at the level of vice president or above, or by his/her duly authorized representative, if such a representative is responsible for the overall operation of the facility from which the discharge originates. The letter shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true, complete, and correct.

2. Sampling Summary

The summary shall contain at least:

a. For each monitored groundwater body, a description and graphical presentation of

the velocity and direction of groundwater flow under/around the Unit, based upon water level elevations taken during the collection of the water quality data submitted in the report.

b. For each monitoring well addressed by the report: a description of the method and time of water level measurement, the type of pump used for purging and the placement of the pump in the well, and the method of purging (the pumping rate, the equipment and methods used to monitor field pH, temperature, and conductivity during purging, the calibration of the field equipment, results of the pH, temperature, conductivity, and turbidity testing, the well recovery time, and the method of disposing of the purge water).

c. For each Monitoring Point and Background Monitoring Point addressed by the report, a description of the sampling procedure (number of samples, field blanks, travel blanks, and duplicate samples taken; the type of containers and preservatives used; the date and time of sampling; the name and qualifications of the person actually taking the samples; description of any anomalies).

3. **Graphical Presentation of Analytical Data**
For each Monitoring Point in each medium, submit, in graphical format, the complete history of laboratory analytical data. Graphs shall effectively illustrate trends and/or variations in the laboratory analytical data. Each graph shall plot a single constituent concentration over time at one (for intra-well comparison) or more (for inter-well comparisons) monitoring points in a single medium. Maximum contaminant levels (MCL) and/or concentration limits shall be graphed along with constituent concentrations where applicable. When multiple samples are taken, graphs shall plot each datum, rather than plotting mean values.

4. **Corrective Action Summary**
Discuss significant aspects of any corrective action measures conducted during the monitoring period. Calculate pollutant load removed from the sites impacted media by mass (water, gas, leachate) removal system(s). Mass removal calculations shall be based on actual analytical data as required by Part I.E. Present discussion and indications relating mass removal data to the violation the corrective action is addressing.

5. **Laboratory Results**
Laboratory results and statements demonstrating compliance with Part II of this Monitoring and Reporting Program. Additionally results of sampling and analyses performed at the Landfill, outside the requirements of this Monitoring and Reporting Program, shall be summarized and reported.

6. **Standard Observations**
A summary and certification of completion of all Standard Observations (Part V.I) for the Landfill, for the perimeter of the landfill, and for the Receiving Waters.

7. **Leachate Collection and Detection Systems**
A summary of the total volume of leachate collected each month since the previous Monitoring Report for the leachate collection.

8. **Map(s)**
A map or aerial photograph showing monitoring locations, relative physical features, and groundwater contours to the greatest degree of accuracy possible.

B. ANNUAL SUMMARY REPORT

The Discharger shall submit an annual report to the Board covering the previous monitoring year. The annual Monitoring Period ends December 31. This report may be combined with the final Monitoring Report of the year and shall be submitted no later than January 31 each year. The annual report must include the information outlined above and the following:

1. **Discussion**
Include a comprehensive discussion of the compliance record, a review of the past year's significant monitoring system and operational changes, a summary of corrective action results and milestones, and a review of construction projects, with water quality significance,

completed or commenced in the past year or planned for the up-coming year.

2. **Graphical Presentation of Analytical Data**
For each Monitoring Point and Background Monitoring Point, submit in graphical format the laboratory analytical data for all samples taken within at least the previous five calendar years. Each such graph shall plot the concentration of one or more constituents over time for a given Monitoring Point or Background Monitoring Point, at a scale appropriate to show trends or variations in water quality. Maximum contaminant levels (MCL) shall be graphed along with constituent concentrations where applicable. Graphs shall plot each datum, rather than plotting mean values. For any given constituent or parameter, the scale for background plots shall be the same as that used to plot downgradient data.

