



DEPARTMENT OF THE NAVY  
COMMANDER  
NAVY REGION HAWAII  
850 TICONDEROGA ST STE 110  
JBPHH, HAWAII 96860-5101

FEB 25 2019

5090  
Ser N45/0434  
February 19, 2019

**CERTIFIED NO: 7016 0910 0001 0891 6546**

Mr. Richard Takaba  
Hawaii State Department of Health  
Environmental Management Division  
Solid and Hazardous Waste Branch  
Underground Storage Tank Section  
2827 Waimano Home Road, #100  
Pearl City, HI 96782

Dear Mr. Takaba:

SUBJECT: RED HILL TANK COMPLEX  
SOIL VAPOR SAMPLING RESULTS FOR JANURARY 2019  
DOH FACILITY ID NO. 9-102271  
DOH RELEASE ID NO. 990051, 010011, 020028, AND 140010

Soil vapor samples were collected from beneath all active and accessible Red Hill tanks on January 24, 2019.

Soil vapor VOC concentrations were measured in the field using a photo-ionization detector. The soil vapor sampling results are being submitted as Enclosure 1.

A conservative approach is to assess the integrity of the associated tank system if VOC concentrations exceed 280,000 ppbv in soil vapor monitoring points (SVMPs) beneath tanks containing JP-5 or JP-8, or 14,000 ppbv in SVMPs beneath tanks containing marine diesel fuel. These values are 50 percent of the calculated vapor concentration from fuel-saturated water.

At Tank 5, the concentrations of VOCs detected in the front, middle, and outer edge soil vapor monitoring probes were 682 ppbv, 1,315 ppbv, and 1,348 ppbv, respectively. Tank 5 was emptied in January 2014 and has not contained fuel since that time. VOC concentrations in all down-gradient soil vapor monitors were below 700 ppbv.

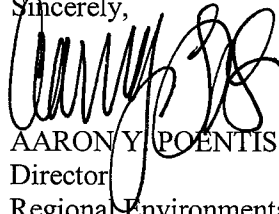
All other VOC concentrations measured in January were about 35 to 1,410 times below the action levels, with no consistent trends observed. NAVSUP FLC Pearl Harbor Causative Research Report is submitted as Enclosure 2. Possible reasons for the results are speculative and may include, but not be limited to, ongoing projects in the tunnel, groundwater level fluctuations, rainfall (or lack thereof), bi-product of biodegradation, and fuel movement in the tanks and piping.

Soil vapor VOC concentration trends will continue to be monitored. The next soil vapor sampling event is scheduled for February 2019, and will include collecting samples from soil vapor monitoring probes beneath all active and accessible tanks.

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If there are any questions regarding this matter, or if more information is needed, please contact Mr. Melvin Muraoka at (808) 471-3869.

Sincerely,

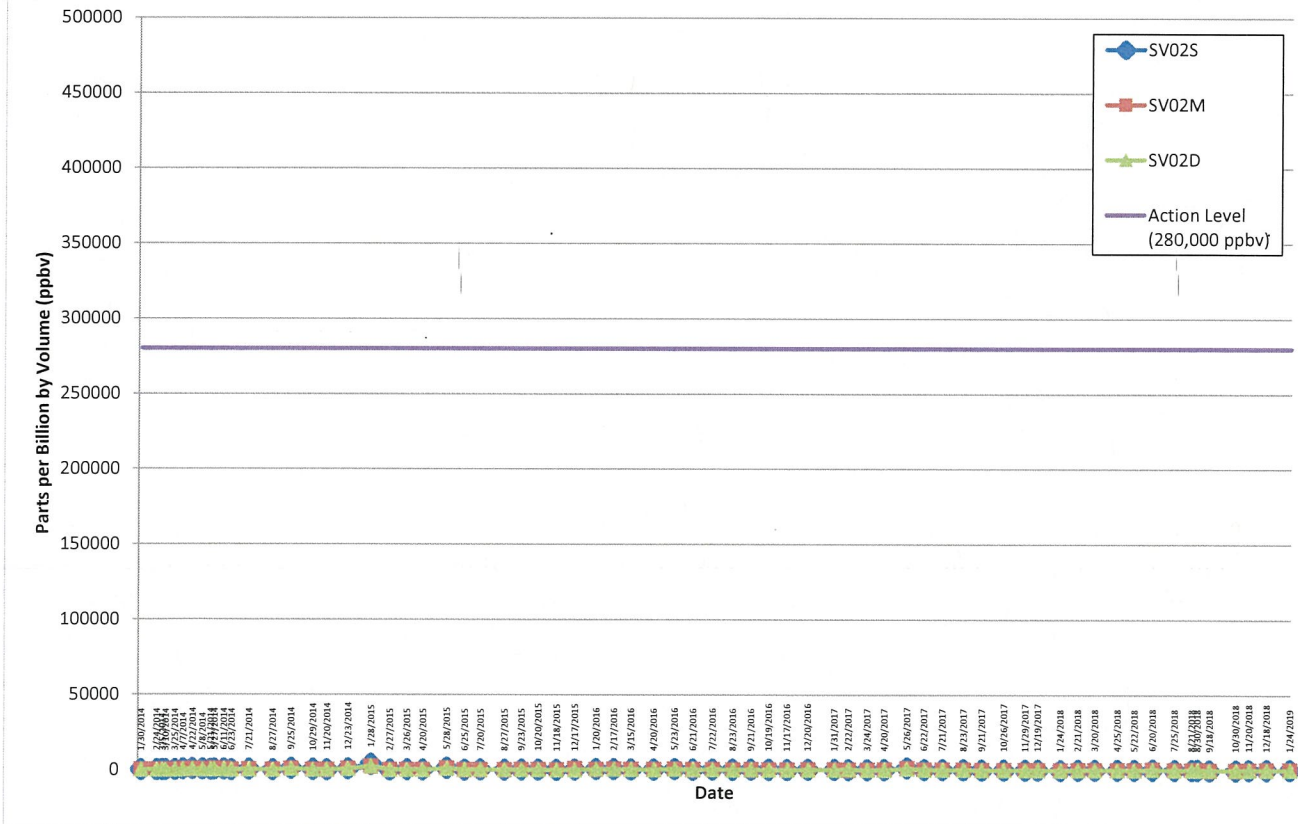


AARON Y. POENTIS  
Director  
Regional Environmental Department  
By direction of the  
Commander

- Enclosure: 1. Summary of Soil Vapor Sampling Results for Tanks 2 through 18 and 20 through January 2019 (18 ages)  
2. NAVSUP FLC Pearl Harbor Causative Research Report IRT Red Hill Soil Vapor Monitoring Report for January 2019

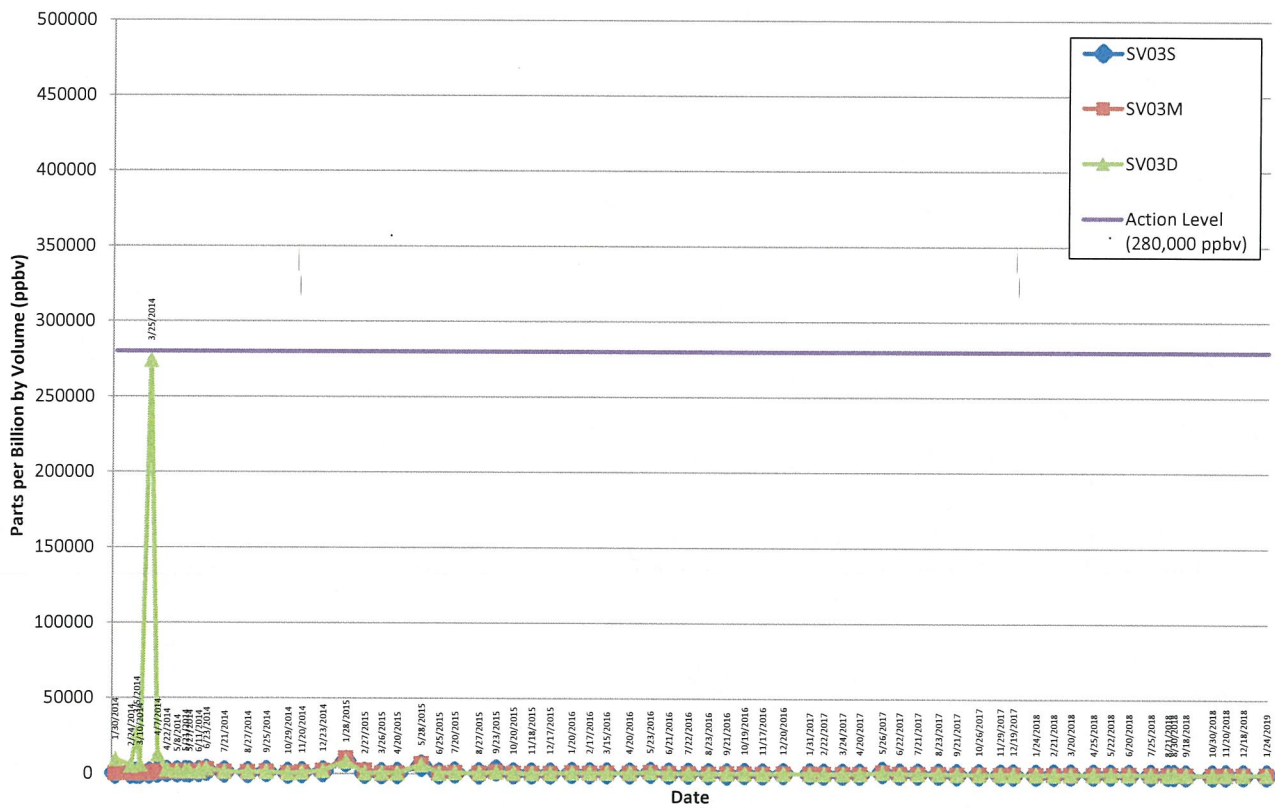
Copy to: Mr. Omer Shalev, U.S. EPA Region 9, Underground Storage Tank Program Office  
Mr. John Floyd, NAVSUP FLC Pearl Harbor  
Mr. Ralph Wells, DLA Energy Pacific

