



**DEPARTMENT OF THE NAVY**

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

**OCT 22 2018**

5090  
Ser N45/0636  
October 19, 2018

**CERTIFIED NO: 7016 0910 0001 0891 9684**

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

Dear Mr. Takaba:

**SUBJECT: RED HILL TANK COMPLEX  
SOIL VAPOR SAMPLING RESULTS FOR SEPTEMBER 2018  
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 September 18, 2018.

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.

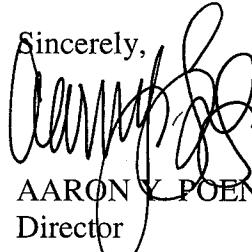
At Tank 5, the concentrations of VOCs detected in the front, middle, and outer edge soil vapor monitoring probes were 670 ppbv, 1,103 ppbv, and 1,211 ppbv, respectively. Tank 5 was emptied in January 2014 and has not contained fuel since that time. VOC concentrations in all down-gradient soil vapor monitors were below 630 ppbv.

All other VOC concentrations measured in September were about 45 to 4,200 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.

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Soil vapor VOC concentration trends will continue to be monitored. The next soil vapor sampling event is scheduled for October 2018, and will include collecting samples from soil vapor monitoring probes beneath all active and accessible tanks.

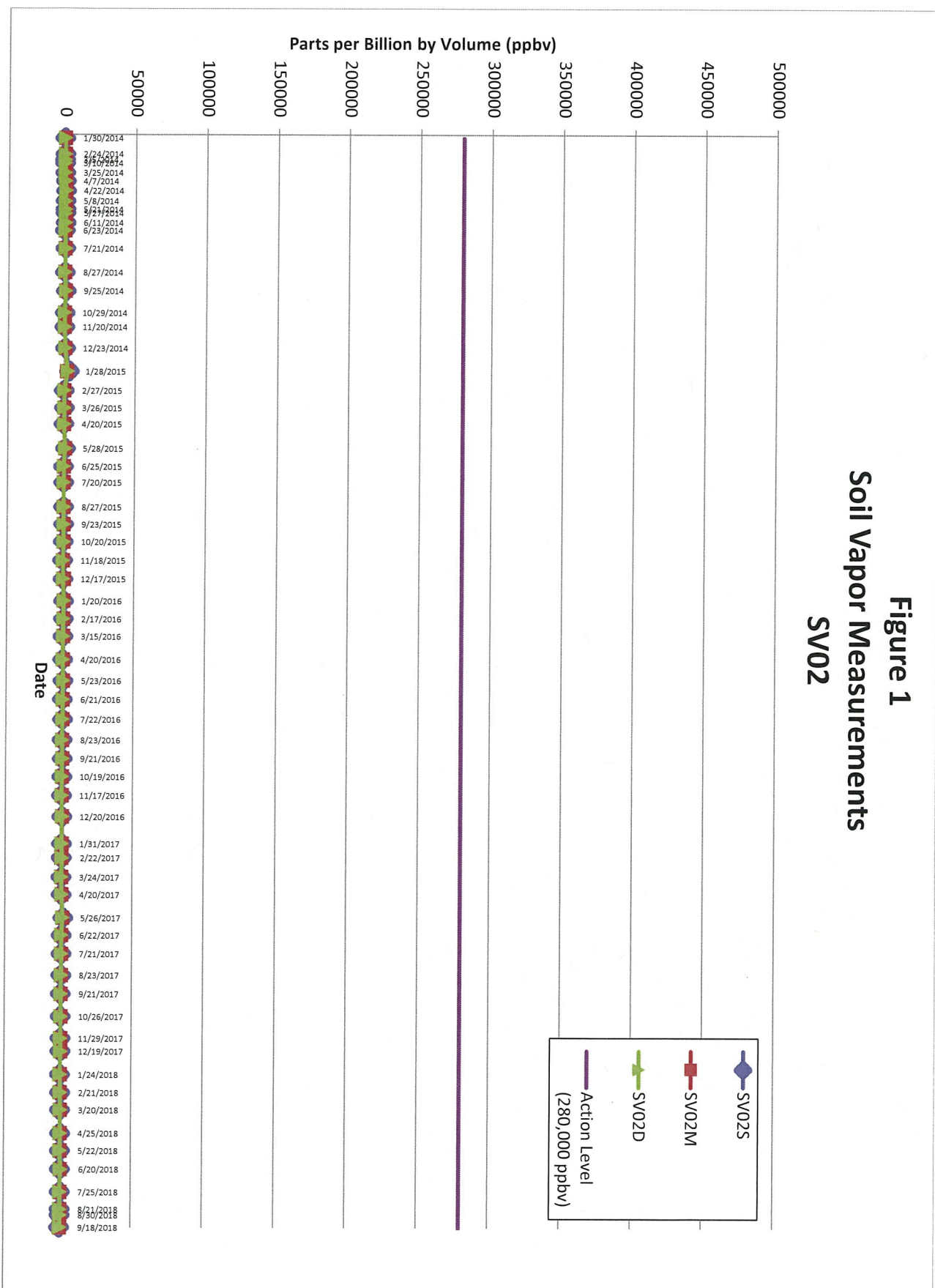
If there are any questions regarding this matter, or if more information is needed, please contact Mr. Melvin Muraoka at (808) 471-3869.

Sincerely,  
  
AARON V. POENTIS  
Director  
Regional Environmental Department  
By direction of the  
Commander

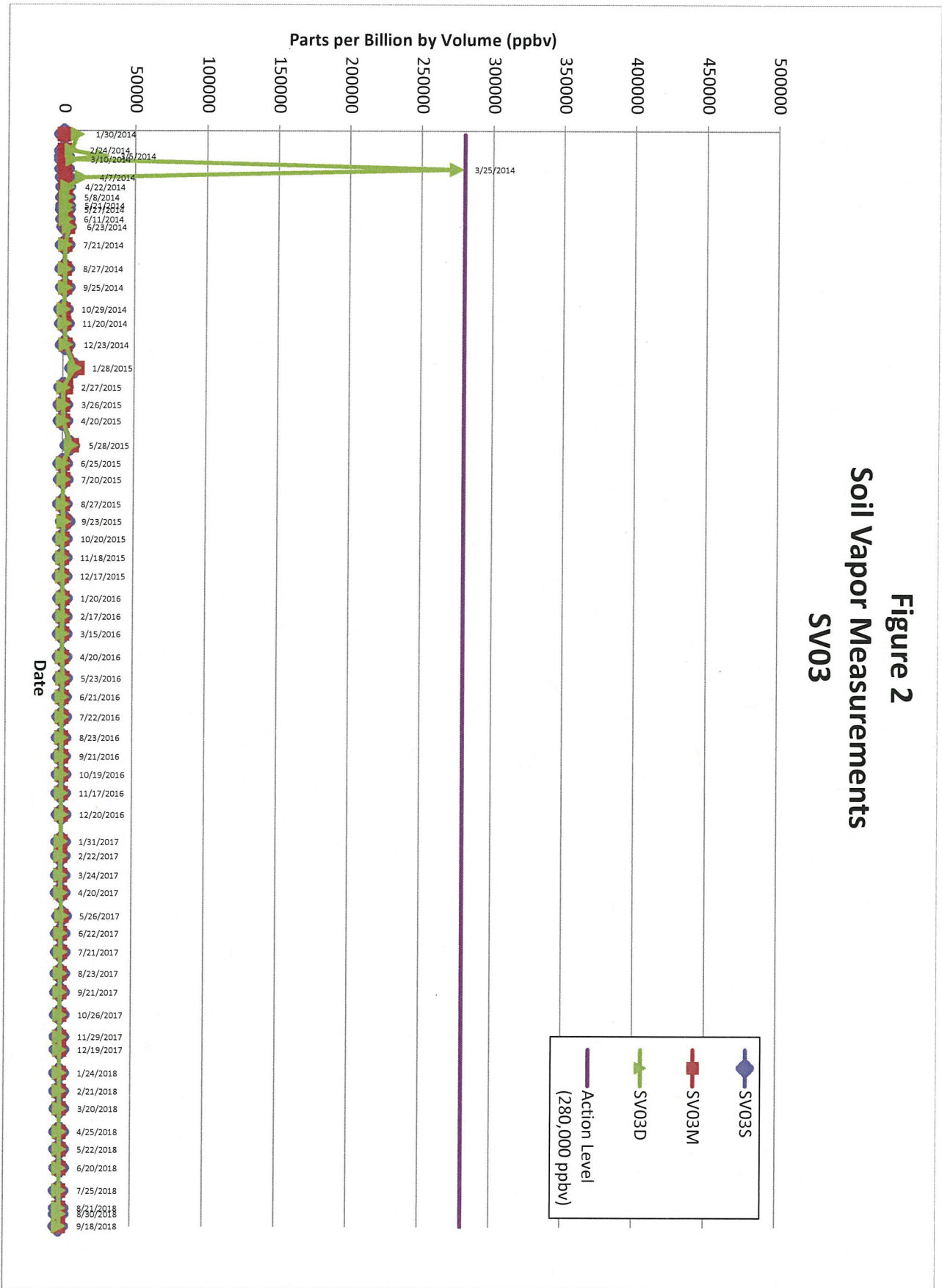
- Enclosures: 1. Summary of Soil Vapor Sampling Results for Tanks 2 through 18 and 20 through September 2018 (18 pages)  
2. NAVSUP FLC Pearl Harbor Causative Research Report IRT Red Hill Soil Vapor Monitoring Report for September 2018

