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Via Federal Express

February 12, 2008
In reply refer to SHEA-106975

Regional Water Quality Control Board
Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Attention: Information Technology Unit

Reference: Compliance File CI-6027 and NPDES No. CA0001309

Subject: Fourth Quarter 2007 NPDES Discharge Monitoring Report Submittal–Santa Susana Field Laboratory

Dear Sir/Madam:

The Boeing Company (Boeing) hereby submits the Discharge Monitoring Report (DMR) for the Santa Susana Field Laboratory (SSFL) for the Fourth Quarter of 2007. This DMR provides the results of the sampling that occurred for the SSFL outfalls (Figure 1) for the period of October 1st through December 31st of 2007 as required by National Pollutant Discharge Elimination System (NPDES) Permit No. CA0001309 (NPDES Permit).

Two sets of permit requirements are addressed during this reporting period. The Los Angeles Regional Water Quality Control Board (Regional Board) revised the permit to implement the Los Angeles River Metals Total Maximum Daily Load (TMDL) and Los Angeles River Nutrients TMDL at the March 3, 2006 Regional Board Hearing, and issued an updated NPDES Permit dated March 17, 2006 with an effective date of April 28, 2006 (Order No. R4-2006-0036). Boeing appealed the two permit revisions and the State Board remanded the NPDES Permit to the Regional Board for the review of the waste discharge requirements for Boeing SSFL and stayed enforcement of the numeric discharge limits for Outfalls 011 and 018. The Regional Board issued a revised permit on November 9, 2007 with an effective date of December 20, 2007 (Order No. R4-2007-0055).

This quarterly DMR provides information and data, including summary tables of surface water sample analytical results, rainfall summaries, liquid waste shipment summaries, and surface water sample laboratory analytical reports. The DMR is provided for the SSFL outfalls authorized by the NPDES Permit. This document will be made available electronically at:

www.boeing.com/aboutus/environment/santa_susana/programs.html.

Additionally, hard copies of this DMR are available at the following: California State University at Northridge Library; Simi Valley Library; and the Platt Branch, Los Angeles Library.

FOURTH QUARTER 2007 DISCHARGE MONITORING REPORT (DMR) CONTENTS AND DISCHARGE SUMMARY

Figure 1 is a site location map indicating the locations of the 19 outfalls at SSFL. A summary of the Fourth Quarter 2007 precipitation measured at SSFL is presented in Appendix A. All sanitary wastes from the domestic sewage treatment plants (STPs) (STPs I, II, and III; Outfalls 015, 016, and 017; respectively) were shipped off-site and appropriately managed with no discharges occurring from these outfalls. Details of all liquid waste shipments including the STP waste are summarized in Appendix B.

As detailed in Appendix A, Boeing observed five rain events with greater than 0.1 inches of rainfall in a 24-hour period. These rainfall events occurred on October 13, November 30, December 7, December 19, and December 21, 2007.

Field inspections are conducted at the storm water outfall locations prior to and following each rain event. For storm events that occur after working hours, a field check and/or sampling is conducted at the first available opportunity when it is safe to access the outfall. No flow was observed at any of the outfalls during the October 13 and November 30 rain events. Flow was observed at Outfalls 006 and 010 on December 7, 2007, at Outfalls 004, 006, 009, and 010 on December 19, 2007, and at Outfall 014 on December 21, 2007.

Additionally, on December 27, 2007, Boeing collected a water sample from the Receiving Water Location in Arroyo Simi per the requirements of the revisions to the NPDES Permit that took effect in December 2007. Receiving water samples for the Calleguas Creek watershed were collected off-site at a location that meets the Regional Board's approval. Analytical results are provided in Appendix C.

As part of the ongoing efforts to assess the structural best management practices (BMPs) installed at SSFL, monitoring is conducted for sediment concentrations. Effluent analytical results are provided in Appendix C.

Samples collected for compliance purposes were submitted to and analyzed by a California-certified analytical laboratory. Appendices C and D contain summary tables of analytical results for surface water samples collected during the Fourth Quarter 2007. These tables identify the outfall, the constituents evaluated (analytes), the date of sampling, the analytical result, and data validation qualifiers.

A summary table of NPDES Permit limit exceedances and/or elevated concentrations of a benchmark limit based on the surface water analytical data is provided in Appendix E. In addition, the results of a reasonable potential analysis (RPA) utilizing updated monitoring data are provided in Appendix F. Appendix G contains copies of the laboratory analytical reports, chains of custody, and data validation reports. Quarterly Summary Notes are a compilation of notes, abbreviations, and data validation codes that are used in the analytical data summary tables and are included as a supplement in Appendices C, D, E and F.

SUMMARY OF NONCOMPLIANCE

The following summary of noncompliance is organized by outfall location. Only those outfalls with NPDES Permit limit exceedances or elevated concentration of a benchmark limit are discussed in this report.