**Figure 1**  
**Soil Vapor Measurements**  
**SV02**

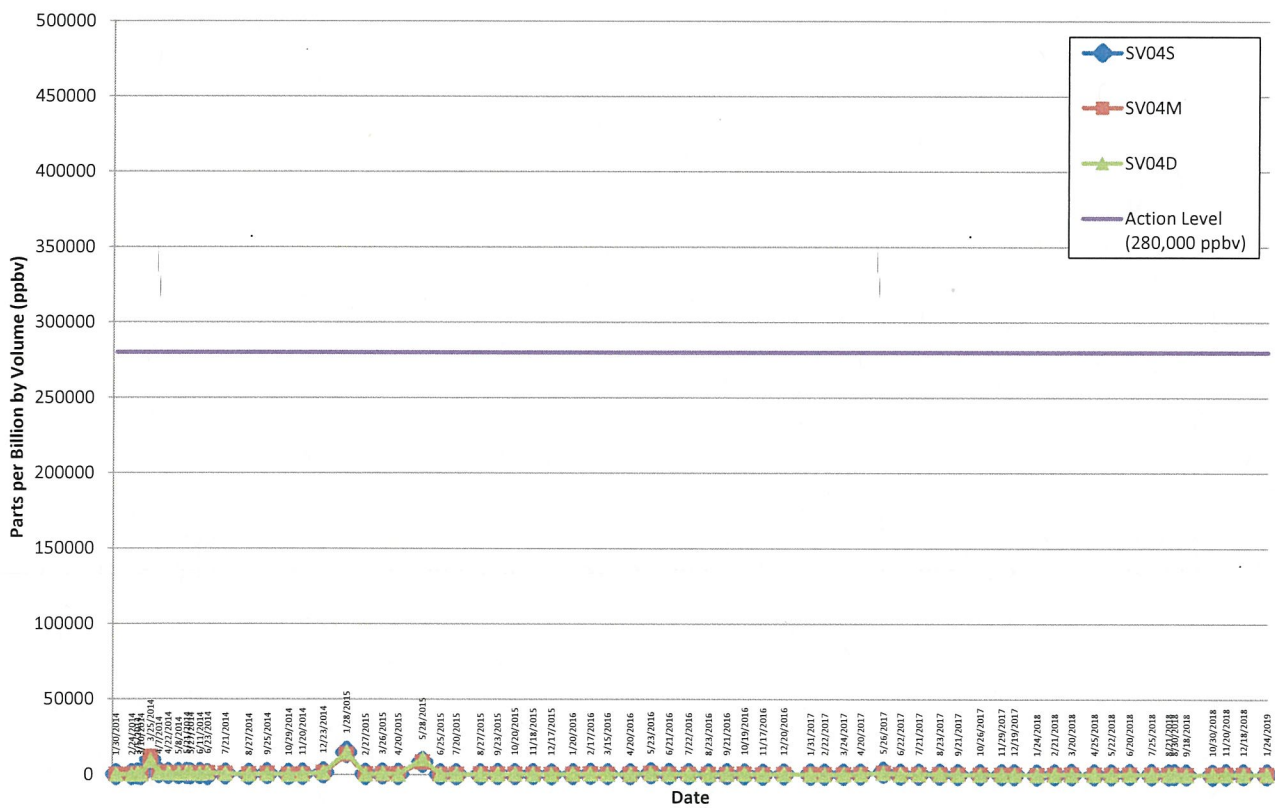


**ENCLOSURE( / )**

**Figure 2**  
**Soil Vapor Measurements**  
**SV03**



**Figure 3**  
**Soil Vapor Measurements**  
**SV04**



**Figure 4**  
**Soil Vapor Measurements**  
**SV05**

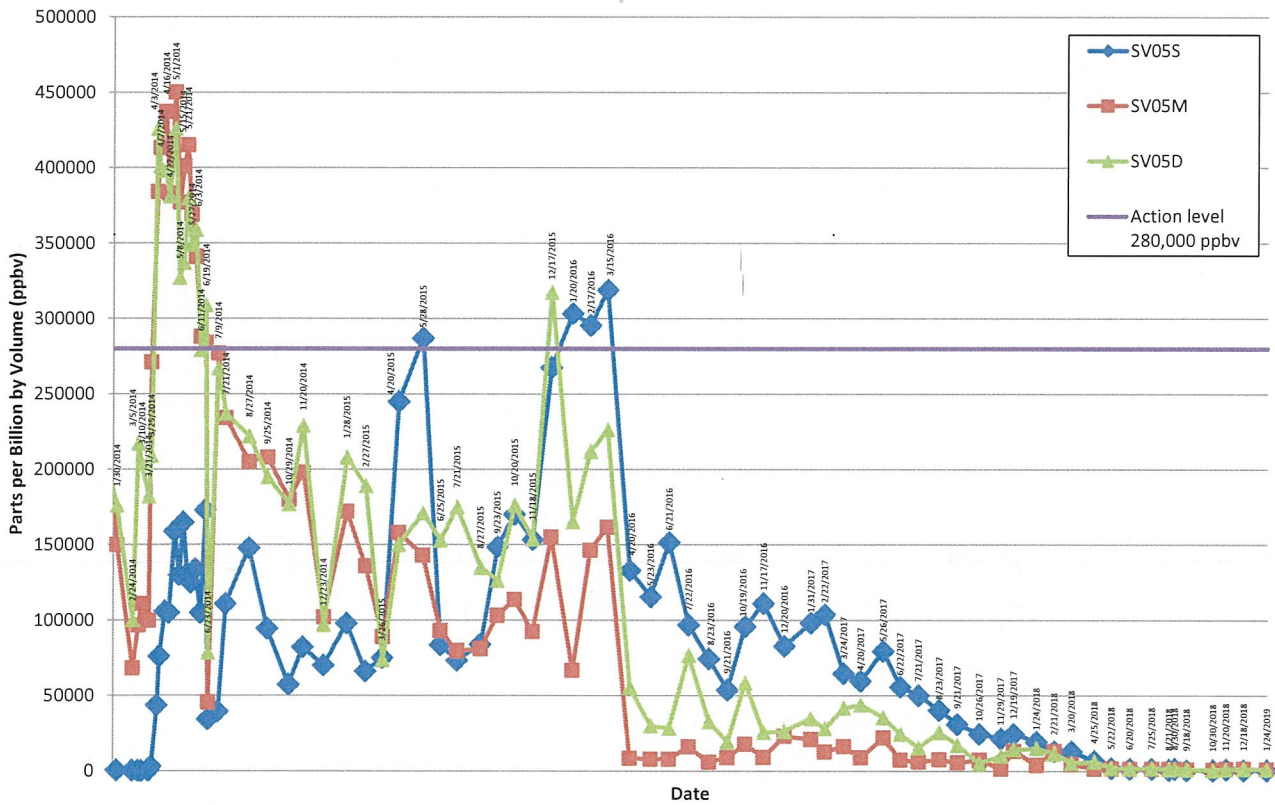
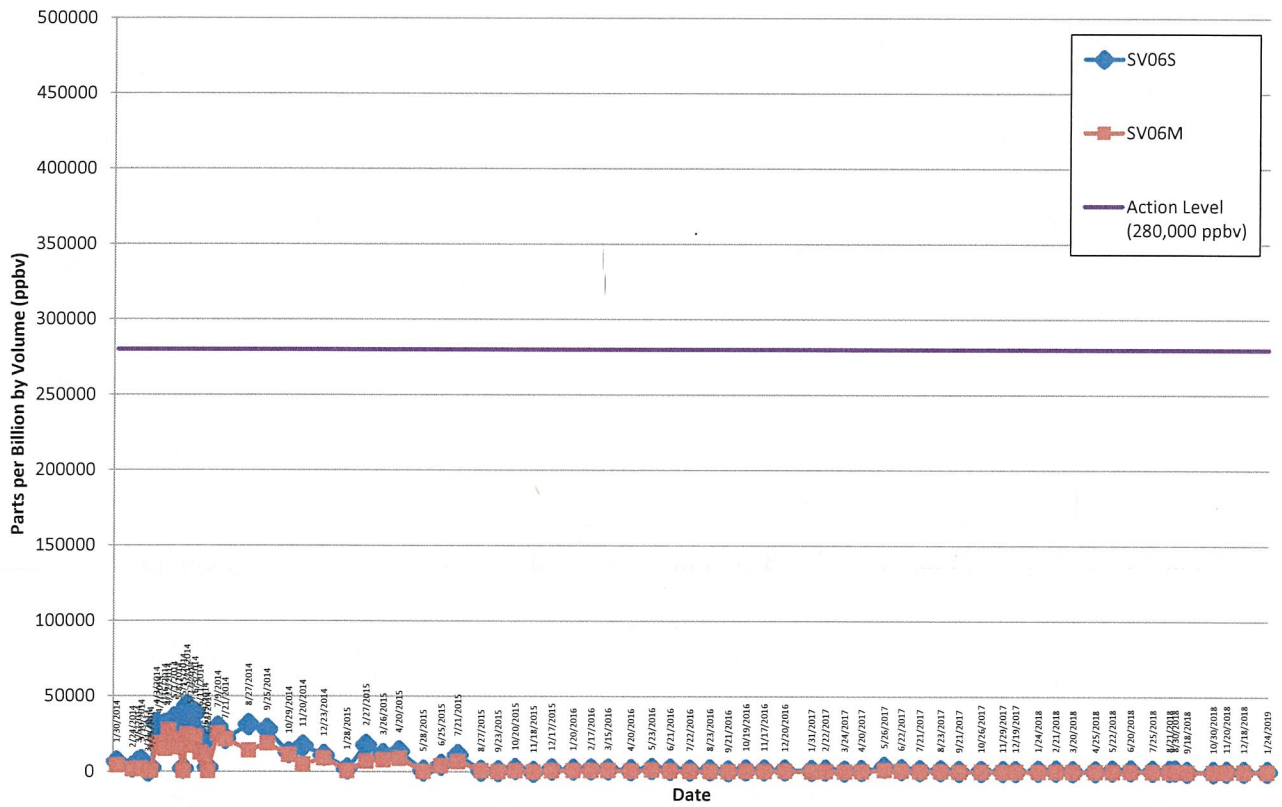


