



**Naval Facilities Engineering Command Southwest
BRAC PMO West
San Diego, CA**

AIR MONITORING SUMMARY REPORT

FEBRUARY 2 TO FEBRUARY 15, 2019

Remedial Action/Non-Time-Critical Removal Action Installation
Restoration Site 12

FORMER NAVAL STATION TREASURE ISLAND, SAN
FRANCISCO, CA

March 2019

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DCN: GLBN-0005-F4239-023



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FRANCISCO, CA

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LIST OF ABBREVIATIONS AND ACRONYMS

4,4'-DDD	4,4-dichlorodiphenyldichloroethane
AMP	Air Monitoring Plan
BAAQMD	Bay Area Air Quality Management District
BAP	benzo(a)pyrene
cfm	cubic feet per minute
CFR	Code of Federal Regulations
DAC	derived air concentration
DTSC	Department of Toxic Substances Control
HERO	Human and Ecological Risk Office
Gilbane	Gilbane Federal
DCP	Dust Control Plan
IR	Installation Restoration
mg/m ³	milligram per cubic meter
Navy	U.S. Department of the Navy
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PDR	personal data-logging real-time aerosol monitor
PM10	particulate matter less than 10 microns in diameter
PUF	polyurethane foam
Ra-226	radium-226
TCDD	2,3,7,8-tetrachlorodibenzo-p-dioxin
TLV	threshold limit value
TSP	total suspended particulates
µg/m ³	microgram per cubic meter
USEPA	United States Environmental Protection Agency
Work Plan	<i>Final Work Plan, Remedial Action/Non-Time Critical Removal Action, Installation Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California</i>

1.0 INTRODUCTION

This Air Monitoring Report was prepared by Gilbane Federal (Gilbane) as requested by the United States Department of the Navy (Navy) under the Radiological Multiple Award Contract (RADMAC II) N62473-12-D-D005, Contract Task Order F4239. Gilbane is performing dust and air monitoring at Former Naval Station Treasure Island in accordance with the Final Dust Control Plan (DCP) and Air Monitoring Plan (AMP), included as appendices to *Remedial Action/Non-Time Critical Removal Action Work Plan, Installation Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California* (Work Plan; Gilbane, 2018).

The DCP describes best management practices and procedures to be implemented to minimize dust generation during work activities. Dust monitoring is conducted to ensure that these procedures are effective. Dust monitoring is also conducted to verify that the working environment meets occupational health and safety standards and that workers are safe. The AMP outlines the requirements for prevention of exposure for construction workers to dust and potential airborne chemicals of concern from the work area. The AMP also establishes the conservative project action levels for dust at the work area boundary to protect residents.

This summary report describes the following:

- Dust and air monitoring sampling locations – **Section 2.0**;
- Dust and air monitoring sample collection and analytical methods – **Section 3.0**;
- Dust and air monitoring data – **Section 4.0**; and
- Dust and air monitoring results – **Section 5.0**.

This summary report presents the dust and air monitoring test results at Installation Restoration (IR) Site 12 and/or IR Site 32 from February 2nd, 2019 through February 15th, 2019, and compares the results with the established action levels included in the Work Plan (Gilbane, 2018).

IR Site 32, located 600 yards to the east of IR Site 12, is being used as a radiological screening yard and staging yard for the IR Site 12 project activities. The screening criteria established for IR Site 12 will be applied to the air monitoring at IR Site 32.

During the reporting period, personal data-logging real-time aerosol monitoring (PDR) dust data was collected. Air samples were collected and analyzed for lead, chromium, polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), dioxin [2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD)], total suspended particulates (TSP), and particulate matter less than 10 microns in diameter (PM10). In addition, air samples were analyzed for radiological gross alpha and beta levels.

2.0 MONITORING SITE LOCATIONS

2.1 Dust Monitoring

During earthmoving activities, multiple PDR stations are set up to monitor real-time airborne dust concentrations. The purpose of the PDR stations is to act as a first line of defense in protecting workers' health, and ultimately the public's health, during field activities. Dust levels are monitored at, and immediately adjacent to, the work area at the locations that will most likely contain the greatest volume of airborne dust. The objective of this dust monitoring approach is to demonstrate that dust levels are below action levels.

The general locations for dust monitors in IR Site 32 are shown on Figure 1, and the general locations for dust monitors for IR Site 12 are shown on Figure 2. Specific locations of each PDR are described in the individual PDR daily data files. Field forms from each location are presented in Attachment 1 of this report. During earth moving activities (i.e. transporting soil to radiological screening yard pads, managing radiological screening yard pads, etc.) at IR Site 32, one PDR serves as the upwind (background) location and two PDRs are placed in downwind perimeter locations. Correspondingly, during earth moving activities at IR Site 12 (i.e., transportation of backfill material, excavation, and backfilling), one PDR serves as the upwind (background) location and two PDRs are placed in downwind perimeter locations. Weather forecasts including wind direction are checked daily with a weather station located at Building 572.

2.2 Air Monitoring

Air monitoring samples were collected at the upwind Perimeter Road location and at the downwind location at the gate to Site 32. Air monitoring samples collected using high volume samplers are collected to identify and quantify airborne contaminants and to confirm the results recorded during dust (PDR) monitoring. Air monitoring stations are mobilized to collect air monitoring samples upwind and downwind of work areas. General locations of air monitoring stations are shown on Figure 3. The locations of the air monitoring stations are determined based on the prevailing wind direction (typically

from the northwest) and are modified as needed. A weather station is erected to monitor the wind direction.

High volume air monitoring stations remain stationary while sampling is being conducted; however, locations may be adjusted when the wind direction changes and when overall excavation work areas change from one site to another. Each upwind and downwind high volume monitoring station includes separate monitoring systems for the following:

- TSP- collected daily
- PM10- collected daily
- Lead and chromium- collected daily
- PAHs, PCBs, and Dioxins- collected on alternating days

2.3 Radiological Air Monitoring

Radiological air samplers are positioned adjacent to excavation work activities for radiologically impacted soil at one upwind and one downwind location during earthmoving activities associated with radiologically impacted soil. The radiological air samplers may be co-located with PDRs or the high-volume samplers.

3.0 SAMPLING AND ANALYTICAL METHODS

Dust and air samples are collected during earthmoving activities. However, during precipitation events, the dust and air monitoring units may not be operable. An attempt will be made to collect samples and readings regardless of the weather. If dust or air monitors are found to be malfunctioning or nonfunctional, earthmoving activities will stop until monitors can be repaired or replaced. The Site Health and Safety Officer is responsible for monitoring the air and dust monitoring sampling equipment. In rare cases, due to ancillary equipment malfunction such as generator failure during the night, a sample may be collected that represents a period of less than 24 hours. If this situation occurs, a note is added to the sample result data tables indicating why the full sampling period was not achieved.

3.1 Dust Samples

The PDR is a high sensitivity photometric monitor with a light-scattering sensing configuration that has been optimized for the measurement of the respirable fraction of airborne dust, smoke, fumes, and mists.

