


FEDERAL EXPRESS

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

Attention: Information Technology Unit  
Reference: Compliance File CI-6027 and NPDES No. CA0001309  
Subject: 2<sup>nd</sup> Quarter 2005 NPDES Discharge Monitoring Report Submittal-  
Santa Susana Field Laboratory

Dear Sir/Madam,

The Boeing Company hereby submits the monitoring report (DMR) for the Santa Susana Field Laboratory (SSFL) for the 2nd Quarter of 2005. This DMR provides the results of the sampling that occurred for the SSFL outfalls identified in Appendix A, Figure 1, of this report for the months of April through June of 2005 as required by National Pollutant Discharge Elimination System (NPDES) Permit No. CA0001309. This quarterly DMR provides all information and data, including rainfall summaries, liquid waste shipment summaries, and analytical reports. The California Water Code Section 13267 sampling that was required by the Regional Water Quality Control Board (RWQCB) at Outfalls 003 (Radioactive Materials Handling Facility) and Outfall 011 (Perimeter Pond) have also been included in this report.

#### **SECOND QUARTER 2005 MONITORING REPORT SUMMARY**

During this reporting quarter, Outfalls 001 through 006, 009, 010, 012, and 018 were sampled at least once. In addition to the routine monitoring at these locations, the constituents that are required to be analyzed on a quarterly basis were also sampled at the appropriate outfall locations.

Review of the results indicate that although the facility was in compliance approximately 97% of the time with discharge standards, there were nine exceedances of discharge standards. Many of the constituents detected at concentrations greater than their permit limit are naturally occurring and have been detected because surface water flows in natural drainages that contain bedrock, soil, sediment, and naturally occurring inorganic and organic materials. Sampling these drainages during storm events in contrast to sampling the effluent from wastewater treatment plants or other "end of pipe" processes typical in an NPDES permit is likely to result in naturally-occurring detections and potential exceedances of

permit limits that Boeing has little or no control over. The analytical results included with this report continue to provide evidence of the technical limitations inherent in setting stringent water quality limits for storm water releases. It supports Boeing's position that limits were established without sufficient data concerning other sources and/or establishment of background conditions. This position is also supported by the California Policy for the Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (the SIP) which specifies that the policy does not apply "to regulation of stormwater discharges". It is noted that the limits that Boeing is required to meet stem from this document.



Notwithstanding these issues, the RWQCB was notified during the quarter of analytical results that exceeded permit limits. A discussion of these exceedances is included in this report. Also, as stipulated in the NPDES permit, written notifications were also made within 24 hours of receipt of validated data for those constituents that had been detected at locations where effluent limits have not been established.

#### **DISCHARGE STATUS**

Precipitation during the 2<sup>nd</sup> Quarter 2005 at SSFL is shown for each month of the quarter, respectively, in Tables B-1, B-2, and B-3, provided as Appendix B. There were no discharges associated with the domestic sewage treatment plants (STP-1, STP-2, and STP-3) (Outfalls 015, 016, and 017, respectively). All sanitary wastes were shipped offsite and appropriately managed. There were no discharges associated with the Bravo (Outfall 013) or APTF (Outfall 014) Test Stands. Cooling water associated with three engine tests at the Alfa Test Stand (Outfall 012) were sampled three times during the 2<sup>nd</sup> Quarter 2005. In accordance with the NPDES sampling protocol, four non-precipitation discharge samples were obtained from Outfall 012 during these engine tests. Since Outfall 012 is sampled every discharge, these samples were analyzed for routine parameters as required in the NPDES permit.

There was discharge associated with nine storm water outfalls (Outfalls 001 through 006, 009, 010, and 018) at least once during the quarter. Outfall samples were typically analyzed at a "once per discharge event" frequency for routine parameters. When appropriate, outfall samples were analyzed for constituents as required in the NPDES permit to be analyzed on a quarterly frequency.

