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Via FedEx

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Information Technology Unit
Regional Water Quality Control Board, Los Angeles Region
320 West 4th Street, Suite 200
Los Angeles, California 90013

Subject: First Quarter 2018 NPDES Discharge Monitoring Report
Compliance File CI-6027 and NPDES No. CA0001309
Santa Susana Field Laboratory
Ventura County, California

The Boeing Company (Boeing) hereby submits this Discharge Monitoring Report (DMR) for the Santa Susana Field Laboratory (Santa Susana Site) for the period of 1 January through 31 March 2018 (First Quarter 2018). This DMR was prepared as required by and in accordance with National Pollutant Discharge Elimination System Permit No. CA0001309 (NPDES Permit) issued by the California Regional Water Quality Control Board, Los Angeles Region (Regional Board) in 2015 and under the regulatory oversight of the Regional Board.

Hard copies of this DMR are available to the public at California State University at Northridge Library; Simi Valley Library; and the Platt Branch of the Los Angeles Library. An electronic version of this DMR is located at:

http://www.boeing.com/principles/environment/santa-susana/monitoring-reports.page

FIRST QUARTER 2018 DMR CONTENTS

This DMR includes the following sections and appendices:

- **Discharge and Sample Collection Summary:** This section describes the number of rain events, number of samples collected, sample dates, and sample locations during the First Quarter 2018. Table I summarizes the First Quarter 2018 sampling record by outfall, location, and sample type collected per the requirements of the NPDES Permit. Table II presents the First Quarter 2018 Arroyo Simi observations. Table III presents the First Quarter 2018 Bell Creek observations.
- **First Quarter 2018 Summary of Non-Compliance:** This section summarizes the sample results that exceeded NPDES Permit limits, daily maximum benchmark limits, and receiving water limits in the First Quarter 2018.
- **First Quarter 2018 Santa Susana Site Stormwater Pollution Prevention Plan (SWPPP)/Best Management Practices (BMP) Activities:** This section presents the Santa Susana Site SWPPP

activities and other BMP related activities associated with NASA, DOE, Expert Panel, the Northern Drainage, and the Outfall 001/002 BMP Compliance Report implemented in the First Quarter 2018. Table IV summarizes specific BMP activities by outfall location.

- **Reasonable Potential Analysis:** This section discusses the results of the analysis.
- **Follow-up on First Quarter 2017 Outfall 001 and Outfall 011 Results:** This section summarizes follow-up activities conducted after detection of human-specific markers on 17 February 2017.
- **SWPPP, BMP Plan, and Spill Contingency Plan Status and Effectiveness Report:** This section references the quarterly DMR in which more information may be found.
- **Data Validation and Quality Control:** This section discusses data validation results and any laboratory or field corrective actions.
- **Figure 1** shows the stormwater collection conveyance system, location of Bell Creek Receiving Water sampling location (RSW-001, Outfall 002), and Santa Susana Site features; **Figure 2** shows the Arroyo Simi Receiving Water (RSW-002, Frontier Park) sampling location and upstream sampling location.
- **Appendix A** summarizes the rainfall measured during the First Quarter 2018 at the Santa Susana Site.
- **Appendix B** tabulates waste shipment details.
- **Appendix C** presents chemical analytical results of the First Quarter 2018 stormwater and/or receiving water samples in tabular form by outfall location, constituents evaluated (analytes), sample dates, and data validation qualifiers.
- **Appendix D** summarizes the NPDES Permit limit exceedances.
- **Appendix E** contains copies of the laboratory analytical reports, chain of custody forms, and data validation reports.
- **Appendix F** tabulates the Reasonable Potential Analysis.
- **Appendix G** presents laboratory methods and State Water Resources Control Board Environmental and Laboratory Accreditation Program renewal certifications for all laboratories.

DISCHARGE AND SAMPLE COLLECTION SUMMARY

The Santa Susana Site measured four qualifying rain events that produced greater than 0.1 inch of rainfall within a 24-hour period and were preceded by at least 72 hours of dry weather during the First Quarter 2018 (Appendix A). Automated flow-weighted composite samplers (autosamplers) were set in preparation for all rain events. One of the four qualifying rain events produced stormwater discharges. During this event stormwater samples were collected at Outfalls 002 and 009. There were no changes in the discharge as described in the NPDES Permit during the reporting period.

One annual offsite receiving water sample was collected at the Arroyo Simi location (RSW-002, Frontier Park; see Figure 2) and one onsite receiving water sample was collected at Outfall 002 (RSW-001). Four additional offsite receiving water grab samples were collected at the Arroyo Simi-Frontier Park location to calculate the geometric mean in compliance with Receiving Water Requirements in Attachment E of the NPDES Permit.
Table I summarizes the First Quarter 2018 sampling record by outfall/location, sample frequency, and sample type collected per NPDES Permit requirements.

