

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

**STAFF REPORT FOR REGULAR MEETING OF DECEMBER 3, 2004**

**ITEM: 15**

**SUBJECT: Renewal of National Pollutant Discharge Elimination System Permit Order No. R3-2004-0124 for Casmalia Resources and the Casmalia Resources Site Steering Committee, Santa Barbara County**

**KEY INFORMATION**

Location:	NTU Road, Casmalia, Santa Barbara County, CA 93429
Type of Discharge:	Industrial
Design Capacity:	500 Gallons/minute maximum
Current Capacity:	N/A
Potential Treatment:	Filtration, precipitation, reverse osmosis
Disposal:	Sludges, spent carbon, brine
Reclamation:	On-site irrigation, dust control, construction
Existing Orders:	Order No. 99-034 and other orders related to previous active disposal operations and unresolved remediation efforts.

**SUMMARY**

The purpose of National Pollutant Discharge Elimination System (NPDES) Permit Order No. R3-2004-0124 (**Order No. R3-2004-0124 or "Order"**) is to provide flexibility for Site water management by allowing controlled discharges from the Site in the event storm water retention ponds fill to capacity. No off-site discharges have been needed to maintain pond water levels, due to on-site water uses and low to average rainfall since 1999. The Casmalia Resources Site Steering Committee (CSC) or (**the Discharger**) requested that the existing Order be renewed to maintain Site water management options.

The Regional Board originally permitted this discharge by adopting Order No. 99-034 in November 1999. That permit was modified in April 2002 to incorporate water quality standards contained in the California Toxics Rule (CTR). The former Casmalia Resources Hazardous Waste Management Facility (**Site**) in Santa Barbara County no longer accepts waste and is the subject of extensive remediation activities.

Staff updated Proposed Order No. R3-2004-0124 to include United States Environmental Protection Agency's (U.S. EPA) latest standards for whole effluent toxicity (WET) testing to ensure protection of aquatic life. Staff also changed the WET chronic toxicity testing standard from 100 percent to 25 percent effluent to be consistent with the 25 percent discharge limitation to Casmalia Creek. This means the testing solution will be 25 percent effluent with 75 percent standardized laboratory testing water. The change is consistent with U.S. EPA's revised WET testing methodologies and representative of discharge conditions which limit the contribution of the discharge to 25 percent of creek flow. The 100 percent effluent standard applied to acute toxicity testing remains unchanged and is consistent with U.S. EPA's testing requirements.

A finding was also added citing the issuance of a general permit for managing storm water discharges associated with industrial activities (**General Permit**). The General Permit covers discharges from recently capped landfills where storm water is segregated using engineering controls to prevent contact with pollutants. All other provisions of proposed renewed Order No.

R3-2004-0124 remain the same as found in the previous Order.

## BACKGROUND

The CSC is the current operator implementing investigation and cleanup activities at the Site under U.S. EPA's oversight. The CSC is a consortium of companies who previously disposed of waste at the Site. Under a U.S. EPA Consent Decree, Civil Number 96-6518KWM, dated June 3, 1997, the CSC is responsible for certain remedial measures.

Title documents cite Casmalia Resources as the property owner. Casmalia Resources did not apply for an NPDES permit; however, Casmalia Resources is named on Order No. R3-2004-0124 as the owner of the facility, as required by law.

Five ponds exist at the Site, including Pond 18 and Pond A-5, which both received groundwater treatment plant effluent (use of Pond A-5 has been discontinued), Pond 13, RCF Pond, and A-Series Pond. All are used for storing storm water runoff.

Regional Board staff deemed a site-specific NPDES permit appropriate to allow and regulate the discharge because:

- a) Site constituents have been detected in pond waters above water quality objectives.
- b) Storm water runoff outside the capped landfill area commingles with wastes previously disposed of on-site.
- c) Groundwater and surface water ponds are hydraulically interconnected.
- d) Full identification and delineation of waste sources in soil and groundwater has not been completed; therefore Site constituents have a reasonable potential to be in storm water runoff and exceed State water quality standards.
- e) Storage capacities of the ponds are limited and pond berms may destabilize thus causing an uncontrolled off-site discharge.
- f) Pond 18 receives groundwater treatment plant effluent and has limited storage capacity. High water levels and potential berm instability (especially during the wet winter season) could cause pond failure resulting in uncontrolled discharges to the adjacent RCF Pond.

- g) Anticipated expansion of groundwater collection, treatment, and discharge may result in the need for additional discharge options including an off-site discharge to reduce accumulated water prior to wet seasons.
- h) Landfill leachate collection and treatment may require additional discharge options, including off-site discharge to manage on-site water balance.

Currently, all Site water is collected in the five ponds described above. Highly contaminated groundwater/leachate from the Gallery Well and other collection features is shipped off-site for treatment and disposal. Sources of on-site water include storm water runoff, groundwater, groundwater seeps, springs, and effluent discharges from the groundwater treatment plant.

Since the adoption of Order No. 99-034 on November 19, 1999, no discharges have occurred from the Casmalia Site. A provision of proposed Order No. R3-2004-0124 requires the Discharger to utilize on-site water to the maximum extent practicable. This requirement satisfied comments received from the community of Casmalia. The probability of an NPDES discharge is reduced by on-site water uses and low early rainfall. On-site water uses include soil moisture conditioning for construction projects such as the landfill caps, irrigation, dust suppression, and near surface misting to enhance evaporation.

In September 2003, the Discharger applied for and was enrolled in a General Permit for managing storm water discharges from recently-capped landfills. This area of the Site consists of 45 acres where the Discharger constructed engineered low-permeability landfill covers to prevent rainwater infiltration into underlying wastes. Storm water from the area is segregated from the rest of the facility by engineering controls, thus preventing it from contacting Site wastes. Landfills included in the storm water runoff area are the Pesticides/Solvents Landfill, Heavy Metals Landfill, Caustic Cyanide Landfill, and Acids Landfill (Attachments B, C, and D).

Only high quality water can be discharged from the Site under proposed Order No. R3-2004-0124 and the Discharger must demonstrate compliance with Order provisions prior to discharging to Casmalia Creek (the receiving water). The

discharge volume will be limited to 25 percent of the flow of Casmalia Creek to prevent in-stream erosion and the discharge outfall will include an engineered dispersion structure.