#### **LIQUID WASTE SHIPMENTS**

The liquid waste shipments during the 2<sup>nd</sup> Quarter 2005 is shown for each month of the quarter, respectively, as Tables C-1, C-2, and C-3, provided as Appendix C. This summary is provided as required in the NPDES permit.

#### **DISCHARGE ANALYSES, AND DATA VALIDATION**

All analyses of sampled discharges were conducted at a laboratory certified for such analysis by the appropriate agency in accordance with current EPA guidelines, procedures, or as specified in the monitoring program. Appendices D, E, and F contain analytical data summary tables for all outfalls, and Reporting Summary Notes. The tables typically identify the outfall; the constituents evaluated (analytes), the date of sampling, the analytical result, and data validation qualifiers. The summary notes are a compilation of notes, abbreviations, and data validation codes that are found in the analytical data summary tables.

Data validation was performed on the analytical results and quality control elements were found to be within acceptable limits for all 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 presents the State 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. However, some constituents' daily maximum and/or monthly average discharge limits in the NPDES permit are less than their respective MLs, and less than the laboratory reporting limit (RL). In cases where the permit limit is less than the RL and ML, the RL was used to determine compliance. The specific constituents that have permit limits that are less than the RL and ML are mercury (daily maximum permit limit of 0.10 and 0.13 ug/L, monthly average limit of 0.05 ug/L, RL of 0.2 ug/L), cyanide (monthly average limit of 4.3, RL of 5.0 ug/L, and Bis-(2-ethylhexyl) phthalate (daily maximum permit limit of 4.0, RL of 5.0 ug/L). Of these compounds, during the 2<sup>nd</sup> Quarter 2005, none were detected at concentrations equal to or greater than its RL.

#### **SUMMARY OF NON-COMPLIANCE AND CORRECTIVE ACTIONS TAKEN**

As required in the NPDES permit, during the 2<sup>nd</sup> Quarter 2005, Boeing notified the RWQCB of constituents that were non-compliant. Nine permit limits exceedances occurred during the quarter at three drainage outfall locations, comprised of five constituents: TCDD, iron, sulfate, total dissolved solids, and strontium-90. Appendix F is a table that contains the summary of these permit limit exceedances.

As indicated in Appendix F, Summary of Permit Limit Exceedances, Outfall 001 had one exceedance of iron and TCDD; Outfall 002 had four exceedances of sulfate, one exceedance of total dissolved solids (TDS), and one exceedance of TCDD; and Outfall 003 had one exceedance of strontium-90 that was analyzed as part of the 13267 sampling requested by the RWQCB.

#### **TCDD Discussion**

On April 28 at Outfalls 001 and 002, TCDD was detected at concentrations that exceeded the permit limit of  $2.8 \times 10^{-8}$  ug/L. The values of TCDD were  $3.73 \times 10^{-8}$  ug/L and  $6.28 \times 10^{-7}$  ug/L, respectively. It should be noted that while the permit limit has been exceeded, these TCDD concentrations are well below Federal and California maximum contaminant levels (MCLs) for drinking water. The MCL for TCDD is  $3.0 \times 10^{-5}$  ug/L or 30 parts per quadrillion and is established for only one form of TCDD (2, 3, 7, 8-TCDD is one of the more toxic congeners of dioxin and the MCL is based on 2, 3, 7, 8-TCDD). The analyses performed as required for the NPDES permit includes not only this one congener, but also an additional 16 congeners. Not only were the results from this quarter analyzing all 17 congeners shown to be below drinking water standards each time TCDD was analyzed, the one congener (2,3,7,8-TCDD) used for drinking water standards was not detected in any of the surface water samples.