TABLE I: Sampling Record during the First Quarter 2018

Date	Outfall/Location	Sample Frequency	Sample Type
03/21-03/22/2018	Outfall 009	Annual, Routine, Toxicity, Semi-Annual, Species Sensitivity Screening	Grab, Composite
03/22-03/23/2017	Outfall 002 (includes RSW-001)	Annual, Quarterly, Routine, Toxicity (OF002, RSW-001); 5-Year Priority Pollutants (RSW-001)	Grab, Composite
03/22/2018	Arroyo Simi Receiving Water (RSW-002, Frontier Park)	Annual, Quarterly, Geometric Mean, 5-Year Priority Pollutants	Grab
03/30/2018	Arroyo Simi Receiving Water (RSW-002, Frontier Park)	Geometric Mean	Grab
4/6/2018	Arroyo Simi Receiving Water (RSW-002, Frontier Park)	Geometric Mean	Grab
4/13/2018	Arroyo Simi Receiving Water (RSW-002, Frontier Park)	Geometric Mean	Grab
4/20/2018	Arroyo Simi Receiving Water (RSW-002, Frontier Park)	Geometric Mean	Grab

Notes:

Routine = 1/discharge.

Toxicity is required during the 1st and 2nd Rain or Flow Event.

Geometric mean samples were collected in compliance with Receiving Water Requirements in Attachment E of the NPDES Permit. The 30-day period of collecting five equally spaced samples began at the end of March and ended in April. Since laboratory results were available prior to the publication of this DMR, the sample results and the geometric mean calculation are included in this report.

Species sensitivity screening was collected in compliance with Whole Effluent Toxicity Testing Requirements in Attachment E of the NPDES Permit.

All analyses were conducted at analytical laboratories certified for such analyses by the State Water Resources Control Board (i.e., all have current certification from the Environmental Laboratory Accreditation Program [ELAP] established by the California Environmental Laboratory Improvement Act) or are approved by the State Water Resources Control Board Executive Officer and in accordance with current USEPA guideline procedure or as specified in the NPDES Permit. The annual requirement for including reporting limits, method detection limits, laboratory analytical methods, State Water Resources Control Board ELAP renewal certifications for all laboratories, and associated laboratory quality assurance and quality control procedures are included in Appendix G.

FIRST QUARTER 2018 RECEIVING WATER SURVEYS

The receiving water monitoring program required by the Permit includes surveys of Bell Creek, Dayton Canyon Creek and Arroyo Simi. Observations are made only during discharge from Outfalls 002, 008, and 009, respectively, and at most monthly during periods of multiple flow events. During First Quarter 2018 Outfall 002 flowed in March, Outfall 008 did not flow, and Outfall 009 flowed in March. Table II and Table III below present the observations.

TABLE II: First Quarter 2018 Arroyo Simi Observations

Arroyo Simi Observations	January 2018	February 2018	March 2018
Date and time of inspection	NA	NA	3/22/2018, 07:55
Weather conditions	NA	NA	Rainy, cool, 55°, cloudy
Color of water	NA	NA	Brown
Appearance of oil films or grease, or floatable materials	NA	NA	No films; trace of floating Styrofoam
Extent of visible turbidity or color patches	NA	NA	Uniform, opaque
Description of odor, if any	NA	NA	None
Presence or activity of California Least Tern or California Brown Pelican	NA	NA	No
Upstream Surface Water Temperature*	NA	NA	55.85°F
Upstream Surface Water pH*	NA	NA	7.71 pH Units

Notes:

NA = not applicable. Since Outfall 009 did not flow during the months of January and February, a monthly inspection at Arroyo Simi was not required.

* = This data was collected to assist in determining compliance with receiving water limitations. Upstream data are compared to the pH and temperature measured at Arroyo Simi sample location RSW-002 (Appendix C) and were within 0.5 units and 5°F of the upstream field readings; therefore, compliance was demonstrated.

TABLE III: First Quarter 2018 Bell Creek Observations

Arroyo Simi Observations	January 2018	February 2018	March 2018
Date and time of inspection	NA	NA	3/22/2018, 13:55
Weather conditions	NA	NA	Drizzling, overcast, cool, 58°F
Color of water	NA	NA	Brown
Appearance of oil films or grease, or floatable materials	NA	NA	None
Extent of visible turbidity or color patches	NA	NA	Uniform, translucent
Description of odor, if any	NA	NA	None
Presence or activity of California Least Tern or California Brown Pelican	NA	NA	No

Notes:

NA = not applicable. Since Outfall 002 did not flow during the months of January and February, a monthly inspection at Outfall 002 was not required.