Outfall 004

The following is a summary of noncompliance at Outfall 004 (SRE). The following permit limit exceedances are provided in Appendix E.

TCDD TEQ

A NPDES Permit limit exceedance occurred during the Fourth Quarter 2007 on December 19, 2007, for TCDD TEQ at Outfall 004, as detailed in the Summary of Permit Limit Exceedances table in Appendix E of this DMR. The reported concentration of TCDD TEQ was 3.97×10^{-7} ug/L. This concentration is above the NPDES Permit limit of 2.80×10^{-8} ug/L.

The presence of TCDD in both background soils and fire-related materials is well-documented in scientific literature (USEPA, 2000; Gullett and Touati, 2003). These findings are further substantiated by previously completed on- and offsite studies (MWH, 2005), as presented in the Flow Science Background Report (Flow Science, 2006), and as reported in the first, second and fourth quarter 2006 DMRs. These reports suggest that the levels of TCDD TEQ measured in surface water samples at the SSFL may result primarily from wildfire combustion processes, regional atmospheric deposition, and other off-site sources. Boeing will continue to investigate additional sources of TCDD onsite.

Additional dioxin removal can be facilitated by increasing the retention time of the water within activated carbon media contained in the BMP installed at Outfall 004. It is unclear exactly what retention time would be necessary to achieve the water-quality based effluent limit of 2.8×10^{-8} ug/l for TCDD TEQ. Dioxin congeners are hydrophobic molecules that partition readily into the organic fraction of sediments and solid materials. Activated carbon is believed by United States Environmental Protection Agency (EPA) to be best available technology for the removal of dioxins from water (http://www.epa.gov/OGWDW/dwh/t-soc/dioxin.html). However, studies have not been conducted to support the development of technology-based effluent limits for dioxin when activated carbon is used. Boeing is unaware of any studies documenting what retention time, if any, in activated carbon can achieve this effluent limit. In fact, specific studies of the use of activated carbon do not show effluent concentrations as low as the water quality based effluent limit of 2.8×10^{-8} ug/L. One of the few studies identified while researching the literature reported an effluent concentration just below 8.1×10^{-5} ug/l (Torrens, 2000). Nevertheless, Boeing is committed to attempting to achieve the water quality based effluent limit, if possible. Specifically, bagged carbon and zeolite at Outfall 004 will be replaced with bulk media, such as granular activated carbon and zeolite. The bulk placement will reduce hydraulic short-circuiting and increase average retention time.

Outfall 006

The following is a summary of noncompliance at Outfall 006 (FSDF-2) on the north slope of SSFL. The following permit limit exceedances are provided in Appendix E.

Chloride
Chloride was detected at Outfall 006 on December 7 and December 19, 2007 as indicated in Appendix E. Chloride concentrations exceeded the NPDES Permit limit of 150 mg/L on December 2, 2007 and December 19, 2007. The reported concentrations of chloride were 170 mg/L and 210 mg/L, respectively.

Chloride is a naturally occurring compound (Hunter and Davis, 2001). BMP materials installed at the site include fresh sand, zeolite, and activated carbon. Sand and zeolite may contain chloride or other salts that could be flushed or rinsed from filter media. No activities other than BMP installation occurred at the site that could have introduced chloride at levels that would be expected to cause an exceedance. Exceedances of chloride were not observed prior to installation of the expanded BMP with sand and zeolite.

Boeing will investigate the presence of chloride in BMP materials and conduct additional rinsing operations of the BMP material at this outfall to further reduce concentrations of naturally occurring salts that can potentially cause permit exceedances. Rinse water will be collected to minimize the potential for permit limit exceedances in the future. Boeing will continue to monitor chloride concentrations at this outfall to try to identify sources. Measures to reduce chloride will be implemented to the extent possible.

Outfall 014
The following is a summary of noncompliance at Outfall 0014 (FSDF-2) on the north slope of SSFL. The following elevated concentrations of a benchmark limit are summarized in Appendix E.

Chloride
Chloride was detected at Outfall 014 on December 21, 2007 as indicated in Appendix E. Chloride was detected at a concentration that was elevated above a benchmark limit of 150 mg/L on December 21. The reported concentration of chloride was 810 mg/L.

Boeing believes the elevated chloride concentration at this outfall location could be attributed to BMP upgrade activities and wash-off from the zeolite and/or activated carbon filter media, as discussed below.

Chloride is a naturally occurring compound (Hunter and Davis, 2001). BMP materials installed at the site include zeolite and activated carbon that may contain chloride, resulting in chloride possibly being flushed or rinsed from filter media.

