

State of California
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

ORDER NO. R4-2009-00XX

**WASTE DISCHARGE REQUIREMENTS
FOR
THE BOEING COMPANY
(Santa Susana Field Laboratory)
(NPDES NO. CA0001309)**

The California Regional Water Quality Control Board, Los Angeles Region (Regional Board), finds:

Background

1. The Boeing Company (hereinafter Boeing or Discharger) discharged waste from its Santa Susana Field Laboratory (SSFL) facility under waste discharge requirements, which serve as a National Pollutant Discharge Elimination System (NPDES) permit, contained in Order No. 98-051 adopted by this Regional Board on June 29, 1998 (NPDES Permit No. CA0001309).
2. Boeing filed a report of waste discharge and applied for renewal of its waste discharge requirements and NPDES permit for discharge of wastes to surface waters. Order R4-2004-0111, adopted on July 1, 2004, incorporated effluent limitations based on the California Toxics Rule (CTR) criteria where appropriate and added nine new compliance points for a total of eighteen compliance points at the SSFL facility.
3. Order R4-2006-0008 (adopted January 19, 2006) amended Order No R4-2004-0111. Order R4-2006-0008 was the result of new information incorporated into the Order after one year of compliance and routine monitoring based on Monitoring and Reporting Program (MRP) No. 6027. Order R4-2006-0036 (adopted March 9, 2006) incorporated the waste load allocations (WLAs) from Total Maximum Daily Loads (TMDLs) for the Los Angeles River and for Calleguas Creek.
4. Order R4-2007-0055 amended Order R4-2006-0036 to comply with directives given to the Regional Board in Order WQ 2006-0012 issued by the State Water Resources Control Board in the matter of the Petition of the Boeing Company for Review of Waste Discharge Requirements (WDR) Orders R4-2004-0111, R4-2006-0008, and R4-2006-0036 for the Santa Susana Field Laboratory. The Order also includes revisions based on the results of the reasonable potential analysis which includes the data collected through May 22, 2006.
5. On December 3, 2008, Tracy Egoscue, Executive Officer of the Regional Board, issued a California Water Code Section 13304 Order to perform interim/source removal action of soil in the areas of Outfalls 008 and 009 Drainage Areas to the Discharger. The Order directed the Discharger to cleanup and abate the waste that are discharging to waters of

March 11, 2009
Revised: April 6, 2009

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the State, minimize impacts to the streambed adjacent habitat during the cleanup, protect the water quality during and after the cleanup, and restore the streambed and surrounding habitat following the cleanup.

6. On December 11, 2008, the Discharger submitted a new report of waste discharge (ROWD). Supplemental information was submitted on February 2, 2009, to complete the ROWD. This Order (R4-2009-00XX) includes updates required as a result of the new ROWD, the California Water Code Section 13304 Order, and the new reasonable potential analysis (RPA) conducted on data collected from August 2004 through December 2008.

Description of Facility

7. SSFL is located at the top of Woolsey Canyon Road in the Simi Hills, Ventura County, California (Figure 1). The developed portion of the site comprises administrative areas I – IV is approximately 1,525.7 acres. The northern undeveloped property is approximately 181.7 acres and the southern undeveloped property is 1142.6 acres. SSFL is owned by both Boeing and the National Aeronautics and Space Administration (NASA). The United States Department of Energy (DOE) also owns several buildings located in Area IV, with the land being under the ownership of Boeing.
8. Boeing and its predecessors' operations at SSFL since 1950 include research, development, assembly, disassembly, and testing of rocket engines, missile components, and chemical lasers. DOE conducted past operations in research and development of energy related programs, and seismic testing experiments. Current DOE activities onsite are solely related to facility decontamination, decommissioning, and environmental remediation and restoration.
9. Historical Boeing activities at SSFL that contributed to discharges from the site include rocket engine testing where water was used to cool flame deflectors, fire suppression equipment, and pressure testing of equipment used to support rocket engine testing. Other facility support activities such as cooling, heating, domestic waste treatment, and ground water treatment contributed to discharges from the site as well.
10. Surface Impoundments: There are nine closed surface impoundments at the SSFL that are regulated under the Resource Conservation and Recovery Act (RCRA). The nine impoundments are closed and regulated by Department of Toxic Substances Control (DTSC) under two postclosure permits issued in 1995. These impoundments include: Engineering Chemistry Laboratory (ECL), Advanced Propulsion Test Facility (APTF) 1 & 2, Storable Propellant Area (SPA) 1 & 2, Systems Test Lab (STL) IV 1 & 2, Delta skim pond and the Alfa Bravo skim pond. A tenth surface impoundment, the Propellant Load Facility (PLF), was clean closed and did not require a postclosure permit.
11. Nuclear Operations Decontamination and Decommissioning: Nuclear research and development for the U.S. Department of Energy (DOE) and its predecessors was conducted at the SSFL from 1954 – 1989. The activities included developing and operating reactors, and fabricating and disassembling nuclear fuel. The federal government began to phase out the program in the 1960s. The last reactor was shut

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down in 1980, and nuclear research was terminated in 1989. This research and the associated activities resulted in residual contamination in Area IV.

There are currently no programs at the SSFL that employ special nuclear materials. Current decommissioning activities have reduced the inventory of radioactive waste to approximately 5 curies. Previously all of this material was stored in shielded vaults located at the Radioactive Materials Handling Facility (RMHF), near Outfall 003. More recently, any radioactive material stored onsite is located in a separate building at a RMHF. SSFL continues to utilize radioisotopes in the form of calibration sources that are necessary to calibrate radiation detectors and counting equipment. Periodic radiological monitoring of surface waters is conducted under the existing NPDES permit. One radiological facility located in Area IV, Building 4059, was decommissioned in 2004. Two radiological facilities located in Area IV of the SSFL remain to be decommissioned and storm water run-off from the area is monitored for radioactivity. The DOE is responsible for the cost of decontamination and decommissioning, and the California Department of Public Health (Radiologic Health Branch) has radiological oversight responsibilities at SSFL including a radioactive materials license.

10. Monomethyl Hydrazine Usage: Monomethyl hydrazine (MMH), a propellant, has been used for research, development and testing of rocket engines at SSFL since 1955. MMH that is released as a result of testing operations is captured and treated by an ozonation unit under a variance granted by DTSC. MMH is no longer used at SSFL.
11. Energy Technology Engineering Center (ETEC) Cogeneration Operations: The Sodium Component Testing Installation (SCTI) (cogeneration) unit of ETEC utilized two cooling tower operations, Power Pac and E-5. Both systems have been shut down and will not be reactivated. The facility has been decommissioned and was demolished in July, 2003.
12. Rocket Engine and Component Testing: An engine test consisted of a cycle of one to three engine runs lasting one to three minutes each. A test cycle would take one to two weeks to complete. Each engine run resulted in the use of 50,000 to 200,000 gallons of deluge/cooling water that may have come in contact with fuels such as LOX or kerosene and associated combustion products. The frequency of testing historically varied depending on production requirements. In July 2004 the frequency of testing was one test cycle every one to two months. In January 2006 the Discharger indicated that the frequency of testing had significantly decreased over the past year and was likely to shut down completely during the life of this permit. The updated ROWD submitted in February 2007 provided documentation that rocket engine and component testing operations at the facility had terminated.
13. CTL-3 Chemical Laser Testing: CTL-3 was not operational in 2004. In 2005, limited operations resumed at the facility. There is no discharge to surface waters from this area.
14. Future Operations: Since SSFL is a test facility, it is difficult to anticipate future test projects and possible wastewater generation. Following are discussions of potential

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future operations:

Treatment Under Tiered Permitting Rules: Boeing is exploring the feasibility of treating certain waste streams by either a mobile or fixed hazardous waste treatment unit operating under DTSC Permit-By-Rule requirements. The waste streams to be treated would be classified under these regulations as non-RCRA, or RCRA exempt hazardous waste. Treated effluent would then be released at a separate outfall.

Description of Waste Discharge

15. SSFL has the potential (based on a 24-hour duration, 10 year return storm event) to discharge a total of approximately 168 million gallons per day (MGD) of storm water runoff that has the potential to contain pollutants from the facilities. Approximately 70% of the discharge exits the property via two southerly discharge points (Discharge Outfalls 001 and 002) to Bell Creek, a tributary to the Los Angeles River, a water of the United States, with its confluence located near the intersection of Bassett Street and Owensmouth Avenue in Canoga Park (see Figure 1).

The storm water from the northern boundaries of the site is discharged via Outfalls 003 through 007, 009 and 010 to the northwest toward the Arroyo Simi. The storm water runoff from Happy Valley (Outfall 008) flows via Dayton Canyon Creek to Chatsworth Creek. Chatsworth Creek flows south to Bell Creek southwest of the intersection of Shoup Avenue and Sherman Way. Bell Creek subsequently flows southeast to the Los Angeles River.

16. Groundwater Remediation: During the early 1950s to the mid-1970s, volatile organic compounds were utilized for the cleaning of hardware and rocket engine thrust chambers, and for the cleaning of other equipment. These solvents migrated into the subsurface, contaminating groundwater primarily with trichloroethylene (TCE) and 1,2-dichloroethylene (1,2-DCE).

An extensive groundwater remediation/investigation program has been ongoing at the SSFL, has included pumping, treating and storing groundwater at the facility. In July 2004, this system was composed of eight treatment systems, five active and three inactive, which have the capability of producing up to 578 million gallons per year of groundwater treated to remove the volatile and, in some cases, semi-volatile organic compounds. The treatment system was not designed to treat other pollutants such as perchlorate or metals. Treated groundwater was discharged directly into one of five ponds included in the water reclamation system via naturally occurring streambeds and in some cases man made watercourses present onsite. The chemical treatment used for the groundwater treatment systems consisted of ultraviolet light and hydrogen peroxide oxidation, and carbon adsorption. The physical treatment consisted of air stripping towers. These treatment systems were regulated under RCRA hazardous waste permits or administrative order issued by DTSC, and various air quality control permits issued by Ventura County. Groundwater treatment operations at the facility were terminated in September 2005 after the Topanga Fire destroyed much of the piping utilized to transport the water around the site.

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In the future, Boeing plans to treat effluent from SSFL groundwater remediation operations in either a mobile or fixed hazardous waste treatment unit operating under DTSC Permit-By-Rule requirements. The waste streams to be treated would be classified under these regulations as non-RCRA or RCRA exempt hazardous waste. Treated groundwater effluent would then be released at a separate outfall (Outfall 019).

17. Water used at SSFL for personnel and for industrial purposes is supplied by both the Calleguas Municipal Water District and a bottled water supplier. The water used for industrial purposes historically after use was discharged to the onsite streambeds, watercourses, and ponds. Currently, there are no operations that generate wastewater. Groundwater treatment is scheduled to resume in late 2009. The treated groundwater effluent will be discharged at Outfall 019.
18. Two package-type activated sludge sewage treatment plants (STP1 and STP3) previously provided secondary and tertiary treatment for most of the domestic sewage generated onsite. Disinfected sewage effluent from the activated sludge facilities was directed to the reclaimed water system reservoirs (unlined ponds). Water from the reservoirs was routinely reused for industrial purposes. A third activated sludge sewage treatment plant (STP2) is a transfer holding tank and only used for storage.

Operations terminated at STP3 in October 2001 and at STP1 in December 2001. Domestic sewage, which was previously treated at the sewage treatment plants, is being shipped offsite. The STP1 and STP3 basins are currently used as collection points for wastewater generated onsite. Every few days, vacuum trucks transport the accumulated waste off site for treatment. One of the Joint Outfalls (Los Angeles County Sanitation District's) facilities are routinely used for disposal of the waste.

19. The SSFL previously utilized a system of natural, unlined and man-made ponds and channels to collect and reuse water as a cooling media and for fire suppression during rocket engine and component hot fire testing and to provide for storm water settling as a BMP. Water supplied to the system came from any one, or a combination of the following, sources: storm water, treated groundwater, tertiary treated sanitary sewage, recycled test cooling water, or domestic water purchased from an established purveyor. The water was stored in a series of steel tanks located in Area 2 called Skyline. The water was transferred by gravity to either the Alfa or Bravo test facilities for use as cooling and fire protection water during test operations. Excess water from these operations was returned to the ponds through open, unlined channels. The water was then pumped back to the storage tanks at Skyline for reuse. If the demand for water exceeds the reclaimed water supply, domestic water was used to make up the difference. The reclaimed water system is separated from the domestic water supply by air gaps and backflow prevention devices. The reclaim water is no longer used in the reclaim system. Water used for industrial purposes was replaced by domestic water supplied by Calleguas Municipal Water District.

Historically, Area I utilized the R-1 Pond as a reservoir for the reclaimed water system. Water retained in the R-1 Pond was comprised of primarily effluent from the groundwater treatment systems. Other sources included effluent from Sewage Treatment Plant 1 and seasonal rain events. If the supply of reclaimed water exceeds

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requirements, the R-1 Pond will overflow into Perimeter Pond; excess water from Perimeter Pond will then flow south to Bell Creek through Outfall 001. Discharges through Outfall 001 are rare, and will usually only occur after rainfall over an extended period.

Historically, Areas II, III, and IV shared a common system for reclaimed water collection and distribution, is referred to as Area IV. Area IV used Silvernale Pond and R-2A Pond as reservoirs for the reclaimed water system. As in Area I, the primary source of water stored in the ponds came from groundwater treatment operations. Other sources include effluent from Sewage Treatment Plant 3, cooling water runoff from test operations and seasonal rain events. If the supply of reclaimed water exceeded requirements, the water was discharged to the south through R-2A Pond, and then to Bell Creek through Outfall 002. Reclaimed water could be pumped from either Silvernale or R-2A Pond to the reclaimed water storage tanks located at Skyline, as needed.

Industrial operations onsite historically discharged untreated wastewater directly to either constructed or natural drainage areas and streambeds. The wastewater flowed to ponds located onsite and was subsequently used in other industrial activities such as quenching operations during engine tests. These natural drainage areas and streambeds are waters of the United States.

20. The five active ponds used historically for collection and storage of reclaimed water are:

R-1 Pond	capacity 3.7 million gallons
Perimeter Pond	capacity 1.3 million gallons
Silvernale Pond	capacity 6.0 million gallons
R2-B Pond	capacity 200,000 gallons
R2-A Pond	capacity 2.5 million gallons

The Coca Pond was previously used as a retention basin to collect water from the space shuttle main engine testing area. When Coca Pond is filled to capacity, it discharges to the R-2 Pond. The pond was historically used to collect water that leaked from the fire suppression system located in the former test area. If sufficient leaks occurred, the pond discharged to R-2. However, this permit prohibits discharges of non storm water to the onsite waterways and ponds.

21. SSFL has the capability to redirect the flow in each of the five ponds via unlined channels, water lines, or pumping into water storage tanks as follows:

R-1 Pond	Flow may be discharged to Perimeter Pond or pumped to the Reclaimed Water Storage Tanks.
Perimeter Pond (PP)	Flow may be released to Bell Canyon or pumped to R-1 Pond.
Silvernale Pond	Effluent flows by gravity to R2-A Pond.

R2-B Pond	This pond is a silt inlet to R-2A Pond. Flow goes directly to R-2A Pond.
R2-A Pond	Flow may be released to Bell Canyon or pumped to Silvernale Pond.

Air agitation is used at these ponds to control algae blooms. Chemical addition, such as copper sulfate, bromine or chlorine, is not used, but may become necessary in the future if agitation alone proves to be inadequate to control algae blooms.

22. The SSFL is underlain by alluvium, weathered bedrock and unweathered bedrock. The alluvium occurs in narrow drainages and alluvial valleys. The alluvium is underlain by the Chatsworth Formation. The Chatsworth Formation consists of fractured sandstone with interbeds of siltstone and claystone, which can transmit water as well as contaminants.

The groundwater system at the SSFL is divided into two aquifers; the shallow and the deep. The alluvium and weathered bedrock comprise the shallow aquifer, and the unweathered and fractured Chatsworth Formation comprise the deep aquifer.

The groundwater surface in the shallow aquifer generally reflects surface topography. In April 2002, groundwater depths in the shallow aquifer ranged from approximately 6 feet to 40 feet below grade. Wells in the deeper aquifer contained groundwater between approximately 23 feet to approximately 520 feet below grade.

23. Previously, excess water from the onsite wastewater reclamation system was intermittently discharged to the southern Discharge Outfalls 001 and 002

The ROWD submitted by the Discharger in February 2007 indicated that the onsite reclamation system was no longer in use. Wastewater discharges to surface waters will occur solely from the Groundwater Extraction Treatment System (Outfall 019), when it begins operations. Other facility support activities such as fire suppression equipment, cooling, and heating will not discharge to onsite drainages or to the onsite ponds.

24. Order 98-051 included estimates of discharges from the Seismic Test Area of 0.0002 mgd. The operations at that area have ceased and, the building has been demolished. Hence, there are no projected discharges from that location.

Order No. 98-051 also includes a total design flow from industrial discharges of 1.6338 mgd. The design flow in Order R4-2004-0111 is 1.5123 mgd. The decrease in the design flow is due to operations that have ceased, facilities that have been demolished, and a decrease in the pump rate for the groundwater treatment systems.

25. Previously, in dry weather, ongoing activities were normally sufficient to use the water generated from the onsite groundwater treatment systems. However, in recent years this water balance has changed. Water now being added into the system from the Calleguas Municipal Water District, plus the reduction of testing activities, has caused releases from R-2A Pond (located upstream from Outfall 002) to become intermittent. During hot weather, the water released will either evaporate or percolate into the ground without

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reaching Discharge Outfall 002. Thus, offsite discharge of water rarely occurs during dry weather.