In reviewing the analytical results of surface water samples from this and previous quarters, and other related documents and materials on the sources of TCDD, several observations were noted. These observations found that:

- TCDD is naturally present in soils.
- Soil is naturally present in surface water runoff.
- Large and frequent storms increased soil runoff.
- The highest concentrations of TCDD in surface water were in NPDES outfalls on the north side of the facility.
- TCDD concentrations in northern outfalls were generally decreasing over time and rain events.
- TCDD concentrations in southern outfalls (i.e., Outfalls 001 and 002) were typically less than and more sporadic than those at other outfalls.
- It is well documented from other published sources that ash from brush fires contains TCDD (especially higher-chlorinated dioxin congeners).
- The recent Piru and other Southern California Fires, and prevailing wind direction brought a significant ash fall to the SSFL, especially in the northern areas.
- Known soil contaminant source areas at SSFL did not appear to be contributing to TCDD in surface water.

Based on these observations, it was concluded in the 4<sup>th</sup> Quarter 2004 DMR that elevated TCDD levels were caused by non-facility-related sources and would be returning to normal background ranges as the rainy season progressed.

The results contained in this 2<sup>nd</sup> Quarter 2005 DMR appear to support these conclusions. Only two additional TCDD exceedances were reported in the 2<sup>nd</sup> Quarter, one each at Outfalls 001 and 002 on April 28. These locations serve large watersheds and as such migration of soil and ash from recent fires would take time to reach the outfalls. Both exceedances indicate the potential for varying background, inconsistent detections of TCDD concentrations at these locations. It is anticipated that inconsistent and sporadic detections of naturally occurring TCDD, naturally occurring metals, and other naturally occurring constituents may occur in samples collected from these natural drainages at SSFL.

#### **Iron Discussion**

Iron was detected one time at Outfall 001 on April 28 at a concentration of 0.36 mg/L. This is compared to its permit limit of 0.30 mg/L. Iron is also a naturally occurring constituent found in sediment and as such concentrations appear to vary based on rainfall and sediment uptake at the monitoring locations. Surface water samples for iron on April 2, 9, and 16 indicate concentrations that were less than the permit limit. Therefore based on the data reviewed, this one non-compliant event for iron is thought to be from naturally occurring sources and a function of rainfall and drainage flow over which Boeing has little control. Further evaluation of BMPs and their implementation will be conducted and implemented as necessary and appropriate to mitigate the sediment loading at this location.



### **Sulfate Discussion**

Sulfate was detected at Outfall 002 on April 1, 8, 15, and 22 at concentrations of 310, 360, 400, and 400 mg/L, respectively, as compared to its permit limit of 300 mg/l. Sulfate is a naturally occurring mineral which has been well within limits over the years based on a review of the extensive history of compliance at this location. Since these elevated levels occurred at the same time that the facility experienced significant rainfall it is surmised that the source of the sulfate is from a seep or spring which contained a naturally occurring pocket of a sulfur compound. This seems to prove out with additional investigative sampling that occurred earlier in the year identifying the source to be from one localized area in an undeveloped portion of the facility. Further observations will be conducted to validate this theory. It is anticipated that sulfate concentrations will decrease at Outfall 002 as conditions return to those that prevailed prior to the excessive rainfall from the 2004-2005 rainy season.

### **Total Dissolved Solids (TDS) Discussion**

Total dissolved solids (TDS) were detected at Outfall 002 on April 22 at a concentration of 1,000 mg/L, as compared to its permit limit of 950 mg/l. Based on a review of the extensive history of compliance at this location, this was the only time that TDS exceeded compliance limits at Outfall 002. TDS will continue to be monitored in accordance with the NPDES permit and subsequent actions, if any, will be based on the recurrence of TDS at concentrations greater than the permit limit.

### **Strontium-90 Discussion**

As part of the RWQCB-requested California Water Code Section 13267 sampling at Outfall 003, surface water samples were collected and analyzed in both an unfiltered and filtered manner. The sample collected on April 28, 2005 contained concentrations of strontium-90 in both the unfiltered and filtered portions at concentrations that exceeded the permit limit. The permit limit is 8.0 pCi/L based on an unfiltered result. The filtered result was 10.8 +/- 0.85 pCi/L, and the unfiltered result was 11.4 +/- 0.82 pCi/L. Based on a review of the extensive history of compliance at this location, this exceedance was the only time that strontium-90 exceeded compliance limits at Outfall 003. Strontium-90 will continue to be monitored in accordance with the NPDES permit. A radiological survey of the area had already been scheduled to begin in August and should facilitate identification and remediation of any potential strontium-90 source in the surrounding soil.