FIRST QUARTER 2018 SUMMARY OF NON-COMPLIANCE

As summarized in Appendix D, the First Quarter 2018 exceedances of Daily Maximum Benchmark Limits, Daily Maximum Permit Limits, or receiving water limits included:

- *Escherichia coli* (*E. coli*) at Arroyo Simi – Frontier Park (RSW-002);
- *Escherichia coli* (*E. coli*) at Bell Creek (RSW-001); and
- *Iron* at Outfall 002.

Boeing is committed to fulfilling the requirements of the NPDES Permit. The actions taken during the First Quarter 2018 to control erosion and sediment transport and minimize the occurrence of future permit exceedances are described in Table IV, the section on Outfall 008/009 ISRA and BMP Plan-Related Activities in this report, and the section on Outfall 001/002 BMP Compliance Report Related Activities in this report. Boeing will continue to work with the Stormwater Expert Panel (Expert Panel) to address exceedances at Outfalls.

Arroyo Simi Frontier Park – (RSW-002)

Bacteria

In a sample collected offsite at the Arroyo Simi – Frontier Park (RSW-002) location on 22 March 2018, *E. coli* was detected at 11,000 most probable number per 100 milliliters (MPN/100mL), which is above the single sample maximum receiving water limit of 235 MPN/100mL. As stated in the NPDES Permit, *E. coli* is part of the water quality objectives for monitoring inland surface waters and includes a geometric mean calculation. Four additional samples were collected at the Arroyo Simi – Frontier Park (RSW-002) location on March 30 and April 6, 13 and 20 and were used to calculate the geometric mean for *E. coli*. The calculated geometric mean for *E. coli* of 366 MPN/100mL was above the geometric mean receiving water limit of 126 MPN/100mL.

On 21 March 2018, *E. coli* was detected in the stormwater sample collected from Outfall 009 at 390 MPN/100mL. However, the Permit does not include a maximum daily effluent limit for *E. coli* at Outfall 009. The discharge from Outfall 009 was also analyzed for human-specific Bacteroides to determine whether a human signal was present in bacteria from this sample. Results of the Bacteroides analysis demonstrated that human-specific markers were absent at Outfall 009; therefore, the bacteria was found to have originated from non-human, natural sources (i.e., birds, wildlife). Since discharge from Outfall 009 is the only Santa Susana Site Outfall contributing runoff to Arroyo Simi, any bacteria detected at Arroyo Simi – Frontier Park (RSW-002) from the Santa Susana Site are from natural/wildlife, and not human sources.

Bell Creek – (RSW-001)

Bacteria

In a sample collected at the Bell Creek receiving water location (Outfall 002, RSW-001) on 22 March 2018, *E. coli* was detected at 280 MPN/100mL, which is above the single sample maximum receiving water limit of 235 MPN/100mL. As stated in the NPDES Permit, *E. coli* is part of the water quality objectives for monitoring inland surface waters and includes a geometric mean calculation; however, Outfall 002 did not flow for 30 days (it flowed for 3 days), therefore geometric mean samples were not collected nor was a geometric mean calculated.

The discharge from Outfall 002 was also analyzed for human-specific Bacteroides to determine whether a human signal was present in bacteria from this sample. Bacteroides analysis indicated human-specific markers were present at Outfall 002. However, the bacteroides result for Outfall 002 was qualified as Detected, but Not Quantified (DNQ), and Boeing is not aware of any potential human source of bacteria in Outfall 002.

Outfall 002

Iron

On 22 March 2018, iron was detected in a stormwater sample collected from Outfall 002 at 2.1 mg/L, which is above the Daily Maximum Benchmark Limit of 0.3 mg/L. The actions completed during Third Quarter 2017 to control erosion and sediment transport and minimize the occurrence of future permit exceedances in Outfall 002 are described in the Outfall 001/002 BMP Compliance Report (Boeing, 2017). Boeing and the Expert Panel will continue to monitor and evaluate the effectiveness of BMPs within the Outfall 002 watershed.

The Expert Panel study, *SSFL Metals Background Report: Sources of Metals in SSFL Watersheds* (Pitt, 2009) noted that heavy metals in stormwater discharges from Outfalls 001, 002, 008, and 009 originate from various sources, including natural soil components, rainfall, and dry atmospheric deposition from local and regional sources. This report also explained that data show wet weather metals concentrations in creeks in regional natural watersheds, and that the Santa Susana Site's "outfall metal concentrations were comparable to the concentrations at these undeveloped watersheds."

In the 2017 Expert Panel Annual Report (Geosyntec and the Expert Panel, 2017), the Expert Panel discussed iron exceedance at Outfall 002. Based on the wide range of iron concentrations in natural background soils and total suspended solids (TSS) concentrations measured in stormwater samples, the expected concentration of iron in stormwater samples "attributable to purely background soils" also has a reasonably wide range.

Since total metals are commonly associated with sediment particles, Boeing believes that the iron concentration observed in stormwater runoff in the Outfall 002 watershed was the result of contact with native sediments and soil.