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

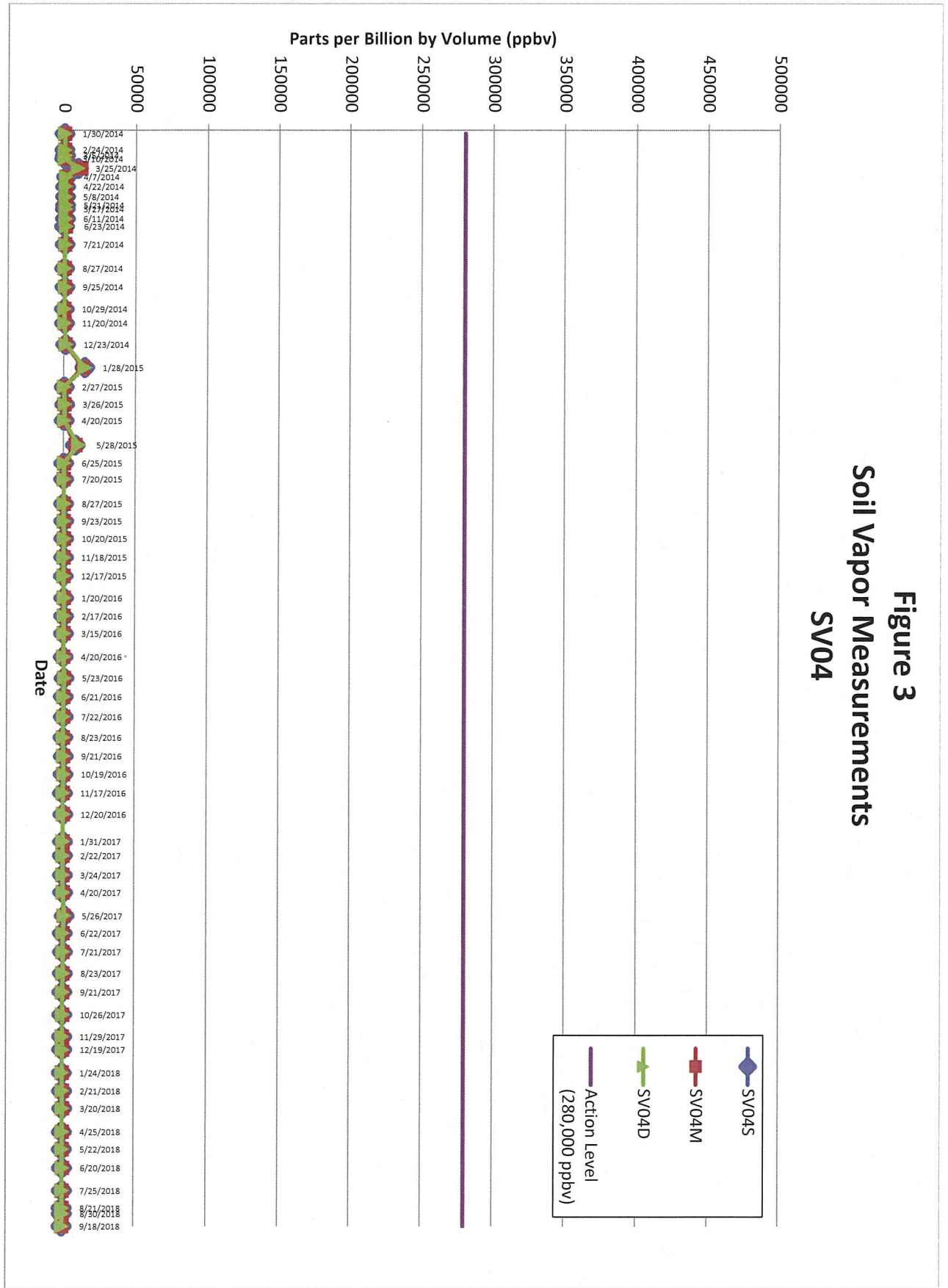
Figure 1  
Soil Vapor Measurements  
SV02