PDRs are used to evaluate real-time monitoring of airborne dust concentrations, to determine if there is a need for additional dust control or personal protection.

3.2 Air Samples

Air samples were sampled in accordance with the United States Environmental Protection Agency (USEPA) reference sampling method for PM₁₀, described in 40 Code of Federal Regulations (CFR) 50, Subpart J. Each sample was collected on a filter over an approximately 24-hour period; the filter was then weighted to determine the amount of PM₁₀ collected.

TSP samples were collected with a high-volume (39 to 60 cubic feet per minute [cfm]) air sampler in accordance with USEPA's reference sampling method for TSP, described in Title 40 CFR, Part 50, Subpart B. Each sample was collected on a filter over an approximately 24-hour period; the filter was then weighed to determine the amount of TSP collected. Once the filter weight was determined, the sample was analyzed for lead and chromium in accordance with USEPA Method 6020 using inductively coupled mass spectrometry.

Air samples for PCBs, PAHs, and dioxins are collected and analyzed in accordance with USEPA Methods TO-4A, TO-13, TO-9A, respectively, using TISH polyurethane (PUF) samplers. The filter media collected from the air samplers is submitted to the analytical laboratory for appropriate analysis.

PCB, PAH, and dioxin samples are collected on alternating days at the downwind and upwind stations during earthmoving activities.

3.3 Radiological Air Samples

Radiological air monitoring is also conducted upwind and downwind on days of earthmoving activities. Radiological samples are collected with a LV-1 low volume air sampler. Air filters are counted on site following a decay period and are compared with public air concentration limits published in 10 CFR Part 20. Radiological air sampling methods and procedures are detailed in Gilbane Radiological Procedure PR-RP-150 *Radiological Survey and Sampling*.

The radiological air sample is counted on a Low Background Protean WPC-9950 and analyzed for gross alpha and beta activity. The calculated airborne concentration in microcuries is then compared to the effluent concentration (often but incorrectly refer to as a derived air concentration [DAC] which applies only to occupational exposures) limit specified in Table 2 of Appendix B to 10 CFR 20. The effluent

concentration is the concentration of a given radionuclide in air which, if inhaled continuously over the course of a year, results in an exposure equal to the annual regulatory limit specified in 10 CFR 20.1302. The threshold for radiological effluent air monitoring samples is 10 percent of the effluent concentration, which ensures work practices are evaluated and modified as necessary to ensure the limit is not reached.

4.0 DUST AND AIR MONITORING DATA

The Human and Ecological Risk Office (HERO) at the request of the California Department of Toxic Substances Control (DTSC) developed dust action levels for community air monitoring for IR Site 12. Subchronic and chronic dust action levels as PM₁₀ were calculated for lead, chromium, dioxin, benzo(a)pyrene (BAP), 4,4-dichlorodiphenyldichloroethane (4,4'-DDD) and PCBs. As presented in the document *Dust Action Levels for Installation Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California* (HERO, 2018), the action levels were calculated using the maximum chemicals of concern soil concentrations at IR Site 12. As noted in **Section 1.0**, IR Site 12 action levels will be implemented for project work at IR Site 32.

Based on HERO's recommendations, a PM₁₀ dust action level of 50 microgram per cubic meter (ug/m³) will be implemented for all excavations areas at IR Site 12 except at the area surrounding sampling location KCH-1217-1 which will have a limit of 8 ug/m³ due to the elevated level of contaminants historically measured at this location. TSP is expected to be further controlled based on the limit employed for PM₁₀, in accordance with guidance provided by the San Francisco Bay Area Air Quality Management District (BAAQMD), which estimates that PM₁₀ makes up approximately 55 percent of TSP. If it is apparent that project activities are the cause of exceedances, additional control measures will be considered and implemented.

Dust monitoring action levels that are implemented on a real-time basis are listed in Table 1. PDR data are collected and reviewed each day by the Site Health and Safety Manager. PDR data are included in Attachment 1.

Analytical results from air monitoring samples are compared with the project screening criteria (threshold limit values [TLV]) listed in Table 2. Air monitoring results are included in Attachment 2. Radiological monitoring results are included in Attachment 3.

Table 1
Dust Monitoring Project Action Levels

Method	Monitoring Location	Monitoring Frequency ^a	Action Level ^b	Action
PDR	Near Workers' Breathing Zones (typically on equipment)	Periodically ^c	<2.5 mg/m ³ >2.5 mg/m ³	Continue work. Use Level D and increase dust control (i.e., apply water or other suppression method). Optionally upgrade to Level C until concentrations are reduced.
	Job Site Perimeter	Continuously	<1.0 mg/m ³ >1.0 mg/m ³	Continue work. Increase dust control and re- evaluate. Stop work if levels do not decrease.

Notes:

Only the Health and Safety Manager is authorized to downgrade levels of personal protective equipment.

^a Frequency of air monitoring may be adjusted by the project Certified Industrial Hygienist after sufficient characterization of site contaminants has been completed, tasks have been modified, or site controls have proven effective.

^b Five readings exceeding the action level in any 15-minute period or a sustained reading exceeding the action level for five minutes will trigger a response. Action levels represent airborne particulate concentrations in excess of background particulate concentrations.

^c PDR will be monitored a minimum of three times a day.

< less than

> greater than

mg/m³ milligram per cubic meter

PDR personal data-logging real-time aerosol monitor

Table 2
Air Monitoring Project Screening Criteria

Chemicals of Concern	Project Screening Criteria (Threshold Limit Value) $\mu\text{g}/\text{m}^3$	Basis
Lead	242	TI Site 12 Dust Action Level
Chromium	929	TI Site 12 Dust Action Level
TSP	50	TI Site 12 Dust Action Level
PM10	50	BAAQMD ambient air quality
BAP	50 (8) ^b	TI Site 12 Dust Action Level
PCBs ^a	NA	TI Site 12 Dust Action Level
4,4'-DDD	200	TI Site 12 Dust Action Level
Dioxin ^a	1E+07	TI Site 12 Dust Action Level
Radiological (Ra-226)	10% of DAC ^c	Occupational and public air concentration limits for Ra-226 published in 10 Code of Federal Regulations Part 20.

Notes:

a The dust action level was increased by a factor of 10 to account for the short-term duration of the project relative to the lifetime assumptions incorporated into the toxicity criteria and exposure assumption.

b BAP action levels will be 50 $\mu\text{g}/\text{m}^3$ for all excavations except for the area surrounding sample locations KCH-1217-1 at which it will be 8 $\mu\text{g}/\text{m}^3$

c Public air concentration limits are commonly referred to as DAC, but are in actuality Effluent Concentrations from Table 2 for 10 CFR Part 20.