26. The wastewater, which was a combination of storm water runoff, treated sewage effluent, treated groundwater, and water from industrial processes, was discharged offsite through Outfall 001, located at Latitude 34° 12' 49.7" North and Longitude 118° 41' 43.7" West, or through Outfall 002, located at Latitude 34° 13' 2.4" North and Longitude 118° 42' 15.4" West. These two discharge outfalls are located a maximum 6,000 feet south of the final retention ponds located at the edge of the developed portion of the site.
27. Many of the areas that discharged wastewater to the drainage areas and streambeds are associated with activities that are being regulated by DTSC under RCRA. DTSC is exercising its RCRA authority through Post Closure Permits and corrective action oversight of contaminated areas. The corrective action oversight includes delineation of areas of contamination, as well as subsequent cleanup operations at solid waste management units (SWMUs) and areas of concern onsite. The Post Closure Permits cover the operation of the groundwater treatment systems used during the cleanup.
28. The 1995 Final SB 1082 Framework which was issued on December 14, 1995 documents the framework for implementing Health and Safety Code Section 25204.6(b) dealing with jurisdictional overlap between the DTSC and the Regional Water Quality Control Boards (RWQCBs). SB 1082 requires that "sole jurisdiction over the supervision of that action [meaning oversight of those corrective action activities] is vested in either the department or the State Water Resources Control Board and the California Regional Water Quality Control Boards." Since many of the identified wastewater sources are currently involved in the RCRA corrective action or the Post Closure Permits with DTSC as the oversight agency and consistent with RCRA, DTSC will ensure that the discharges from these operations meet the substantive Clean Water Act requirements. Regional Board staff was provided with the opportunity to comment during the revision of the RCRA permits to ensure the Clean Water Act, Porter-Cologne Act, and the Basin Plan requirements are met. The final revised permits have not been issued. Order R4-2004-0111, R4-2006-0008, R4-2006-0036 required the final, downstream outfalls (Serial Nos. 001 and 002) to comply with water quality standards, and these outfalls were regulated under these Orders. Order R4-2007-0055 regulates with numeric effluent limitations discharges from Outfalls 011 and 018 and includes requirements for monitoring at Outfalls 001 and 002

There were several other operations that were ongoing, which are not included in the RCRA corrective action, that discharge wastewater to the onsite drainageways and streambeds. These activities were covered by the NPDES permit.

29. The operations evaluated at SSFL during the development of Order R4-2004-0111 and the agency (RWQCB or DTSC) with primary oversight authority and the NPDES outfall number associated with the operation if the Regional Board has oversight are listed below (Figure 2).

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Operation	Current NPDES Outfall No.	Agency
1. Wastewater and Storm water runoff	001	RWQCB
2. Wastewater and storm water runoff	002	RWQCB
3. Storm water Radioactive Material Handling Facility	003	RWQCB
4. Storm water Sodium Reactor Exp.	004	RWQCB
5. Storm water Sodium Burn Pit 1	005	RWQCB
6. Storm water Sodium Burn Pit 2	006	RWQCB
7. Storm water Building 100	007	RWQCB
8. Storm water Happy Valley	008	RWQCB
9. Storm water WS-13 Drainage	009	RWQCB
10. Storm water Building 203	010	RWQCB
11. R-1 Pond	----	DTSC
12. Perimeter Pond	011	RWQCB
13. R-2 Ponds (R-2A and R-2B)	----	DTSC
14. R-2 Spillway	018	RWQCB
15. Silvernale Pond	----	DTSC
16. Alfa Test Stand	012	RWQCB
17. Bravo Test Stand	013	RWQCB
18. WS-5 Groundwater Treatment System (GWTS)/ Ultraviolet light/peroxidation (UV/P)	----	DTSC
19. RD-9 GWTS UV/P	----	DTSC
20. Alfa GWTS/Air Stripping Towers (AST)	----	DTSC
21. Delta GWTS/AST	----	DTSC
22. STLV-IV GWTS/AST	----	DTSC
23. Area 1 Road GWTS/AST	----	DTSC
24. Bravo GWTS/AST	----	DTSC
25. Canyon GWTS/AST	----	DTSC
26. Interim GWTS near FSDF*	----	DTSC
27. Interim GWTS near Bldg 59*	----	DTSC
28. Interim GWTS near RMHF*	----	DTSC
29. APTF	014	RWQCB
30. STP-1 – effluent	015	RWQCB
31. STP-2 – effluent	016	RWQCB
32. STP-3 – effluent	017	RWQCB
33. Groundwater Treatment System	019	RWQCB

Implemented in Interim Measures at the site. If the systems continue to operate they will be included in the revised Post Closure Permit.

Operations at the test stands (Outfalls 012 – 014) and the sewage treatment plants (Outfalls 015 – 017) have ceased. No further process waste discharges are expected from these areas. The groundwater treatment systems listed above have been taken off line and a new groundwater treatment system operating under Permit-by-Rule

requirements is planned for the site. Effluent from the groundwater treatment operations will be discharged at Outfall 019 in the vicinity of CTL III during routine operations.

30. The ROWD submitted on February 20, 2007, included a request to discharge treated groundwater to the streambed downstream of Outfall 011 and upstream of Outfall 001. The treated groundwater is a wastewater from a point source and thus will be regulated by RWQCB in this permit at a new outfall (Outfall 019), which is included in the previous table. Outfall 019 is located in the vicinity of CTL III and during dry weather operations a sample will be collected post treatment at that location. During storm events the discharge from Outfall 019 will be piped downstream of the engineered BMPs located at Outfall 011 but prior to the area where the sample is collected. Therefore, the sample collected at Outfall 011 during storm events will have mixed wastewater; storm water runoff and effluent from the groundwater treatment unit.

Description of Storm Water Sampling

31. One objective of this Order is to protect the beneficial uses of receiving waters. To meet this objective, storm water runoff discharges from the SSFL are subject to requirements stipulated in this NPDES permit and the Discharger will be required to comply with all applicable provisions of the Storm Water Pollution Prevention Plan (Attachment A). This plan includes requirements to develop, implement, and when appropriate update a Storm Water Pollution Prevention Plan (SWPPP) along with Best Management Practices (BMPs) with the intent of preventing all pollutants from contacting storm water and with the intent of keeping all contaminants of concern from moving into receiving waters.
32. Past operations at SSFL have resulted not only in contamination of the groundwater with volatiles but also with various types of surface and near surface soil contamination. Previous investigations and sampling has confirmed the presence of elevated concentrations of mercury and perchlorate in soil, which has been present in storm water runoff in elevated concentrations. The persistent transport of these contaminants offsite in storm water requires that these contaminants have effluent limitations in this Order.
33. Storm water from APTF flows toward Bell Creek and the Los Angeles River. Operations at the facility included small engine testing using kerosene (RP-1), hydrogen, potentially alcohol, methanol, peroxide, and liquid oxygen (LOX). Nitrogen is also used for purge gas. After testing, the staging areas were not routinely washed down to remove residual contaminants from the test operations. In July 2004, the Discharger indicated that during normal operations, testing may occur during storm events.

Outfall 014, located at the former location of APTF, was established in Order R4-2004-0111. No test operations have occurred at this location since the adoption of the Order in 2004 and the ROWD submitted in February 2007 indicates that testing operations at the facility have ceased. This Order requires monitoring of storm water runoff from the area.

34. Storm water runoff from the area that drains to discharge points 001 and 002 is

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estimated at 34 and 51 MGD respectively (based on a 24-hour duration, 10-year return storm). Historically, this runoff was mixed with industrial waste collected in the ponds prior to discharge.

35. The estimated flow from the area that drains storm water only from the northwest slope and discharges it via discharge points 003, 004, 005, 006, 007, 008, 009, and 010 are 0.79, 0.55, 0.015, 0.81, 0.2, 3.3, 32, and 0.38 MGD respectively. The flow from these locations exits the site leading to Meier Canyon towards the Arroyo Simi (Figure 2). The Arroyo Simi is a tributary to Calleguas Creek, a water of the United States. The locations and the associated drainage areas are listed below for each of the seven storm water only discharge locations:

<u>Discharge Outfall</u>	<u>Latitude (North)</u>	<u>Longitude (West)</u>	<u>Vicinity</u>
003 (RMHF)	34° 14' 4.0"	118° 42' 38.4"	Radioactive Materials Handling Facility
004 (SRE)	34° 14' 9.1"	118° 42' 23.9"	Former Sodium Reactor Experiment
005 (SBP-1)	34° 13' 48.1"	118° 43' 3.9"	Former Sodium Burn Pit 1
006 (SBP 2)	34° 13' 50.7"	118° 42' 59.9"	Former Sodium Burn Pit 2
007 (B100)	34° 13' 50.2"	118° 42' 52.5"	Building 100
009(WS-13)	34° 14' 19"	118° 41' 38"	WS-13 Drainage Area
010(Bldg. 203)	34° 14' 17"	118° 41' 56"	Building 203

There is no flow from these locations except during heavy rainfall. For purposes of access and safety, these sampling stations have been established inside the SSFL northwest property boundary. The stations are located in close proximity to past and/or existing radiological facilities or other operations, as is noted in the vicinity column above. Additional storm water flow exits the site via various drainage channels into Meir, Runkle and Woolsey Canyons.

36. Storm water runoff from the northwest slope of the facility is monitored at Discharge Outfalls 003, 004, 005, 006, 007, 009, and 010 which discharge towards the Arroyo Simi. The outfall locations near the Northwest slope are located such that they capture runoff from past and existing radiological facilities.
37. The WS-13 Drainage (Outfall 009) area begins near the entrance to the property and traverses several potential areas of concern. The WS-13 drainage area collects storm water runoff from the Area 1 and Area 2 Landfill, and the former LOX plant located on NASA owned property. In addition, WS-13 picks up storm water run on from Sage Ranch where agricultural operations took place and a gun shooting range was located. The storm water runoff from the WS-13 drainage area is sampled at Discharge Outfall 009. This outfall drains to Arroyo Simi.
38. Building 203 (Outfall 010) was formerly used as an instrumentation laboratory where various types of instrumentation were repaired and calibrated. The instrumentation included but was not limited to, thermometers and manometers that contained mercury. Also historically, a photographic processing lab was present in Building 202. Currently

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Building 203 is used for laser research and Building 202 is inactive. Operations in Building 203 include polishing, cleaning (using solvents and other chemicals), assembly and testing of various components in both open warehouse and clean room environments. All wastes are currently containerized and transported off site for disposal.

Building 203 has been added as Solid Waste Management Unit (SWMU) 5.2 under the RCRA corrective action program due to mercury contamination. Mercury has also been detected downgradient of the building in the surface soils of the adjacent drainage. An interim measure to remove the surface soil and the associated contamination was completed in the summer of 2004.. The storm water runoff from Building 203 will be sampled at Discharge Outfall 010. Discharges from Building 203 drains to the Arroyo Simi and subsequently to Calleguas Creek.

39. The area commonly referred to as Happy Valley receives storm water runoff from the former solid propellant testing area. A major component of the propellant was perchlorate. The propellant testing area is inactive and buildings have been demolished. Since the propellant has been used in the area and reasonable potential existed for the constituent to cause or contribute to an exceedance, an effluent limit for perchlorate and a requirement to sample the runoff for all other constituents tested for at Discharge Outfalls 003 through 007, has been included in Order R4-2004-0111. The Discharger with DTSC oversight implemented an interim measure (soil removal activity) for soils contaminated with elevated levels of perchlorate during Fall 2003. This project was completed in early 2004. This new storm water monitoring location is Discharge Outfall 008. Following the completion of the interim measure perchlorate has not exceeded the effluent limit. Storm water from Happy Valley flows to Dayton Canyon Creek which merges with Chatsworth Creek. Chatsworth Creek which flows south to Bell Creek southwest of the intersection of Shoup Avenue and Sherman Way. Bell Creek subsequently flows east and merges with Calabasas Creek at the Los Angeles River near the intersection of Vanowen Street and Owensmouth Avenue.

Description of Groundwater Treatment System, and Water Reclamation System

40. The groundwater treatment systems were designed to treat VOC contaminated groundwater. The groundwater is treated and subsequently discharged to channels that transport it around the site for reuse. Perchlorate has been detected in some of the wells. Since the five active RCRA permitted treatment systems are not designed to treat perchlorate, the Discharger has in some instances terminated the treatment of the pumped groundwater from the locations where perchlorate has been detected.

The groundwater treatment systems monitoring and discharge requirements are included in the Hazardous Waste Facility Post-Closure Permit for SSFL which is managed by DTSC. Consequently, all activities associated with the groundwater treatment systems and discharges associated therewith will continue to be managed by DTSC. DTSC is required by RCRA to ensure that the requirements implemented in its permits comply with all applicable and appropriate Regional Board requirements. The treated groundwater and storm water runoff was regulated at Outfall 001. Order R4-2007-0055 required compliance of treated groundwater and storm water runoff at Outfall 011, which is upstream of Outfall 001.

41. A new groundwater treatment system is in the design phase for the SSFL. The groundwater treatment system will be located near CTL-III and will treat water from extraction wells, purge water generated during groundwater sampling events, and groundwater generated during well installations or pumping tests. The treated effluent will be discharged near CTL III (Outfall 019) which is located upstream of Outfall 011. The system is scheduled to be complete in late 2009.

During storm events the discharge from Outfall 019 will be piped downstream of the engineered BMPs located at Outfall 011 but prior to the area where the sample is collected. Therefore, the sample collected at Outfall 011 during storm events will have mixed wastewater; storm water runoff and effluent from the groundwater treatment unit.

42. The rocket engine test stands were used to test fire rocket engines built onsite. The fire suppression and cooling water used during testing may contain residual fuels and solvents. This wastewater was directed via lined and unlined channels to the reclamation ponds, which were used to store wastewater collected from the various onsite operations along with any storm water runoff for reuse onsite.

The Regional Board had oversight of the discharges from the active engine test stands. Order No. R4-2004-0111 included requirements for monitoring of the discharges. The data collected was used to evaluate reasonable potential of the discharge to exceed applicable requirements and if warranted; effluent limitations were implemented for the discharges in Order Nos. R4-2006-0008 and R4-2006-0036.

43. The sewage treatment plants were also managed by the Regional Board. The sewage treatment plants historically collected only domestic waste generated onsite. There is no pretreatment program in place since the facility does not handle any industrial waste. To implement Clean Water Act section 405(d), on February 19, 1993, USEPA promulgated 40 CFR Part 503 to regulate the use and disposal of municipal sewage sludge. Orders R4-2004-0111, R4-2006-0008, and R4-2006-00036 implement the regulations and it is the responsibility of the Discharger to comply with said regulations, which are enforceable by USEPA.

The plants (STP-1 and STP-3) were activated sludge sewage treatment plants that provided secondary and tertiary treatment for the domestic sewage from the facility. The disinfected sewage effluents were subsequently directed to the reclaimed water system reservoir. The two plants are currently being used as collection reservoirs only. They previously had effluent limitations for BOD₅20°C, coliform, and turbidity on discharges from the facilities. Sewage sludge generated was hauled offsite to the one of the facilities operated by Los Angeles County Sanitation Districts. The monitoring program for the sewage treatment plants included requirements for the previously mentioned constituents as well as pH, oil and grease and suspended solids. Order R4-2004-0111 included requirements to monitor for priority pollutants, perchlorate, N-nitrosodimethylamine, 1,4-dioxane, and 1,2,3-trichloropropane to provide the data required to evaluate reasonable potential. Data collected provided the basis for establishing additional effluent limitations for the sewage treatment plants in Orders R4-2006-0008 and R4-2006-0036.

After the State Board decision to remand the permit to the Regional Board in Order WQ 2006-0012, Boeing on February 21, 2007, submitted an updated Report of Waste Discharge (ROWD) to the Regional Board. The ROWD included a request to remove the sewage treatment plant outfalls (Outfall 015 – 017). The Discharger is currently using the facilities as collection reservoirs; periodically they are pumped out and the waste is disposed of at the County of Los Angeles Sanitation Districts' facilities. The Discharger does not plan to discharge from the locations in the future.

44. The water reclamation system consisted of five ponds located throughout the developed portion of the site. The treated groundwater, engine test stand wastewater and collected storm water historically traveled around the site, for months prior to being discharged offsite. The natural water courses located onsite are waters of the United States and are subject to regulation under the National Pollutant Discharge Elimination System provisions of the Clean Water Act. Since many of these ponds and water courses that connect these ponds are unlined, contaminants in the water may be deposited on surface soils or they may percolate down to shallow groundwater. Subsequent discharges offsite via these waterways may also transport these contaminants offsite.

The ponds, which were used to store the wastewater for future use, are in all cases included in solid waste management units (SWMUs) currently being investigated by DTSC. These areas are included in the ongoing RCRA characterization and cleanup at the site and are managed by DTSC. There are two special cases, Perimeter Pond and the R-2 Pond Spillway which includes runoff from both R-2A and R-2B Ponds. The ponds are SWMUs and cleanup and characterization will proceed with DTSC oversight. The effluent from Perimeter Pond and the R-2 Pond Spillway will have Regional Board oversight for the required monitoring since the discharges routinely occur as a result of storm events and the discharge is to waters of the United States. The ponds also collected wastewater from a number of areas involved in cleanup operations that may contribute constituent concentrations to the discharge. The water reclamation system at SSFL is no longer operational.