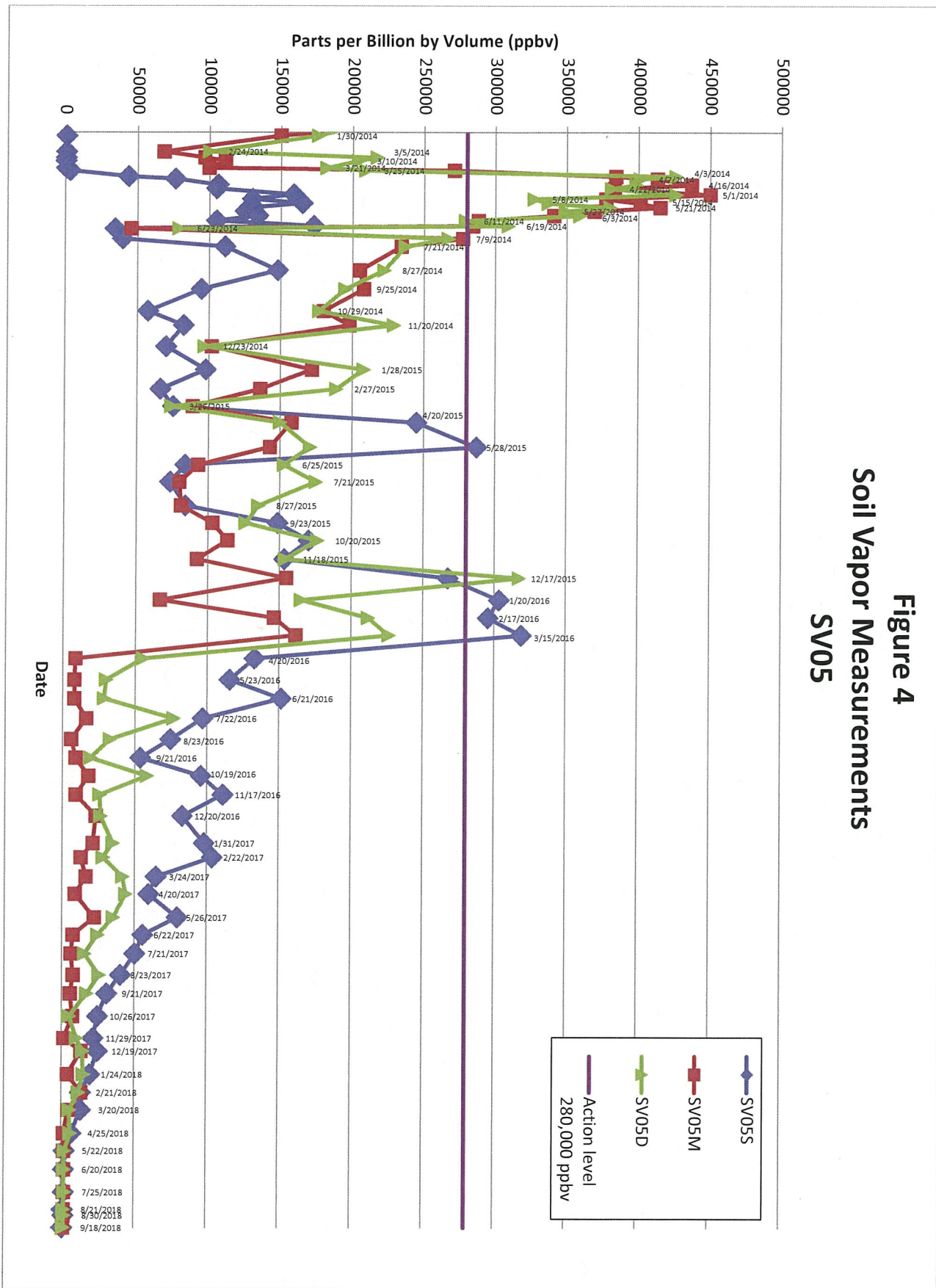


**Figure 2**  
**Soil Vapor Measurements**  
**SV03**



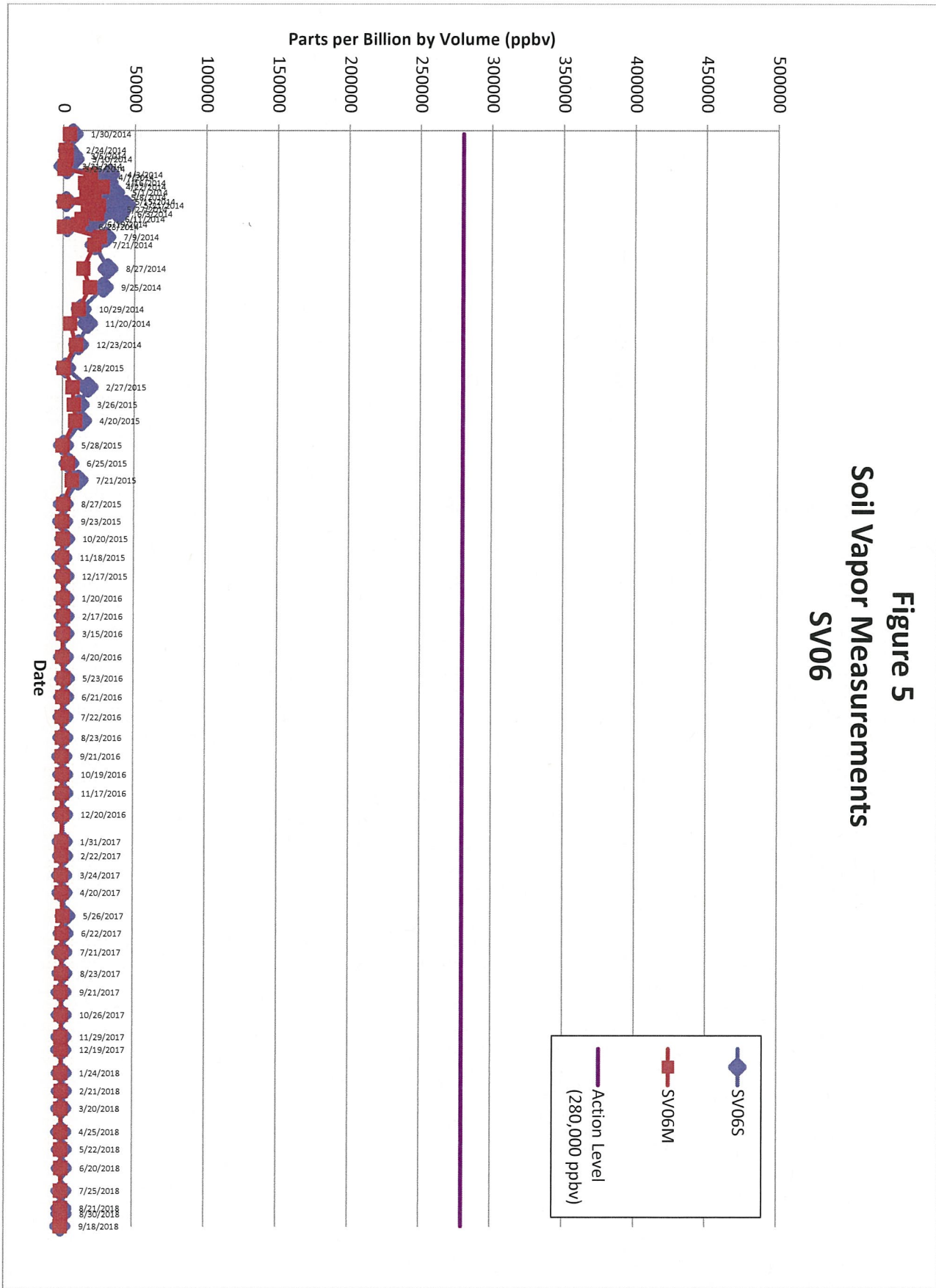
**Figure 3**  
**Soil Vapor Measurements**  
**SV04**