Total volume of the discharge will vary seasonally, but the Discharger estimates between 10 and 30 million gallons could be discharged to reduce pond water volumes to acceptable levels. On-site water management and total rainfall are the main factors affecting potential discharges.

## SITE HISTORY

The Casmalia Site received hazardous waste from 1973 to 1989. The Site is located in northern Santa Barbara County immediately north and east of Vandenberg Air Force Base, and approximately eight miles southwest of Santa Maria (Attachment A of proposed Order No. R3-2004-0124). The NPDES discharge location to Casmalia Creek is also depicted on Attachments A and D of proposed Order No. R3-2004-0124.

The Regional Board regulated the facility until U.S. EPA took over regulatory authority for the Site in 1992. Pre-existing Regional Board orders remain in place, but in deference to U.S. EPA's Consent Decree, these Orders have not been implemented nor enforced since U.S. EPA assumed lead agency responsibility.

During facility operations, liquid and solid wastes disposed at the Site ranged from heavy metals to organic solvents, pesticides, polychlorinated biphenyls, petroleum hydrocarbon and oil field wastes, and minor quantities of miscellaneous wastes. Historically, the Site contained numerous surface impoundments that were subsequently excavated under Regional Board orders and placed into four of six on-site landfills based on waste category (Attachment B of proposed Order No. R3-2004-0124). Five of the six landfills exist today (the sixth was excavated and placed into one of the remaining landfills). These remaining landfills are the primary focus of recent remedial efforts including the installation of final covers (Attachment C of Order No. R3-2004-0124). Groundwater contamination containment, identification and delineation of waste sources, and landfill leachate collection and control are key long-term remedial action measures. These on-

going efforts are occurring under a U.S. EPA lead multi-agency coordination effort.

In 1992, the U.S. EPA conducted emergency response actions to stabilize deteriorating Site conditions. One problem was high water levels in the RCF Pond and A-Series Pond (the two largest storm water ponds). These ponds are remnants of past surface impoundment excavation activities and have become storm water runoff collection ponds. Prior to the winter of 1995/1996, the two ponds filled to near capacity and overflow was imminent. To mitigate the emergency situation, the U.S. EPA began discharging storm water runoff to Casmalia Creek under a General Permit. The discharge was not treated and monitoring information indicated trace levels of chlorinated organic constituents and the presence of elevated minerals and salts in pond water discharged to Casmalia Creek. The discharge was a one-time event to manage an emergency situation resulting from high water levels in the storm water ponds, and also to prevent a catastrophic failure and uncontrolled release of the ponds to Casmalia Creek and Schuman Creek.

U.S. EPA in conjunction with the United States Fish and Wildlife Service (U. S. FWS) performed pre- and post-discharge surveys of Casmalia Creek and Schuman Creek to assess potential impacts of the discharge on water quality, biological resources, and two species listed as "Threatened" or "Endangered" pursuant to the Federal Endangered Species Act. U.S. EPA in conjunction with the U. S. FWS published its findings in a report dated July 1996. Based on the survey methods applied, the two agencies concluded that the discharge had no adverse impacts to water quality, biological resources, and the two Threatened or Endangered Species (California Red Legged Frog and the Tidewater Goby).

## GENERAL SITE INFORMATION

The Site consists of the following main features: (Attachment C of proposed Order No. R3-2004-0124.)

- a) Five hazardous waste landfills; four recently capped.
- b) Seven burial cells.

- c) Eleven injection wells.
- d) A leachate collection well and sump, monitoring wells, and associated appurtenances.
- e) Series of groundwater collection trenches.
- f) A system for partial treatment of contamination in extracted groundwater.
- g) Five ponds (described previously) with storm water runoff and groundwater treatment plant discharges.

#### **Regulatory Status and Authority**

U.S. EPA currently has lead regulatory responsibility for on-site activities at the Site. U.S. EPA is supervising the Discharger's investigation of site-wide contamination pursuant to a Federal Consent Decree. Currently, the regulatory roles of the Regional Board and the Department of Toxic Substances Control are limited. The State agencies inspect the Site, review technical reports, and consult with U.S. EPA and Discharger regarding Site activities. The State agencies are also working with U.S. EPA to ensure enforcement of State "applicable or relevant and appropriate requirements" during the implementation of investigation and remediation activities pursuant to the Consent Decree.

The Regional Board is the lead agency for regulating off-site discharges under the Federal Clean Water Act. The Discharger is required to monitor their compliance and submit self-monitoring reports pursuant to proposed Order No. R3-2004-0124, and the Regional Board has primary enforcement authority for violations. U.S. EPA also has enforcement authority for NPDES permit discharges pursuant to the Federal Clean Water Act. Regional Board staff will provide notice regarding enforcement activities to the Department of Toxic Substances Control and U.S. EPA.

An important requirement of proposed Order No. R3-2004-0124 is that the Discharger shall minimize discharges to Casmalia Creek to the extent feasible (Provision D. 1). In an effort to comply with this provision, the Discharger must give priority to on-site water uses to maintain and manage pond water levels. These uses include dust control, moisture conditioning for construction soil, and irrigation to promote evaporation.

Resources agencies with regulatory oversight responsibility for sensitive species that have been documented in the on-site ponds have established an interim maximum allowable pond draw down rate of four inches per week. Although the Discharger has not maximized on-site water uses to meet the draw down rate, four of the five ponds are at historic low water levels, with the A-Series Pond being the exception. To achieve compliance with Provision D. 1 of the proposed Order, Regional Board staff continue to recommend to U.S. EPA that they require the Discharger to maximize on-site water use options.

#### **Groundwater Characteristics**

Site hydrogeology is complex. A general description is given for purposes of this staff report. As a result of numerous investigations, three groundwater zones have been identified. These include from surface to depth:

- a) Alluvium
- b) Upper hydrostratigraphic unit
- c) Lower hydrostratigraphic unit

Alluvium occurs discontinuously across the surface and varies in thickness from a few feet to approximately 15 feet. The alluvium is composed of weathered claystone that has been re-deposited over time by surface water flows. The upper hydrostratigraphic unit has been characterized as highly weathered and fractured claystone, while the lower hydrostratigraphic unit has been characterized as unweathered claystone with fewer fractures relative to the upper unit. The weathered and unweathered claystone at the Site and surrounding area have been faulted and folded by tectonic stresses; thus, regional fractures would influence groundwater movement at the Site. Upper and lower groundwater zones exist within the weathered and unweathered claystone, which are composed of marine depositional formations. As a result, groundwater contains many naturally occurring salts and minerals.