3. **Analytical Data**
All monitoring analytical data obtained during the previous year, presented in tabular form as well as on **CDROM**, in MS-EXCEL format or in another file format acceptable to the Executive Officer. Additionally, complete data histories of each well shall be submitted on **CDROM**.

4. **Leachate Results**
Results of annual leachate collection and leachate detection system testing, as required by Part I.C. Where leachate is used for dust control, testing that shows the leachate is non-hazardous shall be submitted annually.

5. **Map(s)**
A map showing the areas where filling has taken place during the previous calendar year. Indicate areas, if any, in which filling has been completed or intermediate cover has been placed.

C. CONTINGENCY RESPONSE

1. **Leachate Seep**
The Discharger shall, within 24 hours report by telephone concerning the discovery any previously unreported seepage from the disposal area. A written report shall be filed with the Board 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.
   c. **Description** - A description of the nature of the discharge (e.g., all pertinent observations and analyses).
   d. **Location** – Location of sample(s) collected for laboratory analysis, as appropriate.
   e. **Corrective measures** - approved (or proposed for consideration) by the Regional Water Board Executive Officer.

2. **Response to an Initial Indication of a Release**
Should the initial statistical or non-statistical comparison (under Part III. A. or B. of this Monitoring and Reporting Program) indicate that a release is tentatively identified, the Discharger shall;
   a. Within 24 hours, notify their designated Regional Water Board staff contact verbally as to the Monitoring Point(s) and constituents) or parameter(s) involved;
   b. Provide written, notification by certified mail within seven days of such determination; and
   c. Either of the following:
      i. Shall carry out a discrete re-test in accordance with Part III.C. If the re-test confirms the existence of a release or the Discharger fails to perform the re-test, the Discharger shall carry out the requirements of Part IV.C.4. In any case, the Discharger shall inform the Board of the re-test outcome within 24 hours of results becoming available, following up with written results submitted by certified mail within seven days.
      ii. Make a determination, in accordance with Title 27, §20420(k)(7), that a source other than the waste management unit caused the release or that the evidence is an artifact caused by an error in sampling, analysis, or statistical evaluation or by natural variation in the groundwater, surface water, or the unsaturated zone.

3. **Physical Evidence of a Release**
If either the Discharger or the Regional Board Executive Officer determines that there is significant physical evidence of a release Title 27, Section 20385(a)(3), the Discharger shall conclude that a release has been discovered and shall:
   a. Within seven days notify the Regional Water Board of this fact by certified mail (or acknowledge the Regional Water Board's determination).
   b. Carry out the requirements of Part IV.C.4. for all potentially-affected monitored media.
   c. Carry out any additional investigations stipulated in writing by the Regional Water Board Executive Officer for the purpose of identifying the cause of the indication.

4. **Release Discovery Response**
If the Discharger concludes that a release has been discovered the following steps shall be carried out:
   a. If this conclusion is not based upon monitoring for all COC the Discharger shall sample for all COC at all Monitoring Points in the affected medium. Within seven days of receiving the laboratory analytical results, the Discharger shall notify the Executive Officer, by certified mail, of the concentration of all COC at each Monitoring Point. This notification shall include a synopsis showing, for each Monitoring Point, those constituents that exhibit an unusually high concentration.
   b. The Discharger shall, within 90 days of discovering the release, submit an Amended Report of Waste Discharge proposing an Evaluation Monitoring and Reporting Program that;
      i. Meets the requirements of Title 27, §20420 and §20425.
      ii. Satisfies the requirements of 40 CFR §258.55(g)(l)(ii) by committing to install at least one monitoring well at the facility boundary directly downgradient of the center of the release.
   c. The Discharger shall, within 180 days of discovering the release, submit a preliminary engineering feasibility study meeting the requirements of Title 27, Section 20430.
   d. The Discharger shall immediately begin delineating the nature and extent of the release by installing and monitoring assessment wells as necessary to assure that the Discharger can meet the requirements of Title 27, Section 20425 to submit a delineation report within 90 days of when the Executive Officer directs the Discharger to begin the Evaluation Monitoring and Reporting Program.