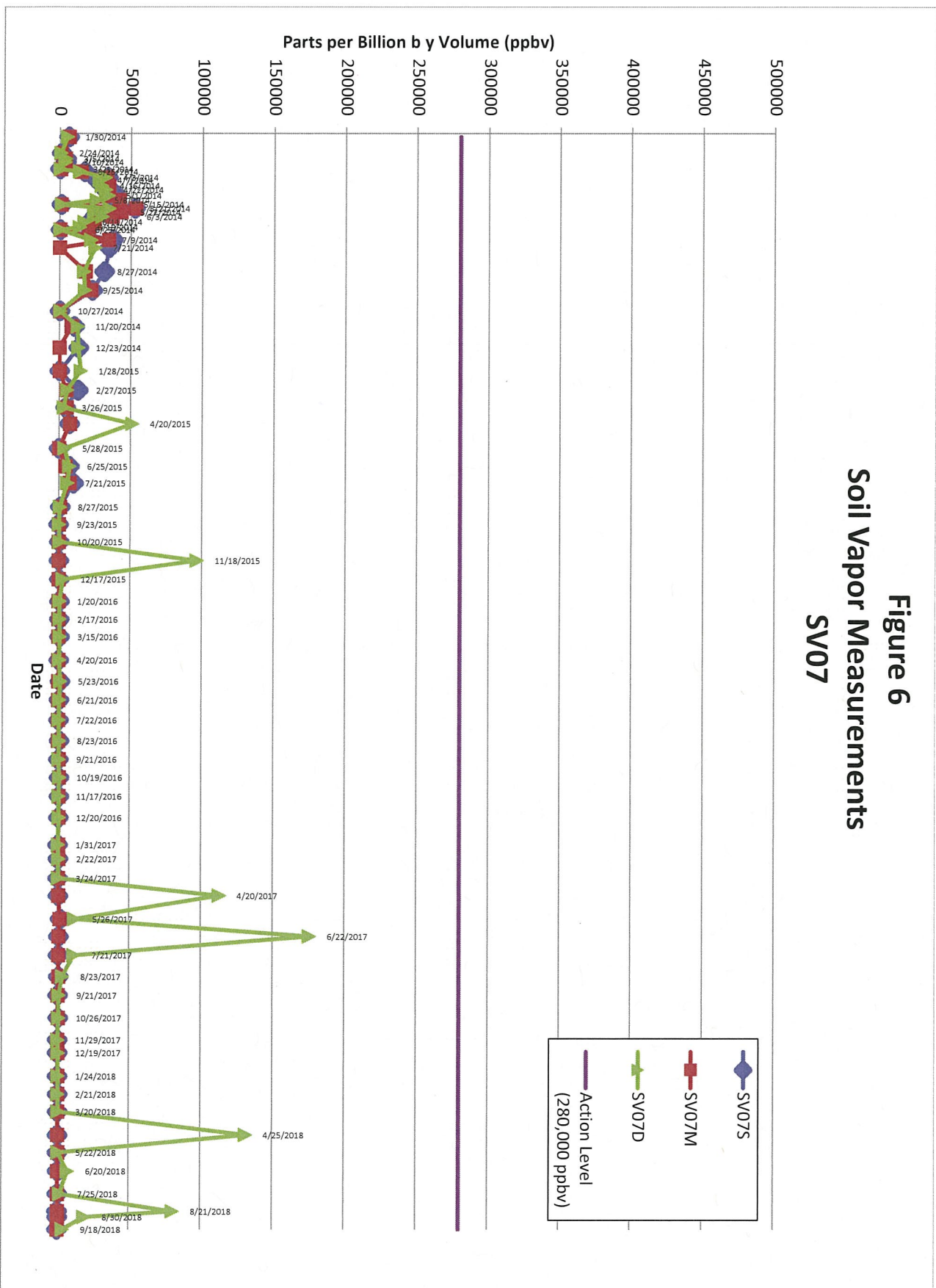


**Figure 4**  
**Soil Vapor Measurements**  
**SV05**

**Figure 5**  
**Soil Vapor Measurements**  
**SV06**

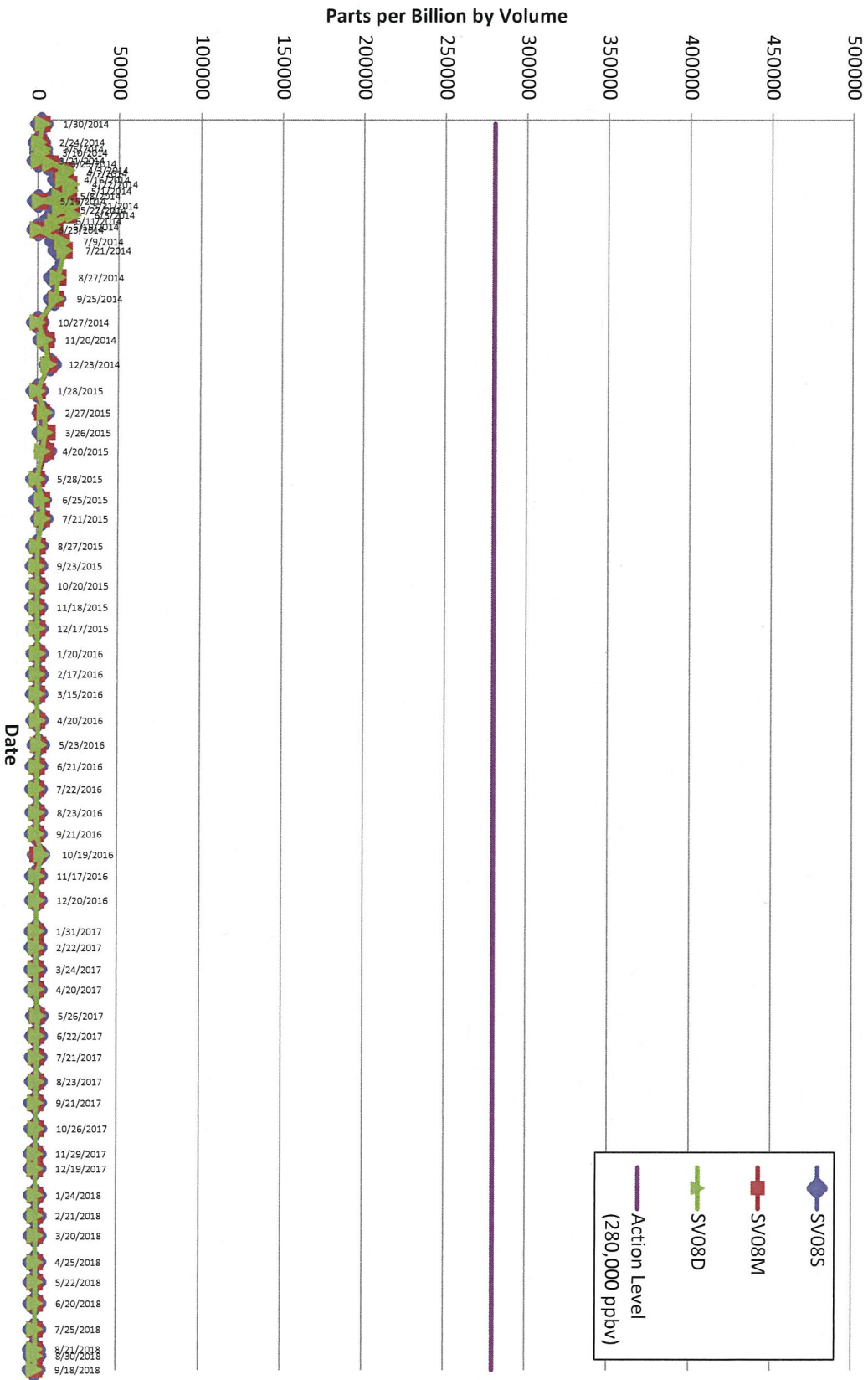


**Figure 6**  
**Soil Vapor Measurements**  