45. On December 17, 2003, the Regional Board received the *December 2003 Technical Memorandum Analysis of Groundwater Recharge, Santa Susana Field Laboratory, Ventura County, California*, prepared by Montgomery Watson Harza on behalf of the Boeing Company. This document was submitted to DTSC in order to present a qualitative and quantitative analysis of groundwater recharge at the Santa Susana Field Laboratory. Regional Board staff has also reviewed this document and find that a reasonable conclusion for the amount of rainfall that infiltrates soil using a water balance method is between 23% to 26%. Using a chloride mass balance method resulted in a range of 1% to 12% rainfall infiltration. As these calculations by different methodologies differ significantly and are inconclusive, Regional Board staff find that there is insufficient data to suggest that rainfall will not significantly recharge groundwater in the underlying surficial soils, weathered and fractured bedrock. In addition, there has been no site-specific soil attenuation factor/model submitted for Regional Board staff review. Inasmuch, those limitations placed in this Order to protect groundwater recharge beneficial uses and beneficial uses of underlying groundwater apply at end-of-pipe.

Applicable Plans, Policies, and Regulations

46. On June 13, 1994, the Regional Board adopted a revised *Water Quality Control Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan) as amended on January 27, 1997, by Regional Board Resolution No. 97-02. The Basin Plan (i) designates beneficial uses for surface and groundwaters, (ii) sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state antidegradation policy (*Statement of Policy with Respect to Maintaining High Quality Waters in California*, State Board Resolution No. 68-16, October 28, 1968), and (iii) describes implementation programs to protect all waters in the Region. In addition, the Basin Plan incorporates all applicable State and Regional Board plans and policies and other pertinent water quality policies and regulations. The Regional Board prepared the 1994 update of the Basin Plan to be consistent with all previously adopted State and Regional Board plans and policies. This Order implements the plans, policies and provisions of the Regional Board's Basin Plan.

47. The receiving water for discharges from Outfall 008 enters Dayton Canyon Creek, flows via Chatsworth Creek to Bell Creek, southwest of the intersection of Sherman Way and Shoup Avenue, and subsequently to the Los Angeles River. The receiving water for Outfalls 001, and 002 is Bell Creek and subsequently to the Los Angeles River. The Basin Plan contains water quality objectives for, and lists the following beneficial uses for Dayton Canyon Creek, Bell Creek, and the Los Angeles River.

Dayton Canyon Creek – Hydrologic Unit 405.21

Existing: wildlife habitat
Intermittent: groundwater recharge, contact and non-contact water recreation; warm freshwater habitat.

Bell Creek – Hydrologic Unit 405.21

Existing: wildlife habitat
Intermittent: groundwater recharge, contact and non-contact water recreation; warm freshwater habitat.

The Los Angeles River upstream of Figueroa Street – Hydrologic Unit 405.21:

Existing: groundwater recharge; contact and non-contact water recreation, warm freshwater habitat; wildlife habitat; and wetland habitat.
Potential: industrial service supply.

Los Angeles River downstream of Figueroa Street – Hydrologic Unit 405.15

Existing: groundwater recharge, contact and non-contact water recreation, and warm freshwater habitat.
Potential: industrial service supply and wildlife habitat.

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Los Angeles River downstream of Figueroa Street – Hydrologic Unit 405.12

- Existing: groundwater recharge; contact and noncontact water recreation; warm freshwater habitat; marine habitat; wildlife habitat; and rare, threatened, or endangered species.
- Potential: industrial service supply; industrial process supply; migration of aquatic organisms; spawning, reproduction, and/or early development; and shellfish harvesting.

Los Angeles River Estuary – Hydrologic Unit 405.12

- Existing: industrial service supply; navigation; contact and non-contact water recreation; commercial and sport fishing; estuarine habitat; marine habitat; wildlife habitat; rare, threatened, or endangered species; migration of aquatic organisms; spawning, reproduction, and/or early development; and wetland habitat.
- Potential: shellfish harvesting.

Dayton Canyon Creek, Bell Creek and all of the reaches of the Los Angeles River listed, except for the estuary, also have municipal and domestic supply (MUN) listed as a potential beneficial use with an asterisk in the Basin Plan. This is consistent with Regional Board Resolution 89-03; however the Regional Board has only conditionally designated the MUN beneficial uses and at this time cannot establish effluent limitations designed to protect the conditional designation.

48. The storm water runoff discharges from the northwest side of SSFL (Outfalls 003 through 007) exit the site and flow down the Meier and Runkle Canyons toward the Arroyo Simi. The Arroyo Simi is tributary to the Calleguas Creek. The beneficial uses of the Arroyo Simi and other tributaries of the Calleguas Creek are:

Arroyo Simi – Hydrologic Unit 403.62

- Existing: wildlife habitat, rare, threatened, or endangered species habitat,
Intermittent: industrial process supply, groundwater recharge, freshwater replenishment, contact and non-contact water recreation, warm freshwater habitat;

Arroyo Las Posas – Hydrologic Unit 403.62

- Existing: groundwater recharge, freshwater replenishment, contact and non-contact water recreation, warm freshwater habitat, wildlife habitat,
Potential: industrial process supply, industrial service supply, agricultural supply, and cold freshwater habitat.

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Calleguas Creek – Hydrologic Unit 403.12

Existing: industrial service supply, industrial process supply, agricultural supply, groundwater recharge, contact and non-contact water recreation, warm freshwater habitat, and wildlife habitat,

Calleguas Creek – Hydrologic Unit 403.11

Existing: agricultural supply, groundwater recharge, freshwater replenishment; contact and non-contact water recreation, warm freshwater habitat, cold freshwater habitat, wildlife habitat, rare, threatened or endangered species, and wetland habitat,

Calleguas Creek Estuary – Hydrologic Unit 403.11

Existing: noncontact water recreation, commercial and sport fishing, estuarine habitat, wildlife habitat, rare, threatened or endangered species, migration of aquatic organisms, spawning, reproduction, and/or early development, and wetland habitat;

Potential: navigation and water contact recreation.

Mugu Lagoon – Hydrologic Unit 403.11

Existing: navigation, non-contact water recreation, commercial and sport fishing, estuarine habitat, marine habitat, preservation of biological habitats, wildlife habitat, rare, threatened or endangered species, migration of aquatic organisms, spawning, reproduction, and/or early development, shellfish harvesting, and wetland habitat,

Potential: water contact recreation.

All of the reaches of Calleguas Creek, except the estuary, also include conditional municipal and domestic supply designations as an intermittent or potential beneficial use in the Basin Plan.

49. **Ammonia Basin Plan Amendment.** The 1994 Basin Plan provided water quality objectives for ammonia to protect aquatic life, in Tables 3-1 through Tables 3-4. However, those ammonia objectives were revised on April 25, 2002, by the Regional Board with the adoption of Resolution No. 2002-011, *Amendment to the Water Quality Control Plan for the Los Angeles Region to Update the Ammonia Objectives for Inland Surface Waters (including enclosed bays, estuaries and wetlands) with Beneficial Use designations for protection of Aquatic Life*. The ammonia Basin Plan amendment was approved by the State Board, the Office of Administrative Law, and USEPA on April 30, 2003, June 5, 2003, and June 19, 2003, respectively. Although the revised ammonia water quality objectives may be less stringent than those contained in the 1994 Basin Plan, they are still protective of aquatic life and are consistent with USEPA's 1999 ammonia criteria update.

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50. **Title 22 of the California Code of Regulations.** The California Department of Health Services (DHS) established primary and secondary maximum contaminant levels (MCLs) for a number of chemical and radioactive contaminants. These MCLs can be found in Title 22, California Code of Regulations (Title 22). Chapter 3 of the Basin Plan incorporates portions of Title 22 by reference. In addition, narrative objectives require that ground waters shall not contain taste or odor-producing substances in concentrations that affect beneficial uses. The secondary MCLs in Title 22 are designed to ensure that water's taste and odor does not affect its suitability to drink. Title 22 MCLs have been incorporated into NPDES permits and Non-Chapter 15 WDRs to protect the municipal and domestic supply (MUN) and groundwater recharge (GWR), where the underlying groundwater is designated MUN, beneficial uses.

Groundwater Recharge. Sections of Bell Creek and Arroyo Simi, near the SSFL discharge points, are designated as GWR indicating that groundwater recharge is a beneficial use. Surface water from the Bell Creek enter the Los Angeles River Watershed. The headwaters of the Los Angeles River originate in the Santa Monica, Santa Susana, and San Gabriel Mountains. Four basins in the San Fernando Valley area contain substantial deep groundwater reserves and are recharged mainly through runoff and infiltration.

Surface water discharges from the north west edge of the SSFL are directed to Arroyo Simi a tributary located in the Calleguas Creek Watershed. Supplies of groundwater are critical to agricultural operations and industry (sand and gravel mining) in this watershed. Moreover, much of the population in the watershed relies upon groundwater for drinking. Since groundwater from these basins is used to provide drinking water to a large portion of the population, Title 22-based limitations are needed to protect that drinking water supply. By limiting the contaminants in the SSFL discharges, the amount of pollutants entering the surface waters and groundwater basins are correspondingly reduced. Once groundwater basins are contaminated, it may take years to clean up, depending on the pollutant. Compared to surface water pollution, investigations and remediation of groundwater are often more difficult, costly, and extremely slow. For these reasons Title 22-based limitations will remain in the NPDES permit where there is reasonable potential.

Notification Level for Perchlorate. DHS also establishes Notification Levels (NLs), or health-based advisory levels for chemicals in drinking water that lack MCLs. Through 2004, the Notification Levels were referred to as Action Levels. An NL is the concentration of a chemical in drinking water that is considered not to pose a significant health risk to people ingesting that water on a daily basis. NLs may be established by DHS for non-regulated chemical contaminants when one of the following occurs:

1. A chemical is found in an actual or proposed drinking water source, or
2. A chemical is in proximity to a drinking water source, and guidance is needed, should it reach the source.

A NL is calculated using standard risk assessment methods for non-cancer and cancer endpoints, and typical exposure assumptions, including a 2-liter per day ingestion rate, a 70-kilogram adult body weight, and a 70-year lifetime. For chemicals that are

considered carcinogens, the NL is considered to pose “de minimus” risk, i.e., a theoretical lifetime risk of up to one excess case of cancer in a population of 1,000,000 people – the 10^{-6} risk level. (In that population, approximately 250,000 – 300,000 cases of cancer would be anticipated to occur naturally.) NLs may be revised from time to time to reflect new risk assessment information. Chemicals for which NLs are established may eventually be regulated by MCLs, depending on the extent of contamination, the levels observed, and the risk to human health. A number of the contaminants for which action levels were originally established now have MCLs.

In 1997, DHS established an 18 $\mu\text{g/L}$ action level for perchlorate. DHS used the upper value of the 4 to 18 $\mu\text{g/L}$ range that resulted from the provisional reference dose that USEPA prepared in support of its Superfund activities. A revised external review draft perchlorate reference dose corresponding to a drinking water concentration of 1 $\mu\text{g/L}$ was released in 2002. DHS concluded that the action level needed to be revised downward. On January 18, 2002, DHS reduced the perchlorate action level to 4 $\mu\text{g/L}$. The revised action level coincided with the analytical detection limit for purposes of reporting and was at the lower end of the 4 to 18 $\mu\text{g/L}$ range from the USEPA 1992-1995 assessment. The Public Health Goal (PHG) for perchlorate was developed by Office of Environmental Health Hazard Assessment based on a contemporary health risk assessment. This new information was provided to DHS and on March 11, 2004, the NL for perchlorate was revised to 6 $\mu\text{g/L}$, a value identical to the PHG that will be used by DHS to develop the MCL for perchlorate. The effluent limit for perchlorate (6 $\mu\text{g/L}$) included in this WDR has been updated to reflect the change implemented by DHS.

Perchlorate and its salts are used in, but not limited to, solid propellant for rockets, missiles, and fireworks. The defense and aerospace industries purchase more than 90 percent of all the perchlorate manufactured. Perchlorate has historically been used at SSFL and thus is considered a chemical of concern at the site. Monitoring data collected during the tenure of the current permit indicates that perchlorate is present in the storm water runoff in Happy Valley and it has been detected in some of the groundwater wells utilized in the cleanup operations ongoing with DTSC oversight.

Perchlorate can interfere with iodide uptake by the thyroid gland; this can result in a decrease in the production of thyroid hormones, which are needed for prenatal and postnatal growth and development, as well as for normal body metabolism. Neither the CTR, NTR, or the Basin Plan has requirements stipulated for perchlorate. Since there is no drinking waters standard, or maximum contaminant level (MCL), the DHS uses the NL as an advisory level. The Regional Board, exercising its best professional judgement, in the review of the “best available science” has in the past considered and used ALs when deemed appropriate to establish final effluent limitations in WDRs and NPDES permits adopted by this Board, to implement the Basin Plan narrative WQO, “*all waters shall be maintained free of toxic substance that produce detrimental physiological responses in human, plant, animal, or aquatic life,*” and to prevent degradation of valuable groundwater sources of drinking water.

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51. Under title 40 Code of Federal Regulations (40 CFR) section 122.44(d), *Water Quality Standards and State Requirements*, "Limitations must control all pollutants or pollutant parameters (either conventional, non-conventional, or toxic pollutants), which the Director determines are or 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." Where numeric effluent limitations for a pollutant or pollutant parameter have not been established in the applicable state water quality control plan, 40 CFR section 122.44(d)(1)(vi) specifies that water quality-based effluent limitations (WQBELs) may be set based on United States Environmental Protection Agency (USEPA) criteria, and may be supplemented where necessary by other relevant information to attain and maintain narrative water quality criteria, and to fully protect designated beneficial uses.
52. Section 402(p) of the federal Clean Water Act (CWA), as amended by the Water Quality Act of 1987, requires NPDES permits for storm water discharges. The Discharger, in addition to meeting the effluent limitations included in this permit for storm water discharges only, will be required to develop and implement a SWPPP as stipulated in Finding 27. These requirements, as they are met, will protect and maintain existing beneficial uses of the receiving water.
53. Effluent limitation guidelines requiring the application of best practicable control technology currently available (BPT), best conventional pollutant control technology (BCT), and best available technology economically achievable (BAT), were promulgated by the USEPA for some pollutants in this discharge. Effluent limitations for pollutants not subject to the USEPA effluent limitation guidelines are based on one of the following: best professional judgment (BPJ) of BPT, BCT or BAT; current plant performance; or water quality based effluent limitations (WQBELs). The WQBELs are based on the Basin Plan, other State plans and policies, or USEPA water quality criteria which are taken from the CTR. These requirements, as they are met, will protect and maintain existing beneficial uses of the receiving water. The attached Fact Sheet for this Order, which has been reviewed and considered by the Regional Board, is considered part of this Order. The Fact Sheet includes specific bases for the effluent limitations, including the basis for determining reasonable potential for a pollutant to cause or contribute to an exceedance of water quality standards.
54. 40 CFR section 122.45(f)(1) requires that except under certain conditions, all permit limitations, standards, or prohibitions be expressed in terms of mass units. 40 CFR section 122.45(f)(2) allows the permit writer, at its discretion, to express limitations in additional units (e.g., concentration units). The regulations mandate that, where limitations are expressed in more than one unit, the permittee must comply with both. Generally, mass-based effluent limitations would ensure that proper treatment, and not dilution, is employed to comply with the final effluent concentration limitations. Concentration-based effluent limitations, on the other hand, would discourage the reduction in treatment efficiency during low flow periods and would require proper operation of treatment units at all times. In the absence of concentration-based effluent limitations, a permittee would be able to increase its effluent concentration (i.e., reduce its level of treatment) during low flow periods and still meet its mass-based effluent limitations.

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55. Effluent limitations established pursuant to sections 301 (Effluent Limitations), 302 (Water Quality-Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 304 (Information and Guidelines), and 402 (NPDES) of the CWA and amendments thereto, are applicable to the discharges herein.

limitations

On May 18, 2000, the USEPA promulgated numeric criteria for priority pollutants for the State of California [known as the CTR and codified as 40 CFR section 131.38]. On March 2, 2000, the State Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Policy or SIP)*. The SIP was effective on April 28, 2000 with respect to the priority pollutant criteria promulgated for California by the USEPA through National Toxics Rule (NTR) and to the priority pollutant objectives established by the Regional Boards in their Basin Plans, with the exception of the provision on alternate test procedures for individual discharges that have been approved by the USEPA Regional Administrator. The alternate test procedures provision was effective on May 22, 2000. The SIP was effective on May 18, 2000, with respect to the priority pollutant criteria promulgated by the USEPA through the CTR. The State Board adopted an amendment to the SIP on February 24, 2005 that became effective on July 13, 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements in this Order implement the SIP.

56. The CTR and SIP require dischargers' submittal of data to the Regional Board to: (1) determine if WQBELs for priority pollutants are required; and (2) to calculate effluent limitations, if required. The policy further provides that the time schedule for providing the data shall be as short as practicable but not to exceed three years from the date of the SIP, which was May 22, 2000.

57. The CTR criteria for freshwater or human health for consumption of organisms, whichever is more stringent, were used to prescribe the effluent limitations in this Order to protect the beneficial uses of the Los Angeles River and the Calleguas Creek.

Under 40 CFR section 131.38(e)(6), the CTR authorizes the Regional Board to grant a compliance schedule for WQBELs based on CTR criteria for a period up to five years from the date of permit issuance, reissuance, or modification. The SIP provides a compliance schedule for WQBELs (up to five years) and for WQBELs based upon Total Maximum Daily Loads (TMDL) and Waste Load Allocations development (up to 15 years). However, the USEPA has not yet approved the longer of the two compliance schedules nor depromulgated the five-year maximum in the CTR to allow for the 15 years in the SIP. Therefore, the more stringent provision, allowing a compliance schedule of five years, is the maximum duration authorized.