5. **Release Beyond Facility Boundary**
Any time the Discharger concludes (or the Regional Board Executive Officer directs the Discharger to conclude) that a release from the Unit 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. Initial notification to Affected Persons shall be accomplished within 14 days of making this conclusion and shall include a description of the Discharger's current knowledge of the nature and extent of the release.
   b. Subsequent to initial notification, the Discharger shall provide updates to all Affected Persons, including any persons newly affected by a change in the boundary of the release, within 14 days of concluding there has been any material change in the nature or extent of the release.
   c. Each time the Discharger sends a notification to Affected Persons (under a. or b., above), 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 Affected Persons.

D. RESPONSE TO VOC DETECTION IN BACKGROUND

1. Except as indicated in D.2. below, any time the laboratory analysis of a sample from a Background Monitoring Point shows either (1) two or more VOCs above their respective

Method Detection Limit, or (2) one VOC above its respective Practical Quantitation Limit, the Discharger shall:

a. Within 24 hours, notify the Regional Board by phone that possible Background Monitoring Point contamination has occurred.
b. Follow up with written notification by certified mail within seven days.
c. Shall immediately, obtain two new independent VOC samples from that Background Monitoring Point and send them for laboratory analysis of all detectable VOCs.

2. If either or both the new samples validates the presence of VOC(s), at the Background Monitoring Point, the Discharger shall:
   a. Within 24 hours, notify the Regional Board about the VOC(s) verified to be present at that Background Monitoring Point.
   b. Provide written notification by certified mail within seven days of validation.
   c. Within 180 days of validation, submit a report, acceptable to the Executive Officer, which; examines the possibility that the detected VOC(s) originated from other than the Unit, and proposes appropriate changes to the Monitoring and Reporting Program.

3. If the Executive Officer determines, after reviewing the report submitted under Part IV.D.I. above, that the VOC(s) detected originated from a source other than the Unit, the Executive Officer will make appropriate changes to the Monitoring and Reporting Program.

4. If the Executive Officer determines, after reviewing the report submitted under Part IV.D.I., that the detected VOC(s) most likely originated from the Unit, the Discharger shall assume that a release has been detected and shall immediately begin carrying out the requirements of Part IV.C.4. of this Monitoring and Reporting Program.
   a. Initial notification to Affected Persons shall be accomplished within 14 days of making this conclusion and shall include a description of the Discharger's current knowledge of the nature and extent of the release.
   b. Subsequent to initial notification, the Discharger shall provide updates to all Affected Persons, including any persons newly affected by a change in the boundary of the release, within 14 days of concluding there has been any material change in the nature or extent of the release.
   c. Each time the Discharger sends a notification to Affected Persons (under a. or b., above), 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 Affected Persons.

PART V: DEFINITION OF TERMS

A. AFFECTED PERSONS

All individuals who either own or reside upon the land that directly overlies any part of that portion of a gas- or liquid-phase release that has migrated beyond the facility boundary.

B. CONSTITUENTS OF CONCERN (COC)

Those constituents which are likely to be in the waste in the Unit or which are likely to be derived from waste constituents, in the event of a release. The Constituents of Concern for this Unit are listed in Part I.E.3, Table A.

C. FACILITY-SPECIFIC METHOD DETECTION LIMIT (METHOD DETECTION LIMIT)

The lowest concentration at which a given laboratory, using a given analytical method, to detect a given constituent, (in spite of any Matrix Effect) can regularly differentiate, with 99% reliability, between a sample which contains the constituent and one which does not.

D. MATRIX EFFECT

Any increase in the Method Detection Limit or Practical Quantitation Limit for a given constituent as a result of the presence of other constituents, either of natural origin or introduced through a release, that are present in the sample being analyzed.