### **SITEWIDE CORRECTIVE ACTIONS TAKEN**

In conjunction with the corrective actions noted for each constituent above, Best Management Practices (BMPs), to minimize the potential for site operations to impact surface water and for sediment to accumulate, were implemented in the previous two quarters, and continued during this quarter. In addition to monitoring and maintaining existing BMPs, specific BMPs implemented during the 2<sup>nd</sup> Quarter of 2005 were:

- Outfall 004 – Replace activated carbon filter bags.
- Outfall 005 – Replace activated carbon filter bags and vermiculite bags to improve sediment control.
- Outfall 006 – Replace activated carbon filter bags and vermiculite bags to improve sediment control.



- Outfall 007 – Placement of activated carbon filter bags to maximize sediment removal capability.
- Outfall 010 – Removed the existing filter media and replaced with vermiculite bags. Removed and replaced the cocomatting.

Based on the 2<sup>nd</sup> Quarter 2005 sampling and analytical results, the BMPs implemented in the 4<sup>th</sup> Quarter 2004, and the 1<sup>st</sup> and 2<sup>nd</sup> Quarters of 2005 proved successful in minimizing the migration of pollutants in surface water.

Many of the constituents detected at concentrations greater than their permit limit are naturally occurring and have been detected because surface water flowing in natural drainages, containing natural bedrock, soil, sediment, and naturally occurring inorganic and organic materials is being sampled. While BMPs controlling sediment transport have been implemented, and further evaluation of BMPs will be performed, storm water coming in contact with natural sediments is likely resulting in naturally occurring detections and potential exceedance of permit limits.

#### **SUMMARY OF POTENTIAL HEALTH RISKS BASED ON CONSTITUENTS EXCEEDING PERMIT LIMITS**

TCDD, iron, sulfate, TDS, and strontium-90 in site surface water during 2<sup>nd</sup> Quarter 2005 does not pose an unacceptable health risk. Of these five constituents, only TCDD and strontium-90 have primary MCLs (drinking water standard). The MCL for TCDD is for the single congener 2,3,7,8-TCDD. During the 2<sup>nd</sup> Quarter 2005, there were no detections of the congener 2,3,7,8-TCDD. Therefore, there was no potential for the drinking water standard for TCDD to be exceeded. The MCL for strontium-90 is 8.0 pCi/L. This is the first permit limit exceedance for strontium-90. Based on extensive groundwater sampling at SSFL, strontium-90 has not been detected at concentrations greater than its MCL. Therefore, this one-time presence of strontium-90 in surface water at a concentration greater than its permit limit is likely an isolated occurrence this exceedance has not impacted any public drinking water source.

Iron, sulfate, and TDS do not have primary MCLs. The California secondary MCLs (based on taste, odor, and appearance standards) for iron, sulfate, and TDS are 0.3 mg/L, 250-500 mg/l, and 500-1,000 mg/L, respectively. As indicated by these concentrations or ranges of concentrations, only iron exceeds its secondary MCL. Although the surface water monitored in this report is not used for drinking, the comparison of the results to the primary and secondary MCLs provides evidence that the discharges did not pose a risk to the neighboring communities.

#### **California Water Code Section 13267 Sampling 2nd Status Report**

In response to the May 20, 2004 RWQCB request that surface water samples be collected from Outfalls 003 and 011 (RMHF and Perimeter Pond, respectively), Boeing submitted a technical work plan to the RWQCB on August 31, 2004. The work plan described two studies that consisted of sample collection and analytical testing of surface water samples obtained from these outfalls. On January 12, 2005, the RWQCB provided unconditional approval of the Study 1 portion of the work plan, and conditional approval of Study 2.