FIRST QUARTER 2018 SANTA SUSANA SITE SWPPP/BMP ACTIVITIES

Boeing implemented significant activities related to the Site-Wide SWPPP (Haley & Aldrich, 2017) and BMP-related activities to assist in improving stormwater quality and compliance at the Santa Susana Site. Table IV summarizes the activities completed during the First Quarter 2018 by outfall. In addition to SWPPP related activities, specific BMP projects, which are discussed in sections below Table IV, included: NASA SWPPP BMPs; DOE BMPs; Expert Panel reports related to BMPs; Outfall 008/009 BMPs; Northern Drainage BMPs; and Outfall 001/002 BMPs.

TABLE IV: Boeing's First Quarter 2018 BMP Activities

OUTFALL (Location)	BMP ACTIVITIES DURING FIRST QUARTER 2018
001 (South Slope)	Conducted erosion, sediment control, and drainage stabilization inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected the outfall and flume for sediment/debris. Checked the sample box and flow meter control box for the presence of debris and/or animals. Cleaned the sample box and the outfall area and performed weed abatement as needed. Reset the flow meter and replaced the tape monthly.
002 (South Slope)	Conducted erosion, sediment control, and drainage stabilization inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected the outfall and flume for sediment/debris. Checked the sample box and flow meter control box for the presence of debris and/or animals. Cleaned the sample box and the outfall area and performed weed abatement as needed. Reset the flow meter and replaced the tape monthly. Constructed a trench on the dirt road leading to OF002 to prevent pooling; located approximately 100 yards upstream of the outfall.
003 (Radioactive Material Handling Facility)	Conducted erosion and sediment control inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected the outfall and flume for sediment/debris. Checked the sample box and flow meter control box for the presence of debris and/or animals. Cleaned the sample box and the outfall area and performed weed abatement as needed. Reset the flow meter and replaced the tape monthly. Conducted maintenance inspections of structural BMPs, including the flow-through structure and stormwater conveyance and retention systems.
004 (Sodium Reactor Experiment Area)	Conducted erosion and sediment control inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected the outfall and flume for sediment/debris. Checked the sample box and flow meter control box for the presence of debris and/or animals. Cleaned the sample box and the outfall area and performed weed abatement as needed. Reset the flow meter and replaced the tape monthly. Conducted maintenance inspections of the structural BMPs, including the flow-through structure and stormwater conveyance system.
005 (Sodium Burn Pit 1)	Conducted erosion and sediment control inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected the outfall for sediment/debris. Checked the sample box for the presence of debris and/or animals. Cleaned the sample box and the outfall area and performed weed abatement as needed. Conducted maintenance inspections of the stormwater conveyance and retention systems.
006 (Sodium Burn Pit 2)	Conducted erosion and sediment control inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected the outfall and flume for sediment/debris. Checked sample box and flow meter control box for the presence of debris and/or animals. Cleaned sample box and the outfall area and performed weed abatement as needed. Reset flow meter and replaced the tape monthly. Conducted maintenance inspections of the structural BMPs, including the flow-through structure and stormwater conveyance system.

OUTFALL (Location)	BMP ACTIVITIES DURING FIRST QUARTER 2018
007 (Building 100)	Conducted erosion and sediment control inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected the outfall for sediment/debris. Checked the sample box for the presence of debris and/or animals. Cleaned the sample box and the outfall area and performed weed abatement as needed. Conducted maintenance inspections of the stormwater conveyance and retention systems.
008 (Happy Valley)	Conducted erosion and sediment control inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected the outfall and flume for sediment/debris. Checked the sample box and flow meter control box for the presence of debris and/or animals. Cleaned the sample box and the outfall area and performed weed abatement as needed. Reset the flow meter and replaced the tape monthly.
009 (WS-13 Drainage)	Outfall BMPs: Conducted erosion and sediment control inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected the outfall and flume for sediment/debris. Checked the sample box and flow meter control box for the presence of debris and/or animals. Cleaned the sample box and the outfall area and performed weed abatement as needed. Reset the flow meter and replaced the tape monthly. Lower Lot BMP: Inspected the Sedimentation Basin, Biofilter, and Cistern areas. Cleaned the curb leading to the basin free of leaves, sediment, and debris. Cleaned upstream areas free of sediment and installed additional fiber roll to contain loose soil and prevent migration of sediment into the parking lot. Upper Parking Lot BMP: Performed maintenance inspection of media filter near the parking lot. Cleaned the area free of sediment and debris. Front Gate: Performed maintenance inspection of area near the front gate. Former Building 1436 (B1436) Detention Bioswales: Performed maintenance inspection of bioswale surface area, including vegetated area and fiber rolls. B-1 Area: Performed maintenance inspection of BMPs along the slope and within drainage. Culvert Modifications: Performed maintenance inspection of BMPs. Inspected the culvert inlets and rip-rap check dams. At CM-2, CM-5, and CM-12 cleaned sediment and debris build-up in front of the weir boards. At CM-2 cleaned leaves and debris at culvert inlet. At CM-4 reinstalled loose fiber roll and cleaned culvert basin free of sediment. At CM-12 repaired weir boards and fabric. At Administration Area inlet filters and CM-1 and CM-3 inspected road crossing BMPs. Former Shooting Range: Performed maintenance inspection of BMPs. Well 13 Road: Performed maintenance inspection of BMPs near the culvert. Helipad: Repaired Helipad lower dam HDPE cover (loose due to wind).