% percent

4,4'-DDD dichlorodiphenyldichloroethane

BAAQMD Bay Area Air Quality Management District

BAP benzo(a)pyrene

DAC derived air concentration

PCBs polychlorinated biphenyls

PM10 particulate matter smaller than 10 microns in diameter

Ra-226 radium-226

TSP total suspended particulates

$\mu\text{g}/\text{m}^3$ microgram per cubic meter

5.0 AIR MONITORING RESULTS

If dust (PDR) monitoring equipment alarm, the source of exceedance will be determined by evaluating both upwind and downwind dust (PDR) sample locations. If the difference between upwind and downwind concentrations is greater than the action level for a sustained period of 15 minutes, then earthmoving activities will be halted until dust control measures are implemented. These may include, but are not limited to adding water to the work area during earth moving tasks, evaluation of alternate work procedures or equipment, and/or cessation of the activity that is creating the dust until the PDR readings are below the screening criteria.

PDR summary results are presented in Attachment 1. Weather information (including ambient pressure and temperature data) and high volume air monitoring sample results are presented in Attachment 2. Weather information was collected from the weather station at Building 572, Avenue M, Treasure Island, San Francisco, California. Radiological air monitoring results are presented in Attachment 3.

PM10 analytical results from February 2, 2019 to February 15, 2019 did not exceed the project-specific screening criteria presented in Table 2.

TSP analytical results from February 2, 2019 to February 15, 2019 did not exceed the project-specific screening criteria presented in Table 2.

Metals (chromium and lead), PAHs, total PCBs, and dioxin analytical results from February 2, 2019 to February 15, 2019 did not exceed the project-specific screening criteria presented in Table 2.

Dust (PDR) delta action levels did not exceed during the reporting period. The data sheets are found in Attachment 1.

Radiological air monitoring action levels were not exceeded during the reporting period.

6.0 REFERENCES

Gilbane, 2016. *Radiological Procedure PR-RP-150 Radiological Survey and Sampling*. January.

Gilbane, 2018. *Remedial Action/Non-Time Critical Removal Action Work Plan, Installation Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California*. September.

Gilbane, 2018. *Remedial Action/Non-Time Critical Removal Action Work Plan, Air Monitoring Report, Installation Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California*. September.

Gilbane, 2018. *Remedial Action/Non-Time Critical Removal Action Work Plan, Dust Control Plan, Installation Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California*. September.

HERO, 2018. *Dust Action Levels for Installation Restoration Site 12, Former Naval Station Treasure Island, San Francisco, California*. September.

FIGURES



**IR Site 12 Non-SWDA Remedial Action/
SWDA Removal Action**
Former Naval Station Treasure Island
San Francisco, CA

Figure 1
PDR Monitoring Locations
IR Site 32



**IR Site 12 Non-SWDA Remedial Action/
SWDA Removal Action**
Former Naval Station Treasure Island
San Francisco, CA

Figure 2
PDR Monitoring Locations
IR Site 12

ATTACHMENTS

ATTACHMENT 1
PDR SUMMARY TABLE AND FIELD FORMS

Table 1-1

Personal Data-logging Real-time (PDR) Aerosol Monitoring Results

Remedial Action/NTCRA IR Site 12

Former Naval Station Treasure Island, San Francisco, California



DustTrak Unit	IR Site	Date	Maximum (mg/m ³)	Average (mg/m ³)	Delta Between Upwind and Downwind stations (mg/m ³)	Below action level? (0.050 mg/m ³) (Yes/No)
DM1	Site 32	2/4/2019	0.006	0.005	NA	NA
DM2	Site 32		0.012	0.011	0.006	Yes
DM3	Site 32		0.007	0.006	0.001	Yes
DM29	Site 12		0.004	0.004	NA	NA
DM30	Site 12		0.006	0.005	0.001	Yes
DM31	Site 12		0.007	0.005	0.001	Yes
DM1	Site 32	2/5/2019	0.007	0.003	NA	NA
DM2	Site 32		0.006	0.005	0.002	Yes
DM3	Site 32		0.004	0.003	0.000	Yes
DM32	Site 12		0.006	0.003	NA	NA
DM33	Site 12		0.025	0.011	0.008	Yes
DM34	Site 12		0.006	0.004	0.001	Yes
DM1	Site 32	2/6/2019	0.012	0.007	NA	NA
DM2	Site 32		0.009	0.007	0.000	Yes
DM3	Site 32		0.007	0.006	-0.001	Yes
DM35	Site 12		0.013	0.006	NA	NA
DM36	Site 12		0.012	0.004	-0.002	Yes
DM37	Site 12		0.013	0.008	0.002	Yes
DM1	Site 32	2/7/2019	0.019	0.016	NA	NA
DM2	Site 32		0.021	0.014	-0.002	Yes
DM3	Site 32		0.024	0.017	0.001	Yes
DM1	Site 32	2/11/2019	0.012	0.008	NA	NA
DM2	Site 32		0.012	0.010	0.002	Yes
DM3	Site 32		0.010	0.008	0.000	Yes
DM38	Site 12		0.015	0.010	NA	NA
DM39	Site 12		0.008	0.005	-0.005	Yes
DM40	Site 12		0.008	0.004	-0.006	Yes
DM1	Site 32	2/12/2019	0.026	0.018	NA	NA
DM2	Site 32		0.017	0.012	-0.006	Yes
DM3	Site 32		0.018	0.013	-0.005	Yes
DM41	Site 12		0.016	0.013	NA	NA
DM42	Site 12		0.014	0.010	-0.003	Yes
DM43	Site 12		0.017	0.013	0.000	Yes

Notes:

bold = results above screening criteriamg/m³ = milligram per cubic meter

NA = not applicable

DUST MONITORING LOG

Client Name NAVFAC

Date 2/4/19

Project No. J310000300

Page of

Logged by Mike Cox

Weather Cloudy 50°

Instrument Type: Dust Trak II

Calibration Standards Used: Factory calibrated

Time	Location	Instrument Readings, (Units)					Serial number PPE Used	Activities, Remarks
		mg/m ³						
0723	DM 1	0.004					2714	no earth moving activities
0733	DM 2	0.010					3703	↓
0746	DM 3	0.007				MDR-3	2724	
0814	DM 29	0.004	excavation			HP 100	1649	UP wind
0816	DM 30	0.004	excavation			MDR-3 HP 100	2368	Down wind
0818	DM 31	0.004	excavation			HP 100	3204	Down wind
1037	DM 1	0.006				MDR-3	2714	no earth moving activities
1043	DM 2	0.012					3703	↓
1045	DM 3	0.006					2724	
1052	DM 29	0.003					1649	
1054	DM 30	0.006					2368	
1056	DM 31	0.007					3204	
1239	DM 1	0.004					2714	Began excavation at MDR-3
1244	DM 2	0.010					3703	↓
1246	DM 3	0.006					2724	
1252	DM 29	0.003					1649	
1254	DM 30	0.006					2368	
1255	DM 31	0.005					3204	
3:49	DM 1	0.004					2714	Backfill excavation at MDR-3
3:55	DM 2	0.010					3703	
3:57	DM 3	0.006					2724	
3:59	DM 29	0.004					1649	Backfill w/clean material complete
4:07	DM 30	0.005					2368	no earth moving activities
4:11	DM 31	0.004					3204	