Groundwater contamination has resulted from leachate discharges from the landfills and burial cells and previous disposal activities. Depth to groundwater is highly variable. Some areas of the Site have springs and seeps; while in other areas groundwater occurs at various depths within the alluvium (0 to 10 feet) and upper and lower hydrostratigraphic units (10 feet to 200 feet). Hydrologic characterization of the Site occurred

during active disposal operations. Further characterization and groundwater monitoring continue as required by the Consent Decree.

Groundwater recharge occurs from Casmalia Creek during extended dry periods. Thus, the proposed Order contains provisions for maintaining the beneficial uses of groundwater. Groundwater supply wells exist within a quarter mile off-site downstream of the discharge and immediately adjacent to Casmalia Creek, and Casmalia Resources installed numerous monitoring wells on-site during disposal operations. The Discharger is also implementing on-going investigation activities that include sampling and analysis of monitoring wells.

Designated beneficial uses of groundwater in the area include:

- a. Municipal and domestic water supply.
- b. Agricultural water supply.
- c. Industrial water supply.

#### **Physical Characteristics, Ground Slope, Soil Type, And Land Use**

The Site and the discharge location in Casmalia Creek are situated south of the Casmalia Hills and north of the town of Casmalia. Steep to gently sloping topography typifies the area, with valleys generally oriented northwest-southeast. Soil type consists of weathered marine sedimentary rocks. Land use in the area is primarily agricultural and cattle production. Oil production occurs off-site and to the north and east of the discharge location.

#### **Proximity To Neighbors**

The Town of Casmalia is located approximately one mile south of the discharge and the Site. The City of Santa Maria and the unincorporated area of Orcutt are located approximately eight and five miles northeast of the Site, respectively. Other towns north and east of the Site include Tanglewood, Betteravia, and Guadalupe. Vandenberg Air Force Base is immediately west and south the Site.

### **DISCUSSION (Basis for existing Order)**

Casmalia Creek is named as the receiving water for the proposed discharge. Casmalia Creek and the Site are located in the San Antonio groundwater basin. Casmalia Creek is a coastal

tributary stream situated in moderately steep, rolling topography. Intense, episodic rainfall is typical in the watershed. As a result, Casmalia Creek is subject to highly variable flow rates resulting from a short rainfall to runoff period. The Casmalia Creek watershed near the proposed discharge is primarily open grassland with some oak trees, and is used for cattle grazing. Grazing practices have lead to watershed impacts including soil erosion, stream bank deterioration, deeply incised creek channel, and pollution from animals and animal wastes entering the creek.

#### **Discharge Description**

The proposed discharge to Casmalia Creek is located west of the Site at 120 degrees 32' 39" West, and 34 degrees 51' 42" North (Casmalia Quadrangle, California, Santa Barbara County), (Attachments A and D of Order No. R3-2004-0124). Discharge Specifications include numeric and narrative water quality based effluent limits for organic and inorganic constituents. The point of compliance is the "end of pipe" prior to entering Casmalia Creek. This was developed because in-stream dilution was not included in establishing effluent limits. Compliance with receiving water limitations based on Basin Plan water quality objectives will require in-stream monitoring for pH, dissolved oxygen, turbidity, temperature, chemical and biological oxygen demand, and creek flow.

Treatment technologies typically used to remove organic constituents from water can include air-stripping, sorption with activated carbon, and biological treatment. Treatment technologies used to reduce inorganic constituents from water can include:

- a) Flocculation, pH adjustment; precipitation, and sedimentation.
- b) Reverse osmosis;
- c) Ultra-filtration; and/or
- d) Ion exchange.

These treatment technologies can be used in conjunction to meet discharge specifications.

The Discharger has proposed using reverse osmosis as the preferred treatment technology to meet numeric effluent limits for three inorganic parameters in the surface water ponds. These parameters include nickel, selenium, and total dissolved solids (TDS). The driver for treatment is

TDS because technologies used to reduce TDS will simultaneously reduce metals. TDS are higher in concentration than metals; therefore, any reduction in TDS will also reduce metals to meet water quality based effluent limits.

Organic constituents have been detected in pond water. To meet effluent limits the Discharger has proposed using activated carbon to remove organic constituents prior to discharging to Casmalia Creek.

### **Prohibitions**

The Order contains discharge prohibitions from the Basin Plan. The main prohibitions are listed below:

- a) No discharges to Casmalia Creek except those authorized pursuant to proposed Order No. R3-2004-0124;
- b) No discharge of Site-related organic constituents;
- c) No discharge of radioactive substances;
- d) No discharge of bioaccumulatory substances;
- e) No discharge of toxic substances;
- f) No creation of a condition of pollution or nuisance;
- g) No degradation of the beneficial uses of water.

### **Sources of Requirements and Rationale for Effluent Limits**

Federal regulations governing the Federal and State NPDES permit program require that permits contain effluent limitations for all pollutant parameters that:

“...may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality. (40 CFR sec. 122.44 (d)).”

Many types of hazardous wastes were disposed at the Site including inorganic and organic elements and compounds. It is likely that a variety of these wastes have reached the five ponds. Therefore, an NPDES permit is needed for a discharge to Casmalia Creek from the ponds.

Due to the numerous inorganic and organic pollutants already detected in the five on-site ponds, there is a reasonable potential for these wastes to be discharged to Casmalia Creek in concentrations that could cause an excursion

above State water quality standards. To ensure this will not occur, proposed Order No. R3-2004-0124 contains numeric effluent limitations and prohibitions in accordance with 40 CFR section 122.44(d).

In order to ensure the discharge will not cause an excursion above State water quality standards and comply with Water Code section 13263 and 13377, effluent limitations must implement water quality objectives in the Basin Plan and CTR. These include the anti-degradation policy, numeric water quality objectives, and narrative water quality objectives.