Boeing will initiate additional rinsing of media at Outfall 014 to remove the naturally occurring salts that may cause exceedances. Boeing will continue to monitor chloride concentrations at this outfall to try to identify sources. Measures to reduce chloride will be implemented to the extent possible. Additionally, where new BMP materials are added, Boeing will continue to flush the materials and collect the rinse water to minimize the potential for permit limit exceedances or elevated concentrations of a benchmark limit in the future.

Total Dissolved Solids

The concentration of Total Dissolved Solids (TDS) in a sample collected from Outfall 014 on December 21 was 2000 mg/L. This elevated concentrations were greater than benchmark limit of 950 mg/L.

TDS is naturally occurring and is expected to be present in natural surface water. TDS may also be naturally occurring in BMP materials such as zeolite or activated carbon. Zeolite and carbon contains various salts, which are displaced when the zeolite adsorbs metals or other constituents. These salts are detected as TDS. TDS observed at Outfall 014 could have been generated from the zeolite media employed there to improve water quality. The presence of TDS in surface stormwater runoff from the BMP correlates with the presence of chloride observed at the same location, as one of the most common constituents of TDS in stormwater runoff is chloride. Once Boeing became aware of the elevated concentration of a benchmark limit, Boeing began to rinse the media filter at Outfall 014. Rinsing of the media is expected to reduce concentrations of chloride and other salts and reduce the risk of further exceedances.

Boeing will initiate further rinsing of the filter media at Outfall 014 to remove the naturally occurring salts that may cause permit exceedances. Boeing will continue to evaluate all data, improve BMPs, and implement measures to minimize TDS migration to and within surface water.

FOURTH QUARTER 2007 CORRECTIVE ACTIONS TAKEN

Throughout the Fourth Quarter 2007, Boeing took actions to improve the quality of surface water discharges. These actions included the installation and rinsing of BMP materials at various outfalls and the continued implementation of the site-wide Storm Water Pollution Prevention Plan (SWPPP). Activities throughout the SSFL site also continued, including site-wide inspections and metal and debris removal at various areas. Specific activities by outfall are identified in Table 1.

Table 1. BMP Activities during the Fourth Quarter 2007

OUTFALL	BMP ACTIVITIES DURING FOURTH QUARTER 2007
001 (South Slope below Perimeter Pond)	Inspected sediment control BMPs. Installed several miles of new fiber rolls. Placed significant quantities of hydroseed on hill slopes to control sediment erosion. Calibrated flow meter.
002 (South Slope below R-2 Pond)	Inspected and performed maintenance on sediment control BMPs. Installed erosion control measures, including several miles of fiber rolls and numerous hay bales, on hill slopes and within drainage channels. Removed 100-120 cubic yards from ash-ridden drainages with a supervac. Placed significant quantities of hydroseed on eroding and poorly-vegetated areas. Calibrated flow meter.
003 (RMHF)	Conducted structural BMP and storm water filter system inspections. Placed Hydroseed on surrounding hill slopes to control sediment erosion. Calibrated flow meter.
004 (SRE)	Conducted structural BMP and storm water filter system inspections. Completed raising the height of the sand filter

OUTFALL	BMP ACTIVITIES DURING FOURTH QUARTER 2007
	flow barrier to retain and filter the 1 year 24-hour storm of 2.3 inches. Rinsed media bed. Calibrated flow meter.
005 (FSDF-1)	Conducted BMP, sedimentation basin and filtration system inspections. Installed portable Baker tanks and media filtration treatment system.
006 (FSDF-2)	Conducted structural BMP, sedimentation basin and storm water filtration system inspections. Upgraded BMP media HDPE walls to correct undermining. Rinsed media bed. Calibrated flow meter.
007 (Building 100)	Conducted structural BMP, sedimentation basin and filtration system inspections.
008 (Happy Valley)	Inspected sediment control BMPs. Installed silt fencing and fiber rolls to control erosion. Placed Hydroseed in lower portion of drainage within the watershed to control sediment erosion. Calibrated flow meter.
009 (WS-13 Drainage)	Began work on project to develop engineered natural treatment system. Installed cat walk for access to flow meter.
010 (Building 203)	Conducted structural BMP and sedimentation/filtration basin inspections. Installed fiber rolls as sediment controls. Placed Hydroseed to control sediment erosion. Calibrated flow meter.
011 (Perimeter Pond)	Conducted BMP and drainage system inspections. Calibrated flow meter. Installed bubbler flow meter and performed calibration.
012 (ALFA Test Stand)	Installed carbon and zeolite bags upstream of sandbag barrier and sampling point. Installed drain pipe out of sandbag barrier, allowing water to flow into sample box placed at sampling point.
013 (BRAVO Test Stand)	Installed carbon and zeolite bags upstream of sandbag barrier and sampling point. Installed drain pipe out of sandbag barrier, allowing water to flow into sample box placed at sampling point.
014 (APTF Test Stand)	Installed bulk carbon and zeolite in existing culvert. Installed sandbag barrier around southern edge of property to redirect stormwater running onto the property around the site.
015 (STP I)	Wastewater currently hauled offsite – no discharges.
016 (STP II)	Wastewater currently hauled offsite – no discharges.
017 (STP III)	Wastewater currently hauled offsite – no discharges.
018 (R-2 Spillway)	Conducted structural BMP and storm water filter system inspections. Calibrated flow meter.
019 (GETS)	Groundwater Extraction Treatment System (GETS) under construction. Treated groundwater hauled off-site – no discharges.