Figure 5  
Soil Vapor Measurements  
SV06





**Figure 6**  
**Soil Vapor Measurements**  
**SV07**

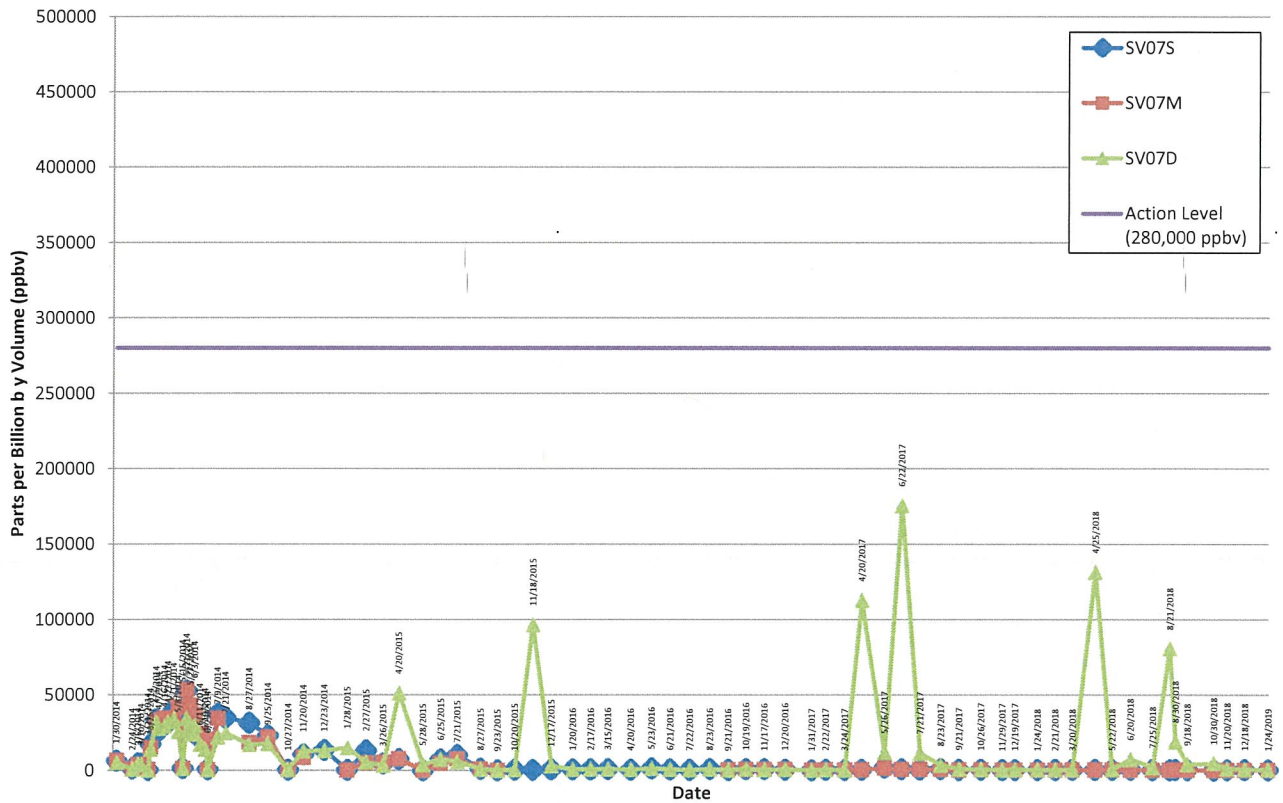
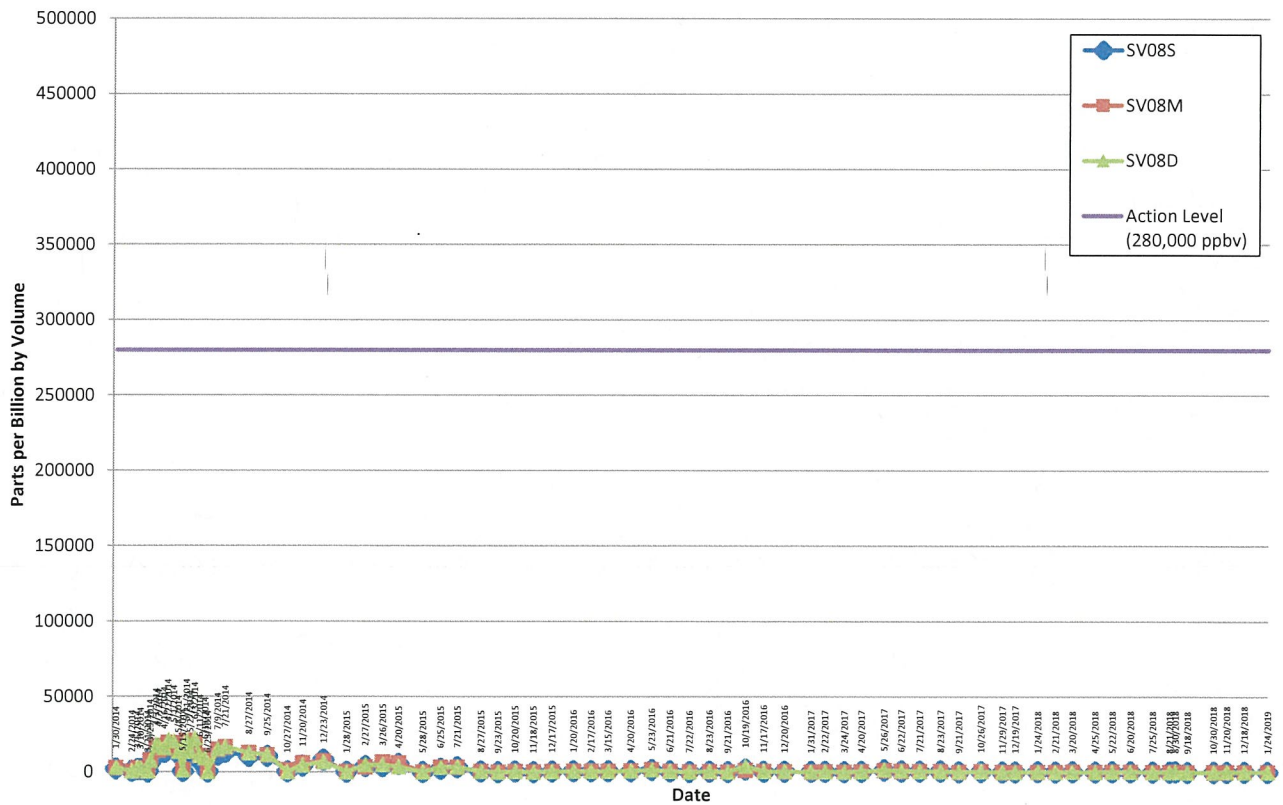
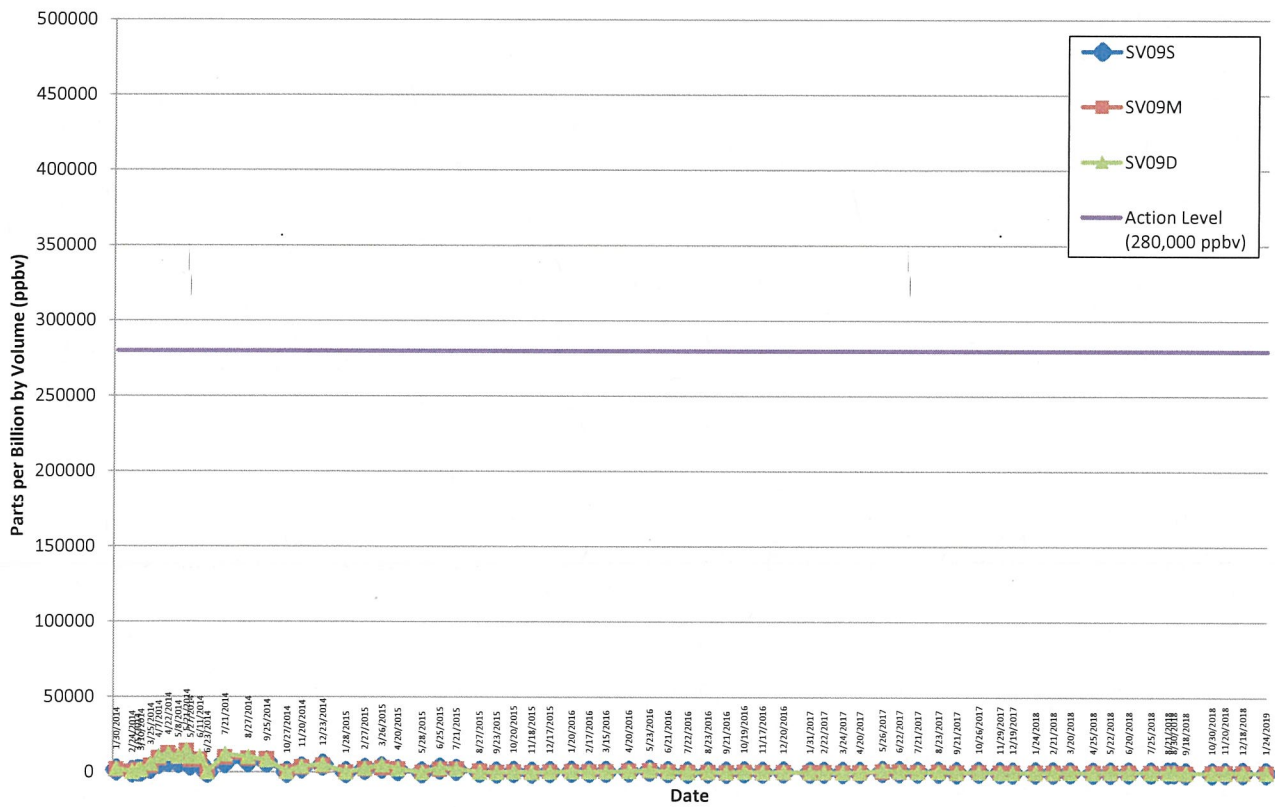