The purpose of Study 1 is to evaluate potential differences between grab samples and composite samples, and consists of the collection of surface water samples from Outfall 011 (Perimeter Pond) during three wet weather discharges and three dry weather discharges. The purpose of Study 2 is to evaluate potential differences in radiological analytical results of filtered and unfiltered samples and consists of the collection of seven wet weather discharge samples and three dry weather discharge samples. The RWQCB letter stated that four wet weather discharges should be collected from Outfall 003 (RMHF), and the other six samples could be collected from Outfall 011 (Perimeter Pond). The six grab samples (Study 1) collected from Outfall 011 (Perimeter Pond) could be dovetailed with and used in partial fulfillment of Study 2.

Based on the RWQCB's January 12, 2005 letter, the initiation of both Study 1 and Study 2 commenced during the 1<sup>st</sup> Quarter of 2005. However, samples collected prior to January 12 (January 4, 5, 11, and 12) did not satisfy the RWQCB's requirements. Therefore, the analytical results from these samples were included in Appendix E of the 1<sup>st</sup> Quarter 2005 reports, but were not considered in fulfilling the study requirements.

The wet weather portion of Study 1 (Outfall 011, Perimeter Pond) was completed during the 1<sup>st</sup> Quarter 2005. As required by the study, both wet weather and dry weather samples were to be collected. Since dry weather flow has not occurred, the dry weather portion of the study has not been completed and dry weather flow did not occur during the 2<sup>nd</sup> Quarter 2005. If discharge occurs from Outfall 011 during dry weather, up to three grab and flow-weighted composite samples will be collected and analyzed. The results of which will be reported in a subsequent quarterly DMR, and a technical report summarizing the completion and results of the studies will be provided under separate cover.

As part of Study 2, a wet weather discharge sample was collected from Outfall 003 (RMHF) on April 28; therefore, the wet weather portion of the study (from both Outfalls 003 and 011) has been completed. As required by the study, surface water samples were collected and analyzed as both filtered and unfiltered samples for radiological constituent's gross alpha, gross beta, total combined Radium 226 and Radium 228, Strontium 90, and tritium. In addition, the filter paper and sediment remaining in the filter paper were analyzed for Cesium 137. As summarized in Appendix E, the filtered and unfiltered sample collected from Outfall 003 was analyzed for constituents in accordance with the RWQCB's requirements (Table 1 of the RWQCB's May 20, 2004 letter and the RWQCB letter of January 12, 2005).

If subsequent discharge occurs from Outfall 011 during dry weather, up to three grab samples will be collected and analyzed for both filtered and unfiltered radiological constituents. The results of those samples will be reported in a subsequent quarterly DMR, and a technical report summarizing the completion and results of the studies will be provided under separate cover.

#### **FACILITY CONTACT**

If there are any questions regarding this report or its enclosures, you may contact Mr. Paul Costa at (818) 586-9177.



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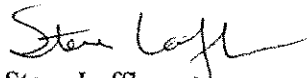
### CERTIFICATION

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 knowing violation.

Executed on the 15<sup>th</sup> of August 2005 at The Boeing Company, Santa Susana Field Laboratory Facility.

Sincerely,



Steve Lafflam  
Division Director  
Safety, Health and Environmental Affairs

- Appendices:
- A Figure 1 Storm Water Drainage System and Outfall Locations
  - B 2<sup>nd</sup> Quarter 2005 Rainfall Data Summary
  - C 2<sup>nd</sup> Quarter 2005 Liquid Waste Shipment Summary Tables
  - D 2<sup>nd</sup> Quarter 2005 Summary Tables, Discharge Monitoring Data, Outfalls 001 through 012, 015, 017, and 018
  - E 2<sup>nd</sup> Quarter 2005 Section 13267 Summary Tables, Discharge Monitoring Data, Outfall 003 and Outfall 011
  - F 2<sup>nd</sup> Quarter 2005 Summary of Permit Limit Exceedances
  - G 2<sup>nd</sup> Quarter 2005 Analytical Laboratory Reports and Chain-of-Custody

cc: Jim Pappas, Department of Toxic Substances Control  
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