REASONABLE POTENTIAL ANALYSIS (RPA)

Outfall monitoring data were collected during the Fourth Quarter 2007 for Outfalls 004, 006, 009, 010, and 014. Data from this quarter were added to the RPA data set as per the MWH and Flow Science RPA procedures for the outfall monitoring group, Outfalls 003-010 (excluding Outfall 008) (MWH and Flow Science, 2006). The December 2007 Permit added stormwater monitoring at the test stands, therefore only the fourth quarter data for Outfall 014 was used for RPA determination at Outfalls 012-014. The analytical results for this sampling period did not trigger reasonable potential for any constituents not already regulated under the current NPDES permit. Complete RPA tables for the outfall monitoring group are provided in Appendix F.

As summarized in the MWH and Flow Science Technical Memo, Boeing does not believe the currently used RPA procedures are appropriate for storm water and storm water-dominated discharges from the SSFL.

DATA VALIDATION AND QUALITY CONTROL DISCUSSION

In accordance with current EPA guidelines and procedures, or as specified in the monitoring program, chemical analyses of surface water discharge and receiving water samples were completed at a State of California certified laboratory. Data validation was performed on a percentage of the analytical results and quality control elements were found to be within acceptable limits for the analytical methods reported, except as noted on the analytical summary tables. Laboratory analytical reports, including validation reports and notes, are included in Appendix G. Attachment T-A of the NPDES Permit issued to the SSFL presents the State of California Water Resources Control Board (SWRCB) minimum levels (MLs) for use in reporting and determining compliance with NPDES Permit limits.

The analytical laboratory achieved these MLs for this reporting period when technically possible. When the laboratory reporting limits (RLs) were elevated, the laboratory maximum detectable limits (MDLs) were below the California state MLs. However, some constituents' daily maximum or monthly average discharge limits in the NPDES Permit are less than their respective MLs, and less than the RL. In cases where the NPDES Permit limit is less than the RL and ML, the RL was used to determine compliance. The specific constituents that have NPDES Permit limits that are less than the RL and ML are: PCBs (receiving water limit of 0.0003 µg/L, RL of 0.5 µg/L); chlordane (receiving water limit of 0.001 µg/L, RL of 0.1 µg/L); 4,4'-DDD (receiving water limit of 0.0014 µg/L, RL of 0.005 µg/L); 4,4'-DDE (receiving water limit of 0.001 µg/L, RL of 0.005 µg/L); 4,4'-DDT (receiving water limit of 0.001 µg/L, RL of 0.01 µg/L); dieldrin (receiving water limit of 0.0002 µg/L, RL of 0.005 µg/L); Toxaphene (receiving water limit of 0.0003 µg/L, RL of 0.1 µg/L); mercury (monthly average limit of 0.05 µg/L, RL of 0.1 µg/L); cyanide (monthly average limit of 4.3 µg/L, RL of 5.0 µg/L); and bis- (2-ethylhexyl) phthalate (daily maximum permit limit of 4.0, RL of 4.7 µg/L).

FACILITY CONTACT

If there are any questions regarding this DMR or its enclosures, you may contact Ms. Lori Blair at (818) 466-8741.

CERTIFICATION

I certify under penalty of law that this document and all appendices were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted.

Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for a knowing violation.

BOEING

Executed on the 12th of February 2008 at The Boeing Company, SSFL.

Sincerely,

Thomas D. Gallacher
Director
Santa Susana Field Laboratory
Environment, Health and Safety

Figure: 1 Storm Water Drainage System and Outfall Locations

Appendices:
- A Fourth Quarter 2007 Rainfall Data Summary
- B Fourth Quarter 2007 Liquid Waste Shipment Summary Tables
- C Fourth Quarter 2007 Summary Tables, Outfalls 004, 006, 009, 010, Arroyo Simi Receiving Water, and BMP Effectiveness Effluent Discharge Monitoring Data
- D Fourth Quarter 2007 Radiological Monitoring Data, Outfall 006
- E Fourth Quarter 2007 Summary of Exceedances
- F Reasonable Potential Analysis (RPA) Summary Tables
- G Fourth Quarter 2007 Analytical Laboratory Reports, Chain-of-Custody, and Validation Reports

cc: Jim Pappas, Department of Toxic Substances Control
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