Figure 7  
Soil Vapor Measurements  
SV08



**Figure 8**  
**Soil Vapor Measurements**  
**SV09**



**Figure 9**  
**Soil Vapor Measurements**  
**SV10**

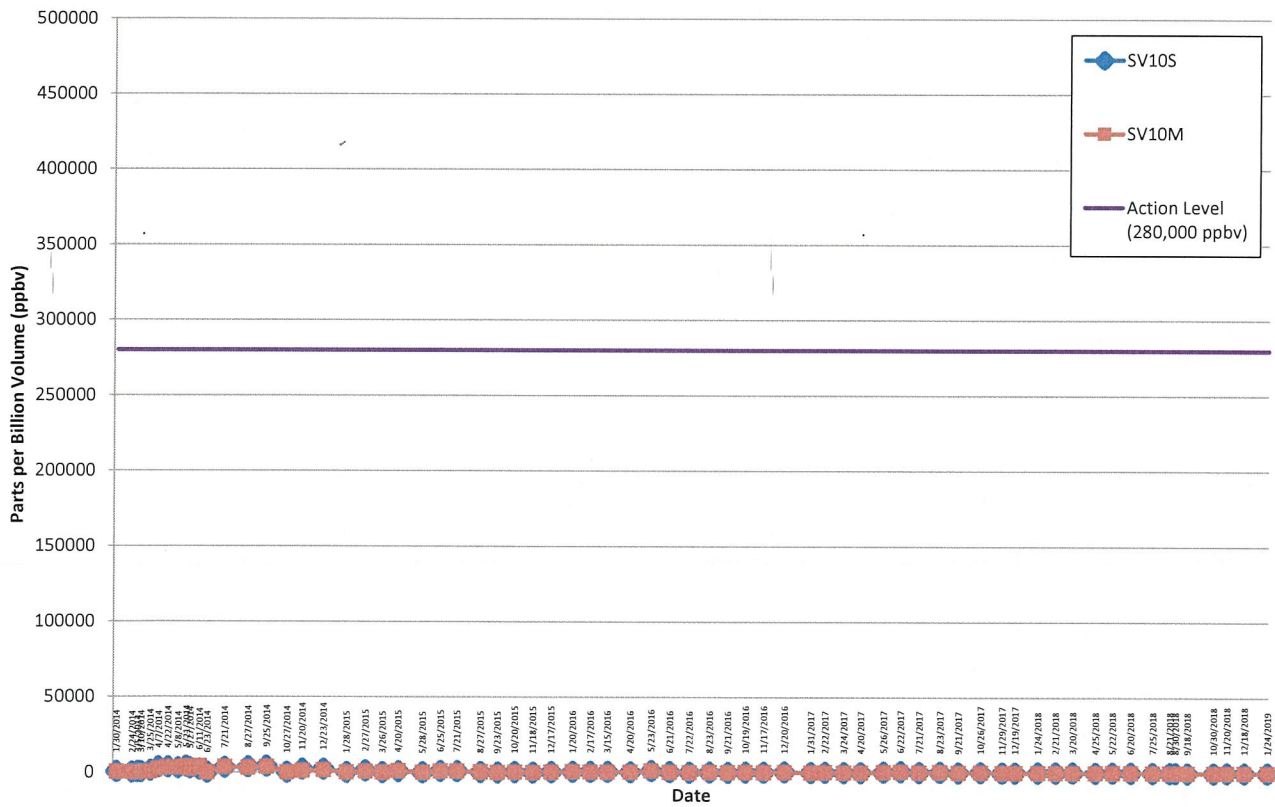