58. State and Federal antibacksliding and antidegradation policies require Regional Board actions ensure that the waterbody will not be further degraded. Antibacksliding provisions are contained in Section 303(d)(4) and 402(o) of the CWA, and in 40 CFR section 122.44(l). Those provisions require a reissued permit to be as stringent as the previous permit with some exceptions where effluent limitations may be relaxed. For those limitations carried forward, the Regional Board has determined that there is reasonable

potential for the pollutant to cause or contribute to an exceedance of water quality standards in accordance with State Board Order No. WQ 2003-0009. Reasonable potential is determined using the procedures established in the SIP, which includes a three-tiered approach involving statistical analysis supplemented by best professional judgment.

59. On October 28, 1968, the State Board adopted Resolution No. 68-16, Maintaining High Quality Water, which established an antidegradation policy for State and Regional Boards. Similarly, the CWA (section 304(d)(4)(B)) and USEPA regulations (40 CFR section 131.12) requires that all NPDES permitting actions be consistent with the federal antidegradation policy. Specifically, waters that are of a higher quality than needed to maintain designated as beneficial shall be maintained at the higher water quality unless specific findings are made.

Watershed Management Approach and Total Maximum Daily Loads (TMDLs)

60. The Regional Board has implemented the Watershed Management Approach to address water quality issues in the region. Watershed management may include diverse issues as defined by stakeholders to identify comprehensive solutions to protect maintain, enhance, and restore water quality and beneficial uses. To achieve this goal, the Watershed Management Approach integrates the Regional Board's many diverse programs, particularly TMDLs, to better assess cumulative impacts of pollutants from all point and nonpoint sources. A TMDL is a tool for implementing water quality standards and is based on the relationship between pollution sources and in-stream water quality conditions. The TMDL establishes the allowable loadings or other quantifiable parameters for a waterbody and thereby provides the basis to establish water quality-based controls. These controls should provide the pollution reduction necessary for a waterbody to meet water quality standards. This process facilitates the development of watershed-specific solutions that balance the environmental and economic impacts within the watershed. The TMDLs will establish waste load allocations (WLAs) and load allocations (LAs) for point and non-point sources, and will result in achieving water quality standards for the waterbody.
61. The Los Angeles River watershed is one of the largest in the Region. The headwaters of the Los Angeles River originate in the Santa Monica, Santa Susana, and San Gabriel Mountains. The river flows through industrial and commercial areas and is bordered by rail yards, freeways, and major commercial and government buildings. The Los Angeles River tidal prism/estuary begins in Long Beach at Willow Street and runs approximately three miles before joining with Queensway Bay located between the Port of Long Beach and the City of Long Beach.

The surface water discharges from Outfalls 001,002, 011, 018, 019, and all other upstream outfalls discharge to Bell Creek, a tributary to the Los Angeles River. Storm water only from Happy Valley, Discharge Serial 008, exits the site toward Dayton Canyon Creek, which flows into Chatsworth Creek. Chatsworth Creek flows southward to Bell Creek, near the intersection of Sherman Way and Shoup Avenue, and subsequently the Los Angeles River. The area where the facility is located is largely undeveloped. The majority of the Los Angeles River Watershed is considered impaired

due to a variety of point and nonpoint sources. Bell Creek, which is the receiving water for the wastewater discharge from the SSFL, is on the 2002 303(d) list. High coliform count is the stressor listed for Bell Creek. Downstream receiving waters are listed for high coliform counts, volatiles (1,1-Dichloroethylene, tetrachloroethylene, and trichloroethylene), nutrients, oil, ammonia and others.

The TMDL for Nitrogen (nutrients) in the Los Angeles River received Regional Board approval on July 10, 2003 (Resolution No. 03-009) and State Board approval with adoption of Order 2003-0074 on November 19, 2003. The Office of Administrative Law (OAL) and USEPA approval dates were February 27, 2003, and March 18, 2003, respectively. The Regional Board filed a Notice of Decision with the California Resources Agency on March 23, 2004 and the TMDL was effective as of that date. The Los Angeles River Nutrient TMDL revision with Interim WLAs was approved by the Regional Board on December 4, 2003 (Resolution No. 2003-016). The State Board approved the TMDL with Resolution 2004-0014 on March 24, 2004. OAL approved it on September 27, 2004, and the effective date for the Order was September 27, 2004. This permit includes effluent limitations based on the WLAs established for the Los Angeles River.

62. The TMDL for metals in the Los Angeles River was approved by the Regional Board during the June 2, 2005 hearing (Resolution No. 2005-006). The State Board approved the TMDL on October 20, 2005; OAL and EPA approvals were received on December 9, 2005 and December 22, 2005 respectively.

The metals TMDL establishes numeric water quality targets that are based on objectives established by USEPA in the CTR. Targets for copper, lead, zinc and/or selenium (total recoverable) are established in designated reaches of the Los Angeles River. Separate water quality targets are established for dry and wet weather discharges.

63. The Los Angeles River Trash TMDL was adopted by the Regional Board on September 19, 2001. The TMDL established a numeric target of zero trash in the river. The TMDL was to be implemented via storm water permits in a phased reduction for a period of ten years. The LA River Trash TMDL was approved by the State Water Resources Control Board on February 19, 2002, the Office of Administrative Law on July 16, 2002 and by the US EPA on August 1, 2002. The TMDL became effective on August 28, 2002.

There were a number of challenges to the LA River Trash TMDL. The consideration of the challenges resulted in a requirement that the TMDL be set aside and not implemented until the California Environmental Quality Act (CEQA) requirements have been satisfied. On June 8, 2006, the Los Angeles Regional Water Quality Control Board adopted a resolution to set aside the adopted TMDL. On July 17, 2006, the State Board adopted Resolution 2006-0051, setting the TMDL aside.

The Regional Board on August 9, 2007, adopted a new TMDL for trash in the Los Angeles River Watershed that includes WLAs of zero for trash. This TMDL will become effective after approval from the State Board, OAL, and EPA. When the TMDL is effective, the WLA for trash will be incorporated in this permit.

64. Storm water runoff from Outfalls 003 through 007, 009 and 010 exiting the SSFL site does so near the northwest site boundary. The receiving water for the storm water runoff is the Arroyo Simi, a tributary of the Calleguas Creek. The Calleguas Creek Watershed extends from the Santa Monica Mountains and the Simi Hills in the south, to the Santa Susana Mountains, South Mountain, and Oak Ridge in the north. Land uses vary throughout the watershed. Urban developments are generally restricted to the city limits of Simi Valley, Moorpark, Thousand Oaks, and Camarillo. Agricultural activities are spread out along valleys and on the Oxnard Plain.

Storm water runoff exits the site and travels down Meier and Runkle Canyons towards the Arroyo Simi. Most of the land use around the facility is open area. Overall the Calleguas Creek Watershed is considered an impaired watershed. It appears that the sources of many of the pollutants in the watershed are agricultural activities, runoff from open space, runoff from industrial areas and publicly owned treatment works (POTWs). Approximately fifty percent of the watershed is still open space, although there is a severe lack of benthic and riparian habitat present. The runoff, when it is sufficient to reach the Arroyo Simi, enters it in Reach 1 – Hydrological Unit 403.62. The stressors listed in the 1998 State Board’s California 303(d) list for this reach are ammonia, boron, chloride, sulfates and total dissolved solids. Elevated levels of chromium, nickel, selenium, silver and zinc were also reported in tissue samples.

In the 2002 State Board 303(d) list, Reach 1 of Arroyo Simi is grouped with Reach 2 and has been renamed Calleguas Creek Reach 7. The listed stressors for Calleguas Creek Reach 7 included fecal coliform, organophosphorus pesticides and sedimentation/siltation in addition to those listed in the 1998 303(d) list. The 2002 303(d) list does not include the metals reported with elevated tissue samples in the 1998 303(d) list. These metals were also not included in the 2006 303(d) list.

65. Chloride TMDL and Chloride Limitations. On March 22, 2002, the consent decree deadline for the establishment of a chloride TMDL, USEPA Region 9 established the Calleguas Creek Total Maximum Daily Load for chloride. The TMDL adopted by USEPA was based largely on the technical efforts produced by the Regional Board staff.

The Calleguas Creek Watershed Group in collaboration with USEPA Region 9 and the Regional Board is developing the *Calleguas Creek Watershed Salts TMDL*. The work plan addresses chloride, TDS, sulfate and boron in the watershed. The Regional Board and USEPA is using the work product from the Calleguas Creek Watershed Group to establish a subsequent TMDL for chloride in the Calleguas Creek Watershed.

Discharges from SSFL enters the Calleguas Creek Watershed in Arroyo Simi Reach 7, which is included on the 303 (d) list as a chloride water quality limited segment in the Calleguas Creek Watershed. There are no waste load allocations (WLAs) for point source discharges or load allocations (LAs) for nonpoint sources that apply to storm conditions in the TMDL. Since all discharges from the SSFL to the Arroyo Simi occur as a result of storm water runoff, no chloride WLAs will be included in this Order for

discharges from Outfalls 003 through 007, 009 and 010 to Arroyo Simi. Based on existing data, SSFL does not appear to contribute chloride loading to the watershed at levels that would alter the assumptions of the TMDL or contribute to further impairment.

Nitrogen Compounds and Related Effects TMDL. On October 24, 2002, the Regional Board adopted Resolution No. 2002-017, Amendment to the *Basin Plan for the Los Angeles Region* to Include a TMDL for Nitrogen Compounds and Related Effects in Calleguas Creek (*Nitrogen Compounds and Related Effects TMDL*). The State Board approved the Nitrogen Compounds and Related Effects TMDL on March 19, 2003. The Office of Administrative Law approved the TMDL on June 5, 2003 and USEPA approved it on June 20, 2003.

The *Nitrogen Compounds and Related Effects TMDL* includes waste load allocations for ammonia (NH₃), nitrite as nitrogen (NO₂-N), nitrate as nitrogen (NO₃-N), and nitrate plus nitrite as nitrogen (NO₂-N + NO₃-N). The TMDL authorizes interim limitations (expressed as interim waste allocations) for total nitrogen (NO₃-N + NO₂-N). The WLA applied to the publicly owned treatment works (POTW) in the watershed and the LAs are specified for agricultural discharges. Hence, this Order does not include the TMDL limitations for ammonia, nitrate as nitrogen, nitrite as nitrogen, or nitrate plus nitrite as nitrogen for discharges of storm water only from the SSFL to Arroyo Simi and Calleguas Creek. However, based on existing data, SSFL does not appear to contribute nitrogen loading to the watershed at levels that would alter the assumptions of the TMDL or contribute to further impairment.

The Regional Board approved the Basin Plan amendment to incorporate the TMDL for toxicity, chlorpyrifos, and diazinon in the Calleguas Creek, its tributaries and Mugu Lagoon (Resolution No. R4-2005-009) on July 7, 2005. The TMDL addresses impairment to water quality due to elevated levels of chlorpyrifos, diazinon, other pesticides and/or other toxicants. The amendment includes numeric targets, WLAs, and load allocations for Toxicity Unit Chronic, chlorpyrifos, and diazinon. It also includes a compliance schedule of two years from the effective date of the TMDL to meet the final WLAs and ten years to meet the LAs applied to nonpoint sources.

The State Board approved the TMDL on September 22, 2005 (Resolution No. 2005-0067). OAL and EPA approvals were effective on November 27, 2005, and March 14, 2006, respectively. The TMDL became effective on March 24, 2006. A waste load allocation of 1.0 TUc is allocated to the major point sources (POTWs) and minor point sources discharging to the Calleguas Creek Watershed. Interim and final waste load allocations and were also established for chlorpyrifos and diazinon. The implementation schedule specifies that the interim limitations for chlorpyrifos and diazinon in storm water NPDES permits be in stream limitations. The appropriate waste load allocations are translated into permit limitations and included in this Order beginning in “resolved” paragraph no. I.B., “Effluent Limitations.”

Resolution No. R4-2005-0010, a TMDL for organochlorine (OC) pesticides, polychlorinated biphenyl (PCBs) and siltation in Calleguas Creek, its tributaries, and Mugu Lagoon, was also approved by the Regional Board on July 7, 2005. The TMDL

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addresses impairment to water quality due to elevated concentrations of OC pesticides and PCBs, which can bioaccumulate in fish tissue and cause toxicity to aquatic life in estuarine and inland waters. Siltation may transport these contaminants to surface waters and impair aquatic life and wildlife habitats. The TMDL establishes water column targets, fish tissue targets, and sediment targets to ensure the protection of beneficial uses. The TMDL establishes a twenty-year plan for reducing OC pesticides, PCBs and siltation loads from point sources and nonpoint sources.

The State Board approved the TMDL on September 22, 2005 (Resolution No. 2005-0068). OAL and EPA approvals are followed on January 20, 2006, and March 14, 2006, respectively. The TMDL was effective on March 24, 2006. The appropriate targets will apply to discharges from Outfalls 003 through 007, 009, and 010 which enter Arroyo Simi, a tributary of Calleguas Creek.

The TMDL includes waste load allocations for OC pesticides and PCBs in sediment in Calleguas Creek and its tributaries. The waste load allocations have been translated directly into ambient contaminant concentrations in the sediment of Arroyo Simi. Those ambient contaminant concentrations will be compared directly to sediment concentrations measured in the samples collected to determine compliance with the interim waste load allocations stipulated. The interim waste load allocations are effective throughout the tenure of this permit.

The waste load allocations in the water column are translated into effluent limitations utilizing the steady state model from the SIP. The calculated effluent limitations are included as receiving water effluent limitations in "resolved" paragraph I.C.1. Since the discharge is storm water and it is near the top of the watershed, the Discharger may utilize the option of sampling the discharge for the OC pesticides and PCBs or sampling the receiving water. The Discharger may also choose to join the Calleguas Creek Watershed TMDL Monitoring Program (CCWTMP) and monitor at an established compliance sampling location in Arroyo Simi.

Resolution R4-2006-012, the TMDL for metals and selenium for Calleguas Creek, its tributaries and Mugu Lagoon was adopted by the Los Angeles Regional Board on June 8, 2006. The TMDL establishes numeric targets for dissolved copper, nickel, and zinc, and in total recoverable mercury and selenium. It also includes fish tissue targets for mercury, bird egg targets for mercury and selenium and sediment quality guidelines for copper, nickel, and zinc.

The State Board approved the TMDL on October 25, 2006 (Resolution No. 2006-0078). OAL and EPA approval the TMDL on February 6, 2007 and March 26, 2007 respectively. The TMDL became effective on March 26, 2007. This permit implements the TMDL.

Discharges from the Boeing SSFL site (Outfalls 003 through 007, 009, and 010) enter Calleguas Creek in Reach 7, which was Arroyo Simi Reaches 1 and 2 in the 1998 303(d) List. Dry weather discharges from this area do not reach Calleguas Creek and Mugu Lagoon. Therefore, no dry weather waste load allocations are established for the constituents in the water column. Selenium waste load allocations have not been

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developed for this reach as it is not on the 303 (d) list. The final waste load allocation developed for mercury was 0.051 µg/L. The mercury waste load allocation was used to develop a daily maximum effluent limit, implemented at Outfalls 003 through 007, 009, and 010.

Final waste load allocations for wet daily maximum concentrations of copper and nickel are stipulated as 31.0 and 958 µg/L, respectively. The daily maximum limit for copper is included in the permit. The TMDL-based daily maximum for nickel, 958 µg/L, was developed to protect aquatic life in the lower Calleguas Creek and Mugu Lagoon and it is greater than the Title 22-based MCL limit of 100 µg/L. Since the groundwater basin beneath the Arroyo Simi has municipal and domestic supply as an existing beneficial use, and Arroyo Simi has groundwater recharge as an intermittent beneficial use, the effluent limitation implemented must be protective of both groundwater recharge and the downstream aquatic life beneficial uses. Therefore, the 100 µg/L effluent limitation, which is protective of the beneficial uses of Arroyo Simi and the groundwater basin beneath it, has been implemented for nickel.

66. To prevent further degradation of the water quality of Los Angeles River and the Calleguas Creek (Arroyo Simi), and to protect its beneficial uses, mixing zones and dilution credits are not considered in derivation of the effluent limitations in this Order.

This determination is based on:

- Many of the beneficial uses stipulated are intermittent for Dayton Canyon Creek, Bell Creek and the Arroyo Simi. The discharges from SSFL in many cases provide a significant portion of the headwaters for these waterbodies, specifically for Dayton Canyon Creek and Bell Creek. Since there is little assimilative capacity for Dayton Canyon Creek and Bell Creek, a dilution factor is not appropriate and the final WQBEL should be a numeric objective applied end-of-pipe. The assimilative capacity for Arroyo Simi, which is the receiving water for storm water discharges from the northern boundary of SSFL, has not been evaluated and consequently no dilution has been given for discharges to that receiving water.
 - The discharge may contain the 303(d) listed pollutants that are bioaccumulative such as metals. These pollutants, when exceeding water quality criteria within the mixing zone, can potentially result in tissue contamination of an organism directly or indirectly through contamination of bed sediments with subsequent incorporation into the food chain. The SIP, section 1.4.2.2.B. states that the “Regional Board shall deny or significantly limit a mixing zone and dilution credit as necessary to protect beneficial uses...” It continues that “such situations may exist based upon the quality of the discharge... or the overall discharge environment (including ... potential for bioaccumulation).”
67. The Discharger may provide the information needed by the Regional Board to make a site-specific determination on allowing a mixing zone, including the calculations for deriving the appropriate receiving water and effluent flows, and/or the results of a mixing zone study. Upon receiving such data, the Regional Board will re-evaluate its

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determination for the need to incorporate dilution credits and will revise the effluent limitations as necessary.