### **ANTI-DEGRADATION POLICY**

Federal regulations require State water quality standards to include an anti-degradation policy that is consistent with Federal policy (40 CFR sec. 131.12). The State Board established California's anti-degradation policy in State Water Resources Control Board Resolution 68-16 (Resolution 68-16), which is deemed to incorporate the requirements of the Federal anti-degradation policy. Resolution 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specified findings. Degradation can be permitted only if the Regional Board finds all of the following:

- a) The change will be consistent with maximum benefit to the people of the State;
- b) The change will not unreasonably affect present and anticipated beneficial uses;
- c) The change will not result in water quality less than that prescribed in water quality policies (note this includes narrative and numeric water quality objectives in water quality control plans).

If the Regional Board makes these findings, the NPDES permit regulating the discharge must require the best practicable treatment or control be applied to the discharge necessary to ensure that:

- a) A pollution or nuisance will not occur; and
- b) The highest water quality consistent with maximum benefit to the people of the State will be maintained.

First, Resolution 68-16 requires no degradation of ambient receiving water conditions. Second, the

policy does permit some flexibility for discharge standards if appropriate findings are made. Third, it does not allow degradation to a degree that will unreasonably affect present or anticipated beneficial uses or cause a condition of nuisance.

### **NUMERIC WATER QUALITY OBJECTIVES**

For certain constituents, it may be necessary to set effluent limits above ambient water quality in the receiving water. On the other hand, it may be necessary to impose effluent limits more stringent than the receiving water in order to protect beneficial uses. When establishing effluent limitations, numeric water quality objectives in the Basin Plan and CTR should be considered first.

The Basin Plan and CTR contain numeric water quality objectives for specific constituents with the purpose of protecting specified beneficial uses. If there are several different numeric objectives for one constituent for the purpose of protecting several different beneficial uses, the most protective effluent limit will be implemented as the numeric water quality objective.

Proposed Order No. R3-2004-0124 contains CTR numeric effluent limits for metals. Most of these limits are calculated based on hardness of the effluent. There has been no discharge since adoption of the original Order and thus, establishing CTR numeric effluent limits based on receiving water monitoring was not applicable. Calculated limits establish allowable concentrations for metals in the effluent prior to entering Casmalia Creek (the receiving water). This compliance objective is anticipated to be protective given the low hardness expected in the effluent (i.e., lower hardness values correspond to lower numeric effluent limits for metals) coupled with the high hardness naturally occurring in the receiving water. As an additional safeguard, proposed Order No. R3-2004-0124 requires comparison of receiving water hardness and effluent hardness. The lowest hardness value must then be used in calculating numeric effluent limits to ensure compliance with water quality standards.

### **NARRATIVE WATER QUALITY OBJECTIVES**

Federal regulations require NPDES permits to contain effluent limitations for every pollutant that

may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative water quality objectives. If there is a risk of violation of a narrative water quality objective, the Regional Board must develop numeric effluent limits that will ensure achievement of that objective.

Applicable U.S. EPA regulations provide the permitting authority with three options when developing numeric effluent limitations to implement a narrative objective. These include establishing effluent limitations with the following methods:

- a) Using a calculated numeric criterion for the pollutant.
- b) On a case-by-case basis using EPA's water quality criteria established under Clean Water Act section 304, supplemented where necessary by other relevant information.
- c) On an indicator parameter for the pollutant of concern (40 CFR sec. 122.44(d)(1)(vi)).

### **EFFLUENT LIMITATIONS BASED ON THE ANTI-DEGRADATION POLICY**

Effluent limits for organic constituents, TDS, and sediments are based primarily on the anti-degradation policy in Resolution 68-16.

**Organic Constituents**

Since organic pollutants found in pond waters do not naturally occur in Casmalia Creek and its watershed, no discharge of these constituents is permitted. The Discharger has proposed removing all organic constituents from the discharge. This means no detectable organic constituents will be found in the discharge. Some examples of organic constituents include trichloroethylene (TCE), acetone, tetrachloroethylene (PCE), methylene chloride, benzene, 1, 2-dichloroethylene (1, 2-DCE), and vinyl chloride. Best available technology can be readily implemented for removing organic contaminants from the discharge. For proposed Order No. R3-2004-0124, analytical methods are used to assess compliance for removal of organic constituents.

Organic constituents generally fall into categories with similar physical and chemical properties. Treatment technologies have been developed based on the shared properties of broad classes of organic constituents. These technologies have been employed on a large scale at sites similar to the Casmalia Site to efficiently and effectively remove organic constituents from water. The same treatment technologies can be easily applied for treating the proposed discharge at the Site. Therefore, there is a high level of confidence that treatment will ensure that the discharge will comply with the effluent limits requiring no detectable quantities of organic constituents.

**Total Dissolved Solids (TDS)**

TDS is present in the five ponds at concentrations exceeding background water quality in Casmalia Creek and groundwater. This is due to evaporative enrichment of the ponds since the last discharge in 1995, as described previously.

The local geology surrounding Casmalia Creek is naturally high in salts causing high background concentrations of TDS in groundwater and surface water. Additional contribution of TDS to the Casmalia Creek watershed occurs from soil erosion, stream bank deterioration and collapse, and reduced riparian habitat related to cattle grazing, stream channel alterations, and previous land modifications from crop production. Grading in tributaries of Casmalia Creek and in Casmalia Creek, along with streambed alterations, placement of fill material in the creek, and destruction of riparian habitat, further contribute to

Casmalia Creek's water quality impairment. Regional Board staff have observed heavy turbidity in Casmalia Creek on four occasions during rainfall events as a result of the above described disturbances in the watershed. Turbidity was also observed during non-rainfall periods, which further indicates the extent of watershed disturbance from cattle.

The 1,000 parts per million (1,000 mg/l) TDS numeric effluent limit was established below the average background concentration of 2,000 mg/l. This limit is based on best professional judgment to prevent the discharge from contributing to further water quality degradation in Casmalia Creek. The TDS effluent limitation is more stringent than ambient water quality since ascertaining background conditions with degraded water quality is difficult. The numeric effluent limit provides a margin of safety to protect against further degradation. The established numeric effluent limit for TDS also corresponds with the upper limit of the California Secondary Maximum Contaminant Level for taste and odor beneficial use protection. This is further explained below in the section titled *Narrative Objective For Taste and Odor*.