AIR MONITORING LOG

Client Name NAVEALProject No. J310000300Logged by Mike CoxDate 2/5/19

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Weather clear 41°Instrument Type: Dust Trak IICalibration Standards Used factory calibrated

Time	Dust Monitoring Station Number	Location	Instrument Reading (mg/m3)	Unit Number	Activities, Remarks
7:28	DM 1		0.002	3703	No earth moving
7:37	DM 2		0.005	2724	↓
7:40	DM 3		0.003	2714	
8:45	DM 32	UP Wind at excavation DS004	0.006	3204	No earth moving
8:49	DM 33	DOWN Wind at excavation DS004	0.008	2368	↓
8:51	DM 34	DOWN Wind at excavation DS004	0.006	1649	
10:41	DM 1		0.007	3703	No earth moving
10:45	DM 2		0.006	2724	↓
10:47	DM 3		0.004	2714	
10:51	DM 32		0.003	3204	Excavation at DS004 Began
10:54	DM 33		0.006	2368	↓
10:56	DM 34		0.004	1649	
12:25	DM 32		0.002	3204	
12:26	DM 33		0.006	2368	
12:27	DM 34		0.003	1649	
12:59	DM 1		0.001	3703	↓
1:03	DM 2		0.003	2724	
1:05	DM 3		0.002	2714	
3:19	DM 32		0.001	3204	Backfill w/clean soil
3:21	DM 32 DM 33 KSA 2-14-19		0.025	2368	↓
3:23	DM 33 DM 34 KSA 2-14-19		0.001	1649	
					No earth moving



AIR MONITORING LOG

Client Name NAVFAC

Date 2/6/19

Project No. J310000300

Page 1 of 1

Logged by Kimberly B

Weather Sunny 44°

Instrument Type: Dust Trak II

Calibration Standards Used Factory Calibrated

Time	Dust Monitoring Station Number	Location	Instrument Reading (mg/m3)	Unit Number	Activities, Remarks
7:32	DM1	W site 32	0.008	3703	No earth moving activities ↓
7:38	DM2	DW site 32	0.003	2714	
7:42	DM3	DW site 32	0.004	3204	
8:07	DM35	Down wind at excavation site 12 - 1226G	0.003	1649	
8:08	DM36	Down wind at excavation site 12 - 1226G	0.005	2368	
8:10	DM37	UP wind at excavation site 12 - 1226G	0.004	2724	Excavation at 1226G ↓
10:22	DM35		0.013	1649	
10:24	DM36		0.012	2368	
10:26	DM37		0.013	2724	
1040	DM1		0.012		
↓	DM2		0.009		Offloading soil @ Site 32 ↓
↓	DM3		0.007		
1300	DM1		0.002		
↓	DM2		0.009		
↓	DM3		0.007		
1320	DM35		0.005		Backfill excavation 1226G ↓
↓	DM36		0.002		
↓	DM37	1	0.009		
1700	DM35	Downwind site 12	0.006		
↓	DM36	Downwind site 12	0.001		
↓	DM37	Upwind site 12	0.005		Backfill excavation 1226G ↓
1930	DM35		0.004		
↓	DM36		0.001		
↓	DM37		0.007		

2000 stopped backfilling 1226G.

1600 stopped excavating

AIR MONITORING LOG

Client Name NAVFAC

Date 2/7/19

Project No. J310000300

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Logged by Mike Cox

Weather Sunny 45°

Instrument Type: Dust Trak II

Calibration Standards Used	Factory Calibrated
1000 mg	1000 mg
500 mg	500 mg
250 mg	250 mg
125 mg	125 mg
62.5 mg	62.5 mg
31.25 mg	31.25 mg
15.625 mg	15.625 mg
7.8125 mg	7.8125 mg
3.90625 mg	3.90625 mg
1.953125 mg	1.953125 mg
0.9765625 mg	0.9765625 mg
0.48828125 mg	0.48828125 mg
0.244140625 mg	0.244140625 mg
0.1220703125 mg	0.1220703125 mg
0.06103515625 mg	0.06103515625 mg
0.030517578125 mg	0.030517578125 mg
0.0152587890625 mg	0.0152587890625 mg
0.00762939453125 mg	0.00762939453125 mg
0.003814697265625 mg	0.003814697265625 mg
0.0019073486328125 mg	0.0019073486328125 mg
0.00095367431640625 mg	0.00095367431640625 mg
0.000476837158203125 mg	0.000476837158203125 mg
0.0002384185791015625 mg	0.0002384185791015625 mg
0.00011920928955078125 mg	0.00011920928955078125 mg
0.000059604644775390625 mg	0.000059604644775390625 mg
0.0000298023223876953125 mg	0.0000298023223876953125 mg
0.00001490116119384765625 mg	0.00001490116119384765625 mg
0.000007450580596923828125 mg	0.000007450580596923828125 mg
0.0000037252902984619140625 mg	0.0000037252902984619140625 mg
0.00000186264514923095703125 mg	0.00000186264514923095703125 mg
0.000000931322574615478515625 mg	0.000000931322574615478515625 mg
0.0000004656612873077392578125 mg	0.0000004656612873077392578125 mg
0.00000023283064365386962890625 mg	0.00000023283064365386962890625 mg
0.000000116415321826934814453125 mg	0.000000116415321826934814453125 mg
0.0000000582076609134674072265625 mg	0.0000000582076609134674072265625 mg
0.00000002910383045673370361328125 mg	0.00000002910383045673370361328125 mg
0.000000014551915228366851806640625 mg	0.000000014551915228366851806640625 mg
0.0000000072759576141834259033203125 mg	0.0000000072759576141834259033203125 mg
0.00000000363797880709171295166015625 mg	0.00000000363797880709171295166015625 mg
0.000000001818989403545856475830078125 mg	0.000000001818989403545856475830078125 mg
0.0000000009094947017729282379150390625 mg	0.0000000009094947017729282379150390625 mg
0.00000000045474735088646411895751953125 mg	0.00000000045474735088646411895751953125 mg
0.000000000227373675443232059478759765625 mg	0.000000000227373675443232059478759765625 mg
0.0000000001136868377216160297393798828125 mg	0.0000000001136868377216160297393798828125 mg
0.00000000005684341886080801486968994140625 mg	0.00000000005684341886080801486968994140625 mg
0.000000000028421709430404007434844970703125 mg	0.000000000028421709430404007434844970703125 mg
0.0000000000142108547152020037174224853515625 mg	0.0000000000142108547152020037174224853515625 mg
0.00000000000710542735760100185871124267578125 mg	0.00000000000710542735760100185871124267578125 mg
0.000000000003552713678800500929355621337890625 mg	0.000000000003552713678800500929355621337890625 mg
0.0000000000017763568394002504646778106689453125 mg	0.0000000000017763568394002504646778106689453125 mg
0.00000000000088817841970012523233890533447265625 mg	0.00000000000088817841970012523233890533447265625 mg
0.000000000000444089209850062616169452667236328125 mg	0.000000000000444089209850062616169452667236328125 mg
0.0000000000002220446049250313080847263336181640625 mg	0.0000000000002220446049250313080847263336181640625 mg
0.00000000000011102230246251565404236316680908203125 mg	0.00000000000011102230246251565404236316680908203125 mg
0.000000000000055511151231257827021181583404541015625 mg	0.000000000000055511151231257827021181583404541015625 mg
0.0000	