Reasonable Potential Analysis

68. Discharges from the engine test stands, which generated wastewater, had not been regulated independently prior to Order R4-2004-0111. These discharges did not have specific monitoring requirements or effluent limitations. Order R4-2004-0111, in an effort to collect the data required to complete a reasonable potential analysis, includes monitoring requirements for discharges from the engine test stands and from the sewage treatment plants for priority pollutants. The subsequent Orders (R4-2006-00008 and R4-2006-0036) included effluent limitations for discharges from the engine test stands and the sewage treatment plants.
69. 40 CFR section 122.44(d)(1)(i) and (ii) require that each toxic pollutant be analyzed with respect to its reasonable potential when determining whether a discharge (1) causes, (2) has the reasonable potential to cause, or (3) contributes to the exceedance of a receiving water quality objective. This is done by conducting a reasonable potential analysis (RPA) for each pollutant. In performing the RPA, the permitting authority uses procedures that account for existing controls on point and nonpoint sources of pollution, the variability of the pollutant or pollutant parameter in the effluent, and the sensitivity of the test species to toxicity testing (when evaluating whole effluent toxicity). Because of effluent variability, there is always some degree of uncertainty in determining an effluent's impact on the receiving water. The SIP addresses this issue by suggesting the use of a statistical approach.

Order R4-2004-0111

70. Section 1.3 of the SIP requires that a limit be imposed for a toxic pollutant if (1) the maximum effluent concentration (MEC) is greater than the most stringent CTR criteria, (2) the background concentration is greater than the CTR criteria, or (3) other available information. These three criteria are routinely referred to as triggers. For the pollutants on the 303(d) list, which have been present in the effluent during past monitoring events, effluent limitations derived using the CTR criteria will be imposed in the permit.

The first two triggers were evaluated using the California Permit Writers Training Tool (CAPWTT). While on contract with the State Board, Scientific Applications International Corporation (SAIC) developed this software to determine RPAs and, when reasonable potential exists, calculate the WQBELs, following procedures in the SIP. The third trigger is evaluated by the permit writer utilizing all other information available to determine if a water quality-based effluent limitation is required to protect beneficial uses.

71. RPAs were performed for each of 126 priority pollutants for which effluent data were available. The basis for each RPA determination is identified in the attached Fact Sheet, which is part of this Order. The input data for the RPAs were provided in the Self-

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Monitoring Reports submitted by the Discharger. One RPA was performed for discharges from Outfalls 001 and 002, which are composed of treated wastewater, water from the groundwater treatment systems, excess reclaimed water, water from the engine test stands, and storm water. Four analytes had reasonable potential to exceed WQBELs: copper, lead, mercury, and TCDD. Three of these analytes (copper, lead, and mercury) had effluent limitations in the previous order (Order No. 98-051).

The Discharger also submitted data for the receiving water associated with discharges from Outfalls 001 and 002. This data was collected using elevated detection limits and hence several other constituents had reasonable potential. The constituents are 2,4,6-trichlorophenol, 2,4-dinitrotoluene, alpha-BHC, bis (2-ethylhexyl) phthalate, N-nitrosodimethylamine and pentachlorophenol. Effluent limitations for these constituents have also been included in this Order.

Since perchlorate has been detected above the Department of Health Services action level in storm water runoff from the facility and it has been detected in the influent to some of the groundwater treatment systems, SIP RPA Trigger 3 and BPJ have been used to establish reasonable potential for it to be present in discharges from the site via Outfalls 001 and 002. Consequently an effluent limit for perchlorate has been included in this Order for these discharges. Further, since perchlorate is not a naturally occurring pollutant and its presence in the receiving waters is the result of operations at the facility, the effluent limitation was developed based on anti-degradation grounds (State Board Res. No. 68-16 and 40 CFR § 131.12). The effluent limitation was therefore set at 6 µg/L, which would prevent the degradation of receiving waters and maintain and protect receiving water quality. Effluent limitations for a number of volatiles, which were included in the current Order and are believed to be present in the groundwater contaminant plume, have also been included in this Order.

Discharges from Outfalls 003 through 007 are storm water runoff only. Daily maximum and monthly average limitations for storm water were included in Order No. 98-051. This Order does not include monthly average limitations for priority pollutants in storm water only discharges since storm events are infrequent and often occur less than once per month during the rainy season. This is consistent with permits adopted by the Regional Board for storm water discharges only.

A second statistical analysis using CAPWTT was completed for discharges of storm water only from locations 003, 004, 005, 006, and 007. This analysis yielded a positive RPA for five analytes: cadmium, copper, cyanide, mercury, and TCDD. Cyanide was detected only once during the period evaluated at a concentration of 5.8 micrograms/liter (µg/L). That detection triggered the reasonable potential since it exceeds that calculated average monthly effluent limit (AMEL). However, the discharges evaluated are storm water only discharges, which do not have monthly average limitations. When the maximum effluent concentration (MEC) of 5.8 µg/L is compared to the maximum daily effluent limit (MDEL) the MEC is less than the MDEL. Consequently, Order R4-2004-0111 does not include an effluent limit for cyanide in the storm water only discharges. CTR-WQBELs for cadmium copper, mercury and TCDD have been included in this Order. The previous order (Order 98-051) included effluent limitations for all of these analytes except TCDD. The statistical analysis did not indicate that antimony or thallium had

reasonable potential. However, Order 98-051 included limitations for these analytes (MCL) from Title 22 from the Basin Plan since groundwater recharge is an intermittent beneficial use and the groundwater basin has an existing municipal and domestic supply beneficial use. The MCL for these constituents is more stringent than the CTR limitations. The compliance history reveals that the effluent limit for antimony (6 µg/L) was exceeded at Outfalls 005 and 007 in 1999 and the limit for thallium (2 µg/L) was exceeded at Outfall 005 on March 8, 2000. Hence, limitations for these constituents have also been included, since reasonable potential does exist for the applicable limit to be exceeded.

The effluent limitations included in order R4-2004-0111 and subsequent updates thereto (R4-2006-0008 and R4-2006-0036) for the analytes with a positive statistical or best professional judgment RPA are the most stringent of the limit included in Order 98-051, and the applicable CTR criteria which include the freshwater aquatic life criteria, and the human health criteria for consumption of organisms only.

72. As set forth above, Section 1.3 of the State Board's State Implementation Plan (SIP) establishes a stepwise procedure for determining which toxic pollutants require water quality-based effluent limitations in conformance with 40 C.F.R. § 122.44(d). This stepwise procedure for toxic pollutants is called a reasonable potential analysis. The SIP's reasonable potential analysis applies to water quality standards for priority pollutants, whether promulgated by USEPA or established as water quality objectives by the Regional Board. Steps 1 through 6 establish an analytical procedure for requiring water quality-based limitations based solely on discharge and ambient receiving water data. Except as noted in Finding 73, reasonable potential for toxic pollutants regulated by Order R4-2004-0111 and subsequent updates was determined using the analytical procedure in Steps 1 through 6 of SIP section 1.3 as explained in Finding 71 and the Fact Sheet.
73. Step 7 of SIP Section 1.3 recognizes that in certain instances a rote, mathematical analysis of the data will not be sufficient to protect beneficial uses. Step 7 therefore reserves for the Regional Board the obligation to "review other available information to determine if a water quality-based effluent limitation is required, notwithstanding the above analysis in *Steps 1 through 6*, to protect beneficial uses." Among the factors the State Board identifies as relevant to the Step 7 analysis are: the facility type, discharge type, and potential toxic impact of the discharge. With respect to the Facility, the Regional Board finds sufficient, unusual circumstances to require a water quality-based effluent limitation for trichloroethylene (TCE). Data and testimony indicate that approximately 530,000 gallons of TCE were released to the soil and groundwater at the Facility. The tremendous volume of TCE released at the site warrants significant scrutiny. While recent monitoring data do not show TCE in surface water discharges, scouring from large storm events may release soils with adsorbed TCE. The large volumes of TCE in scoured soils may become chemically available in the surface water runoff and cause or contribute to an exceedance of the water quality standard. In addition, the existing monitoring data has been collected far downstream from on-site sources. The data may not reliably indicate the presence of TCE in waters of the United States because the turbid conditions may have volatilized the TCE before it reached existing monitoring points (Outfalls 001 and 002). Further, contamination is spotty and

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not completely characterized; pathways are not always predictable and are not fully characterized; and the site is in a hilly environment with uncertain pathways and seeps which could possibly lead to surfacing of water with contamination that cannot be predicted. Finally, TCE is a probable carcinogen that can cause skin rashes on contact, and when ingested has been associated with liver and kidney damage, impaired immune system function, and in large volumes unconsciousness, impaired heart function, or death. Considering the toxic nature of TCE and that past practices at the site released extraordinary volumes of TCE into the environment that can leach into surface water through the scouring from storm events, and further considering that the existing monitoring data may not be representative of direct discharges to waters of the United States since the data were collected downstream of the initial discharge, the Regional Board has determined that a water quality-based effluent limitation for TCE is necessary to protect beneficial uses.

74. Order R4-2004-0111 included eleven new compliance points. These compliance points mark the location of engine test operations, onsite sewage treatment plants, and three new storm water monitoring locations where the associated discharges enter waters of the United States and two discharges from ponds located near the boundary of the developed portion of the site. The associated operations and outfalls for the new compliance points are listed in Finding 29.
75. For pollutants or discharges that lacked effluent data, interim requirements, as described below, were assigned. For these pollutants, the Discharger must submit to this Regional Board effluent concentration data, so that complete reasonable potential analyses can be performed and the need for effluent limitations can be determined.
- Pollutants that lacked sufficient data to do RPAs are subject to interim monitoring requirements.
76. Interim requirements were developed according to the following:
- Interim requirements in the form of monitoring were prescribed for constituents with no monitoring data or with “non-detectable” (ND) data, where all of the reported detection limits were greater than or equal to the CTR criterion. Monitoring is required for priority pollutants and emergent chemicals in discharges from the sewage treatment plants and the engine test stands.
 - No interim monitoring requirements or limitations were prescribed for constituents whose highest monitoring data points or lowest detection limits (in case of ND) were below their respective CTR criterion.
77. For some pollutants, including aldrin, alpha-BHC, chlordane, DDT, dieldrin, heptachlor, heptachlor epoxide, several PAHs, PCBs, TCDD equivalents, and toxaphene the applicable water quality objectives are below the levels that current analytical techniques can measure. Reasonable potential analyses have been completed on each of these constituents and two of them had reasonable potential: alpha-BHC and TCDD equivalents. The MEC detected for TCDD exceeded the CTR criterion and the detection limits for alpha-BHC in the receiving water and the effluent exceeded the

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criterion.

78. For 303(d) listed pollutants, the Regional Board plans to develop and adopt TMDLs, which will specify WLAs for point sources and LAs for non-point sources, as appropriate. Following the adoption of TMDLs by the Regional Board, NPDES permits will be issued with effluent limitations for water quality based on applicable WLAs. In the absence of a TMDL, effluent limitations for 303(d) listed pollutants for which RPA indicates a reasonable potential, will be established for (1) concentration based on the most stringent applicable CTR criterion and/or Basin Plan objective, and (2) mass emission based on the maximum discharge flow rate and concentration limitation.
79. As such, water quality objectives/criteria specified in the Basin Plan, the CTR, or the effluent limitations from the existing permit were used to set the limitations for pollutants that are believed to be present in the effluent and have reasonable potential of exceeding the water quality criteria. Other pollutants may only be monitored to gather data to be used in RPAs for future permit renewals and updates.

R4-2006-0008

80. After the adoption of Order R4-2004-0111, the Discharger collected data at most of the new compliance locations specified in the Order. This Order (R4-2006-0008) amends Order R4-2004-0111 and includes effluent limitations for the constituents that have, as a result of the monitoring and compliance sampling, demonstrated reasonable potential (RP).
81. Discharges from Outfalls 011 and 018 were evaluated with discharges from Outfalls 001 and 002. Outfalls 011 and 018 are the Perimeter Pond and the R-2 Pond Spillway, respectively. Discharges from these outfalls receive no additional treatment prior to exiting the site at Outfalls 001 and 002. However, additional storm water runoff which may also transport site contaminants will enter the streambed and contribute flow after the discharge exits Outfalls 011 and 018 and prior to it passing Outfalls 001 and 002, respectively. RP at these locations using only the data collected from August 20, 2005 through May 5, 2005 was evaluated using an excel spreadsheet. This analysis yielded statistical reasonable potential for the following priority pollutants: copper, lead, mercury, and TCDD. BPJ was used to establish effluent limitations for all other priority pollutants that have reasonable potential at Outfalls 001 and 002.

The Technical Support Document (TSD) for Water Quality-based Toxics Control (EPA/505/2-90-001) methodology for evaluating RP was used for all other constituents of concern (Page 53, Box 3-2). This evaluation resulted in statistical RP for iron, manganese, settleable solids, MBAS, TSS, perchlorate, nitrate +nitrite as Nitrogen, oil and grease, sulfate, BOD, and total dissolved solids. Effluent limitations for barium, fluoride, residual chlorine and chloride were retained after the completion of the BPJ analysis.

Storm Water Outfalls. Outfalls 003 through 007 had a robust data set to evaluate prior to the adoption of Order R4-2004-0111. Outfall 008 was a monitoring location for perchlorate and had no data for other priority pollutants. Outfalls 009 and 010 are new storm water compliance points and they had no data available prior to August 2004. The

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data collected at Outfalls 008 through 010 indicates that the discharges are very similar to those observed at the other storm water locations (Outfalls 003 through 007). Therefore, the analyses were combined and one evaluation was completed for all storm water only discharges (Outfalls 003 through 010).

The data yielded statistical RP for the following priority pollutants: copper, lead, mercury, and TCDD. Historical monitoring data, effluent violations, and site history were incorporated during the BPJ analysis, which resulted in establishing effluent limitations at Outfalls 008 through 010 consistent with those at Outfalls 003 through 007.

RP for constituents of concern in addition to the priority pollutants was also evaluated. Statistical RP exists for total suspended solids, perchlorate, boron, sulfate, total dissolved solids, oil and grease, and nitrate + nitrite as nitrogen. No new data was available for fluoride. Effluent limitations for chloride and fluoride are included based on BPJ.

82. Engine Test Stands. Wastewater data collected at the engine test stands Outfalls 012 through 014 from August 20, 2004 through March 30, 2005, was evaluated for reasonable potential. During this time discharges only occurred at Outfall 012. The RPA completed using the SIP methodology revealed reasonable potential of the wastewater for priority pollutants including copper, lead, mercury and TCDD. The analysis for other chemicals of concern was completed as per the TSD. The constituents with statistical RP are oil and grease, settleable solids, suspended solids, 1,4-dioxane, total petroleum hydrocarbons, naphthalene, tertiary butyl alcohol and ethylene dibromide. Effluent limitations for these constituents were therefore included in Order R4-2006-0036. Effluent limitations for total dissolved solids and for perchlorate were retained based on BPJ.
83. Sewage Treatment Plants. The sewage treatment plants, Outfalls 015 through 017, were evaluated and yielded statistical RP for cadmium, chromium III, copper, mercury, nickel, TCDD, MBAS, total suspended solids, perchlorate, BOD, oil and grease, total residual chlorine, total coliform, and nitrite as nitrogen.

R4-2006-0036

84. Discharges from Outfalls 001, 002, 011 and 018 flow to Bell Creek a tributary of the LA River. The TMDL for metals in the Los Angeles River assigned WLAs to all point source discharges to LA River and all upstream reaches and tributaries (including Bell Creek and tributaries to Bell Creek). Effluent limitations for cadmium, copper, lead, zinc, and selenium at the aforementioned outfalls are based on WLAs established by the TMDL or existing effluent limitations, whichever are more protective. The LA River Nutrient TMDL requires WLAs for ammonia-N, nitrate-N, and nitrite-N, which are included for these outfalls.
85. The storm water discharges (Outfalls 003 through 010) did not have reasonable potential for zinc. Outfalls 003 through 007, 009, and 010 flow to Arroyo Simi, a tributary to Calleguas Creek. However, discharges from Outfall 008 flow to the LA River, which has the LA River Metals TMDL that provides a WLA for zinc. That WLA has been incorporated as an effluent limitation at Outfall 008 only. The LA River Nutrient TMDL

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requires WLAs for ammonia-N, nitrate-N, and nitrite-N, which were also included for this outfall.

86. Rocket Engine Test Stands (Outfalls 012 through 014). Discharges from Outfalls 012 through 014 exit the site via tributaries to Bell Creek. The metals that have TMDL WLAs that do not have reasonable potential at these outfalls are cadmium, selenium and zinc. Effluent limitations for these constituents are included based on the TMDL. The Los Angeles River Nutrient TMDL developed WLAs for ammonia-N, nitrate-N, and nitrite-N. Daily maximum effluent limitations for these constituents are also applicable and included for discharges from these locations. The LA River Nutrient TMDL requires WLAs for ammonia-N, nitrate-N, and nitrite-N, which are included for these outfalls.
87. Sewage Treatment Plants (Outfalls 015 through 017). Discharges from Outfalls 015 through 017 also exit the site via tributaries to Bell Creek. The Metals TMDL resulted in new WLAs for lead and selenium and a wet weather discharge WLA for cadmium. The LA River Nutrient TMDL requires WLAs for ammonia-N, nitrate-N, and nitrite-N, which are included for these outfalls

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88. On December 13, 2006, in Order WQ 2006-0012, the State Board concluded that the compliance locations at Outfalls 001 and 011 were duplicative. It further concluded that compliance locations at Outfalls 002 and 018 were also duplicative. The order required that one set of the compliance points (outfalls with numeric effluent limitations) be deleted.