**SV07**

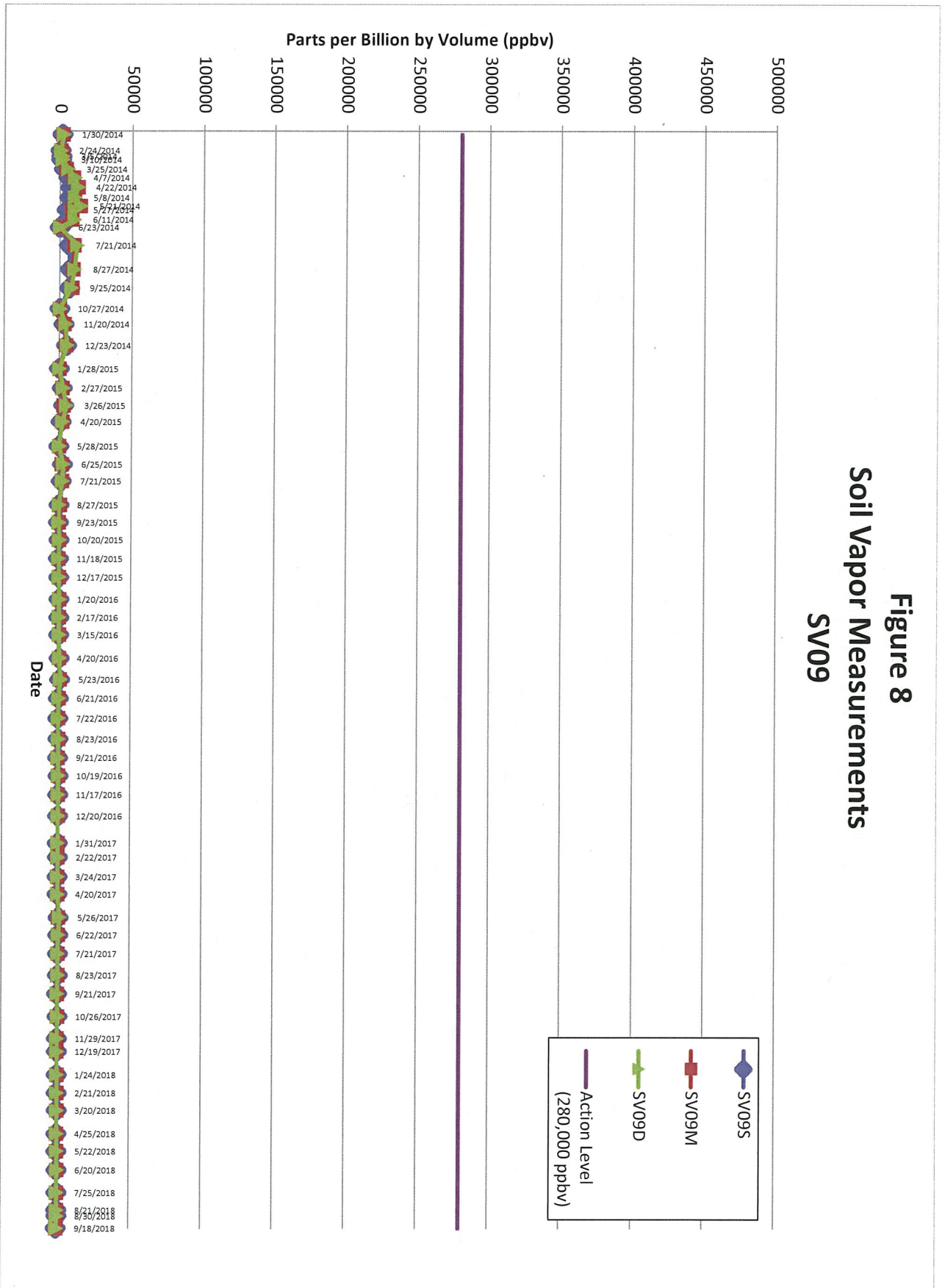




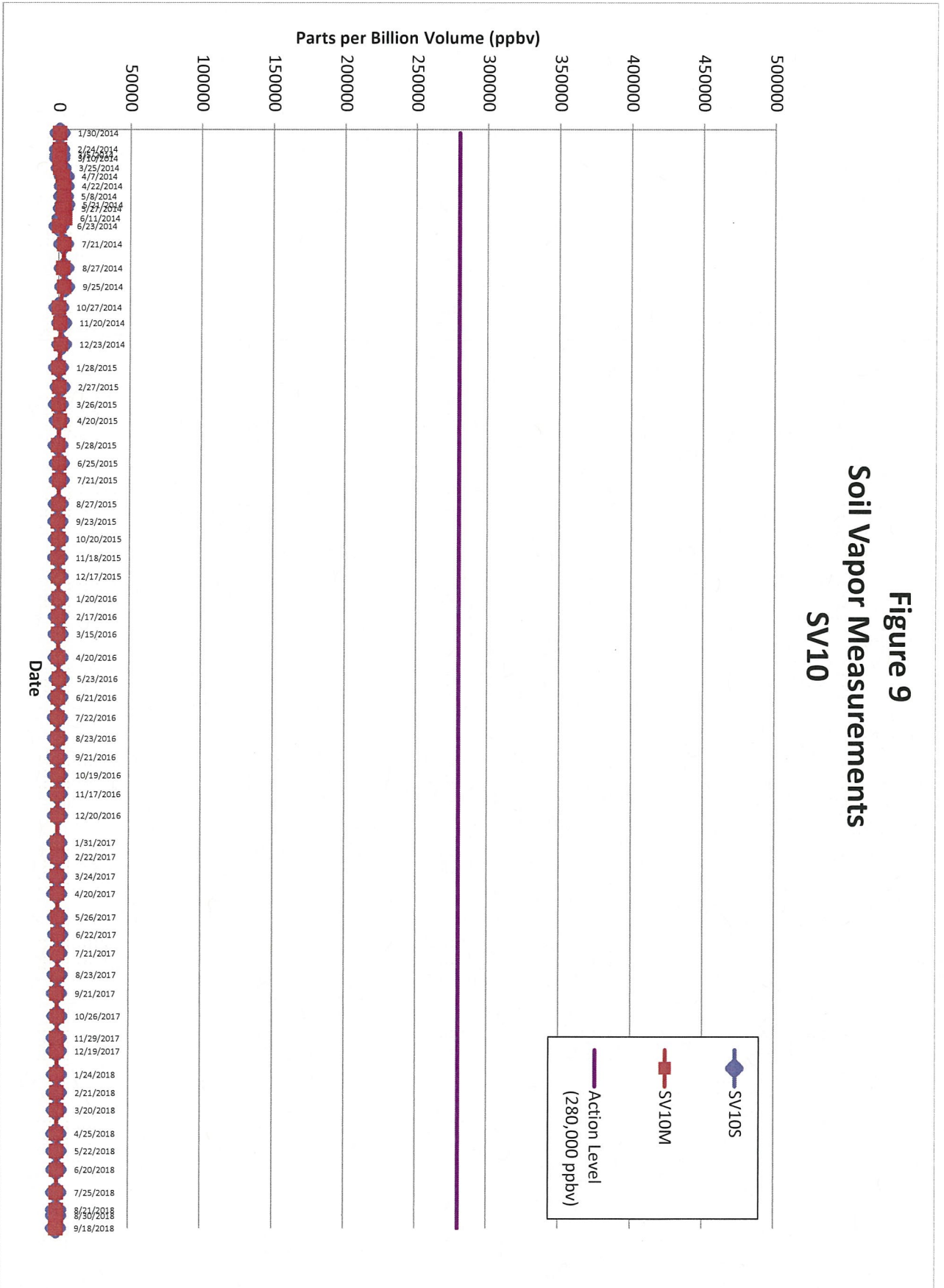
**Figure 7**  
**Soil Vapor Measurements**  
**SV08**



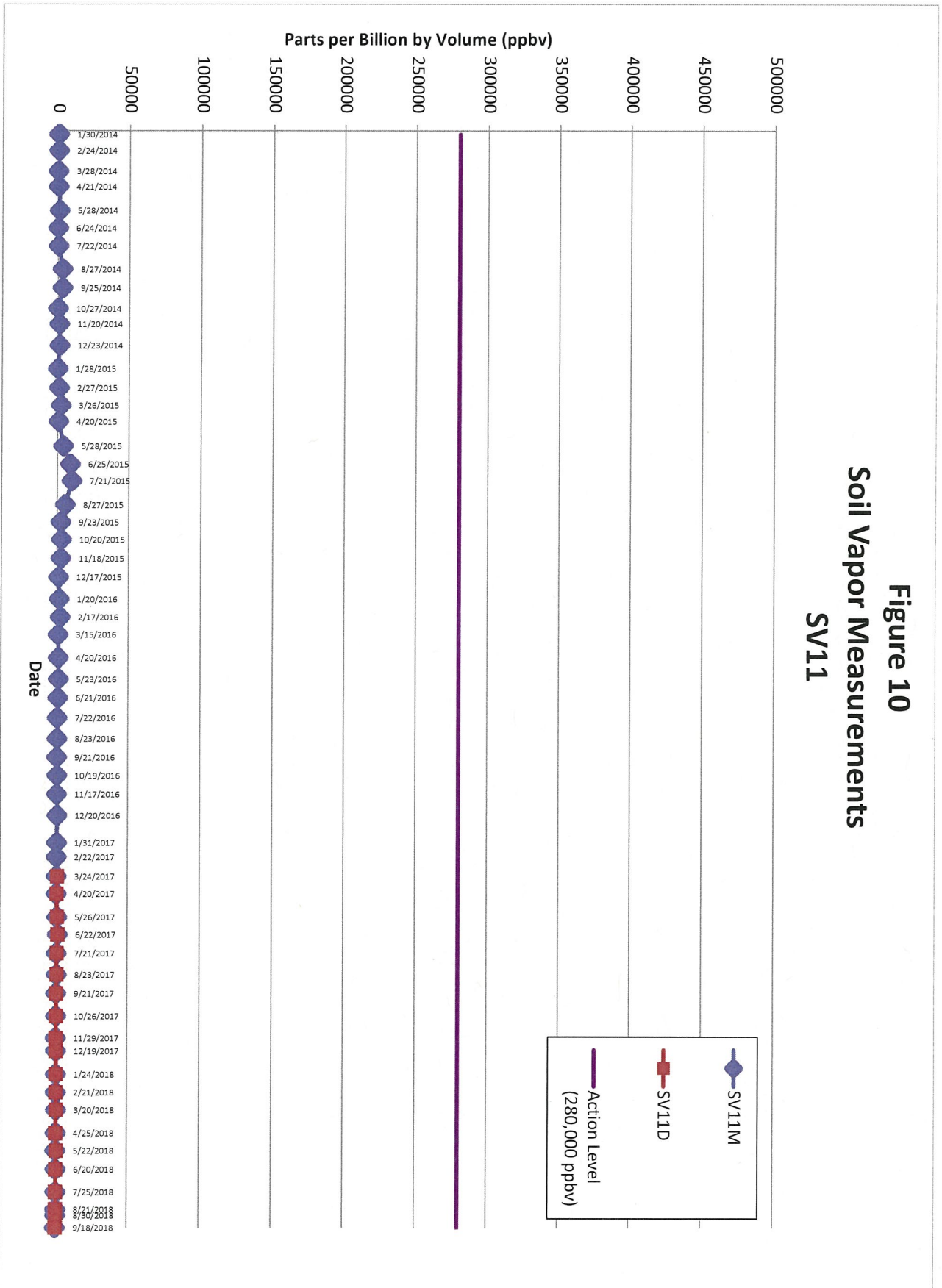
**Figure 8**  
**Soil Vapor Measurements**  
**SV09**