**Sediment Discharge Caused by Erosion**

To ensure the discharge does not cause erosion and increased sediment loading to Casmalia Creek, the proposed Order contains erosion prevention requirements. The contribution of the discharge is limited to 25 percent or less of the total flow of Casmalia Creek. The flow contribution limitation was established to prevent stream bank erosion during high creek flow conditions.

The other erosion prevention measure requires the discharge to be initiated slowly by increasing the flow rate over a 24-hour period until the calculated discharge rate is achieved. The discharge will be phased out over a 10-day period to address aquatic life protection. The flow of Casmalia Creek will be monitored weekly to determine the rate of allowable discharge under proposed Order No. R3-2004-0124. The flow restriction was determined using professional judgment to implement the anti-degradation policy.

**ANTI-DEGRADATION FINDINGS**



Before adopting an NPDES permit authorizing discharges of pollutants that exceed existing receiving water quality, Resolution 68-16 requires the Regional Board to make findings including the following elements:

- a) The highest water quality consistent with maximum benefit to the people of the State will be maintained;
- b) The change in water quality will not unreasonably affect present and anticipated beneficial uses or create a condition of pollution or nuisance;
- c) The change will not result in water quality less than that prescribed in water quality control plans and policies;
- d) The NPDES permit regulating the discharge requires the best practicable treatment or control be applied to the discharge necessary to ensure all of the above.

As noted above, proposed Order No. R3-2004-0124 provides that no organic constituents may be discharged, and there will be no increase in existing TDS and sediment levels in Casmalia Creek due to the discharge. However, the proposed Order contains effluent limitations for inorganic constituents (metals and ammonia) that are based on Basin Plan and CTR numeric and narrative water quality objectives rather than background.

While many of these inorganic constituents exist in the receiving water, there is not sufficient information available to ascertain background levels, with confidence. Also, the background levels may exceed water quality objectives. Therefore, effluent limits are established in the proposed Order based on protection of beneficial uses rather than background concentrations. Consequently, the proposed Order could allow some limited degradation of the receiving water, but not in excess of water quality standards.

Finally, the entire discharge would be treated with technology designed to reduce TDS. A treatment system that reduces TDS will also reduce inorganic pollutants. It is highly probable that the levels of inorganic constituents in the discharge will be lower than the numeric effluent limitations.

The proposed Order also recognizes that due to causes that cannot be completely eliminated in

advance, the discharge may be toxic, although the receiving waters are not. This could result in some degradation of receiving waters. However, the risk of toxicity has been minimized by stringent effluent limitations for individual pollutants. The high level of treatment required to reduce TDS further reduces the risk of toxicity. Finally, the effluent limitations and Monitoring and Reporting Program for toxicity will reduce this risk to insignificant levels.

The proposed Order also contains an effluent limitation for odor in the discharge. This parameter addresses prevention of nuisance and should not have any impact on beneficial uses. Because of the wide variety of chemicals discharged at the Site, it is impossible to predict what odor causing constituents may be in the discharge. Therefore some odor may be unavoidable.

These minimal risks of degradation are consistent with the maximum benefit to the people of the State because the discharge is unavoidable since storm water at the Site must be disposed of to maintain the ponds and prevent catastrophic releases. The discharge as regulated by proposed Order No. R3-2004-0124 will accomplish that by imposing stringent discharge specifications and effluent limits. Furthermore, the high level of treatment proposed by the Discharger will likely provide protection in addition to that required by the proposed Order.

As explained below in the discussion of effluent limitations based on numeric and narrative water quality objectives, effluent limitations will ensure:

- a) Water quality plans and policies compliance;
- b) The discharge will not unreasonably affect beneficial uses or create a condition of nuisance;
- c) The highest water quality consistent with maximum benefit to the people of the state will be maintained;
- d) The best practicable treatment and controls will be required to ensure compliance.

#### **EFFLUENT LIMITATIONS BASED ON NUMERIC WATER QUALITY OBJECTIVES**

The Basin Plan designates beneficial uses for receiving waters and establishes water quality objectives to protect those beneficial uses. Effluent limitations based on Basin Plan and CTR water quality objectives are protective of those uses. In some cases, water quality objectives for a constituent may vary for protection of different beneficial uses. In those cases, the effluent limitations implement the most stringent water quality objective for the beneficial uses of the receiving water. For example, most CTR objectives are calculated using hardness of the effluent or receiving water (whichever is lower) and as such, the calculated CTR objective may be less stringent than a Basin Plan objective. In this instance, the more stringent Basin Plan numeric objective would apply to the discharge to protect the beneficial uses of the receiving water.

The beneficial uses of Casmalia Creek as designated in the Basin Plan include:

- a) Municipal and domestic supply;
- b) Agricultural supply;
- c) Groundwater;
- d) Water contact recreation;
- e) Non-contact water recreation;
- f) Commercial and sport fishing;
- g) Warm freshwater habitat;
- h) Wildlife habitat; and
- i) Spawning, reproduction, and/or early development.

In addition to the beneficial uses designated in the Basin Plan, effluent limitations must be established to protect actual beneficial uses observed in the receiving water but not designated in the Basin Plan. There are two species listed pursuant to the Endangered Species Act located in the watershed receiving the proposed discharge. Therefore, findings were included in proposed Order No. R3-2004-0124 to recognize the "rare" beneficial use located in the watershed.

#### **NARRATIVE WATER QUALITY OBJECTIVES**

There are some constituents in the discharge for which there are no numeric water quality objectives in the Basin Plan and CTR. There are others for which the Basin Plan and CTR establish numeric water quality objectives to protect one or more beneficial uses, but not all the beneficial uses present in the receiving water. In both these cases, proposed Order No. R3-2004-0124 establishes

effluent limitations based on narrative water quality objectives that protect the applicable beneficial uses.

#### **Narrative Objective for Toxicity**

The narrative toxicity objective requires:

"All waters shall be maintained free of toxic substances in concentrations which are toxic to, or which produce detrimental physiological responses in human, plant, animal, or aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, toxicity bioassays of appropriate duration, or other appropriate methods as specified by the Regional Board."