Figure 2 shows the Outfall locations as specified in Order R4-2004-0111 and its subsequent revisions. Outfall 011 is located at the Perimeter Pond. The Perimeter Pond is the final collection basin near the boundary of the developed property that storm water runoff collects prior to entering the undeveloped portion of the property and subsequently exiting the site after passing through Outfall 001.

Outfall 018, the R2-Pond Spillway, is located near the western edge of Area II. The R2 Pond collects storm water runoff from Areas II and III. Storm water runoff entering the R2 Pond has traversed several RCRA areas of concern, each of which have a host of contaminants of concern currently being investigated. The storm water runoff entering the R-2 Pond exits the pond via the R-2 Pond Spillway and travels southward into the undeveloped portion of the site through Outfall 002 prior to exiting the property.

The developed portion of the site has a number of areas of concern that are included in the RCRA assessment and cleanup proceeding with DTSC oversight. Each of these areas has the potential to contribute contaminants to the storm water runoff traversing it. Since Outfalls 011 and 018 are near the boundary of the developed portion of the site, the Regional Board has decided to retain them as compliance points with numeric effluent limitations. However, runoff from a couple of areas of concern may not be captured in monitoring which occurs at these outfalls. Therefore, the Discharger will be required to continue monitoring at Outfalls 001 and 002.

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A “benchmark” is a water quality based effluent limit or a performance based limit that is used to evaluate the performance of BMPs with regard to the removal of contaminants present in the discharge. In this permit, the benchmarks are established based on water quality based effluent limitations. Exceedance of a benchmark triggers an evaluation of the BMPs implemented at the site. The evaluation may determine that the BMPs require augmentation, upgrade, or replacement. If so, the Discharger must update the BMP Compliance Plan, secure the required approval from the Executive Officer, and implement the required upgrades. Section II.C.7., that follows includes the requirements for implementing the BMP Plan for compliance with the benchmarks specified in this permit.

The numeric effluent limitations from Outfalls 011 and 018 will be used as benchmarks to evaluate the efficiency of BMPs implemented at Outfalls 001 and 002. This data will also provide information about the concentration of the contaminants entering the closest residential area and entering Bell Creek.

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89. A reasonable potential analysis was completed for data collected through May 22, 2006. The analysis did not result in the inclusion of any new constituents with effluent limitations in this Order.
90. The Topanga Fire resulted in significant alterations to the site. The exposure of the surface soils with no vegetative cover to runoff has increased the potential for the transport of those surface soils and associated contaminants offsite as a result of the fire. The fire created runoff conditions at SSFL over which the Discharger has limited control. Over 70 percent of the SSFL burned with significant areas denuded of vegetation, making much of the steep terrain highly erodible. Boeing hydromulched upwards of 800 acres and installed erosion control devices throughout much of the SSFL after the fire which occurred on September 28, 2005, and prior to the January 19, 2006 Board Hearing.

After the fire Boeing immediately began efforts to replace the BMPs that were destroyed. Many of the drainage areas were vacuumed to remove accumulated ash. The Discharger hydromulched in excess of 800 acres onsite and installed erosion control devices throughout much of the SSFL site prior to the January 19, 2006 Board Meeting. BMPs implemented prior to the fire were typical of those routinely used at construction sites to retard the transport of sediment (silt fences, plastic sheeting, etc). In most cases, the BMPs implemented after the fire were designed to slow flows (i.e. using underdrain systems) and to treat specific contaminant groups (i.e. metals) using bags filled with carbon or vermiculite. Most recently, the BMPs implemented have been designed to treat the runoff from a storm with the flow of 2.3 inches of rain.

On May 24, 2007, Boeing submitted to the Regional Board the *Phase 2 Post-Fire Vegetation Recovery Assessment Report* prepared for Geosyntech Consultants by Western Botanical Services, Inc. The report assessed the status of and time to recovery of chaparral and scrub at the project site subsequent to the Topanga Fire. The

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executive summary of the report asserts that chaparral and scrub represent the dominant vegetation types at SSFL and that these plant communities represent an important natural vegetation-based means of erosion control at the site. It further states that the “perennial plant cover differed by significantly more than 30 percent between burned and unburned transects, total vegetative cover differed by significantly greater than 20 percent cover and ground cover differed by significantly more than 30 percent cover.” The executive summary also states that the burned chaparral and scrub vegetation will likely recover to near pre-fire conditions within five to ten years.

The report also includes a section titled *Chaparral Recovery after Fire*. The section includes summaries of other studies completed on chaparral. Several studies (Guo 2001, Grace & Keeley 2006, Keeley & Keeley 1981, Horton & Kraebel 1955, Robi Chaud et al 2000) concluded that the total vegetative cover is generally high in the first two years following a fire: reported values are from 11 to 85 percent. The report estimates that between March 26 and April 12, 2007, the mean total vegetative cover within the burned areas is 46.6 percent.

91. Discharges from Outfalls 012 (Alpha Test Stand) and 013 (Bravo Test Stand) flowed to Silvernale Pond, into R-2 Pond, which discharges at Outfall 018 and ultimately to Outfall 002. Discharges from Outfall 014 (APTF) flowed to R-1 Pond, into Perimeter Pond, which discharges at Outfall 011, and ultimately to Outfall 001. The ROWD submitted on February 21, 2007, stated that all rocket engine testing activities have ceased and will not recur. Order R4-2006-0036 included effluent limitations for discharges from the rocket engine test stands and required monitoring during testing events. Those requirements will not be included in the current Order (R4-2007-0055).

However, years of testing have resulted not only in groundwater contamination but in surface and subsurface soil contamination. These contaminants may be mobilized by storm water traversing these areas. Therefore, this Order includes a requirement to implement BMPs around these areas and to monitor the storm water runoff for contaminants of concern. The previous effluent limitations for discharges from the engine test stands provide benchmarks, to evaluate the effectiveness of the BMPs with controlling the transport of contaminants from the areas.

92. Sewage Treatment Plants (Outfalls 015 through 17). The most recent ROWD states that all discharges from Outfalls 015 through 017 have ceased. The basins at the facilities will continue to be used for the collection of sewage. The collection tanks at the sewage treatment plants have sewage level measuring instruments and alarms. Routine removal and hauling of the sewage takes place before the sewage levels reach the levels that would trigger the alarms. Should the amount of sewage in the holding tanks reach the level which would trigger the alarms, the sewage is transferred to additional tanks onsite and sewage hauling contractors are mobilized to move the sewage for offsite treatment and disposal

This protocol alleviates discharges from this area. Thus requirements for monitoring at these locations will be eliminated.

93. The discharge from SSFL (Outfalls 001 through 018) is primarily storm water runoff which

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may contain mobilized contaminants from the site. Outfall 019 will discharge treated groundwater from onsite cleanup operations. Discharges from Outfall 019 will enter the drainage way upstream of Outfall 011. The size of the site and the volume of storm water runoff generated presents challenges with treating the entire volume of rainfall. The BMPs for Outfalls 003 through 007 and 010 are designed to treat the storm water runoff generated from a 2.3 inch storm which represents the 85th percentile of the 1-year 24-hour storm event using the Los Angeles County Department of Public Works (LACDPW) estimation models.

94. Over the last two years, the Regional Board has been working with the Southern California Coastal Water Research Project (SCCWRP) and a cross-section of stakeholders in the region known as the Design Storm Project Steering Committee to evaluate potential design storms in terms of capturing storm water runoff, achieving water quality standards, and implementability. A “design storm” is a specific size storm event used to plan for and design storm water controls. A draft report is scheduled for circulation in early September 2007, which will summarize the results of the first two years of the project; discuss the complexities of establishing a regional design storm; and set forth recommendations for additional technical studies, sensitivity analysis and modeling.

Any effort to develop a regional design storm requires that assumptions and generalizations are made. Regional Board staff anticipates that further work will be needed, before proposing a regional design storm policy or any site-specific design storm, in order to further explore these assumptions and generalizations; evaluate the efficacy of the design storm for different pollutants and land uses; refine the data used in modeling the water quality outcomes of potential design storms; and to consider policy with regard to incorporating design storms into permits.

Double Counting of Violations

95. In several cases; Order R4-2006-0008 and Order R4-2006-0036 included numeric effluent limitations downstream of a compliance point which also had numeric effluent limitations. Concerns were raised by the State Board regarding the potential for double counting violations. Following is a description of how the monitoring was configured which demonstrates that there was little potential for double counting of violations.

Specifically, discharges from Outfall 012 (Alfa Test Stand) had numeric effluent limitations. The discharge from Outfall 012 (rocket engine test firing) was monitored when it occurred. The samples were collected and a determination of compliance was made on that specific event. The discharged wastewater flowed through several RCRA Facility Investigation (RFI) sites included the Bravo Test Stand, Storable Propellant Area (SPA), and Alfa/Bravo Fuel Farm (ABFF) prior to mixing with other wastewater in the Silvernale Pond. At each of the RFI sites there is the potential for the discharged wastewater to pick up additional contaminants in the surface soils or subsurface soils. The Silvernale Pond is also an RFI site with contaminants present in the sediment. The mixed wastewater will sit in Silvernale until the level of wastewater present is enough to cause the pond to overflow. The flow from Silvernale traverses two other RFI sites prior to entering the R-2 Pond. There the flow from Silvernale, which is much different than the flow from Alfa Test Stand (Outfall 012) during a rocket engine test, and any other

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wastewater in R-2 Pond mixes. Discharges from R-2 Pond (Outfall 018) have effluent limitations. However, historically discharges from the ponds do not occur at the same time that rocket engine tests occur. Discharges from R-2 Pond have routinely occurred only after storm events. Since the discharge from Outfall 012 occurs in some cases months prior to discharges from Outfall 018 and since the discharges from Outfall 012 traverse several RCRA RFI sites where contaminants are present prior to entering the R-2 Pond (Outfall 018), there is little probability that “double counting” occurs at this location.

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96. The Discharger, as directed by the 2007 CDO (Order R4-2007-0056), assembled a panel of experts (Expert Panel) with experience in treating storm water flows utilizing engineered natural treatment systems (ENTS). The Expert Panel reviewed site conditions, modeled flow, contaminants of concern and evaluated the technologies applicable and the BMPs capable of providing the required treatment to meet the final effluent limitations. The panel initially evaluated site conditions and on April 30, 2008, issued a report entitled “Expert Panel Final Consensus Recommendation on a Site Specific Design Storm for the SSFL.” The Expert Panel recommended a site specific design storm defined as either, 2.5 inches during a 24-hour period, or 0.6 inches in an hour, as measured at the Area IV rain gauge located at the SSFL. The design storm criteria have been used by the Discharger to size BMPs at the outfalls and to design the ENTs. The design storm has not been implemented in this Order as a mechanism to determine compliance with numeric effluent limitations.
97. On December 3, 2008, Tracy Egoscue, Executive Officer of the Regional Board, issued a California Water Code Section 13304 Order to perform interim/source removal action of soil in the areas of Outfalls 008 and 009 Drainage Areas to the Discharger. The Order directed the Discharger to cleanup and abate the waste that are discharging to waters of the State, minimize impacts to the streambed and adjacent habitat during the cleanup, protect the water quality during and after the cleanup, and restore the streambed and surrounding habitat following the cleanup.

The Discharger has proposed an implementation schedule within which it would complete the requirements of the 13304 Order. The Regional Board has examined the implementation schedule and with some modifications has determined a schedule that is as short as practicable at this time. The Regional Board has determined that the shortest practicable time extends from June 10, 2009 through June 27, 2012, approximately three years. Notwithstanding the need for a longer compliance schedule, the SIP limits compliance schedules in NPDES permits for priority pollutants to not later than May 17, 2010. Therefore, this Order includes a schedule that terminates on May 17, 2010.

A reopener has been included in this Order that allows modification or rescission of the implementation schedule and the associated benchmarks if the Discharger fails to comply with the 13304 Order.

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98. On December 11, 2008, the Discharger submitted a new ROWD. Supplemental information was submitted on February 2, 2009, to complete the ROWD. This Order includes updates required as a result of the new ROWD, the California Water Code Section 13304 Order, and the new RPA conducted on data collected from August 2004 through December 2008.
99. The new RPA did not yield new constituents with reasonable potential at any of the current compliance locations.

Background and Rationale for Requirements.

100. The Regional Board developed the requirements in this Order based on information submitted as part of the application, through monitoring and reporting programs, and through special studies. The Fact Sheet, which contains background information and rationale for Order requirements, is hereby incorporated into this Order and constitutes part of the Findings for this Order. The Monitoring and Reporting Program (Attachment T) and all other attachments are also incorporated into this Order.

CEQA and Notifications

101. The Regional Board has notified the Discharger and interested agencies and persons of its intent to issue waste discharge requirements for this discharge and has provided them with an opportunity to submit their written views and recommendations.
102. The Regional Board, in a public hearing, heard and considered all comments pertaining to the discharge and to the tentative requirements.
103. This Order shall serve as a NPDES permit pursuant to Section 402 of the Federal Clean Water Act or amendments thereto, and shall take effect in accordance with federal law, provided the Regional Administrator, USEPA, has no objections.
104. Pursuant to California Water Code Section 13320, any aggrieved party may seek review of this Order by filing a petition to the State Board. A petition must be sent to the State Water Resources Control Board, Office of Chief Counsel, Attn: Elizabeth Miller Jennings, Senior Staff Counsel, 1001 I Street, 22nd Floor, Sacramento, CA 95814, within 30 days of adoption of this Order.
105. The issuance of waste discharge requirements for this discharge is exempt from the provisions of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code (CEQA) in accordance with the California Water Code, Section 13389.

IT IS HEREBY ORDERED that The Boeing Company (Santa Susana Field Laboratory), in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Federal Clean Water Act and regulations and guidelines adopted thereunder, shall comply with the following:

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I. Discharge Requirements

A. Discharge Prohibition

1. Wastes discharged shall be limited to treated groundwater, fire suppression water, and storm water runoff, as proposed.
2. Discharges of water, materials, radiologic wastes, thermal wastes, elevated temperature wastes, toxic wastes, deleterious substances, or wastes other than those authorized by this Order, to the Arroyo Simi and tributaries to Calleguas Creek, to Dayton Canyon Creek, Bell Creek, and tributaries to the Los Angeles River, or waters of the United States, are prohibited.

B. Effluent Limitations

1. The pH of wastes discharged shall at all times be within the range 6.5 to 8.5.
2. The temperature of wastes discharged shall not exceed 86 °F.
3. The discharge of an effluent from Outfall 018 with constituents in excess of the daily maximum limitations listed below is prohibited for storm water runoff. The discharge of an effluent from Outfall 011 and 019 when discharging together must demonstrate compliance with both the daily maximum and monthly average effluent limitations listed below. Storm water only discharges from Outfall 011 must demonstrate compliance with the daily maximum effluent limitations only.

<u>Constituents</u>	<u>Units</u>	<u>Discharge</u>	<u>Limitations</u>
		<u>Monthly Average</u>	<u>Daily Maximum</u>
Total suspended solids ¹	mg/L	15	45
	lbs/day ²	20,016	60,048

¹ The effluent limitations for total suspended solids and settleable solids are not applicable for discharges during wet weather. During wet weather flow, a discharge event is greater than 0.1 inch of rainfall in a 24-hour period. No more than one sample per week need be obtained during extended periods of rainfall and a storm must be preceded by at least 72 hours of dry weather.

² The mass is calculated using the maximum permitted flow of 160 mgd for Outfalls 001 and 002. The flow used to calculate the mass for Outfalls 003 through 010 is 17.8 mgd. The flow used for Outfalls 012 through 014 was 0.004 MGD and the flow used for Outfalls 015 through 017 is 0.06 MGD. If the recorded flow is different the mass should be recalculated using the equation: Mass (lbs/day) = Flow (mgd) * 8.34 * concentration (mg/L).

© Thirty day average at pH = 7.9 and 20°C, when hourly samples are collected and composited or only one grab sample is collected. Analysis for the temperature and pH of the receiving water at the same time as the discharge would provide data for a site specific determination of the ammonia limit using Attachment H to the WDR. Shall there be no receiving water present, the pH and temperature of the effluent at the monitoring location shall be determined and reported.

® One hour average WLA at 7.9 pH and 20°C, applies if hourly samples are taken throughout the storm and each is analyzed. No single sample may exceed the 10.1 mg/L limit. Analysis for the temperature and pH of the receiving water at the same time as the discharge would provide data for a site specific determination of the ammonia limit using Attachment H to the WDR. Shall there be no receiving water present, the pH and temperature of the effluent at the end of pipe shall be determined and reported.