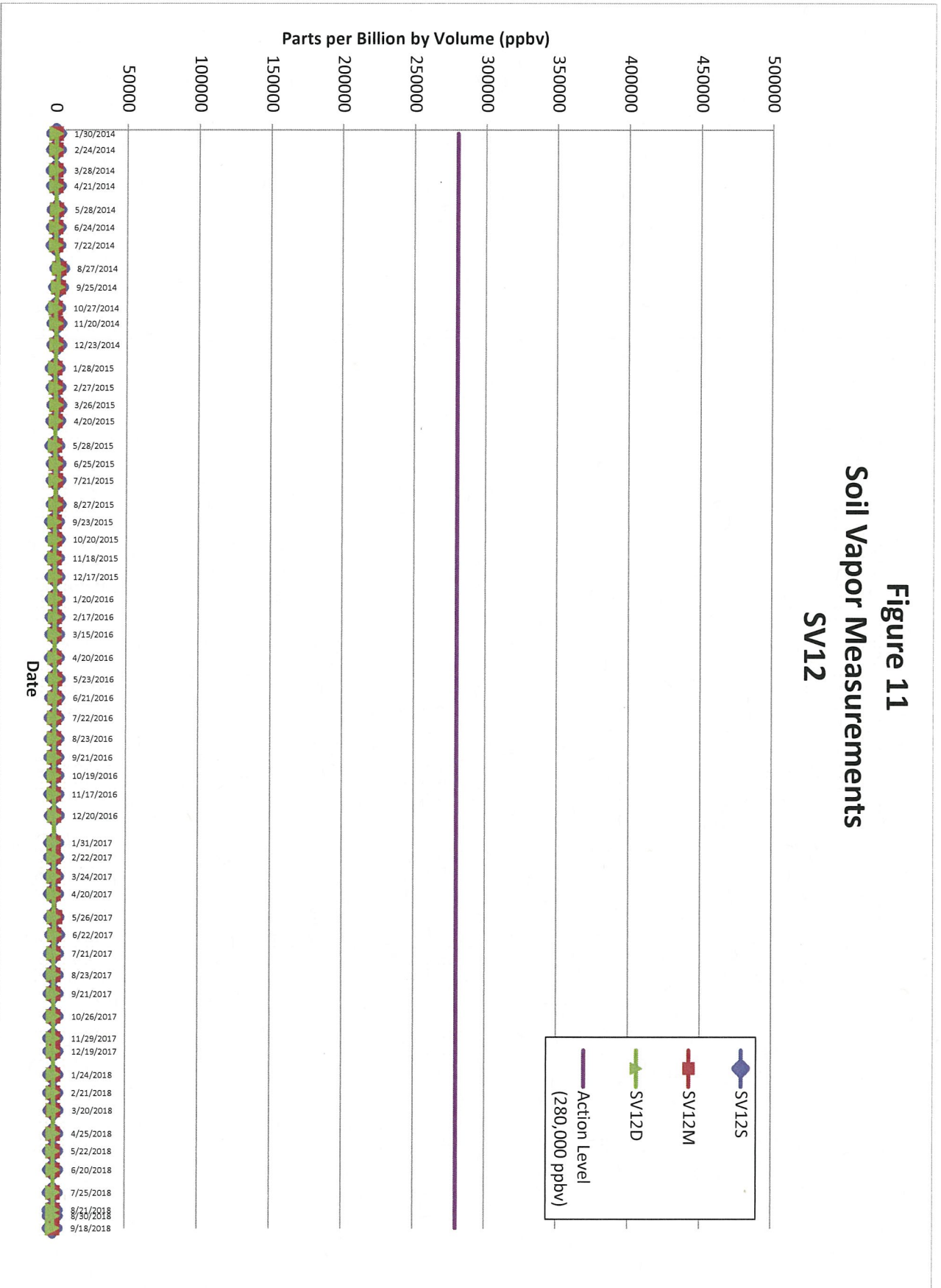
**Figure 9**  
**Soil Vapor Measurements**  
**SV10**



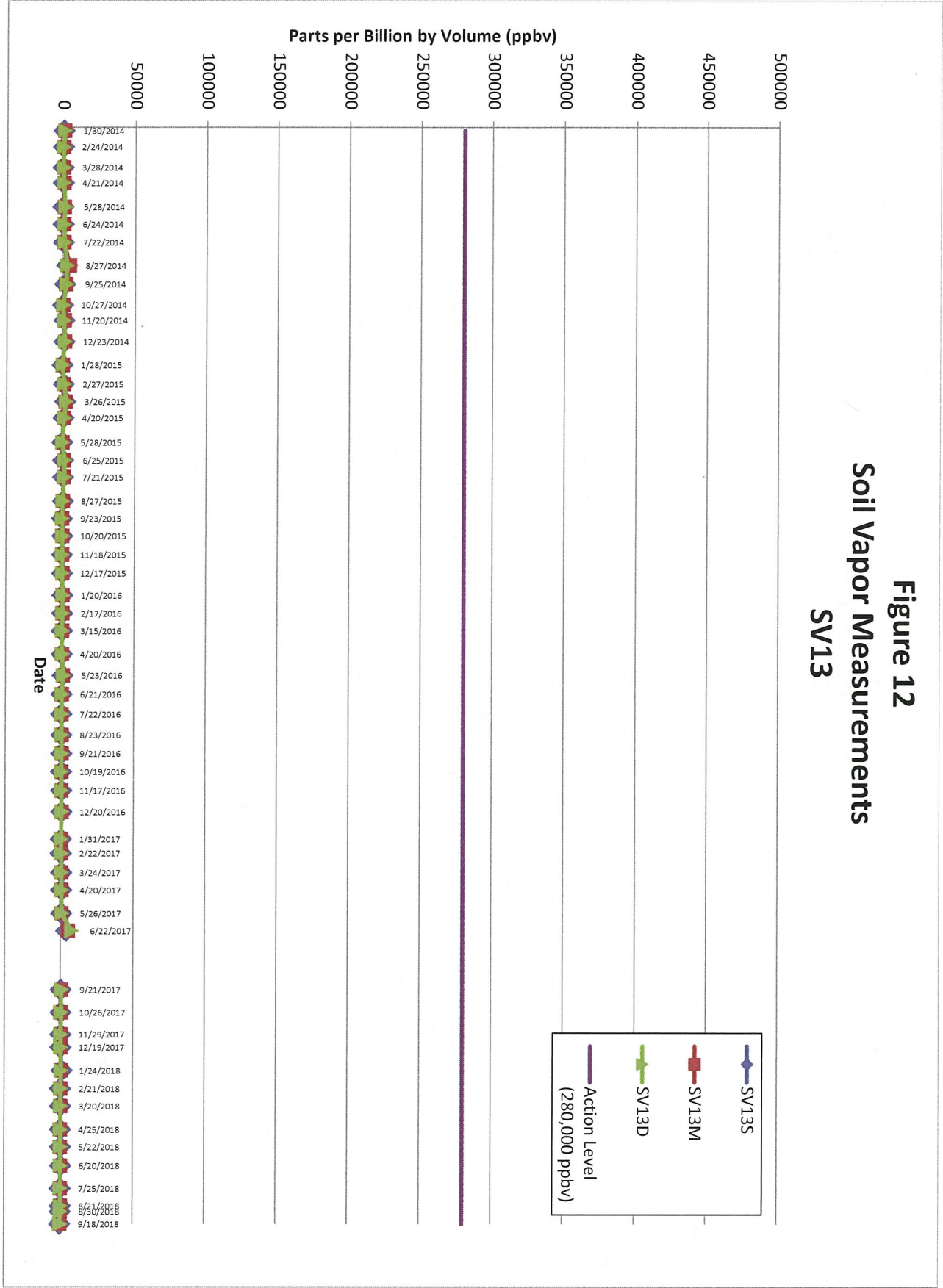
**Figure 10**  
**Soil Vapor Measurements**  
**SV11**



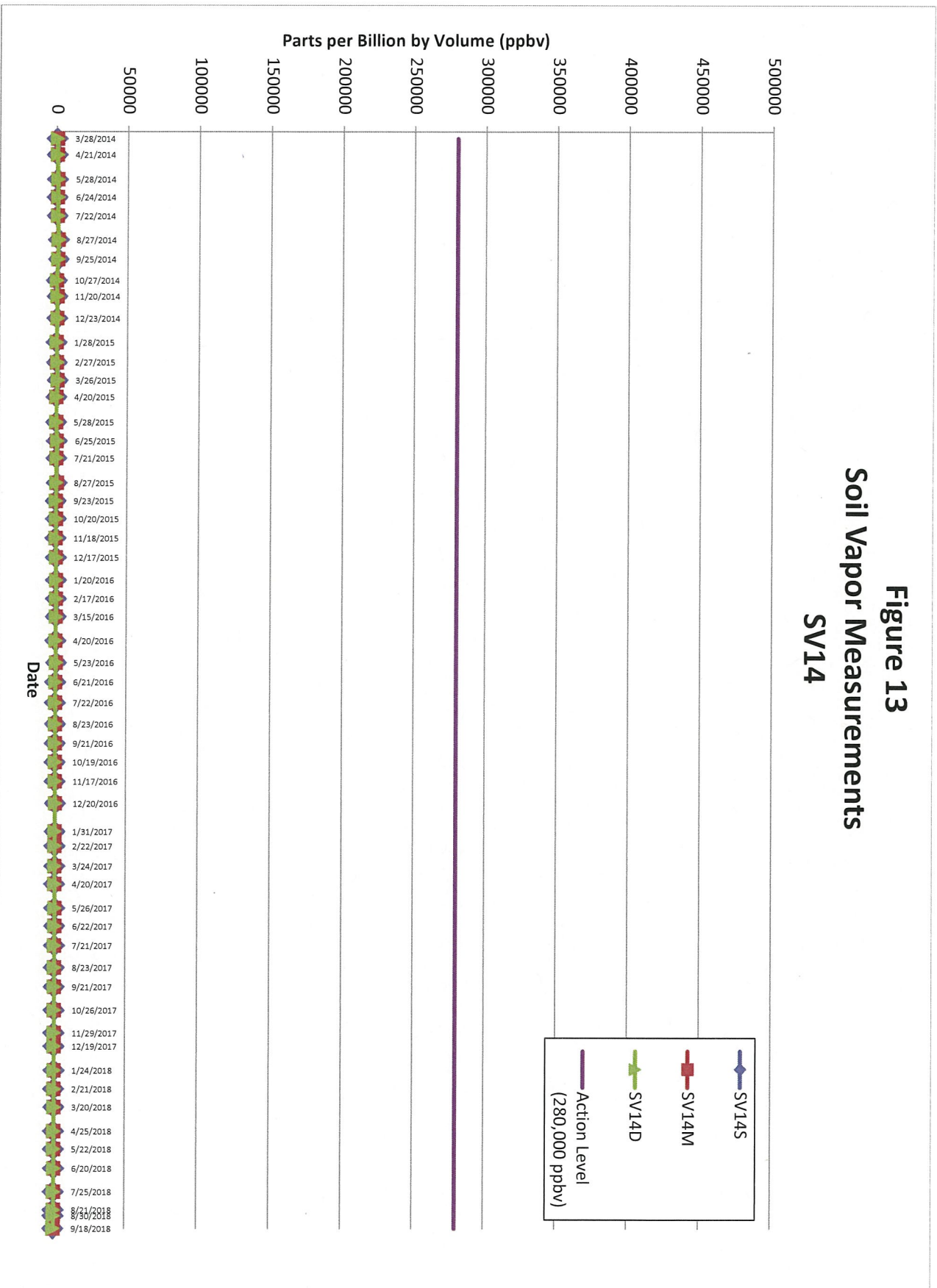
**Figure 11**  
**Soil Vapor Measurements**  
**SV12**