Because the discharge has a reasonable potential to exceed this State water quality objective, proposed Order No. R3-2004-0124 contains whole effluent toxicity limits for acute and chronic toxicity. Acute whole effluent toxicity is: "survival of test organisms exposed to 100 percent effluent shall not be significantly reduced when compared to the survival of control organisms, using a t-test based on 99 percent confidence limits." The daily maximum acute toxicity limit is "Pass" which means no allowable acute toxicity. The chronic whole effluent toxicity limit is 4.0 TUC as a maximum daily limit. This means there shall be no observable adverse effects to test organisms exposed to 25 percent effluent. Compliance with acute and chronic whole effluent toxicity limit will be assessed using the following U.S. EPA promulgated test methods contained in:

- a) *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, October 2002* (EPA/821-R-02-012; or latest promulgated U.S. EPA methodology); and
- b) *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, October 2002* (EPA/821-R-02-013, 2002; or latest promulgated U.S. EPA methodology).

These manuals contain whole effluent toxicity test methods nationally approved in 40 Code of Federal Regulations, Part 136 for NPDES permit compliance monitoring. Compliance with these whole effluent toxicity limits will ensure

excursions above the narrative toxicity objective in the Basin Plan do not occur while protecting warm freshwater habitat and endangered species.

#### **Narrative Objective for Taste and Odor**

The Basin Plan narrative objective for taste and odor provides:

“Waters shall not contain taste or odor-producing substances in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, that cause nuisance, or that adversely affect beneficial uses.”

This water quality objective is not health-based, but is based on aesthetics. To implement this objective, proposed Order No. R3-2004-0124 imposes effluent limits for certain constituents based on State Secondary Maximum Contaminant Levels. Secondary Maximum Contaminant Levels are established to protect the aesthetic quality of drinking water including taste and odor. Effluent limitations for iron, manganese, sulfate, and TDS are based on Secondary Maximum Contaminant Levels for this purpose. There is also an effluent limit specifically for odor that is based on a State Secondary Maximum Contaminant Level.

#### **Protection of Threatened and Endangered Species**

In Schuman Creek, which receives water from Casmalia Creek, the Discharger and previous biological studies have documented two aquatic species listed as “Threatened” and “Endangered” pursuant to the Endangered Species Act. These include the California Red Legged Frog (Threatened) and Tidewater Goby (Endangered). The Endangered Species Act requires that there is no “taking” of listed species except as authorized by an “incidental take” statement issued in connection with a biological opinion of the U. S. Fish and Wildlife Service. In other words, the discharge shall not cause any chronic or acute toxicity to the listed species. To protect the threatened and endangered species habitat beneficial use of the Casmalia Creek watershed, proposed Order No. R3-2004-0124 must include provisions to ensure none of these animals or their habitat will be injured by the discharge.

Regional Board staff consulted the United States Fish and Wildlife Service and the California Department of Fish and Game to ascertain if the subject species were especially sensitive to any pollutants. Both the United States Fish and

Wildlife Service and the California Department of Fish and Game were unable to answer this question because site-specific research to determine sensitivity cannot be done without injuring these animals, and thus violating the Endangered Species Act.

While there is no data regarding sensitivity of these species to pollutants, the requirements of proposed Order No. R3-2004-0124 are stringent enough to prevent injury of these species by the discharge. Riparian habitat will be protected from the discharge by the erosion prevention requirements. Adverse impacts due to pollutants will be prevented by the stringent effluent limitations based on non-degradation and water quality objectives protective of aquatic habitat. The high level of treatment by the Discharger should provide additional protection. Finally, the stringent toxicity testing and reporting requirements will provide protection against both acute and chronic toxicity in the discharge.

#### **MONITORING AND REPORTING PROGRAM**

The monitoring and reporting program is designed to assess compliance with proposed Order provisions for water quality standards.

A key provision of the program is pond water level monitoring to comply with the “action level” requirements under Provision G. 4 and 5 of proposed Order No. R3-2004-0124. The Discharger is required to demonstrate compliance with all provisions prior to discharging once the A-Series and RCF Ponds collectively reach five feet of freeboard. Pre-discharge monitoring and reporting requires demonstrating compliance with numeric, narrative, and WET water quality objectives to ensure protection of beneficial uses in Casmalia Creek. These requirements were implemented and adopted by the Regional Board to address concerns from the public and State and Federal resource agencies.

Minimum allowable freeboard is two feet to provide a margin of safety for maintaining all ponds. The Discharger has estimated that under worst-case weather conditions, the difference between the five feet action level and two feet freeboard would provide approximately 30 days to

implement the pre-discharge compliance demonstration.

The Discharger, at their discretion, may implement the pre-discharge compliance demonstration prior to the ponds reaching the five feet action level by initiating full-scale treatment and monitoring pursuant to the monitoring and reporting program. Such a situation might occur if continued heavy rainfall is forecast and the ponds are filling faster than the Discharger had anticipated.

Analyses for organic compounds, inorganic compounds, and WET will be required before and during a discharge. Given the low probability of a discharge and the intermittent nature of a discharge, the monitoring and reporting program has been developed to be self-executing as described above with the pond action level requirement.

Weekly effluent sampling is required during discharges and daily sampling of the effluent is required when certain water quality objectives are exceeded in the effluent or if the discharge violates water quality objectives. Pursuant to proposed Order No. R3-2004-0124, the Discharger is required to correct water quality violations. Effluent monitoring includes comprehensive suites of analytical parameters that include all constituents of potential concern at the Site. Any constituents that have been detected in pond water or groundwater are also analyzed in the effluent to ensure the treatment systems are operating efficiently. Additionally, continuous monitoring of the effluent flow rate is required during effluent discharges. The discharge rate will be adjusted to meet the 25 percent flow limitation to Casmalia Creek.

In addition to water quality sampling and analyses, the monitoring and reporting program requires the Discharger to monitor WET on a monthly basis during a discharge event to ensure aquatic life protection. WET testing of the effluent begins prior to planned discharges to verify compliance with the acute and chronic toxicity objectives. WET testing will also begin with a discharge to Casmalia Creek and then continue monthly thereafter. One hundred percent survival and a "no observable effect concentration" are required. If toxicity is detected, proposed Order No. R3-

2004-0124 requires the Discharger to perform the following steps:

- a) An accelerated re-testing schedule to verify initial toxicity findings;
- b) Implementation of a "Toxicity Reduction Evaluation Workplan;" a plan designed to identify and eliminate toxicity in the effluent; and
- c) Reduce the toxicity of the discharge to comply with effluent limits.