OUTFALL (Location)	BMP ACTIVITIES DURING FIRST QUARTER 2018
010 (Building 203)	Conducted erosion and sediment control inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected the outfall and flume for sediment/debris. Checked the sample box and flow meter control box for the presence of debris and/or animals. Cleaned the sample box and the outfall area and performed weed abatement as needed. Reset the flow meter monthly. Conducted maintenance inspections of structural BMPs, including the flow-through structure and stormwater conveyance and retention systems.
011 (Perimeter Pond)	Conducted erosion and sediment control inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected the outfall and weir for sediment/debris. Checked the sample box and flow meter control box for the presence of debris and/or animals. Cleaned the sample box and the outfall area and performed weed abatement as needed. Reset the flow meter monthly. Conducted maintenance inspections of structural BMPs, including the flow-through structure and stormwater conveyance system. Stormwater Treatment System 011: Continued repairs and system updates in preparation of possible use during the 2017-2018 rainy season. Added remote display for Actiflo influent flow meter to instrument panel to prevent water damage. Installed stainless steel vessel plugs and drain valves to reduce iron concentration in the water. Coated bag filter housing interior with epoxy during iron concentration investigation effort. Rerouted backwash tank effluent to solids weir tank instead of plate settler. Changed backwash pump to 1.5” suction/ 2” discharge to match sizing of other pumps in the system. Upgraded water heater in polymer skid. Continue installing sample sink.
018 (R-2 Pond Spillway)	Conducted erosion and sediment control inspections and performed maintenance around the perimeter of the outfall, the drainage/watershed, and areas of disturbance or sparse vegetation. Inspected the outfall and flume for sediment/debris. Checked the sample box and flow meter control box for the presence of debris and/or animals. Cleaned the sample box and the outfall area and performed weed abatement as needed. Reset the flow meter monthly. Conducted maintenance inspections of the structural BMPs, including the flow-through structure and conveyance system. Stormwater Treatment System 018: Installed water heater at the emergency shower. Added low point drains on the influent and effluent buffer tank. Installed hard pipe between screw press and weir tank. Added remote display for Actiflo influent flow meter to instrument panel to prevent water damage. Installed higher flow pump at plate settler gravity drain effluent. Installed rain cover over MCC after moisture was observed inside the panels. Installed temporary safety delineation cables from bridge to top of walkway. Cleared vegetation around Helipad discharge pipe.
019 (Area I Groundwater Extraction and Treatment [GET] System)	The GET system has not operated since April 2013 and no pumping or discharge has occurred; therefore, no NPDES Permit sampling was performed at the Area I GET System in the First Quarter 2018. Conducted maintenance inspections of the structural BMPs.

OTHER BMP ACTIVITIES

BMP observations and maintenance inspections were conducted in conformance with the Site-Wide SWPPP at and around the former active test stands Alfa and Bravo and former Advanced Propulsion Test Facility.

NASA-RELATED ACTIVITIES

Demolition activities covered by NASA's Construction SWPPP (dated 16 May 2017) are inspected in accordance with the Construction General Permit (CGP). During the First Quarter 2018, NASA performed planned demolition activities in the Alfa and Bravo Test Stand Areas. NASA maintained fiber rolls as linear sediment controls, maintained silt fencing, and hydroseeded areas to stabilize soils within the areas where construction activities had been completed.

Demolition and stormwater control activities covered by NASA's Construction SWPPP (dated 21 February 2017) are inspected in accordance with the Construction General Permit (CGP). During the First Quarter 2018, BMPs including fiber rolls, sandbags, and hydroseed were placed in the Delta Area where construction activities had been completed.

Demolition activities covered by NASA's Construction SWPPP (dated 04 December 2017) are inspected in accordance with the Construction General Permit (CGP). During the First Quarter 2018, NASA started planned demolition activities in the Coca Test Stand Area. NASA maintained fiber rolls as linear sediment controls around active demolition areas.