[illegible]



AIR MONITORING LOG

Client Name NAVFAC

Date 2/11/19

Project No. J310000300

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Logged by Mike Cox

Weather Sunny 44°

Instrument Type: Dust Trak II

Calibration Standards Used Factory Calibrated

Time	Dust Monitoring Station Number	Location	Instrument Reading (mg/m3)	Unit Number	Activities, Remarks
7:25	DM1	Up wind at site 32	0.012	3204	No earth moving activities
7:33	DM2	Down wind site 32	0.012	2368	
7:37	DM3	Down wind site 32	0.010	2724	↓ Activities ongoing. Not Gilbane Excavation begins 2/12/19 Pre-excavation reading
10:06	DM38	UP wind excavation 1222-F	0.015	3703	
10:07	DM39	Down wind excavation 1222-F	0.008	1649	
10:08	DM40	Down wind excavation 1222-F	0.008	2714	
10:15	DM1		0.009		
10:19	DM2		0.009		
10:21	DM3		0.009		
12:15	DM38		0.006		Earth moving activities on going
12:16	DM39		0.003		
12:17	DM40		0.003		
1:25	DM1		0.004		
1:27	DM2		0.009		
1:29	DM3		0.004		
3:15	DM38		0.009		Backfill of clean soil in progress
3:16	DM39		0.004		
3:17	DM40		0.003		
4:33	DM38		0.009		Backfill clean
4:35	DM39		0.003		soil complete
4:36	DM40		0.003		



AIR MONITORING LOG

Client Name NAVFAC

Date 2/12/19

Project No. J310000300

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Logged by Mike Cox

Weather cloudy

Instrument Type: Dust Trak II

Calibration Standards Used Factory Calibrated

Time	Dust Monitoring Station Number	Location	Instrument Reading (mg/m3)	Unit Number	Activities, Remarks
7:24	DM1	Up wind site 32	0.015	3703	No earth moving activities
7:30	DM2	Down wind site 32	0.004	3204	↓
7:36	DM3	Down wind site 32	0.006	2368	
9:04	DM41	Up wind excavation ^{1203-c}	0.008	2714 ^{MC} 2412	1649 excavation begins
9:05	DM42	Down wind excavation ^{1203-c}	0.007	2714	↓ Activities taking place that Gilbane Compensated Along Ave M
9:10	DM43	Down wind excavation 1203-c	0.010	2724	
10:24	DM1		0.013	3703	
10:28	DM2		0.011	3204	
10:31	DM3		0.011	2368	
11:14	DM41		0.016	1649	↓
11:16	DM42		0.009	2714	
11:17	DM43		0.012	2724	
1:13	DM41		0.016	1649	Backfill w/ clean soil
1:15	DM42		0.014	2714	
1:16	DM43		0.017	2724	
1:31	DM1		0.026	3703	
1:36	DM2		0.017	3204	
1:38	DM3		0.018	2368	
3:50	DM1		0.018	3703	
3:57	DM2		0.016	3204	
4:00	DM3		0.018	2368	

ATTACHMENT 2
SUMMARY OF AIR MONITORING AND AIR SAMPLING RESULTS

Table 2-1**Ambient Pressure and Temperature Monitoring Results****Remedial Action/NTCRA IR Site 12****Former Naval Station Treasure Island, San Francisco, California**

Sample Date	Ambient Pressure (inches of Hg)	Ambient Temperature (°F)	Ambient Temperature (°K)
2/5/2019	29.84	46.00	280.93
2/6/2019	30.17	44.89	280.31
2/7/2019	30.39	47.64	281.84
2/8/2019	30.42	48.47	282.30
2/12/2019	30.36	46.70	281.32
2/13/2019	30.08	48.51	282.32
2/14/2019	29.72	54.36	285.57
2/15/2019	29.84	53.08	284.86

Notes:

Weather data collected from weather station at Building 572, Avenue M, Treasure Island, San Francisco, CA

°F = Degrees Fahrenheit

Hg = mercury

°K = Degrees Kelvin

Table 2-2
Particulate Matter Smaller than Ten Microns (PM10)
Remedial Action/NTCRA IR Site 12
Former Naval Station Treasure Island, San Francisco, California



Location ID	Sampling Period (Hours)	Sample Date	Particulate Matter Less Than 10 Microns in Diameter (ug/m ³)	Delta between Downwind and Upwind Stations (ug/m ³)	PM10 Exceedance? (Yes/No)
Screening Criteria					50
AMS01	25.14	02/05/2019	8.6	NA	NA
	24.23	02/06/2019	10	NA	NA
	25.04	02/07/2019	11	NA	NA
	23.30	02/08/2019	14	NA	NA
	24.57	02/12/2019	8.3	NA	NA
	25.10	02/13/2019	17	NA	NA
	24.61	02/14/2019	1.4	NA	NA
	23.23	02/15/2019	1.3	NA	NA
AMS02	24.03	02/05/2019	12	3.4	No
	23.32	02/06/2019	12	2	No
	23.93	02/07/2019	13	2	No
	22.28	02/08/2019	18	4	No
	23.45	02/12/2019	5	-3.3	No
	22.53	02/13/2019	16	-1	No
	23.50	02/14/2019	3.2	1.8	No
	22.13	02/15/2019	5.9	4.6	No
AMS03	23.39	02/05/2019	12	NA	NA
AMS05	22.09	02/06/2019	6.4	NA	NA
	24.32	02/07/2019	15	NA	NA
	24.30	02/12/2019	15	NA	NA
	23.57	02/13/2019	11	NA	NA
AMS06	23.66	02/05/2019	12	0	No
AMS08	22.08	02/06/2019	8.4	2	No
	23.85	02/07/2019	13	-2	No
AMS10	22.10	02/12/2019	13	-2	No
	24.02	02/13/2019	15	4	No

Notes:

NA = not applicable

PM10 = particulate matter less than 10 microns in diameter

ug/m³ = microgram per cubic meter

Table 2-3
Total Suspended Particulates Monitoring Results
Remedial Action/NTCRA IR Site 12
Former Naval Station Treasure Island, San Francisco, California