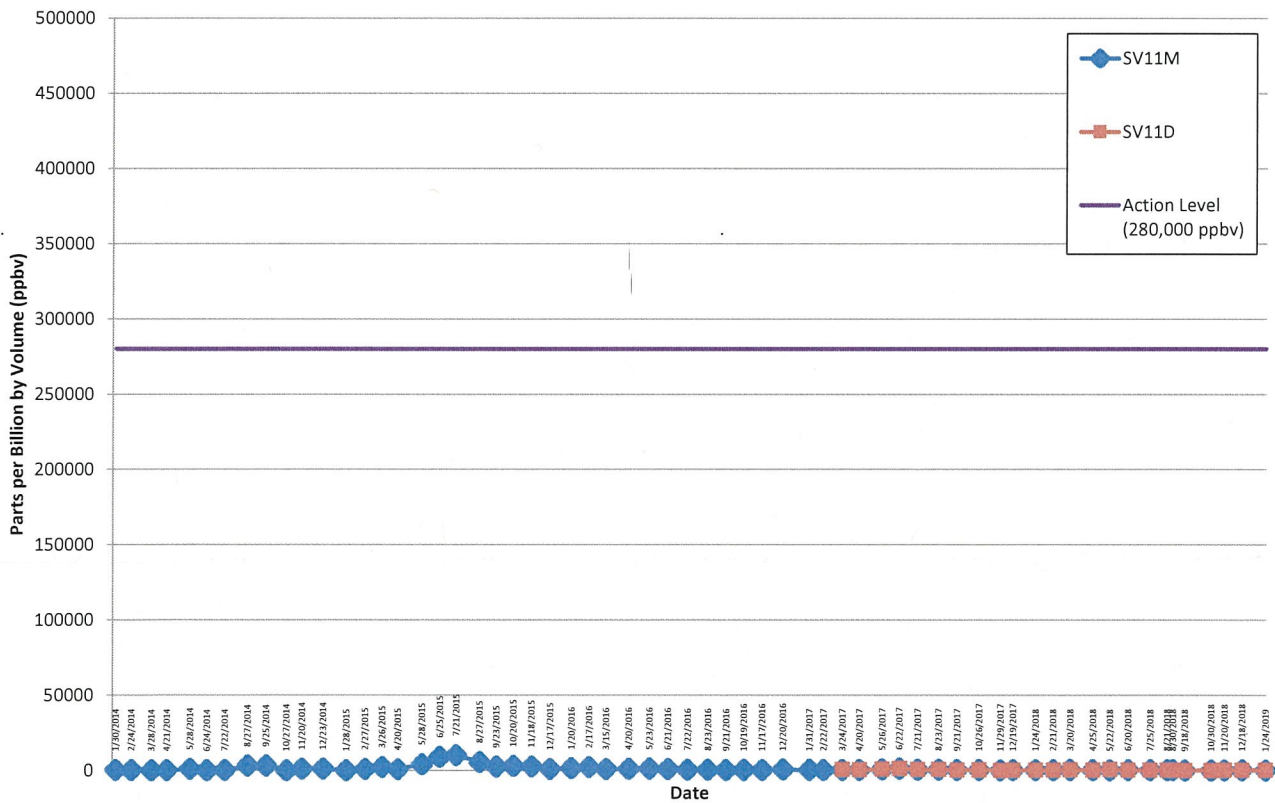


Figure 10  
Soil Vapor Measurements  
SV11



**Figure 11**  
**Soil Vapor Measurements**  
**SV12**

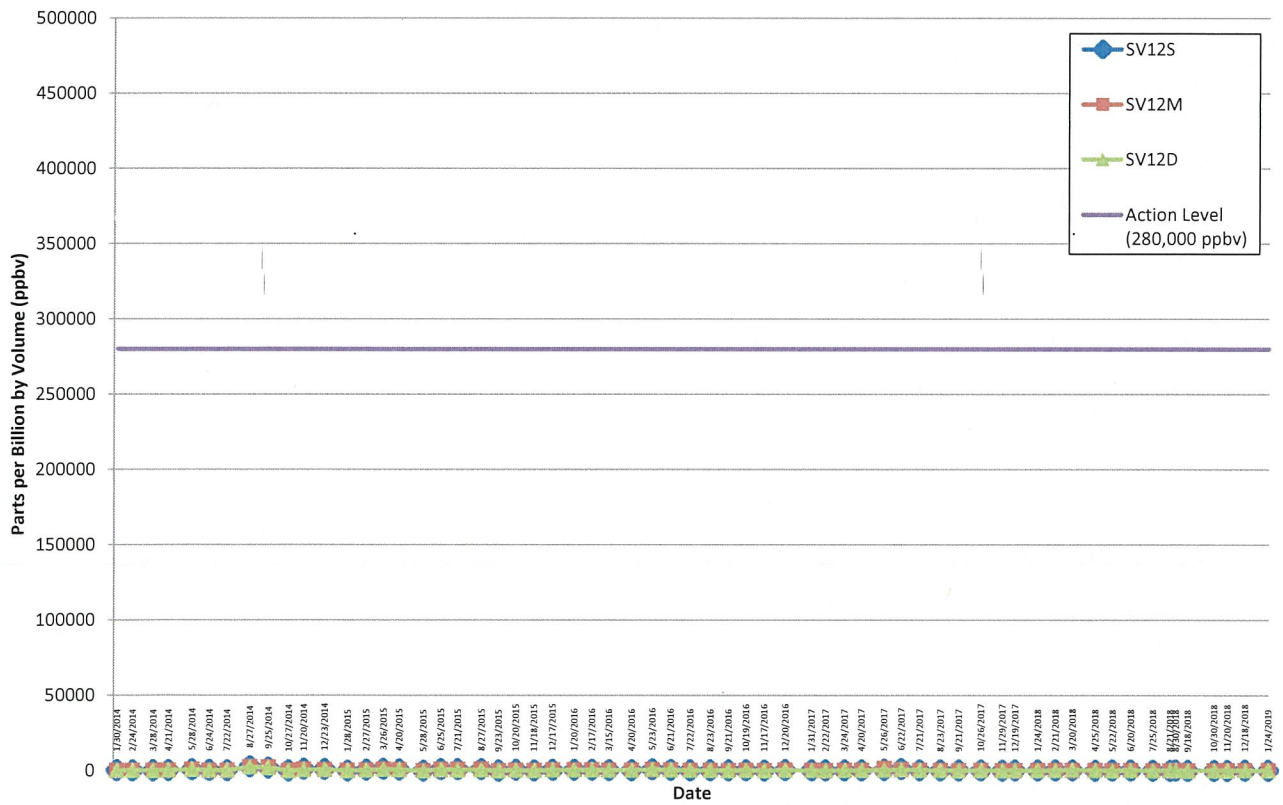
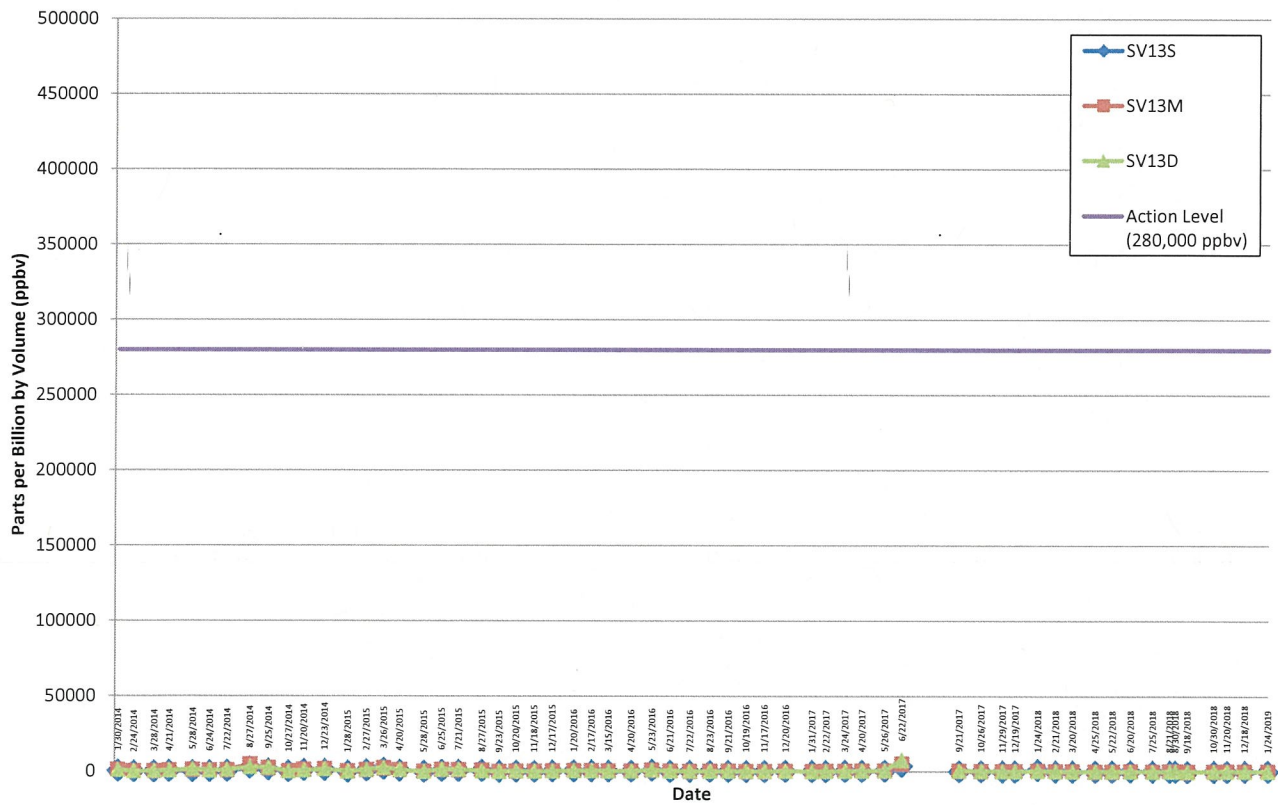