E. MONITORED MEDIUM

Water bearing media that are monitored pursuant to this Monitoring and Reporting Program. The Monitored Media may include: (1) groundwater in the uppermost aquifer, in any other portion of the zone of saturation in which it would be reasonable to anticipate that waste constituents migrating from the Unit could be detected, and in any perched zones underlying the Unit, (2) any bodies of surface water that could be measurably affected by a release, and (3) soil pare liquid beneath and/or adjacent to the Unit.

F. MONITORING PARAMETERS

A short list of constituents and parameters used for the majority of monitoring activity. The Monitoring Parameters for this Unit are listed in Part I.E of this Monitoring and Reporting Program.

G. MONITORING PERIOD

The database duration separating the submittal of a monitoring report and the time of the next report submittal. The Monitoring Period for analysis of all Constituents of Concern is five years; the monitoring frequencey for the monitoring parameters is stated in Table 1 above. Monitoring of static water level elevations, in all monitoring wells will be performed quarterly. Report submittal dates are **July 31** and **January 31**. The due date for any given report will be 30 days after the end of its Monitoring Period, unless stated otherwise.

H. PRACTICAL QUANTITATION LIMIT (PQL)

The lowest acceptable calibration standard (acceptable as defined for a linear response or by actual curve fitting) times the sample extract dilution factor times any additional factors to account for Matrix Effect. The PQL shall reflect the quantitation capabilities of the specific analytical procedure and equipment used by the laboratory. PQLs reported by the laboratory shall not simply by restated from USEPA analytical method manuals. Laboratory derived PQLs are expected to closely agree with published USEPA estimated quantitation limits (EQL).

I. STANDARD OBSERVATIONS

1. For Receiving Waters;
   a. Floating and suspended materials of waste origin; presence or absence, source, and size of affected area.
   b. Discoloration and turbidity - description of color, source, and size of affected area.
   c. Evidence of odors - presence or absence, characterization, source, and distance of travel from source.
   d. Evidence of beneficial use - presence of water-associated wildlife.
   e. Flow rate to the receiving water.
2. Along the perimeter of the Unit:
   a. Evidence of liquid leaving or entering the Unit, estimated size of affected area, and flow rate (show affected area on map).
   b. Evidence of odors; presence or absence, characterization, source, and distance of travel from source.
   c. Evidence of erosion and/or of exposed refuse.
   d. Inspection of all storm water discharge locations for evidence of non-storm water discharges during dry seasons, and integrity during wet seasons.
3. For the Unit:
   a. Evidence of ponded water at any point on the waste management facility (show affected area on map).
   b. Evidence of odors; presence or absence, characterization, source, and distance of travel from source.
   c. Evidence of erosion and/or of daylighted refuse.
   d. Compliance with Storm Water Pollution Prevention Plan, insuring that the terms of the general permit are properly implemented.
   e. Integrity of all drainage systems.

J. RECEIVING WATERS

Any surface water which actually or potentially receives surface or groundwaters which pass over, through, or under waste materials or contaminated soils.

K. VOLATILE ORGANICS COMPOSITE MONITORING PARAMETER FOR WATER (VOCwater)

VOCwater, a composite parameter that encompasses a variety of VOCs. The constituents addressed by the **VOCwater** Composite Monitoring Parameter include all VOCs detectable using USEPA Method 8260, including at least all 47 VOCs listed in Appendix I to 40 CFR 258, MTBE and all unidentified peaks.

L. RECEIVING WATERS

Any surface water which actually or potentially receives surface or groundwaters which pass over, through, or under waste materials or contaminated soils.