Location ID	Sampling Period (Hours)	Sample Date	Total Suspended Particulate (ug/m ³)	Delta Between Downwind and Upwind Stations (ug/m ³)	TSP Exceedance? (Yes/No)
Screening Criteria					50
AMS01	25.10	2/5/2019	8.99	NA	NA
	24.18	2/6/2019	7.71	NA	NA
	25.03	2/7/2019	15.47	NA	NA
	23.32	2/8/2019	22.09	NA	NA
	24.46	2/12/2019	14.94	NA	NA
	25.16	2/13/2019	31.15	NA	NA
	24.45	2/14/2019	15.06	NA	NA
	23.24	2/15/2019	19.94	NA	NA
AMS02	24.03	2/5/2019	15.41	6.4	No
	23.30	2/6/2019	12.89	5.2	No
	23.98	2/7/2019	23.42	8.0	No
	22.23	2/8/2019	32.93	10.8	No
	23.42	2/12/2019	22.77	7.8	No
	22.50	2/13/2019	27.60	-3.6	No
	23.43	2/14/2019	14.70	-0.4	No
	22.13	2/15/2019	17.46	-2.5	No
AMS03	23.36	2/5/2019	18.98	NA	NA
AMS05	22.16	2/6/2019	10.36	NA	NA
	24.40	2/7/2019	27.07	NA	NA
	24.23	2/12/2019	25.01	NA	NA
	23.58	2/13/2019	30.72	NA	NA
AMS06	23.66	2/5/2019	18.39	-0.59	No
AMS08	22.18	02/06/2019	12.38	2.02	No
	23.87	02/07/2019	19.82	-7.24	No
AMS10	22.05	02/12/2019	22.58	-2.43	No
	23.97	02/13/2019	37.33	6.60	No

Notes:

NA = not applicable

TSP = total suspended particulate

bold = results above screening criteria

Table 2-4

Metals by EPA 6020 Monitoring Results

Remedial Action/NTCRA IR Site 12

Former Naval Station Treasure Island, San Francisco, California



Location ID	Sampling Period (Hours)	Sample Date	Lead (ug/m ³)	Lead Exceedance? (Yes/No)	Chromium (ug/m ³)	Chromium Exceedance? (Yes/No)
Screening Criteria				242	929	
AMS01	25.14	2/5/2019	0.0017	No	0.0038	No
	24.23	2/6/2019	0.0013	No	0.0042	No
	25.04	2/7/2019	0.0022	No	0.0019	No
	23.30	2/8/2019	0.0036	No	0.002	No
	24.57	2/12/2019	0.002	No	0.0019	No
	25.10	2/13/2019	0.0022	No	0.0049	No
	24.61	2/14/2019	0.00055	No	0.0041	No
	23.23	2/15/2019	0.00074	No	0.0042	No
AMS02	24.03	02/05/2019	0.0016	No	0.004	No
	23.32	02/06/2019	0.00098	No	0.0044	No
	23.93	02/07/2019	0.0025	No	0.0022	No
	22.28	02/08/2019	0.0043	No	0.0021	No
	23.45	02/12/2019	0.0081	No	0.0047	No
	22.53	02/13/2019	0.0021	No	0.0049	No
	23.50	02/14/2019	0.0006	No	0.0044	No
	22.13	02/15/2019	0.0008	No	0.0045	No
AMS03	23.39	02/05/2019	0.0014	No	0.0042	No
AMS05	22.09	02/06/2019	0.0012	No	0.0017	No
	24.32	02/07/2019	0.0033	No	0.0021	No
	24.30	02/12/2019	0.0027	No	0.0048	No
	23.57	02/13/2019	0.0016	No	0.0046	No
AMS06	23.66	02/05/2019	0.0018	No	0.0046	No
AMS08	22.08	02/06/2019	0.0012	No	0.0018	No
	23.85	02/07/2019	0.002	No	0.0019	No
AMS10	22.10	2/12/2019	0.0026	No	0.0049	No
	24.02	2/13/2019	0.0022	No	0.005	No

Notes:

ug/m³ = microgram per cubic meter

Table 2-5
Polycyclic Aromatic Hydrocarbons by TO-13 Monitoring Results
Remedial Action/NTCRA IR Site 12
Former Naval Station Treasure Island, San Francisco, California



Location ID	Sampling Period (Hours)	Sample Date	BAP(Eq) Exceed-ance? (Yes/No)	BAP (Eq)	2-Methyl-naph-thalene (ug/m ³)	Acenaph-thene (ug/m ³)	Acenaph-thylene (ug/m ³)	Anthra-cene (ug/m ³)	Benzo(a) anthra-cene (ug/m ³)	Benzo(a) pyrene (ug/m ³)	Benzo(b) fluoran-thene (ug/m ³)	Benzo(g,h,i) perylene (ug/m ³)	Benzo(k) fluoran-thene (ug/m ³)	Chrysene (ug/m ³)	Dibenz(a,h) anthra-cene (ug/m ³)	Fluoran-thene (ug/m3)	Fluorene (ug/m3)	Indeno (1,2,3-c,d) pyrene (ug/m3)	Naph-thalene (ug/m3)	Phenan-threne (ug/m3)	Pyrene (ug/m3)
Screening Criteria ¹				50	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
AMS01	24.97	02/07/2019	No	0	0.049	0.0024 J	< 0.0038	< 0.0038	< 0.0038	< 0.0038	< 0.0038	< 0.0038	< 0.0038	< 0.0038	< 0.0038	< 0.0038	0.0038	< 0.0038	0.083	0.0049	< 0.0038
	2.42*	02/13/2019	No	0	< 0.0093	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	< 0.0047	0.0086 J	< 0.0047	< 0.0047
AMS02	23.88	02/07/2019	No	0	0.054	0.0035	< 0.0035	< 0.0035	< 0.0035	< 0.0035	< 0.0035	< 0.0035	< 0.0035	< 0.0035	< 0.0035	0.0017 J	0.0052	< 0.0035	0.1	0.0091	0.0024 J
	23.78	02/13/2019	No	0	0.0052	0.00041 J	< 0.00045	< 0.00045	< 0.00045	< 0.00045	< 0.00045	< 0.00045	< 0.00045	< 0.00045	< 0.00045	0.00021 J	0.00063	< 0.00045	0.011	0.0013	0.00024 J
AMS05	24.24	02/07/2019	No	0	0.042	0.0036	< 0.0033	< 0.0033	< 0.0033	< 0.0033	< 0.0033	< 0.0033	< 0.0033	< 0.0033	< 0.0033	0.0018 J	0.0067	< 0.0033	0.089	0.013	0.0015 J
	23.61	02/13/2019	No	0	0.0033	0.00026 J	< 0.00035	< 0.00035	< 0.00035	< 0.00035	< 0.00035	< 0.00035	< 0.00035	< 0.00035	< 0.00035	0.00017 J	0.00046	< 0.00035	0.0067	0.00091	0.00015 J
AMS08	23.87	02/07/2019	No	0	0.066	0.0034 J	0.0037 J	< 0.0039	< 0.0039	< 0.0039	< 0.0039	< 0.0039	< 0.0039	< 0.0039	< 0.0039	0.0024 J	0.0049	< 0.0039	0.19	0.0097	0.0029 J
AMS10	7.11 *	02/13/2019	No	0	0.0046	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	< 0.0012	0.012	0.00064 J	< 0.0012

Notes:

¹ The screening criteria for BAP(Eq) is 50 ug/m³ except for the area surrounding excavation KCH-1217-1 at which it will be 8 ug/m³.