Figure 12  
Soil Vapor Measurements  
SV13



**Figure 13**  
**Soil Vapor Measurements**  
**SV14**

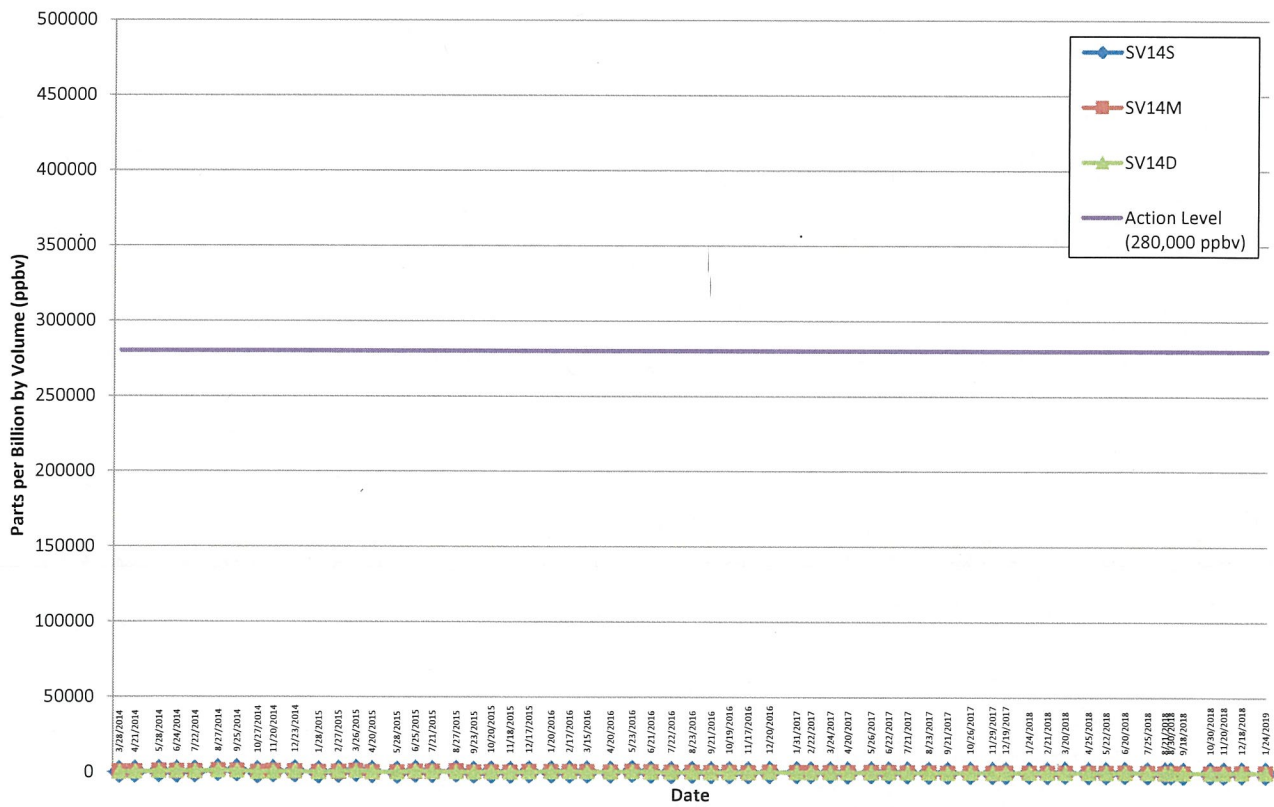




Figure 14  