Test species will be used for WET testing, one for acute toxicity and three for chronic toxicity. The three test species used are considered indicators to assess potential toxicity of the effluent. Since the measure of toxicity in the effluent will likely be caused by unknown toxicants, the only way for staff to assess the range of sensitivities of standardized test species is to test a number of different species from different taxonomic groups.

The WET testing requirements in proposed Order No. R3-2004-0124 are consistent with U.S. EPA's promulgated testing methods, supporting guidance, and technical documents. In general, U.S. EPA considers it unnecessary to test resident species since standard test species have been shown to represent the sensitive range of all ecosystems analyzed. WET testing is designed to determine the protectiveness of the effluent discharge for 95 percent of surface water species nationwide, 95 percent of the time.

The last major component of monitoring includes in-stream monitoring during a discharge for the following parameters:

- a) Chemical and biochemical oxygen demand;
- b) Flow of Casmalia Creek upstream of the discharge;
- c) Dissolved oxygen;
- d) pH;
- e) Temperature; and
- f) Turbidity.

These parameters are necessary because the Basin Plan's requires maintenance of receiving water quality during a discharge. Monitoring will take place 50 feet upstream and downstream of the discharge to ensure compliance with receiving water limitations. The exception is measuring creek flow. Flow will be measured upstream of

the discharge and used to calculate the allowable 25 percent discharge rate.

The Discharger is required to notify the Executive Officer in the event of non-compliance with proposed Order No. R3-2004-0124 including:

- a) Toxicity;
- b) Unauthorized discharges; and/or
- c) Exceedance of effluent limitations.

#### **Reporting Schedule**

The Discharger is required to submit annual water quality assessment reports for discharge events. In addition to submittal of routine self-monitoring reports, non-compliance reporting is also required immediately following violation(s) pursuant to proposed Order No. R3-2004-0124. The Discharger must submit all monitoring reports to the Regional Board, the U.S. EPA, the United States Fish and Wildlife Service, the Department of Toxic Substances Control, the County of Santa Barbara; and other interested agencies upon request.

The reporting schedule is as follows:

- a) Annual reports are due by July 31<sup>st</sup> each year;
- b) Monthly reports are due within 30 days following the reporting period;
- c) Weekly reports are also due within 30 days following the reporting period;
- d) Weekly pond water level measurements are due within five days of measurement;
- e) Daily reporting is required within 24 hours of data collection;
- f) Casmalia Creek and discharge flow rate reports are due within five days following each month of collected data; and
- g) The Pre-Discharge Compliance Assessment Reports are due not less than five days prior to a discharge.

#### **NEED TO PERMIT CONTROLLED DISCHARGES**

To prevent emergency discharges, short-term and long-term water management is needed for the on-site ponds to ensure their structural integrity, safety, and effective management in the event high water levels result from accumulated runoff and groundwater infiltration. A site-specific NPDES permit is an integral part of effective Site water management.

Regional Board staff have determined proposed Order No. R3-2004-0124 is a prudent short and long-term tool for managing Site water balance. Without a site-specific NPDES permit to effectively manage pond water levels through a controlled and regulated discharge, pond structures may fill to capacity and overflow in an uncontrolled manner. Also, maintaining adequate pond freeboard is essential to maintaining the structural integrity of pond berms from seismic failure, inundation, overflow, and potential catastrophic washout.

#### **ENVIRONMENTAL SUMMARY**

This project is exempt from provisions of the California Environmental Quality Act (Public Resources Code Section 2100 et seq.) pursuant to Section 13389 of the California Water Code.

#### **COMMENTS AND RESPONSES**

##### **Casmalia Resources Site Steering Committee (CSC) Letter and Data Package**

1. The CSC requested a change to the monitoring and reporting program to remove the requirement for monitoring and reporting of annual rainfall and flows in Casmalia Creek during periods of no discharge. The CSC has collected and submitted data pursuant to the previously adopted Order, which was used for estimating potential discharge volumes under various creek flow conditions and discharge rates.

Staff Response: Monitoring and Reporting Program No. R3-2004-0124 has been modified to remove provisions requiring annual reporting of rainfall data and creek flow data when no discharges occur. Provisions for monitoring creek flow during discharges remain unchanged.

2. The CSC provided an analysis of projected discharge volumes using flow data from Casmalia Creek and assumptions regarding treatment capacity and hours of discharge.

Staff Response: Staff has evaluated the CSC's data and conclusions and offers the following comments:

- a) The intent of Order No. R3-2004-0124 is to allow for continuous discharge of water from the Casmalia Site.

- b) The monitoring and reporting program is designed for continuous discharge.
- c) The discharge is limited to 25 percent of the flow of Casmalia Creek.
- d) The Order allows discharges under variable creek flow conditions above and below the 1,000 gallons per minute minimum criteria used by the CSC in their analyses for estimating discharge volumes.

**Department of Toxic Substances Control (DTSC) Letter**

1. DTSC requested updates to the figures to be consistent with the figures in the June 2004 Remedial Investigation/Feasibility Study (RI/FS) Work Plan approved by U.S. EPA.

Staff Response: Attachment A is a United States Geological Services Topographic Quadrangle, Photorevised in 1982. This figure was used to show the site location in relation to the main surface water drainages, including Casmalia Creek and Schuman Creek. Attachments B, C, and D remained the same as the purpose of those figures was to show general site features pertinent to the NPDES discharge including the five ponds, groundwater extraction features and locations of the landfills and other features described in Order No. R3-2004-0124.

2. DTSC indicated that titles to portions of land around the Casmalia Site have been transferred and recommended that Finding 3 be modified to reflect the changes.

Staff Response: Staff deleted reference to the title from Finding 3 given the complex nature of the changes in land ownership and lease arrangements that have occurred adjacent to the Site since the original Order was adopted in 1999. Land use around the Site remains the same and therefore the description of land use in Finding 3 was not unchanged.