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<u>Constituents</u>	<u>Units</u>	<u>Discharge</u>	<u>Limitations</u>
		<u>Monthly Average</u>	<u>Daily Maximum</u>
BOD ₅ 20°C	mg/L	20	30
	lbs/day ²	26,700	40,032
Oil and grease	mg/L	10	15
	lbs/day ²	13,344	20,016
Settleable solids ¹	ml/L	0.1	0.3
Total residual chlorine	mg/L	----	0.1
	lbs/day ²	----	133
Total dissolved solids	mg/L	----	950
	lbs/day ²	----	1,270,000
Chloride	mg/L	----	150
	lbs/day ²	----	200,160
Sulfate	mg/L	----	300
	lbs/day ²	----	400,320
Barium ³	mg/L	----	1.0
	lbs/day ²	----	1,330
Fluoride ³	mg/L	----	1.6
	lbs/day ¹	----	2135
Iron ³	mg/L	----	0.3
	lbs/day ²	----	400
Detergents (as MBAS)	mg/L	----	0.5
	lbs/day ²	----	667
Nitrate + Nitrite-N	mg/L	----	8.0
	lbs/day ²	----	10,700
Ammonia-N	mg/L	1.96 [Ⓞ]	10.1 [Ⓞ]
	lbs/day ²	2,615	13,500
Nitrate-N	mg/L	----	8.0
	lbs/day ²	----	10,700
Nitrite-N	mg/L	----	1.0
	lbs/day ²	----	1,334
Manganese ³	µg/L	----	50
	lbs/day ²	----	66.7
Cyanide ³	µg/L	4.3	8.5
	lbs/day ²	5.7	11.3
Antimony ³	µg/L	----	6.0
	lbs/day ²	----	8.01
Arsenic ^{3,4}	µg/L	----	10
	lbs/day ²	----	66.7
Beryllium ³	µg/L	----	4.0
	lbs/day ²	----	5.34

³ These discharge limitations are expressed as total recoverable.

⁴ Concentrations correspond to a total hardness of 100 mg/L. For other conditions where total hardness exceeds 100 mg/L, the limitations can be calculated by following the instructions outlined in 40 CFR Part 131.

<u>Constituents</u>	<u>Units</u>	<u>Discharge</u>		<u>Limitations</u>	
		<u>Monthly Average</u>		<u>Daily Maximum</u>	
Cadmium ^{3,4}	µg/L	2.0		4.0/3.1 ^{*β}	
	lbs/day ²	2.7		5.34/4.14 ^{*β}	
Chromium (VI) ⁵	µg/L	8.1		16.3	
	lbs/day ²	10.8		21.8	
Copper ^{3,4}	µg/L	7.1		14.0	
	lbs/day ²	9.5		18.7	
Lead ^{3,4}	µg/L	2.6		5.2	
	lbs/day ²	3.5		6.94	
Mercury ³	µg/L	0.05		0.10	
	lbs/day ²	0.07		0.13	
Nickel ^{3,4}	µg/L	35		96	
	lbs/day ²	47		128	
Selenium ³	µg/L	4.1		8.2/5 ^{#β}	
	lbs/day ²	5.5		10.9/6.67 ^{#β}	
Silver ^{3,4}	µg/L	2.0		4.1	
	lbs/day ²	2.7		5.5	
Thallium ³	µg/L	----		2.0	
	lbs/day ²	----		2.7	
Zinc ^{3,4}	µg/L	54		119	
	lbs/day ²	72		159	
1,1-Dichloroethylene	µg/L	3.2		6.0	
	lbs/day ²	4.3		8.0	
Trichloroethylene	µg/L	----		5.0	
	lbs/day ²	----		6.7	
Perchlorate	µg/L	----		6.0	
	lbs/day ²	----		8.0	
TCDD	µg/L	1.4E-08		2.8E-08	
	lbs/day	1.9E-08		3.7E-08	
2,4,6-Trichlorophenol	µg/L	6.5		13.0	
	lbs/day	8.7		17	
2,4-Dinitrotoluene	µg/L	9.1		18.3	
	lbs/day	12		24	

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⁵ The Discharger has the option to meet the hexavalent chromium limitations with a total chromium analysis. However, if the total chromium level exceeds the hexavalent chromium limitation, it will be considered a violation unless an analysis has been made for hexavalent chromium in replicate sample and the result reported is within the hexavalent chromium limitations.

* Effluent limit applies only during wet weather discharges. Wet Weather conditions occur between October and March.

^β This effluent limit shall be deemed vacated at such time as Regional Board Resolutions R05-006 and R05-007 are vacated in compliance with a writ of mandate in the matter of Cities of Bellflower et al v. State Water Resources Control Board et al, Los Angeles Superior Court # BS101732. The Regional Board shall provide notice to the discharger of any such action.

Effluent limit applies only during dry weather discharges. Dry weather conditions occur from April through September.

<u>Constituents</u>	<u>Units</u>	<u>Discharge</u>	<u>Limitations</u>
		<u>Monthly Average</u>	<u>Daily Maximum</u>
Alpha BHC	µg/L	0.01	0.03
	lbs/day	0.013	0.04
Bis(2-ethylhexyl)phthalate	µg/L	----	4.0
	lbs/day	----	5.3
N-Nitrosodimethylamine	µg/L	8.1	16.3
	lbs/day	10.8	21.8
Pentachlorophenol	µg/L	8.2	16.5
	lbs/day	10.9	22
Radioactivity Gross Alpha	pCi/L	----	15
	pCi/L	----	50
Combined Radium-226 & Radium-228	pCi/L	----	5.0
	pCi/L	----	20,000
Tritium	pCi/L	----	8.0
Strontium-90	pCi/L	----	

The limitations included in the table above are also benchmarks at Outfalls 001 and 002. The daily maximum and monthly average effluent limitations are benchmarks for Outfall 001 and the daily maximum effluent limitations are benchmarks for Outfall 002.

4. The discharge of storm water runoff only from Discharge Nos. 003 through 010 with constituents in excess of the following limitations is prohibited:

<u>Constituents</u>	<u>Units</u>	<u>Discharge</u>	<u>Limitations</u>
		<u>Monthly Average</u>	<u>Daily Maximum</u>
Oil and grease	mg/L	----	15
	lbs/day ²	----	2,227
Total dissolved solids	mg/L	----	850
	lbs/day ²	----	126,184
Total dissolved solids	mg/L	----	950 ⁶
	lbs/day ²	----	141,029
Chloride	mg/L	----	150
	lbs/day ²	----	22,268
Boron ³	mg/L	----	1.0
	lbs/day ²	----	148
Sulfate	mg/L	----	250 ⁷
	lbs/day ²	----	37,113
Sulfate	mg/L	----	300 ⁶
	lbs/day ²	----	44,536
Fluoride	mg/L	----	1.6
	lbs/day ²	----	238

<u>Constituents</u>	<u>Units</u>	<u>Discharge</u>	<u>Limitations</u>	R E V I S E D T E N T A T I V E
		<u>Monthly Average</u>	<u>Daily Maximum</u>	
Nitrate + Nitrite-N	mg/L lbs/day ²	----	10 ⁷ 1,485	
Nitrate + Nitrite-N	mg/L lbs/day ²	----	8.0 ⁶ 1,188	
Ammonia-N ^(Outfall 008 only)	mg/L lbs/day	----	10.1 [®] 1,500	
Nitrate-N ^(Outfall 008 only)	mg/L lbs/day	--	8.0 1,190	
Nitrite-N ^(Outfall 008 only)	mg/L lbs/day	--	1.0 148	
Selenium ^(Outfall 008 only)	µg/L lbs/day	----	5 ^{#β} 0.7 ^{#β}	
Zinc ^(Outfall 008 only)	µg/L lbs/day	----	159* ^β 23.6* ^β	
Perchlorate	µg/L lbs/day ²	----	6.0 0.89	
Antimony ³	µg/L lbs/day ²	----	6.0 0.89	
Cadmium ^{3,4}	µg/L lbs/day ²	----	4.0/(3.1* ^β ^(Outfall 008 only)) 0.59/(0.46* ^β ^(Outfall 008 only))	
Copper ^{3,4}	µg/L lbs/day ²	----	14.0 2.08	
Mercury ³	µg/L lbs/day ²	----	0.13 0.02	
Nickel ³	µg/L lbs/day ²	----	100 [®] 14.9	
Thallium ³	µg/L lbs/day ²	----	2.0 0.3	
Lead ³	µg/L lbs/day ²	----	5.2 0.77	
TCDD	µg/L lbs/day ²	----	2.8E-08 4.2E-09	
Chronic toxicity	TU _c	----	1 ^α	
Radioactivity				
Gross Alpha	pCi/L	----	15	
Gross Beta	pCi/L	----	50	
Combined Radium-226 & Radium-228	pCi/L	----	5	
Tritium	pCi/L	----	20,000	
Strontium-90	pCi/L	----	8	

The effluent limitations in the table above serve as benchmarks, as defined in finding 88, paragraph five, for the storm water runoff from Outfalls 008 and 009, from November 1, 2007, through May 17, 2010.

5. Benchmarks for storm water at the former locations of Outfalls 012, 013, and 014 are:

<u>Constituents</u>	<u>Units</u>	<u>Discharge Monthly Average</u>	<u>Limitations Daily Maximum</u>
Oil and grease	mg/L lbs/day ²	----	15 0.5
Total dissolved solids	mg/L lbs/day ²	----	950 31.7
Total suspended solids	mg/L lbs/day ²	----	45 1.5
Settleable solids	ml/L	----	0.3
Chloride	mg/L lbs/day ²	----	150 5.0
Boron ^{3,7}	mg/L lbs/day ²	----	1.0 0.03
Sulfate	mg/L lbs/day ²	----	300 10
Fluoride	mg/L lbs/day ²	----	1.6 0.05
Nitrate + Nitrite-N	mg/L lbs/day ²	----	8.0 0.3
Ammonia-N	mg/L lbs/day	----	10.1 [®] 0.34
Nitrate-N	mg/L lbs/day	----	8.0 0.27
Nitrite-N	mg/L lbs/day	----	1.0 0.03
Cadmium	µg/L lbs/day	----	3.1* ^β 0.0001* ^β
Selenium	µg/L lbs/day	----	5 ^{#β} 0.0002 ^{#β}
Zinc	µg/L lbs/day	----	159* ^β 0.005* ^β
Copper ^{3,4}	µg/L lbs/day ²	----	13.5 0.0004
Lead ³	µg/L lbs/day ²	----	5.2 0.0002
Mercury ³	µg/L lbs/day ²	----	0.10 0.000003
TCDD	µg/L lbs/day ²	----	2.8E-08 9.3E-12

^α The chronic toxicity limit is effective at Outfalls 003 through 007, 009, and 010. The limit is included in the Calleguas Creek Toxicity TMDL.

<u>Constituents</u>	<u>Units</u>	<u>Discharge</u>	<u>Limitations</u>
		<u>Monthly Average</u>	<u>Daily Maximum</u>
Naphthalene	µg/L	----	21
	lbs/day ²	----	0.0007
Total petroleum hydrocarbons	µg/L	----	100
	lbs/day ²	----	0.003
Ethylene dibromide	µg/L	----	50
	lbs/day ²	----	0.002
Tertiary butyl alcohol	µg/L	----	12
	lbs/day ²	----	0.0004
1,4-Dioxane	µg/L	----	3
	lbs/day ²	----	0.0001
Perchlorate	µg/L	----	6.0
	lbs/day ²	----	0.0002

6. With the exception of Outfalls 001 and 002, in the event that an effluent limitation set forth above for a pollutant other than a radioactive material is exceeded and the Discharger presents within 30 days of the date of discovery documentation that (i) discharges from a solid waste management unit (unit) regulated by DTSC are causing or contributing to the violation, and (ii) the Discharger was in compliance with all applicable requirements of DTSC permits and corrective action requirements for the unit, and (iii) modifications to DTSC's permit or corrective action requirements are necessary to consistently comply with this Order, then the Discharger, DTSC, and Regional Board will work cooperatively to develop a schedule that is as short as possible to take appropriate actions under the RCRA corrective action requirements or permits, as appropriate, to ensure compliance with this Order. This Order may be reopened and modified, in accordance with applicable laws and regulations, or a Time Schedule Order issued to incorporate appropriate interim limitations while the appropriate actions are being taken under the RCRA corrective action requirements or permits.

C. Receiving Water Limitations

1. The discharge shall not cause the concentration of constituents in Arroyo Simi in the vicinity of the discharges, from Outfalls 003 through 007, 009, and 010, to exceed the following limitations:

<u>Constituents</u>	<u>Units</u>	<u>Discharge</u>	<u>Limitations</u>
		<u>Monthly Average</u>	<u>Daily Maximum</u>
Chlorpyrifos	µg/L	---	0.02
Diazinon	µg/L	---	0.16

⁶ The limit applies to discharges from Outfall 008 only.

⁷ The limit is applicable for discharges from Outfalls 003 through 007, 009 and 010 which flows to Calleguas Creek. It is not applicable at Outfall 008 which discharges to Bell Creek and subsequently the Los Angeles River.

<u>Constituents</u>	<u>Units</u>	<u>Discharge Monthly Average</u>	<u>Limitations Daily Maximum</u>
Chlordane	µg/L	---	0.001
4,4-DDD	µg/L	---	0.0014
4,4-DDE	µg/L	---	0.001
4,4-DDT	µg/L	---	0.001
Dieldrin	µg/L	---	0.0002
PCBs	µg/L	---	0.0003
Toxaphene	µg/L	---	0.0003

The discharge shall not cause any of the following conditions to exist in the receiving waters at any time:

- a. Floating, suspended or deposited macroscopic particulate matter or foam;
 - b. Alteration of temperature, turbidity, or apparent color beyond present natural background levels;
 - c. Visible, floating, suspended or deposited oil or other products of petroleum origin;
 - d. Bottom deposits or aquatic growth; or,
 - e. Toxic or other deleterious substances to be present in concentrations or quantities which cause deleterious effects on aquatic biota, wildlife, or waterfowl or render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration.
2. No discharge shall cause a surface water temperature rise greater than 5°F above the natural temperature of the receiving waters at any time or place.
 3. The discharge shall not cause the following limitations to be exceeded in the receiving waters at any place within one foot of the water surface:
 - a. The pH shall not be depressed below 6.5 nor raised above 8.5, nor caused to vary from normal ambient pH levels by more than 0.5 units;
 - b. Dissolved oxygen shall not be less than 5.0 mg/L anytime, and the median dissolved oxygen concentration for any three consecutive months shall not be less than 80 percent of the dissolved oxygen content at saturation;
 - c. Dissolved sulfide shall not be greater than 0.1 mg/L;

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4. Toxicity limitations for discharges from Outfalls 001 through 014, 018, and Outfall 019:
 - a. Acute Toxicity Limitation and Requirements
 1. The acute toxicity of the effluent shall be such that: (i) the average survival in the undiluted effluent for any three (3) consecutive 96-hour static or continuous flow bioassay tests shall be at least 90%, and (ii) no single test producing less than 70 % survival.
 2. If either of the above requirements (Section I.C.4.a.1) is not met, the Discharger shall conduct six additional tests over a six-week period. The discharger shall ensure that they receive results of a failing acute toxicity test within 24 hours of the close of the test and the additional tests shall begin within 3 business days of the receipt of the result. If the additional tests indicate compliance with acute toxicity limitation, the discharger may resume regular testing. However, if the results of any two of the six accelerated tests are less than 90% survival, then the Discharger shall begin a Toxicity Identification Evaluation (TIE). The TIE shall include all reasonable steps to identify the sources of toxicity. Once the sources are identified, the Discharger shall take all reasonable steps to reduce toxicity to meet the objective.
 3. If the initial test and any of the additional six acute toxicity bioassay test result in less than 70% survival, including the initial test, the Discharger shall immediately begin a TIE.
 4. The Discharger shall conduct acute toxicity monitoring as specified in Monitoring and Reporting Program No. 6027.
 - b. Chronic Toxicity Limitation and Requirements:
 1. This Order includes a chronic testing toxicity trigger defined as an exceedance of 1.0 TU_c in a critical life stage test for 100% effluent. (The monthly median for chronic toxicity of 100% effluent shall not exceed 1.0 TU_c in a critical life stage test.)
 2. If the chronic toxicity of the effluent exceeds 1.0 TU_c, the Discharger shall immediately implement an accelerated chronic toxicity testing according to MRP No. 6027, Section IV.D. If the results of two of the six accelerated tests exceed 1.0 TU_c, the Discharger shall initiate a TIE and implement the Initial Investigation TRE Workplan. (see MRP No. 6027, Section IV.E.).
 3. The Discharger shall conduct chronic toxicity monitoring as specified in MRP No. 6027.

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4. The chronic toxicity of the effluent shall be expressed and reported in toxic units, where:

$$TU_c = \frac{100}{NOEC}$$

The No Observable Effect Concentration (NOEC) is expressed as the maximum percent effluent concentration that causes no observable effect on test organisms, as determined by the results of a critical life stage toxicity test.

5. Preparation of an Initial Investigation TRE Workplan
- i. The Discharger shall submit a detailed initial investigation Toxicity Reduction Evaluation (TRE) workplan to the Executive Officer of the Regional Board for approval within 90 days of the effective date of this permit. The Discharger shall use EPA manuals EPA/600/2-88/070 (industrial) or EPA/833B-99/002 (municipal) as guidance or current versions. At a minimum, the TRE workplan must contain the provisions in Attachment C. This workplan shall describe the steps the Discharger intends to follow if toxicity is detected, and should include, at a minimum:
 - ii. A description of the investigation and evaluation techniques that would be used to identify potential causes and sources of toxicity, effluent variability, and treatment system efficiency;
 - iii. A description of the facility's methods of maximizing in-house treatment efficiency and good housekeeping practices, and a list of all chemicals used in operation of the facility; and,
 - iv. If a toxicity identification evaluation (TIE) is necessary, an indication of the person who would conduct the TIEs (i.e., an in-house expert or an outside contractor) (See MRP Section IV.E.3. for guidance manuals).
5. The discharge shall not cause a violation of any applicable water quality standard for receiving waters.