Soil Vapor Measurements  
SV15

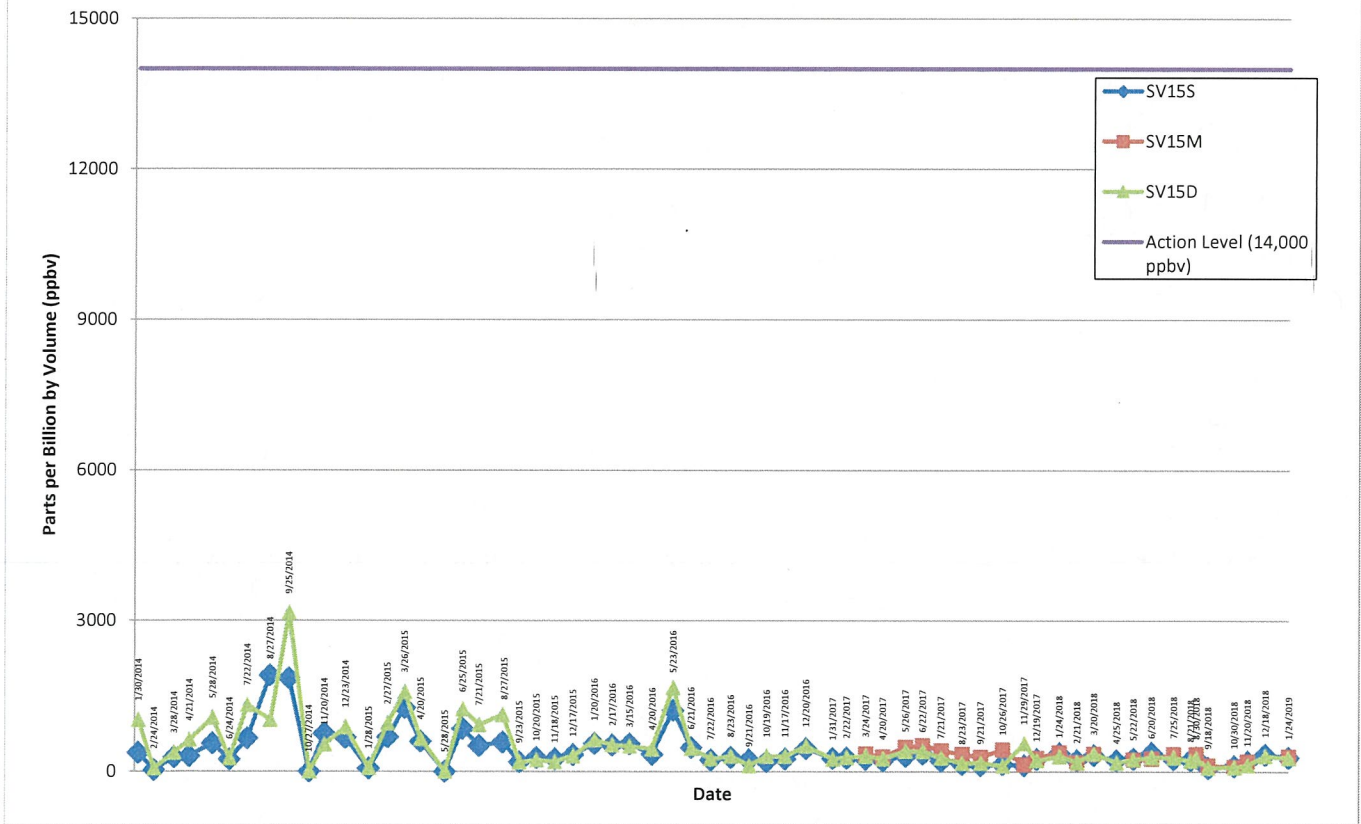
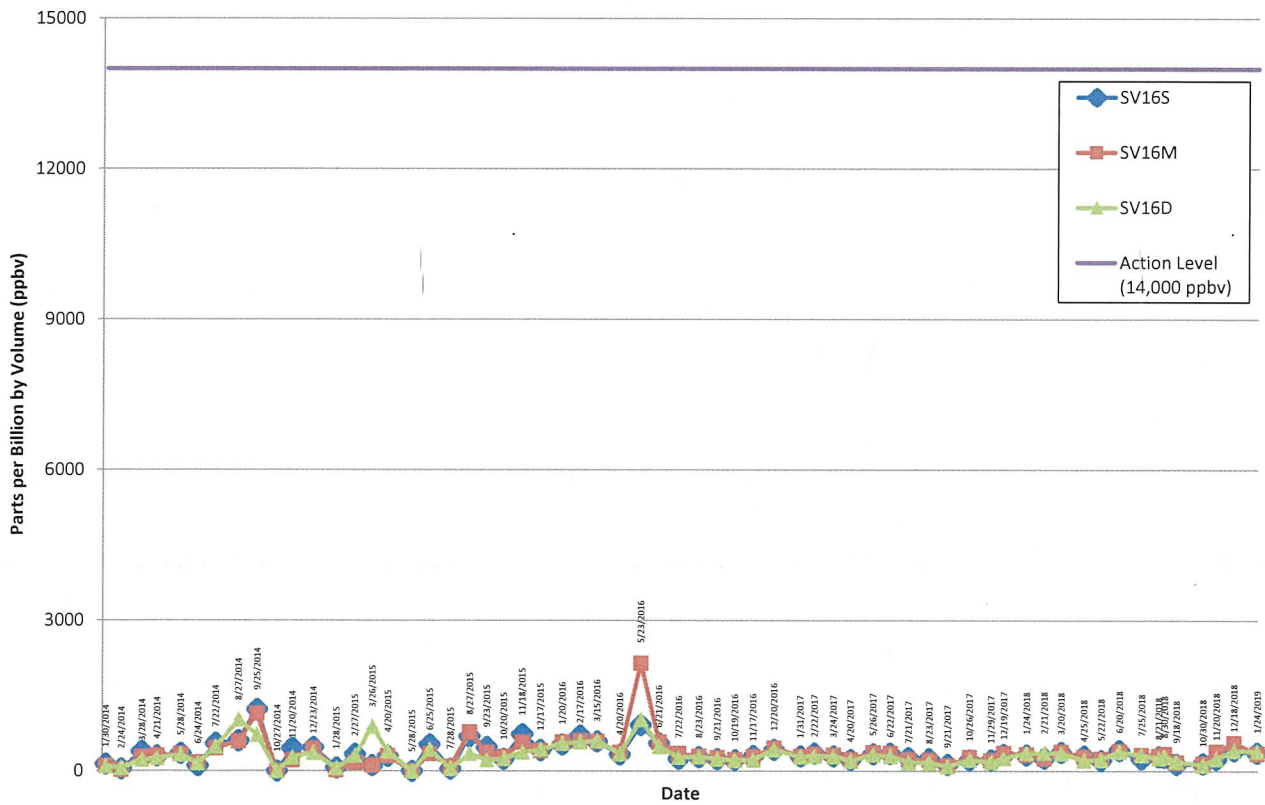
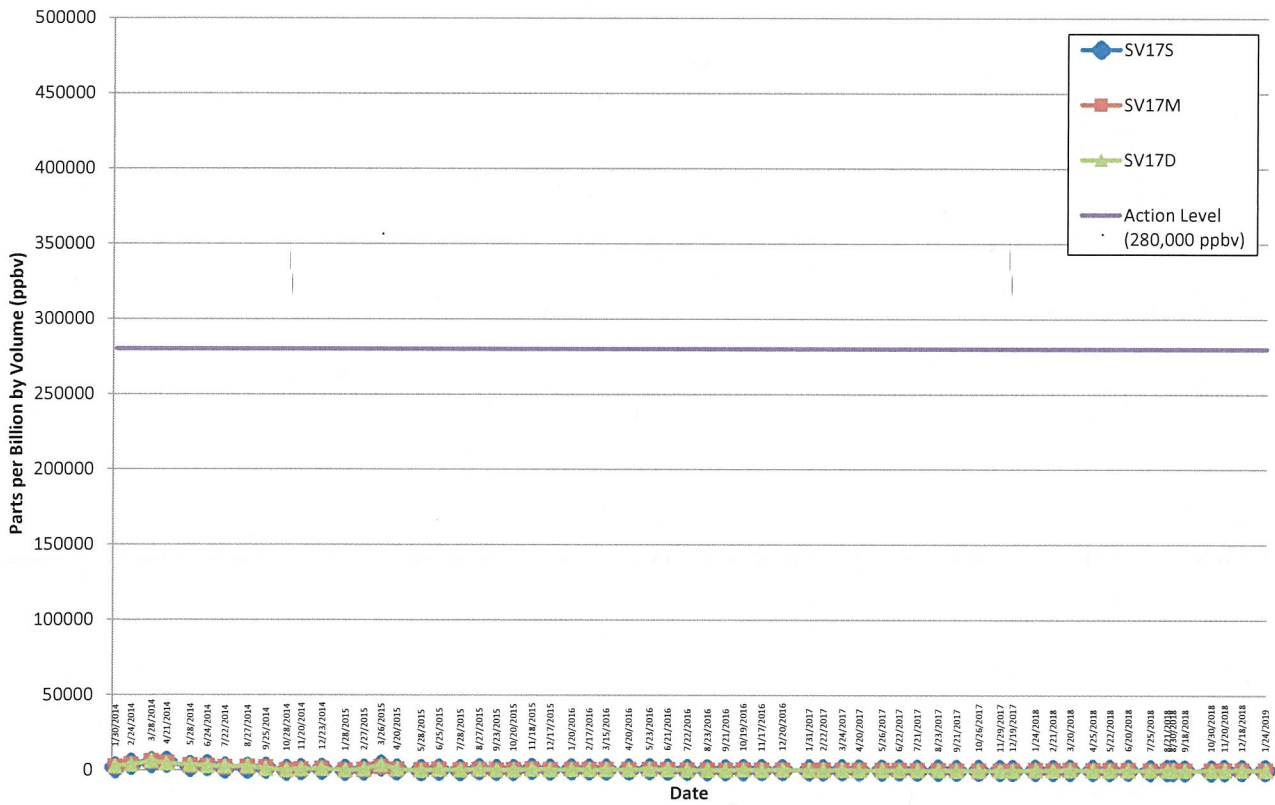