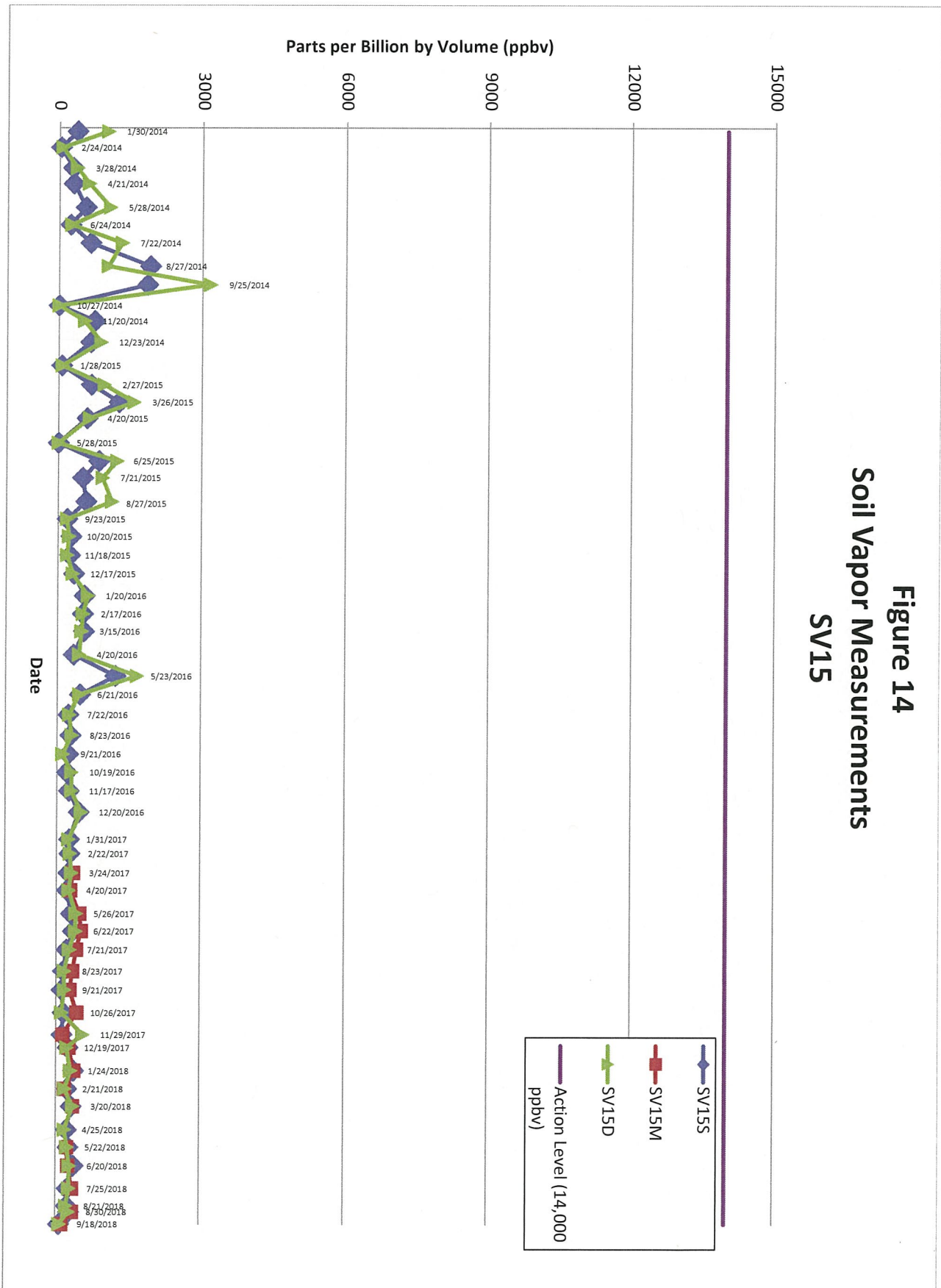
**Figure 12**  
**Soil Vapor Measurements**  
**SV13**