If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Clean Water Act, or amendments, thereto, the Regional Board will revise and modify this Order in accordance with such standards.

D. Final Ambient WLAs for Pollutants in Sediment for Storm Water Dischargers

The following are the final ambient WLAs. They are measured as in-stream annual averages at the base of each subwatershed where the discharges are located.

The final WLAs must be achieved and become sediment limitations after the sampling indicates that the Discharger is able to comply with the final WLAs or at the end of the 20-year compliance schedule specified in the TMDL (March 24, 2026), whichever occurs first. In either event, the permit will be reopened at that time to include appropriate sediment limitations.

<u>Constituents</u>	<u>Units</u>	<u>Discharge</u> <u>Monthly Average</u>	<u>Limitations</u> <u>Daily Maximum</u>
Chlordane	µg/g	--	0.0033
4,4-DDD	µg/g	--	0.002
4,4-DDE	µg/g	--	0.0014
4,4-DDT	µg/g	--	0.0003
Dieldrin	µg/g	--	0.0002
PCBs	µg/g	--	0.12
Toxaphene	µg/g	--	0.0006

E. Interim Ambient WLAs for Pollutants in Sediment for Storm Water Dischargers

The following sediment interim WLAs are effective as sediment limitations from through June 26, 2014 (five years from the effective date of this permit).

<u>Constituents</u>	<u>Units</u>	<u>Discharge</u> <u>Monthly Average</u>	<u>Limitations</u> <u>Daily Maximum</u>
Chlordane	µg/g	--	0.0033
4,4-DDD	µg/g	--	0.014
4,4-DDE	µg/g	--	0.17
4,4-DDT	µg/g	--	0.025
Dieldrin	µg/g	--	0.0011
PCBs	µg/g	--	25.7
Toxaphene	µg/g	--	0.23

The implementation schedule for the TMDL (Resolution No. R4-2005-0010) provides for interim sediment limitations through March 24, 2026 (twenty years from the effective date of the Basin Plan Amendment).

II. Requirements

A. Pollution Prevention and Best Management Practices Plans

The Discharger shall develop, within 90 days of the effective date of this Order, the following plans. If necessary, the plans shall be updated to address any changes in operation and/or management of the facility. Updated plans shall be submitted to the Regional Board within 30 days of revision.

1. A *Storm Water Pollution Prevention Plan* (SWPPP) that describes site-specific management practices for minimizing storm water runoff from being contaminated, and for preventing contaminated storm water runoff from being discharged directly to waters of the State. The SWPPP shall be developed in accordance with the requirements contained in Attachment A and submitted to the Regional Board within 90 days of the effective date of this Order.
2. A *Best Management Practices Plan* (BMPP). The purpose of the BMPP is to establish site-specific procedures that will prevent the discharge of pollutants in non-storm water discharges. The BMPP shall be site-specific and shall cover all areas of the facility.
3. *Compliance Plan*. The interim sediment limitations stipulated in section I.E. of this Order for OC Pesticides and PCBs in sediment shall be in effect for a period not to extend beyond November 23, 2012. Thereafter, the Discharger shall comply with the limitations specified for OC Pesticides and PCBs in section I.D. in of this Order.
4. The Discharger shall develop and submit, within one year of the effective date of this Order, a compliance plan that will identify the measures that will be taken to reduce the concentrations of OC Pesticides and PCBs in sediment at the base of the subwatershed discharging to Arroyo Simi. This plan must evaluate options to achieve compliance with the final sediment limitations within the deadline specified above.
5. The Discharger shall submit annual reports to describe the progress of studies and or actions undertaken to reduce the OC Pesticides and PCBs in the effluent and the sediment, and to achieve compliance with the limitations in this Order by the deadline specified above. The Regional Water Board shall receive the first annual progress report at the same time the annual summary report is due, as required in section VI. of the MRP.
6. *Pollutant Minimization Plan* (PMP). The purpose of the BMPP is to establish site-specific procedures that will prevent the discharge of pollutants in non-storm water discharges. The BMPP shall be site-specific and shall cover all areas of the facility.
 - i. The Discharger shall develop a PMP to maintain effluent concentrations of OC Pesticides and PCBs at or below the effluent limitations specified in Receiving Water Limitations section I.C.1 and

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Interim Ambient Mass of Pollutants in Sediment for Storm water Dischargers specified in section I.E. of this Order. The PMP shall include the following:

- a. Annual review and monitoring of the receiving water, sediment in the receiving water, and the effluent for OC Pesticides and PCBs;
 - b. Submittal of a control strategy designed to proceed toward the goal of maintaining effluent concentrations at or below the effluent limitation;
 - c. Implementation of appropriate cost-effective control measures consistent with the control strategy;
 - d. An annual status report that shall be sent to the Regional Water Board at the same time the annual summary report is submitted in accordance with section I.B of the MRP, and include:
 - (i) All PMP monitoring results for the previous year;
 - (ii) A list of potential sources of OC Pesticides and PCBs;
 - (iii) A summary of all actions undertaken pursuant to the control strategy;
 - (iv) A description of actions to be taken in the following year.
- B. Pursuant to the requirements of 40 CFR 122.42(a), the Discharger must notify the Board as soon as it knows, or has reason to believe (1) that it has begun or expected to begin, to use or manufacture a toxic pollutant not reported in the permit application, or (2) a discharge of toxic pollutant not limited by this Order has occurred, or will occur, in concentrations that exceed the specified limitations in 40 CFR 122.42(a).
- C. Compliance Determination
1. Compliance with single constituent effluent limitation – If the concentration of the pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reported Minimum Level (see Reporting Requirement II. C. of *M&RP*), then the Discharger is out of compliance.
 2. Compliance with monthly average limitations - In determining compliance with monthly average limitations, the following provisions shall apply to all constituents:
 - a. If the analytical result of a single sample, monitored monthly, quarterly, semiannually, or annually, does not exceed the monthly average limit

for that constituent, the Discharger has demonstrated compliance with the monthly average limit for that month.

- b. If the analytical result of a single sample, monitored monthly, quarterly, semiannually, or annually, exceeds the monthly average limit for any constituent, the Discharger shall collect four additional samples as early as flow is available during the month. All five analytical results shall be reported in the monitoring report for that quarter, or 45 days after results for the additional samples were received, whichever is later.

When all sample results are greater than or equal to the reported Minimum Level (see Reporting Requirement II. C. of M&RP), the numerical average of the analytical results of these five samples will be used for compliance determination.

When one or more sample results are reported as “Not-Detected (ND)” or “Detected, but Not Quantified (DNQ)” (see Reporting Requirement II. C. of M&RP), the median value of these four samples shall be used for compliance determination. If one or both of the middle values is ND or DNQ, the median shall be the lower of the two middle values.

- c. In the event of noncompliance with a monthly average effluent limitation, the sampling frequency for that constituent shall be increased to weekly and shall continue at this level until compliance with the monthly average effluent limitation has been demonstrated.
 - d. If only one sample was obtained for the month or more than a monthly period and the result exceed the monthly average, then the Discharger is in violation of the monthly average limit.
3. Compliance with effluent limitations expressed as a sum of several constituents – If the sum of the individual pollutant concentrations is greater than the effluent limitation, then the Discharger is out of compliance. In calculating the sum of the concentrations of a group of pollutants, consider constituents reported as ND or DNQ to have concentrations equal to zero, provided that the applicable ML is used.
 4. Compliance with effluent limitations expressed as a median – in determining compliance with a median limitation, the analytical results in a set of data will be arranged in order of magnitude (either increasing or decreasing order); and
 - a. If the number of measurements (n) is odd, then the median will be calculated as $X_{(n+1)/2}$, or
 - b. If the number of measurements (n) is even, then the median will be calculated as $[X_{n/2} + X_{(n/2)+1}]$, i.e. the midpoint between the $n/2$ and $n/2+1$ data points.

5. Compliance with the pH limitation – If the receiving water pH downstream of the discharge, exceeds 8.5 pH units as a result of:
 - a. high pH in the storm water, or
 - b. elevated pH in the receiving water upstream of the discharge,then the exceedance shall not be considered a violation.
6. Compliance with the temperature limitation – If the receiving water temperature downstream of the discharge, exceeds 86°F as a result of:
 - a. high temperature in the ambient air, or
 - b. elevated temperature in the receiving water upstream of the discharge,then the exceedance shall not be considered a violation.
7. The Discharger shall comply with benchmarks and receiving water limitations through timely implementation of control measures and other actions to reduce pollutants in the discharges in accordance with the BMP plan and its components and other requirements of this Order including any modifications. The BMP plan and its components shall be designed to achieve compliance with receiving water limitations. If exceedances of Water Quality Objectives or Water Quality Standards (collectively, Water Quality Standards) persist, notwithstanding implementation of the BMP and its components and other requirements of this permit, the Discharger shall assure compliance with discharge prohibitions and receiving water limitations by complying with the following procedure:
 - a. Upon a determination by either the Permittee or the Regional Board that discharges are causing or contributing to an exceedance of an applicable Water Quality Standard, the Discharger shall within 24 hours notify and thereafter submit a revised BMP compliance report (as described in the Monitoring and Reporting Program) to the Regional Board that describes the BMPs that are currently being implemented and additional BMPs that will be implemented to prevent or reduce any pollutants that are causing or contributing to the exceedances of Water Quality Standards. This BMP Compliance Report is due to the Regional Board 60 days after the second reported exceedance of a benchmark. The BMP Compliance Report shall include an implementation schedule along with descriptions and proposed installation locations of the upgrades or new BMPs. The Executive Officer at the Regional Board may require modifications to the BMP Compliance Report.
 - b. Submit any modifications to the BMP Compliance Report required by the Regional Board within 30 days of notification.

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- c. Within 30 days following the approval of the BMP Compliance Report, the Discharger shall revise the BMP Plan and its components and monitoring program to incorporate the approved modifications that have been and will be implemented; and implementation schedule, and any additional monitoring required.
 - d. Implement the revised BMP plan and its components and monitoring program according to the approved schedule.
- 8. So long as the Discharger has complied with the procedures set forth above and is implementing the revised BMP plan and its components, the Discharger does not have to repeat the same procedure for continuing or recurring exceedances of the same effluent limitations or receiving water limitation unless directed by the Regional Board to develop additional BMPs.
- D. In calculating mass emission rates from the monthly average concentrations, use one half of the method detection limit for "Not Detected" (ND) and the estimated concentration for "Detected, but Not Quantified" (DNQ) for the calculation of the monthly average concentration. To be consistent with section II.E.3., if all pollutants belonging to the same group are reported as ND or DNQ, the sum of the individual pollutant concentrations should be considered as zero for the calculation of the monthly average concentration.
- E. The discharge of any product registered under the Federal Insecticide, Fungicide, and Rodenticide Act to any waste stream which may ultimately be released to waters of the United States is prohibited unless specifically authorized elsewhere in this permit. This requirement is not applicable to products used for lawn and agricultural purposes. Discharge of chlorine for disinfection in plant potable and service water systems and in sewage treatment is authorized.
- F. The discharge of any waste resulting from the combustion of toxic or hazardous wastes to any waste stream which ultimately discharges to waters of the United States is prohibited, unless specifically authorized elsewhere in this permit.
- G. There shall be no discharge of PCB compounds, such as those once commonly used for transformer fluid.
- H. Compliance with the sediment effluent concentrations will be determined by calculating the in-stream annual average at the base of each subwatershed where the discharges are located. The Boeing SSFL discharge is located in Arroyo Simi and the sediment concentration at Arroyo Simi East of Hitch Boulevard or at Simi Valley Water Quality Control Plant should not exceed the interim effluent limitations. Since the facility is located near the top of the watershed, the Discharger may choose to collect the sediment samples closer to the facility.
- I. The Discharger shall notify the Executive Officer in writing no later than six months prior to planned discharge of any chemical, other than chlorine or other product

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previously reported to the Executive Officer, which may be toxic to aquatic life. Such notification shall include:

- a. Name and general composition of the chemical,
- b. Frequency of use,
- c. Quantities to be used,
- d. Proposed discharge concentrations, and
- e. USEPA registration number, if applicable.

No discharge of such chemical shall be made prior to the Executive Officer's approval.

- J. The Regional Board and USEPA shall be notified immediately by telephone, of the presence of adverse conditions in the receiving waters or on beaches and shores as a result of wastes discharged; written confirmation shall follow as soon as possible but not later than five working days after occurrence.

III. Provisions

- A. This Order includes the attached *Standard Provisions and General Monitoring and Reporting Requirements* (Standard Provisions, Attachment N). If there is any conflict between provisions stated hereinbefore and the attached Standard Provisions, those provisions attached herein prevail. Boeing shall report to the Regional Board any monitoring data that exceeds the detection limit for monitored constituents without effluent limitations. The report shall be reported, via facsimile, within 24 hours of the Discharger receiving the data from the lab. Regional Board staff will bring a reopener to the Regional Board within 90 days of determining that reasonable potential exists to cause or to contribute to an exceedance of water quality standards.
- B. This Order includes the attached Monitoring and Reporting Program (Attachment T). If there is any conflict between provisions stated in the Monitoring and Reporting Program and the Standard Provisions, those provisions stated in the Monitoring and Reporting Program prevail.
- C. This Order may be modified, revoked, and reissued or terminated in accordance with the provisions of 40 CFR sections 122.44, 122.62, 122.63, 122.64, 125.62, and 125.64. Causes for taking such actions include, but are not limited to: failure to comply with any condition of this order and permit, endangerment to human health or the environment resulting from the permitted activity; or acquisition of newly obtained information which would have justified the application of different conditions if known at the time of Order adoption. The filing of a request by the discharger for an Order modification, revocation, and issuance or termination, or a notification of planned changes or anticipated noncompliance does not stay any condition of this Order.

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- D. The Discharger must comply with the lawful requirements of municipalities, counties, drainage districts, and other local agencies regarding discharges of storm water to storm drain systems or other water courses under their jurisdiction; including applicable requirements in municipal storm water management program developed to comply with NPDES permits issued by the Regional Board to local agencies.
- E. Discharge of wastes to any point other than specifically described in this Order and permit is prohibited and constitutes a violation thereof.
- F. The Discharger shall comply with all applicable effluent limitations, national standards of performance, toxic effluent standards, and all federal regulations established pursuant to Sections 301, 302, 303(d), 304, 306, 307, 316, and 423 of the Federal Clean Water Act and amendments thereto.

IV. Reopeners

- A. This Order may be reopened and modified, in accordance with SIP Section 2.2.2.A, to incorporate new limitations based on future reasonable potential analysis to be conducted, upon completion of the collection of additional data by the discharger. Notwithstanding the foregoing, in the event that reasonable potential analyses indicate that a pollutant has reasonable potential, the Regional Board staff shall bring an appropriate modification to the Regional Board, at the next practicable Board meeting.
- B. This Order may be reopened and modified, in accordance with the provisions set forth in 40 CFR Parts 122 and 124, to include requirements for the implementation of the watershed management approach.
- C. This Order may be reopened and modified, in accordance with the provisions set forth in 40 CFR Parts 122 and 124, to include new minimum levels (MLs).
- D. This Order may be reopened and modified to consider incorporation of a site specific or regional design storm (based on the evaluation of the results of the Design Storm Project) and subsequent policy considerations.
- E. This Order may be reopened and modified, to revise effluent limitations as a result of future Basin Plan Amendments, such as an update of an objective or the adoption of a TMDL for Los Angeles River or the Calleguas Creek.
- F. This Order may be reopened upon the submission by the discharger, of adequate information, as determined by the Regional Board, to provide for dilution credits or a mixing zone, as may be appropriate.
- G. This Order may be reopened and modified, to revise the toxicity language once that language becomes standardized.

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- H. In accordance with Provision I.B.7, this Order may be reopened and modified to incorporate interim limitations, to the extent authorized by law, while DTSC revises and reissues updated RCRA corrective action requirements or permits, as appropriate, to ensure compliance with this Order.
- I. This Order may also be reopened and modified, revoked, and reissued or terminated in accordance with the provisions of 40 CFR sections 122.44, 122.62 to 122.64, 125.62, and 125.64. Causes for taking such actions include, but are not limited to, failure to comply with any condition of this order and permit, endangerment to human health or the environment resulting from the permitted activity.
- J. This Order may be reopened and modified to revise the compliance schedule specified in Section I.B.4 for discharges from Outfalls 008 and 009, if the Discharger fails to comply with the California Water Code Section 13304 Order to Perform Interim/Source Removal Action of Soil in the Areas of Outfalls 008 and 009 Drainage Areas, issued on December 3, 2008.

V. Expiration Date

This Order expires on April 10, 2014.

The Discharger must file a Report of Waste Discharge in accordance with Title 23, California Code of Regulations, not later than 180 days in advance of the expiration date as application for issuance of new waste discharge requirements.

VI. Previous Permits Superseded

Order No. R4-2004-0111, adopted by this Board on July 1, 2004, is superseded by this Order.

Order No. R4-2006-0008, adopted by this Board on January 19, 2006, is superseded by this Order.

Order No. R4-2006-0036, adopted by this Board on March 9, 2006, is superseded by this Order.

Order No. R4-2007-0055, adopted by this Board on November 1, 2007, is superseded by this Order.

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The Boeing Company
Santa Susana Field Laboratory
Order No. R4-2009-00XX

CA0001309

I, Tracy J. Egoscue, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, Los Angeles Region on May 7, 2009.

Tracy J. Egoscue
Executive Officer

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