DOE-RELATED ACTIVITIES

DOE inspected the silt fencing during the First Quarter 2018 installed in the vicinity of well DD-141 and well DD-143 to evaluate its effectiveness at preventing soil erosion. Silt fencing was installed near DD-141 to prevent sediment from entering the drainage north of the Building 56 Landfill Area and near DD-143 to prevent sediment from entering the drainage upgradient from Outfall 003. After installing air monitoring station DOE-3 near Outfall 005 during the First Quarter 2018, DOE placed hydroseed and fiber rolls (Figure 1).

EXPERT PANEL-RELATED ACTIVITIES

The BMP activities discussed below were performed, commenced, or completed during the First Quarter 2018 in coordination with the Expert Panel.

Former Building 1436 Detention Bioswales

Two detention bioswales were constructed at the former Building 1436 following its removal in Third Quarter 2014. The graded surface was hydroseeded and more than 2,900 native plantings were installed in December 2014. The bioswales were designed to capture, pretreat, and detain runoff from the adjacent parking lot and from approximately 13.9 acres of drainage area east and upgradient prior to releasing the stormwater to the former Instrument and Equipment Laboratories (IEL) storm drain, where flow is diverted to the lower lot biofilter for treatment. The First Quarter 2018 activities included inspections of the BMPs.

Lower Lot Biofilter

The lower lot biofilter is a stormwater treatment BMP designed and built to capture, convey, and treat stormwater runoff from the lower parking lot and former IEL watershed. The lower lot biofilter consists of a 30,000-gallon cistern, a stormwater conveyance line, a sedimentation basin, and a media biofilter.

The First Quarter 2018 activities included inspections to verify that the sedimentation basin and biofilter were free of sediment and debris, checks of the Cistern area and pump, and inspections of surrounding BMPs. Approximately 811,700 gallons of stormwater were pumped from the Cistern to the sedimentation basin during the First Quarter 2018.

NASA Expendable Launch Vehicle (ELV) Area BMPs

BMPs and drainage improvements were installed between June and October 2013 at the NASA ELV to improve the quality of stormwater from the ELV area. Stormwater is gravity-driven through the tank system, starting with the settling tanks, then through the filter media tank, before discharging to a tributary that flows to Outfall 009. In the Second Quarter 2016, a sand bag berm was placed across the ELV asphalt swale, to divert runoff from directly discharging to the Northern Drainage to instead flow toward CM-1 for treatment. The First Quarter 2018 activities included inspections of the BMPs.

Administration Area Inlet Filters

Four storm drain inlets were modified with either drop inlet filters or weighted wattles filled with media mixtures during the Second Quarter 2017. A sandbag berm was also placed upstream of the inlet closest to the lower lot to increase the settling of solids. The First Quarter 2018 activities included inspections of the BMPs.

Road Runoff Diversion to CM-3

The construction of a new Service Area road runoff diversion to CM-3 was completed during the Second Quarter 2017. This BMP included a new curb installed on the north side of the road meant to convey flow to a new drop inlet and trench under the road, which then directs the collected runoff to CM-3 for treatment before entering the Northern Drainage. The First Quarter 2018 activities included inspections of the BMPs.

Road Runoff Diversion to CM-1

The construction of a new road runoff diversion to CM-1 was completed during Fourth Quarter 2017 and the rip-rap berm was increased in height to treat the additional road runoff. The First Quarter 2018 activities included inspections of the BMPs.

Well 13 Road

The sandbag berms located near the culvert inlet and downgradient of the hydroseeded area were reinforced and increased in height during Fourth Quarter 2017. The First Quarter 2018 activities included inspections of the BMPs.

Upper Parking Lot Media Filter

The construction of a media filter at the northeast corner of the upper parking lot was completed during the Second Quarter 2017. This BMP included a new media filter, similar in style to the B-1 media filter,

designed to treat runoff from parts of the parking lot, as well as parts of the adjacent Entrance Road. The First Quarter 2018 activities included inspections of the BMPs.

Creosote Treated Wood Poles

During Fourth Quarter 2017 creosote treated wood poles had fiber roll installed around the base of the pole. First Quarter 2018 activities included continuing fiber roll installation at non-creosote roadside power poles throughout the site.

Former Shooting Range

Prior to the First Quarter 2018, existing BMPs at the Former Shooting Range consisted of:

- Slope stabilization measures (i.e., vegetation planting areas);
- Rip-rap berms along the Northern Drainage;
- A culvert maintenance media filter;
- Fiber rolls;
- Sandbag berm;
- Silt fencing;
- Constructed water bar across the trail;
- Three check structures on the Northern trail;
- Sandbags with fiber rolls;
- A check structure at the dissipater;
- Hydroseeding; and
- Plantings.

The First Quarter 2018 activities included inspections of the BMPs.

NASA and Boeing BMP Monitoring-Related Activities

In addition to activities performed in coordination with the Expert Panel described above, BMP performance monitoring samples were collected in the watersheds associated with Outfalls 001/009 during the First Quarter 2018. Samples were analyzed for metals, dioxins, and total suspended solids at the locations listed below. These samples will be reported by the Expert Panel in the 2017/18 Annual Report (Figure 1).