NE = Not established

BAP(Eq) = Benzo(a) pyrene equivalency

J = estimated value

< = nondetected less than associated reporting limit

* = PUF sampler malfunction

Table 2-6
Polychlorinated Biphenyls by TO-4A Monitoring Results
Remedial Action/NTCRA IR Site 12
Former Naval Station Treasure Island, San Francisco, California



Location ID	Sampling Period (Hours)	Sample Date	Total PCB Exceedance? (Yes/No)	Total PCB	PCB-1016 (Aroclor 1016) (ug/m ³)	PCB-1221 (Aroclor 1221) (ug/m ³)	PCB-1232 (Aroclor 1232) (ug/m ³)	PCB-1242 (Aroclor 1242) (ug/m ³)	PCB-1248 (Aroclor 1248) (ug/m ³)	PCB-1254 (Aroclor 1254) (ug/m ³)	PCB-1260 (Aroclor 1260) (ug/m ³)
Screening Criteria							NE				
AMS01	24.24	02/06/2019	NA	0	< 0.00052	< 0.00052	< 0.00052	< 0.00052	< 0.00052	< 0.00052	< 0.00052
	24.51	02/12/2019	NA	0	< 0.00063	< 0.00063	< 0.00063	< 0.00063	< 0.00063	< 0.00063	< 0.00063
	23.13	02/15/2019	NA	0	< 0.00068	< 0.00068	< 0.00068	< 0.00068	< 0.00068	< 0.00068	< 0.00068
AMS02	23.21	02/06/2019	NA	0	< 0.00053	< 0.00053	< 0.00053	< 0.00053	< 0.00053	< 0.00053	< 0.00053
	23.49	02/12/2019	NA	0	< 0.00068	< 0.00068	< 0.00068	< 0.00068	< 0.00068	< 0.00068	< 0.00068
	22.05	02/15/2019	NA	0	< 0.00063	< 0.00063	< 0.00063	< 0.00063	< 0.00063	< 0.00063	< 0.00063
AMS05	21.63	02/06/2019	NA	0	< 0.00056	< 0.00056	< 0.00056	< 0.00056	< 0.00056	< 0.00056	< 0.00056
	24.25	02/12/2019	NA	0	< 0.00048	< 0.00048	< 0.00048	< 0.00048	< 0.00048	< 0.00048	< 0.00048
AMS08	22.21	02/06/2019	NA	0	< 0.00063	< 0.00063	< 0.00063	< 0.00063	< 0.00063	< 0.00063	< 0.00063
AMS10	22.13	02/12/2019	NA	0	< 0.00059	< 0.00059	< 0.00059	< 0.00059	< 0.00059	< 0.00059	< 0.00059

Notes:

NA = Not applicable

NE = none established

PCB = polychlorinated biphenyl

ug/m³ = microgram per cubic meter

< = nondetected less than associated reporting limit

Table 2-7

Dioxin as 2,3,4,7,8-TCDD by TO-9A Monitoring Results

Remedial Action/NTCRA IR Site 12

Former Naval Station Treasure Island, San Francisco, California



Location ID	Sampling Period (Hours)	Sample Date	2,3,7,8-Tetrachlorodibenzo-p-dioxin (ug/m ³)	Dioxin Exceedance? (Yes/No)
Screening Criteria				10,000,000
AMS01	25.07	02/05/2019	< 0.000000014	No
	23.24	02/08/2019	< 0.000000015	No
	24.53	02/14/2019	< 0.000000019	No
AMS02	22.03	02/05/2019	< 0.000000015	No
	22.18	02/08/2019	< 0.000000014	No
	23.51	02/14/2019	< 0.000000018	No
AMS03	23.32	02/05/2019	< 0.000000012	No
AMS06	23.69	02/05/2019	< 0.000000015	No

Notes:

ug/m³ = microgram per cubic meter

< = nondetected less than associated reporting limit

ATTACHMENT 3
RADIOLOGICAL AIR MONITORING RESULTS



AIR SAMPLE RESULTS - PUBLIC EXPOSURE MONITORING

Project Information									Effluent Air Concentration					Sampling Period				Color Codes					
Contract / Task Order Number: N62473-17-D-0005		Project Title / Location: IR Site 12 RD/RA, Treasure Island, SF, CA			Gilbane Project Number: J310000300							Alpha	Beta	Air samples collected between October 1, 2018 and March 6, 2019		Value < MDC		Value < 0.1 x Effluent Conc					
									Radionuclide			Ra-226	Sr-90			< 72 hr decay time		Value > 0.1 x Effluent Conc					
Information effective as of: 3/7/2019									Effluent Conc (µCi/ml)			9.E-13	6.E-12			Data reviewed		Value > Effluent Conc					
Sample Collection									Count Information								Sample Results				Initials		
Sample Number	Sample Type	Sample Location	Equip No	Ave Flow Rate (lpm)	Start Day Time	End Date Time	Elapsed Time (min)	Volume (ml)	Inst No	Count Date	Time (min)	Counting Units	Gross Activity		Net dpm		Activity (µCi/ml)		Effluent Conc (%)		Count Tech	Data Reviewer	
													Alpha	Beta	Alpha	Beta	Alpha	Beta	Alpha	Beta			
AS-117	Perimeter	AMS-01	PE01	50	2/4/19 6:00	2/4/19 16:25	625	3.1E+07	A	2/11/19	20	cpm	0.100	4.300	0.3	9.2	4.2E-15	1.3E-13	0.5%	2.2%	BS	CB	
AS-118	Perimeter	AMS-02	PE02	60	2/4/19 6:10	2/4/19 16:30	620	3.7E+07	A	2/11/19	20	cpm	0.150	3.450	0.4	6.9	5.2E-15	8.4E-14	0.6%	1.4%	BS	CB	
AS-119	Perimeter	AMS-03	PE03	60	2/4/19 7:30	2/4/19 16:10	520	3.1E+07	A	2/11/19	20	cpm	0.300	3.650	0.9	7.5	1.2E-14	1.1E-13	1.4%	1.8%	BS	CB	
AS-120	Perimeter	AMS-06	PE04	60	2/4/19 7:15	2/4/19 16:15	540	3.2E+07	A	2/11/19	20	cpm	0.150	4.500	0.4	9.8	6.0E-15	1.4E-13	0.7%	2.3%	BS	CB	
AS-121	Perimeter	EX # MDR-3	PE05	60	2/4/19 10:30	2/4/19 16:00	330	2.0E+07	A	2/11/19	20	cpm	0.150	3.550	0.4	7.2	9.8E-15	1.6E-13	1.1%	2.7%	BS	CB	
AS-122	Perimeter	AMS-01	PE01	50	2/5/19 5:55	2/5/19 15:55	600	3.0E+07	A	2/11/19	20	cpm	0.050	3.300	0.1	6.5	2.2E-15	9.8E-14	0.2%	1.6%	BS	CB	
AS-123	Perimeter	AMS-02	PE02	60	2/5/19 6:05	2/5/19 16:00	595	3.6E+07	A	2/11/19	20	cpm	0.100	3.550	0.3	7.2	3.6E-15	9.1E-14	0.4%	1.5%	BS	CB	
AS-124	Perimeter	AMS-05	PE03	50	2/5/19 8:00	2/5/19 16:00	480	2.4E+07	A	2/11/19	20	cpm	0.050	3.200	0.1	6.2	2.7E-15	1.2E-13	0.3%	1.9%	BS	CB	
AS-125	Perimeter	AMS-08	PE04	60	2/5/19 8:30	2/5/19 16:10	460	2.8E+07	A	2/11/19	20	cpm	0.050	2.700	0.1	4.9	2.4E-15	8.0E-14	0.3%	1.3%	BS	CB	
AS-126	Perimeter	AMS-01	PE01	50	2/6/19 6:00	2/6/19 17:15	675	3.4E+07	A	2/11/19	20	cpm	0.100	3.700	0.3	7.6	3.8E-15	1.0E-13	0.4%	1.7%	BS	CB	
AS-127	Perimeter	AMS-02	PE02	60	2/6/19 5:55	2/6/19 17:20	685	4.1E+07	A	2/11/19	20	cpm	0.200	3.750	0.6	7.7	6.3E-15	8.5E-14	0.7%	1.4%	BS	CB	
AS-128	Perimeter	AMS-05	PE03	50	2/6/19 6:10	2/6/19 17:00	650	3.3E+07	A	2/11/19	20	cpm	0.200	4.050	0.6	8.5	8.0E-15	1.2E-13	0.9%	2.0%	BS	CB	
AS-129	Perimeter	AMS-08	PE04	60	2/6/19 6:15	2/6/19 17:05	650	3.9E+07	A	2/11/19	20	cpm	0.250	3.600	0.7	7.3	8.3E-15	8.5E-14	0.9%	1.4%	BS	CB	
AS-130	Perimeter	AMS-01	PE01	50	2/7/19 5:35	2/7/19 14:10	515	2.6E+07	A	2/11/19	20	cpm	0.000	3.650	0.0	7.5	0.0E+00	1.3E-13	0.0%	2.2%	BS	CB	
AS-131	Perimeter	AMS-02	PE02	60	2/7/19 5:30	2/7/19 14:00	510	3.1E+07	A	2/11/19	20	cpm	0.350	4.950	1.0	11.0	1.5E-14	1.6E-13	1.6%	2.7%	BS	CB	
AS-132	Perimeter	AMS-01	PE01	50	2/11/19 7:30	2/11/19 16:30	540	2.7E+07	A	2/19/19	20	cpm	0.150	4.050	0.4	8.5	7.2E-15	1.4E-13	0.8%	2.4%	BS	CB	
AS-133	Perimeter	AMS-02	PE02	60	2/11/19 7:35	2/11/19 16:35	540	3.2E+07	A	2/19/19	20	cpm	0.300	4.500	0.9	9.8	1.2E-14	1.4E-13	1.3%	2.3%	BS	CB	
AS-134	Perimeter	AMS-05	PE03	50	2/11/19 7:45	2/11/19 16:20	515	2.6E+07	A	2/19/19	20	cpm	0.250	4.000	0.7	8.4	1.3E-14	1.5E-13	1.4%	2.4%	BS	CB	
AS-135	Perimeter	AMS-10	PE04	60	2/11/19 8:15	2/11/19 16:15	480	2.9E+07	A	2/19/19	20	cpm	0.050	4.650	0.1	10.2	2.3E-15	1.6E-13	0.3%	2.6%	BS	CB	
AS-136	Perimeter	EX # 1222 F	PE06	60	2/11/19 9:50	2/11/19 16:10	380	2.3E+07	A	2/19/19	20	cpm	0.150	3.200	0.4	6.2	8.5E-15	1.2E-13	0.9%	2.1%	BS	CB	
AS-137	Perimeter	AMS-01	PE01	50	2/12/19 6:05	2/12/19 15:50	585	2.9E+07	A	2/19/19	20	cpm	0.150	4.350	0.4	9.3	6.7E-15	1.4E-13	0.7%	2.4%	BS	CB	
AS-138	Perimeter	AMS-02	PE02	60	2/12/19 6:00	2/12/19 15:55	595	3.6E+07	A	2/19/19	20	cpm	0.100	3.750	0.3	7.7	3.6E-15	9.7E-14	0.4%	1.6%	BS	CB	
AS-139	Perimeter	AMS-05	PE03	50	2/12/19 6:10	2/12/19 16:10	600	3.0E+07	A	2/19/19	20	cpm	0.400	3.550	1.2	7.2	1.7E-14	1.1E-13	1.9%	1.8%	BS	CB	
AS-140	Perimeter	AMS-10	PE04	60	2/12/19 6:15	2/12/19 16:15	600	3.6E+07	A	2/19/19	20	cpm	0.150	3.450	0.4	6.9	5.4E-15	8.6E-14	0.6%	1.4%	BS	CB	
AS-141	Perimeter	EX # 1203 C	PE06	60	2/12/19 8:30	2/12/19 14:40	370	2.2E+07	A	2/19/19	20	cpm	0.150	3.650	0.4	7.5	8.8E-15	1.5E-13	1.0%	2.5%	BS	CB	
AS-142	Perimeter	AMS-01	PE01	50	2/13/19 5:55	2/13/19 14:30	515	2.6E+07	A	2/19/19	20	cpm	0.100	4.150	0.3	8.8	5.0E-15	1.5E-13	0.6%	2.6%	BS	CB	
AS-143	Perimeter	AMS-02	PE02	60	2/13/19 6:00	2/13/19 14:35	515	3.1E+07	A	2/19/19	20	cpm	0.100	4.100	0.3	8.7	4.2E-15	1.3E-13	0.5%	2.1%	BS	CB	
AS-144	Perimeter	AMS-01	PE01	50	2/14/19 5:55	2/14/19 14:30	515	2.6E+07	A	2/19/19	20	cpm	0.200	3.400	0.6	6.8	1.0E-14	1.2E-13	1.1%	2.0%	BS	CB	
AS-145	Perimeter	AMS-02	PE02	60	2/14/19 6:00	2/14/19 14:35	515	3.1E+07	A	2/19/19	20	cpm	0.100	3.450	0.3	6.9	4.2E-15	1.0E-13	0.5%	1.7%	BS	CB	