3. DTSC requested that the description of Pond 13 be modified to indicate that the pond is unlined, similar to the descriptions of the RCF and A-Series Ponds.

Staff Response: The finding was modified to include the description of the pond as being unlined.

4. DTSC provided correction to Finding 9 regarding influent sources to the on-site groundwater treatment system.

Staff Response: Finding 9 was changed to reflect the correct sources of influent to the treatment system by deleting reference to the Perimeter Control Trenches (PCTs). Groundwater pumped from the PCTs is discharged to the RCF Pond and A-Series Pond.

5. DTSC requested that Finding 10 include reference to two new areas where non-aqueous-phase liquids have been detected since the time Order was adopted and last modified.

Staff Response: Finding 10 was modified to include reference to the two piezometers installed in 2000 where non-aqueous-phase liquids were detected.

6. DTSC noted that in addition to the two species listed as Threatened and Endangered in Finding 25, three protected species have been observed in or around on-site ponds, including the Western Spade Footed Toad, the Two-Striped Garter Snake, and the Coast Horned Lizard.

Staff Response: The purpose of Order No. R3-2004-0124 is to protect off-site aquatic species in the receiving water. However, the on-site species noted by DTSC were listed in Finding 25 as having special protection status under California Department of Fish and Game regulations in Title 14 of the California Code of Regulations. Staff acknowledges that these species may use the on-site ponds and possibly Casmalia Creek. However, in the absence of promulgated water quality standards specific to those three species, no additional requirements were added to Order No. R3-2004-0124. It should be noted that U.S. EPA's promulgated whole effluent toxicity testing requirements are designed to be highly protective of aquatic species as noted throughout the Staff Report and Order.

7. DTSC suggested that Finding 30 refer to an updated Attachment C with respect to the capped landfill areas.

Staff Response: Finding 30 was modified to include reference to the original Attachment C. As noted above in response to DTSC comment 1, the original simplified figures remain in Order R3-2004-0124 to facilitate ease of reader use in identifying general site features related to the permit.

8. DTSC provided correction to the name of the work plan being implemented by the CSC.

Staff Response: Finding 31 was corrected to read: Remedial "Investigation"/Feasibility Study instead of reading Remedial "Action"/Feasibility Study.

9. DTSC requested that the term "TUc" defined in Finding 40.

Staff Response: Finding 40 was changed to indicate the meaning of "TUc" as "Toxicity Units chronic." The TUc water quality standard is defined in Section C.4 of Order No. R3-2004-0124 and establishes toxicity compliance parameters for the discharge.

10. DTSC stated that Finding 41, like Finding 25 (See comment 6 above), lists only two of five protected species. The comment also noted that that the Endangered Species Act is cited while the State's Fish and Game Code under Title 14 of the California Code of Regulations are not included and are more protective of the three species that are not listed in Finding 41; i.e. the Western Spade Footed Toad, the Two-Striped Garter Snake, and the Coast Horned Lizard.

Staff Response: The purpose of Order No. R3-2004-0124 is to protect off-site aquatic species in the receiving water. The on-site species noted by DTSC were not listed Finding 41, but were acknowledged in finding 25 as noted above in response to comment number 6. Staff acknowledges that these species may use the on-site ponds and possibly Casmalia Creek and Schuman Creek. However, in the absence of promulgated water quality standards specific to those three species, no additional requirements were added to Order No. R3-2004-0124. It should be noted that U.S. EPA's promulgated whole effluent toxicity testing requirements are designed to be protective of aquatic species as noted throughout the Staff Report and Order.

11. DTSC recommended that the requirement under Section B.6.b for the statistical "Pass" or "Fail" statistical criteria for acute toxicity should be changed from using 100 percent effluent to 25 percent effluent.

Staff Response: The Order remains unchanged. Acute toxicity testing requires 100 percent effluent while chronic toxicity testing requires 25 percent effluent. The difference is that acute toxicity is measured at the "end of pipe" under the required testing protocols, except where a "mixing zone" has been established for assessing compliance with NPDES permit standards within a receiving water. Mixing zones are typically established where the discharge is continuous, and mixing zones require collection of in-stream monitoring data within the zone of mixing between the receiving water and effluent. The absence of a discharge under Order No. R3-2004-0124 thus far has precluded development of a mixing zone and thus, the acute toxicity standard is based on 100 percent effluent at the end of pipe prior to the discharge entering Casmalia Creek.

The 25 percent effluent standard for evaluating chronic toxicity is allowable under required U.S. EPA WET testing protocols. This is the case with or without establishment of a mixing zone. Therefore, the standard is consistent with U.S. EPA's revised WET testing methodologies and is representative of discharge conditions which limit the contribution of the effluent to 25 percent of creek flow.

12. DTSC indicated that the "Standard Provisions and Reporting Requirements for National Pollutant Discharge Elimination System Permits" referred to in Provision G.2 have been revised to update the addresses of the Regional Board and U.S. EPA. DTSC asked if the referenced standards should indicate revision dates corresponding to the address changes.

Staff response: The date indicated is correct. Changes to address indicating where reports are submitted do not require action by the Regional Board. Changes to standards and provisions would require action by the Regional Board to adopt proposed changes. In this instance, the date of adoption would be revised indicating that the Board has taken an action on the item.

13. DTSC indicated that the “Standard Provisions and Reporting Requirements for National Pollutant Discharge Elimination System Permits” requires the CSC to provide the Regional Board and U.S. EPA copies of all reports related to the Order. DTSC requested that copies such reports also be provided to the Casmalia Site Interagency Committee, which includes DTSC, the California Department of Fish and Game, the United States Fish and Wildlife Service, and the County of Santa Barbara.

Staff Response: We will request that the CSC provide copies of all reports related to Order No. R3-2004-0124 the agencies noted above. Staff will include the request in a transmittal letter for the Order if the Regional Board adopts the item at its December meeting.

### **RECOMMENDATION**

Adopt NPDES permit Order No. R3-2004-0124 as proposed.

### **ATTACHMENTS**

Proposed Waste Discharge Requirements Order No. R3-2004-0124, including Monitoring and Reporting Program Order No. R3-2004-0124. Standard Provisions and Reporting Requirements are available at:

<http://www.swrcb.ca.gov/rwqcb3/Permits/documents/standardprovisions.pdf>

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