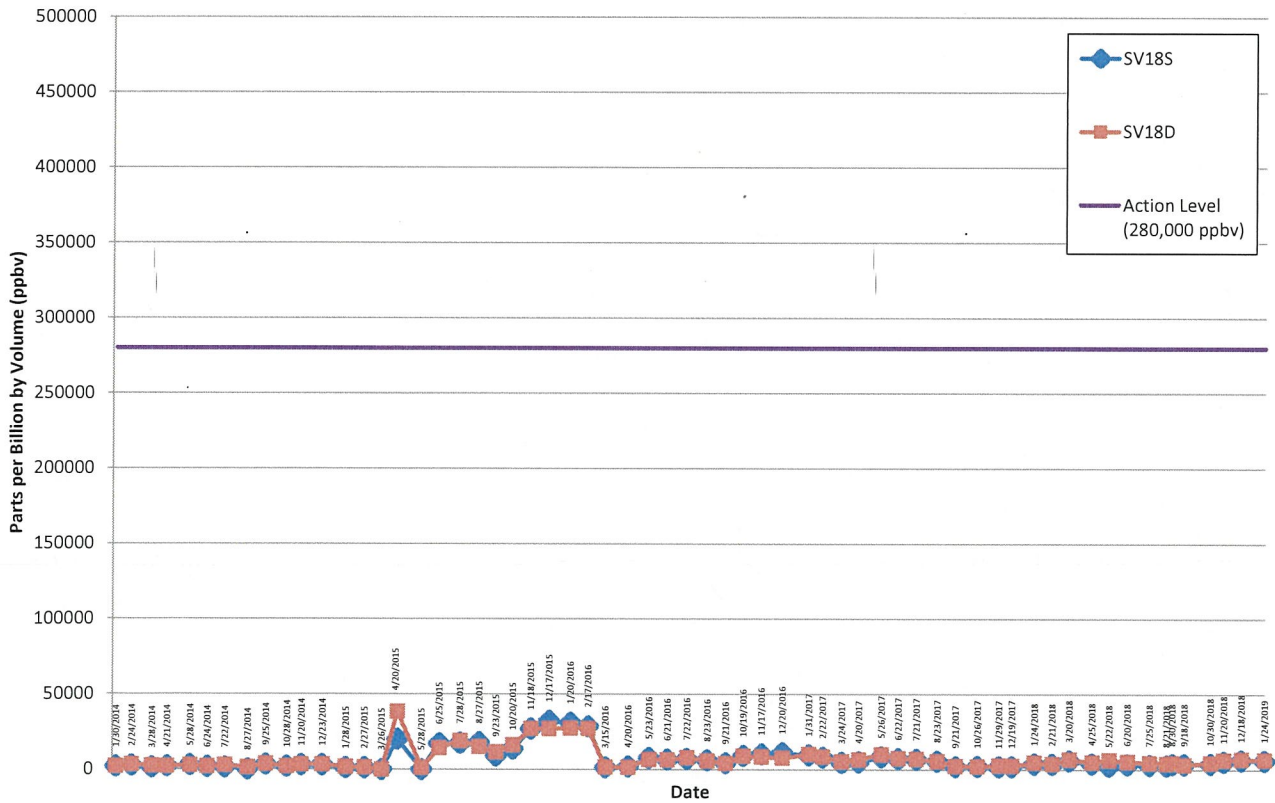
Figure 15  
Soil Vapor Measurements  
SV16



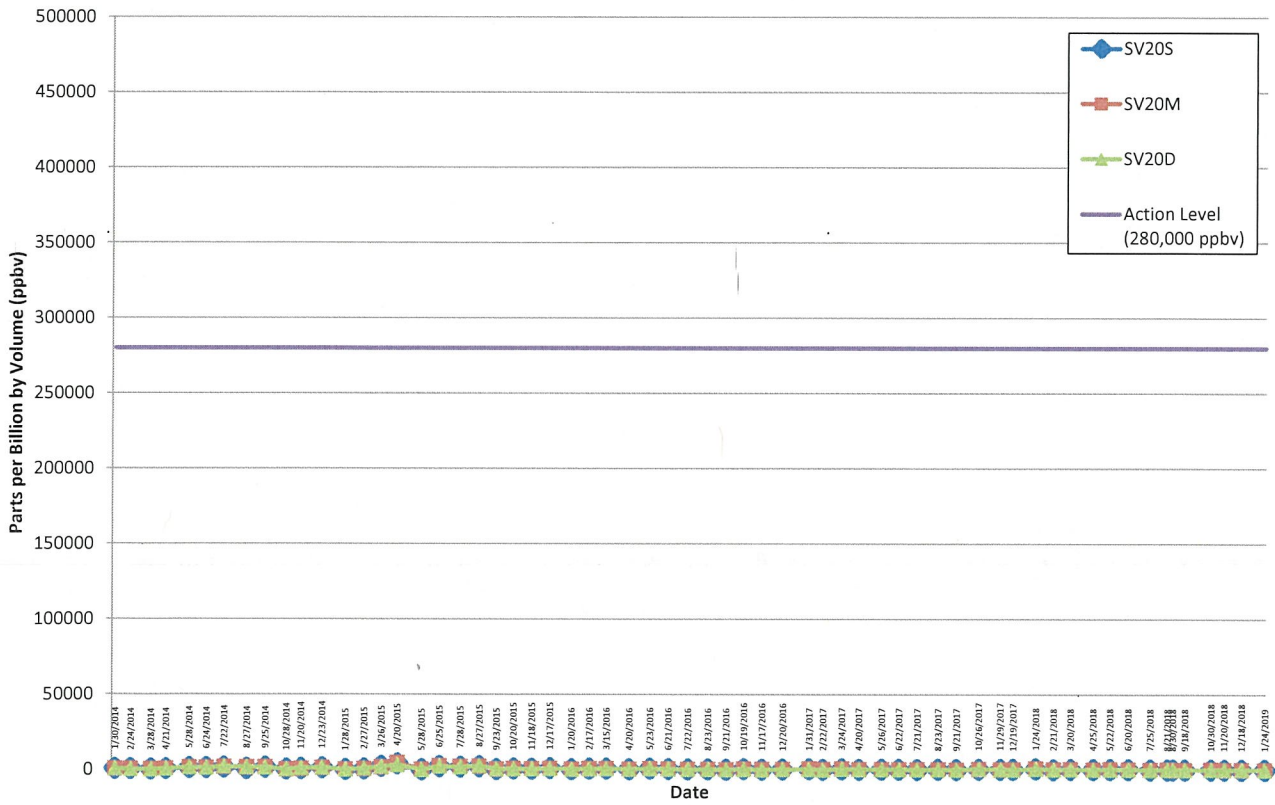
**Figure 16**  
**Soil Vapor Measurements**  
**SV17**



**Figure 17**  
**Soil Vapor Measurements**  
**SV18**



**Figure 18**  
**Soil Vapor Measurements**  
**SV20**



18 Feb 2019

From: Deputy Director, Fuel Department, NAVSUP FLC Pearl Harbor, HI  
To: Environmental Department, NAVFAC Pearl Harbor, HI

Subj: NAVSUP FLC PEARL HARBOR CAUSATIVE RESEARCH REPORT IRT RED HILL  
SOIL VAPOR MONITORING REPORT FOR JANUARY 2019

Ref: (a) Red Hill Bulk Fuel Storage Facility Groundwater Protection Plan  
(b) Red Hill Soil Vapor Monitoring Report for Round 130, dtd 30 Jan 2019

1. Ref (a) requires NAVSUP FLCPH investigate possible fuel leaks. Refs (b) reported the following soil vapor monitoring results at the Red Hill Fuel Storage Facility:

- Strong increase trends indicated at tank 18
- Slight increase trends at tanks 2-17

2. FLCPH causative research and findings:

a. Reviewed all AFHE Unscheduled Fuel Movement (UFM) Alarm Summaries and UFM Reports. The following UFM alarms were recorded during the month of January 2019:

03 Jan: RH 2,3,4,6,7,8,9,10,11,12,15,16,18, and 20 – Repair tech performing system troubleshooting inadvertently created UFM alarms for the entire system. Confirmed no unscheduled fuel movement.

04 Jan: RH 15 - UFM occurred after completing an evolution. Zero flow rate and system indicated conditions normal. Top gauge of tank consistent with last gauge. No release of fuel from the tank occurred.

10 Jan: RH 4 - - UFM occurred after completing an evolution. Zero flow rate and system indicated conditions normal. Top gauge of tank consistent with last gauge. No release of fuel from the tank occurred.

15 Jan: RH 10 - - UFM occurred after completing an evolution. Zero flow rate and system indicated conditions normal. Top gauge of tank consistent with last gauge. No release of fuel from the tank occurred.

24 Jan: RH 15 – Alarm occurred without evolution. AFHE report indicated probe drift creating erroneous readings. Tank locked down and manually gauged twice per shift for 19 days. Manually gauging consistent and no evidence of a leak.

b. Reviewed Red Hill Inventory Trend Analysis Reports for January 2019; reports did not reveal evidence of a loss of fuel in any Red Hill tank.

ENCLOSURE(2)

Subj: NAVSUP FLC PEARL HARBOR CAUSATIVE RESEARCH REPORT IRT RED HILL SOIL VAPOR MONITORING REPORT FOR JANUARY 2019

- c. Red Hill maintenance and repair contractors did not report any factors that could have influenced increase in trends.
  - d. Inspection of the area surrounding all Red Hill tanks did not show evidence of a fuel leak or evidence that fuel was spilled in the area.
  - e. All active tanks have passed tank tightness testing within the required periodicity.
4. There's no evidence of a leaking tank in the Red Hill Complex or evidence of a spill that may have contributed to elevated soil vapor VOC levels in the area of elevated VOC concentrations.

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ou=USN, cn=FLOYD.JOHN.LEWIS.1064149357  
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JOHN FLOYD