- B-1 area;
- Lower Parking Lot area;
- Area I Landfill area (A1LF);
- IEL area;
- ELV, Helipad area;
- CM-1 area;
- Well 13 Road area; and
- Coca area.

Non-Industrial Sources Special Studies

The Expert Panel submitted a Site-Wide Stormwater Work Plan and 2014/15 Annual Report (2015 Work Plan) in September 2015 (Geosyntec and the Expert Panel, 2015a) on behalf of Boeing to meet the requirements of the NPDES Permit (Order No. R4-2015-0033)[1]. The 2015 Work Plan also includes recommended non-industrial sources special studies intended to help identify sources of lead and dioxins within the Outfall 009 watershed. The special studies involve vacuum sampling pavement solids, pan sampling atmospheric deposition solids, soil sampling around treated wood poles, lead isotope sampling, and sediment and stormwater sampling at multiple locations along the Northern Drainage. A subset of sampling for the various studies was conducted in the First Quarter 2018, including the following:

- Collected Non-Industrial Sources Special Studies samples to analyze lead, dioxins, and total suspended solids at the following locations in or near the Northern Drainage; these samples will be reported by the Expert Panel in the 2017/18 Annual Report (Figure 1).
  - Along the Northern Drainage above the confluence with Area II drainage (stormwater);
  - Along the Area II drainage above the confluence with the Northern Drainage (stormwater);
  - Along the dirt access road adjacent to Northern Drainage (stormwater);
  - Along the dirt road crossing at box culvert (stormwater); and
  - Along the Northern Drainage downstream of a 24-inch storm drain outlet discharge (stormwater).
- Collected Non-Industrial Sources Special Studies pavement solids samples to analyze lead, dioxins, total suspended solids and particle size from the following locations; these samples will be reported by the Expert Panel in the 2017/18 Annual Report.
  - LOX entrance road;
  - Area II Road near CM-9;
  - Lower parking lot; and
  - Upper parking lot, two locations (south end and east side).

NORTHERN DRAINAGE BMPS

Boeing restored the Northern Drainage following cleanup activities performed under the oversight of the Department of Toxic Substances Control (DTSC) and in accordance with the requirements of Regional Board's Cleanup and Abatement Order No. R4-2007-0054 (Regional Board, 2007). The restoration and mitigation activities proposed in the Northern Drainage Restoration, Mitigation, and Monitoring Plan (RMMP)[2] were implemented in 2012. In accordance with the RMMP, regular maintenance, monitoring, and reporting were implemented in the Northern Drainage from 2012 through the Third Quarter 2017 for the stream's plant biology and geomorphology. Successful restoration and mitigation of the Northern Drainage per the success criteria of the RMMP were documented in the fifth and final annual mitigation monitoring report submitted in December 2017. Based on the success of the project, Boeing requested that the Regional Board provide written notice stating that Boeing has complied with all terms of the Cleanup and Abatement Order and Boeing's obligations under the Order are terminated. Boeing will continue to inspect the Northern Drainage BMPs annually and will maintain them on an as-needed basis.

[1] Available at: http://www.boeing.com/principles/environment/santa-susana/permits.page
[2] Available at: http://www.boeing.com/principles/environment/santa-susana/technical-reports.page

No RMMP-related inspections of Northern Drainage BMPs were performed during First Quarter 2018.

OUTFALL 001/002 BMP COMPLIANCE REPORT RELATED ACTIVITIES

Boeing submitted a BMP Compliance Report to the Regional Board on 16 June 2017 discussing activities to reduce or eliminate benchmark exceedances for the Outfall 001 and 002 drainages (Boeing, 2017). The BMP activities were completed during the Third Quarter 2017 and are currently included in sitewide BMP inspections.

Boeing and the Expert Panel will continue to monitor and evaluate the effectiveness of BMPs within the watersheds of Outfall 001 and Outfall 002 and discuss in the 2018 Expert Panel Annual Report.

REASONABLE POTENTIAL ANALYSIS

Stormwater discharges from the Santa Susana Site occurred at Outfalls 002 and 009 during the First Quarter 2018. Analytical results from this quarter were added to the Reasonable Potential Analysis dataset. RPA analysis was performed for *E. coli* for Outfall 002 and Outfall 009; these analyses are discussed below, and Boeing believe they did not trigger reasonable potential (Appendix F). The analytical results for the First Quarter 2018 did not trigger a reasonable potential for any other constituent not already regulated under the current NPDES Permit.