ORDERED BY: _____
Executive Officer

DATE: 11/1/02

Figure: Figure A-1 Monitoring Point Location Map

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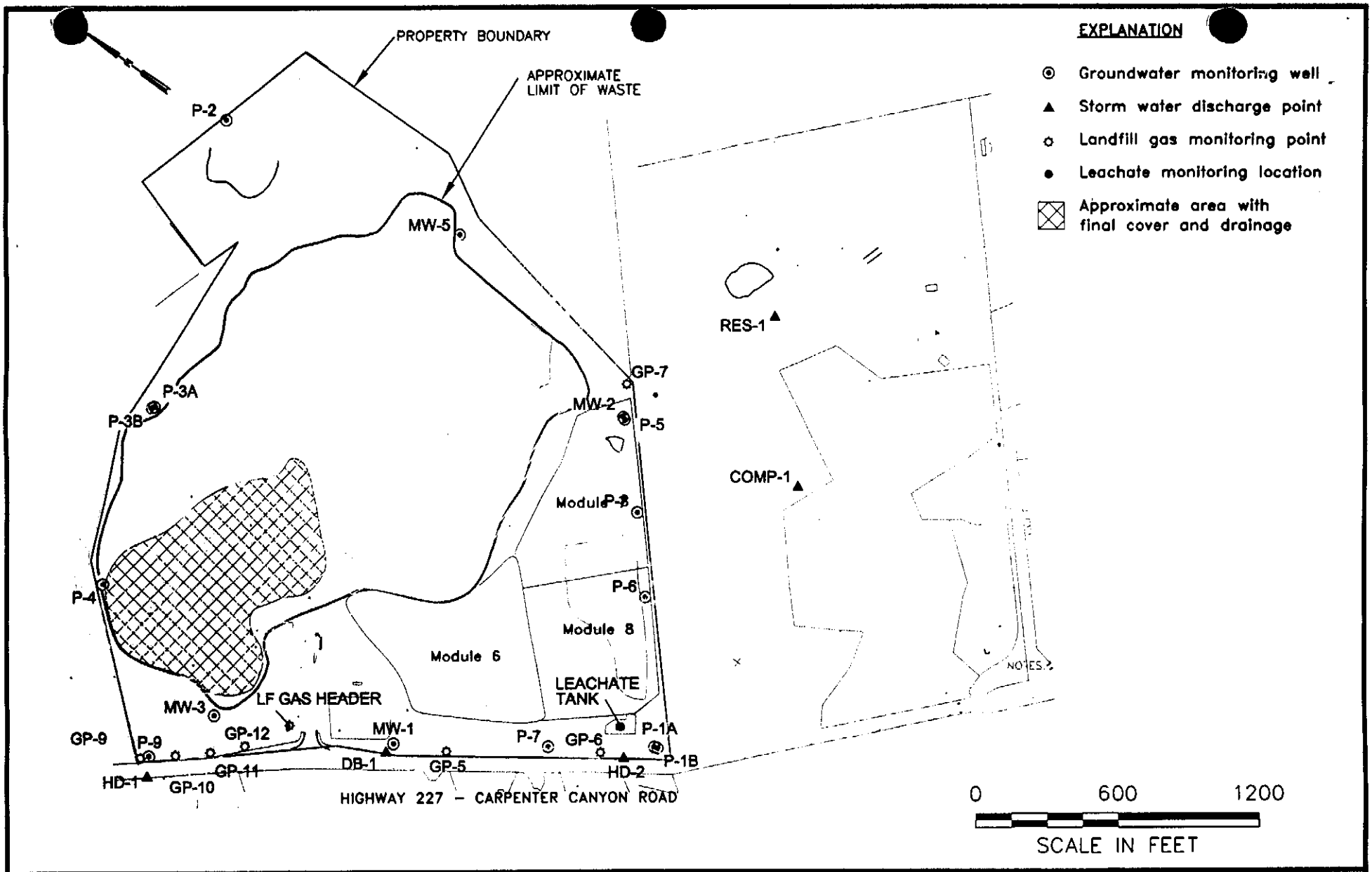
10/1/02 8:00 am



LAND DISPOSAL UNIT
CENTRAL COAST REGIONAL WATER QUALITY CONTROL BOARD

COLD CANYON LANDFILL
COUNTY OF LUIS OBISPO, CALIFORNIA

MONITORING LOCATION MAP

FIGURE
A-1

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