Bacteria

On 22 March 2018, *E. coli* was detected in stormwater samples collected from Outfall 002 as 280 MPN/100mL. On 21 March 2018, *E. coli* was detected in stormwater samples collected from Outfall 009 at 390 MPN/100mL. Outfalls 002 and 009 were also analyzed for human-specific Bacteroides to confirm if the bacteria present in these samples were from human sources. Bacteroides analysis did not identify human-specific markers at Outfall 009. Bacteroides analysis indicated human-specific markers were present at Outfall 002. However, the bacteroides result for Outfall 002 was qualified as Detected, but Not Quantified (DNQ), and Boeing is not aware of any potential human source of bacteria in Outfall 002. As such, Boeing believes that no reasonable potential has been demonstrated for *E. coli* at either Outfall 002 or Outfall 009.

FOLLOW-UP ON FIRST QUARTER 2017 OUTFALL 001 AND OUTFALL 011 RESULTS

On 22 March 2017, Boeing sealed off a corroded slide gate valve on a bypass line connecting the inactive Sewage Treatment Plant to R-1 Pond by encasing the slide gate in concrete. The system was flushed to verify that flow from a leak in the slide gate valve was stopped.

As discussed in the First Quarter 2017 DMR, following the results of Bacteroides analyses demonstrating human-specific markers were present at Outfall 001 and three upstream locations (Outfall 011, R-1 Pond, and Perimeter Pond) on 17 February 2017, Boeing reviewed its sanitary waste collection procedures and as-built drawings for the inactive Sewage Treatment Plant. Boeing collected additional water samples for human-specific Bacteroides analysis on 27 March 2017 under dry conditions at R-1 Pond and Perimeter Pond. Laboratory analysis reported that human-specific markers were absent.

SWPPP, BMP PLAN, AND SPILL CONTINGENCY PLAN STATUS AND EFFECTIVENESS REPORT

The SWPPP, BMP Plan, and SPRP were updated in August 2017 after completion of the annual comprehensive site compliance evaluation in May 2017. To be consistent with Boeing's policy of ensuring that information is made available in a timely manner, changes and revisions to the SWPPP, BMP Plan, and SPRP were summarized in the Second Quarter 2017 DMR which was also issued August 2017. Boeing will continue to report changes and revisions to these Plans in the quarterly DMR associated with the issuance of the updated Plans.

DATA VALIDATION AND QUALITY CONTROL

In accordance with current federal and state Environmental Protection Agency guidelines and procedures, or as specified in the NPDES Monitoring and Reporting Program, samples were analyzed at a State of California-certified laboratory. Data validation was performed on 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. Measures were implemented by the analytical laboratory to monitor and/or evaluate low level detections, analyze for interferences, and ensure that cross-contamination did not occur. Laboratory analytical reports, including validation reports and notes, are included in Appendix E.

Attachment H of the NPDES Permit presents the State Board's minimum levels laboratories are expected to achieve for reporting and determining compliance with NPDES Permit limits. The analytical laboratory achieved these minimum levels in the First Quarter 2018 except when reporting limits were above the minimum levels (generally due to matrix). In cases where the NPDES Permit limit was less than the reporting limit and minimum level, the reporting limit was used to determine compliance.

CONCLUSIONS

Boeing continues to improve water quality at stormwater discharge locations at the Santa Susana Site through methods designed to preserve the natural conditions in the watershed to the maximum extent feasible by implementing distributed, sustainable erosion control/restoration measures and continuing our collaboration with the Expert Panel.

FACILITY CONTACT

If there are any questions regarding this report or its enclosures, you may contact Mr. Jeffrey Wokurka of Boeing at (818) 466-8800.

CERTIFICATION

I certify under penalty of law that this document and all attachments 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 violations.

Executed on the 15th of May 2018 at The Boeing Company, Santa Susana Site.

Sincerely,

David W. Dassler P.E.
Remediation Program Manager
Environment, Health & Safety

Enclosures:

References
Figure 1 – Site Map with Stormwater Collection and Conveyance System, RSW-001 Sampling Location, and Site Features
Figure 2 – Arroyo Simi Receiving Water – (RSW-002, Frontier Park) Sampling Location
Appendix A – First Quarter 2018 Rainfall Data Summary
Appendix B – First Quarter 2018 Waste Shipment Summary Tables
Appendix C – First Quarter 2018 Discharge Monitoring Data Summary Tables
Appendix D – First Quarter 2018 NPDES Permit Limit Exceedances
Appendix E – First Quarter 2018 Analytical Laboratory Reports, Chain of Custody Forms, and Validation Reports
Appendix F – First Quarter 2018 Reasonable Potential Analysis Tables
Appendix G – First Quarter 2018 Analytical Laboratory Methods, Method Detection Limits, Reporting Limits, QA/QC Procedures, and ELAP Certifications

cc: Ms. Cassandra Owens, RWQCB
Mr. Mark Malinowski, DTSC
California State University – Northridge, Library
Simi Valley Library
Los Angeles Library, Platt Branch

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