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

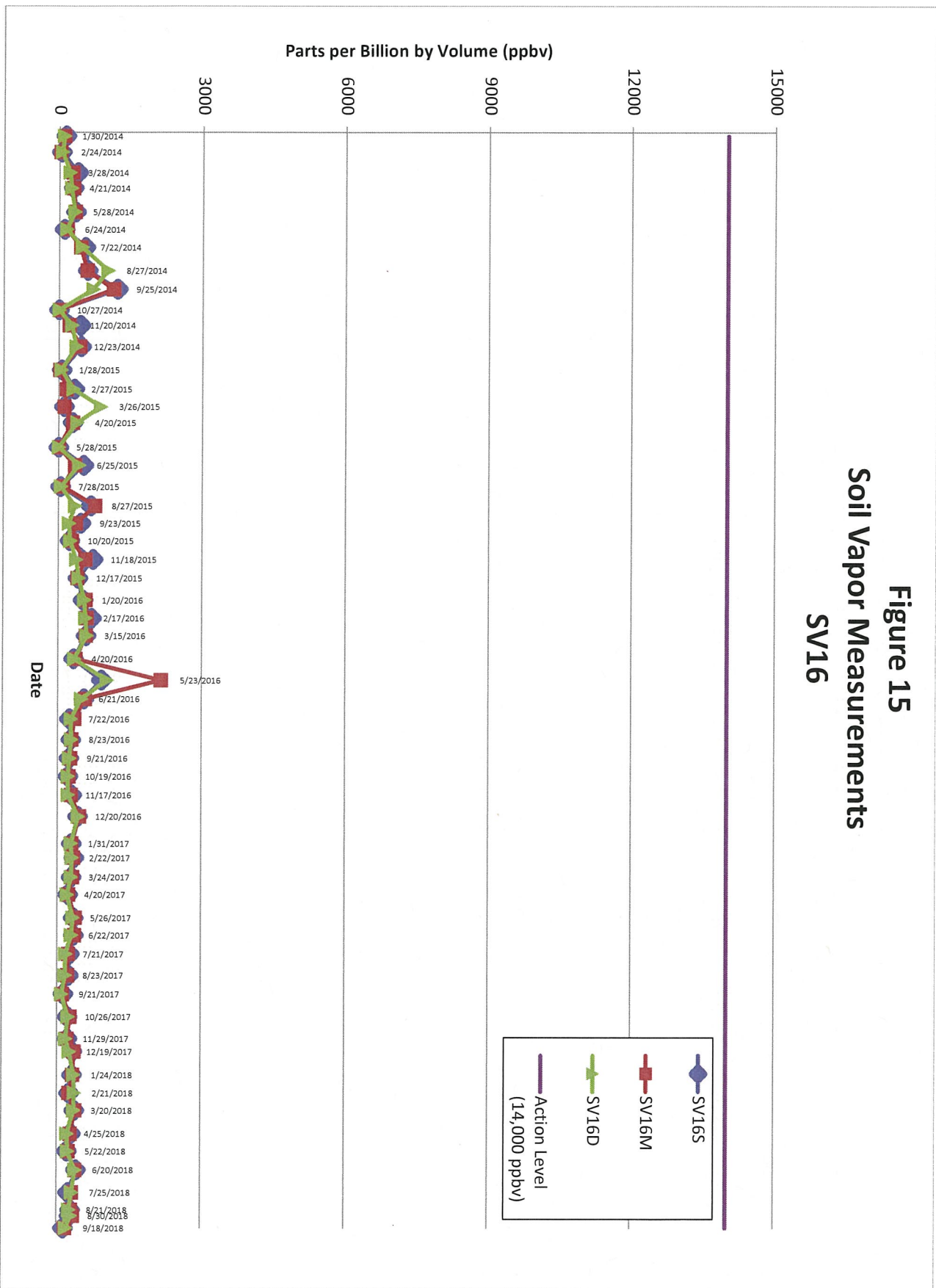


**Figure 14**  
**Soil Vapor Measurements**  
**SV15**

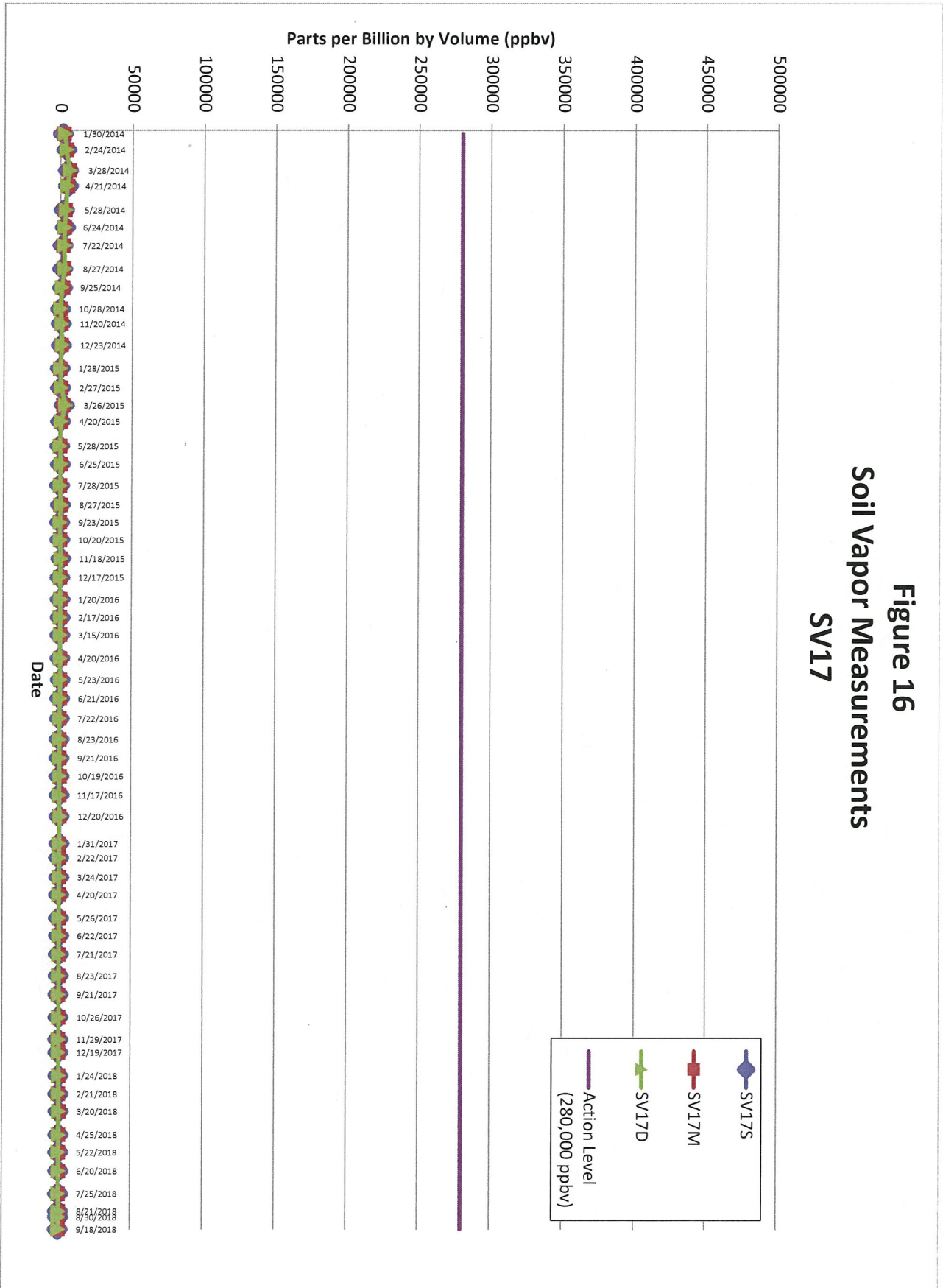




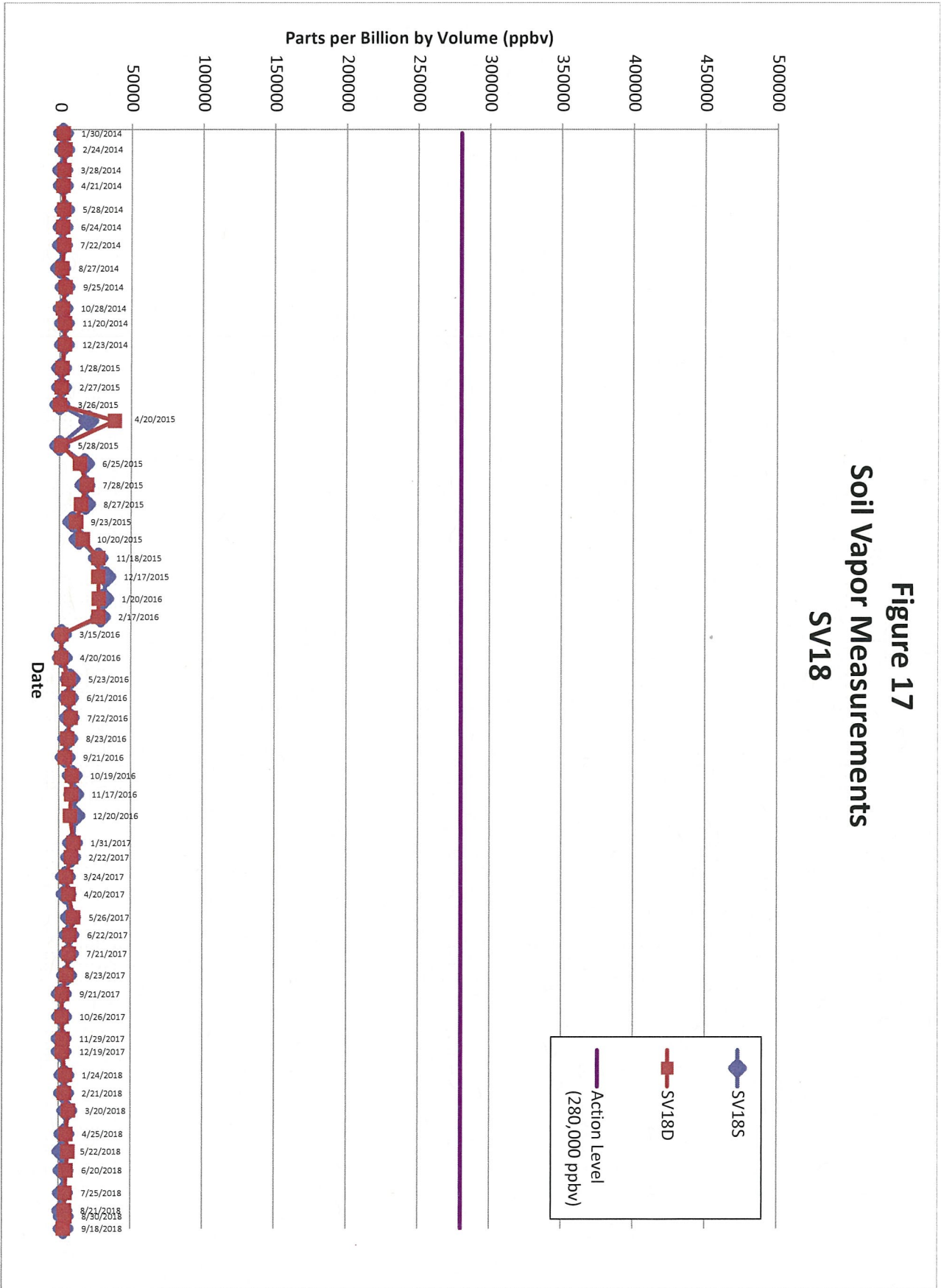
**Figure 15**  
**Soil Vapor Measurements**  
**SV16**



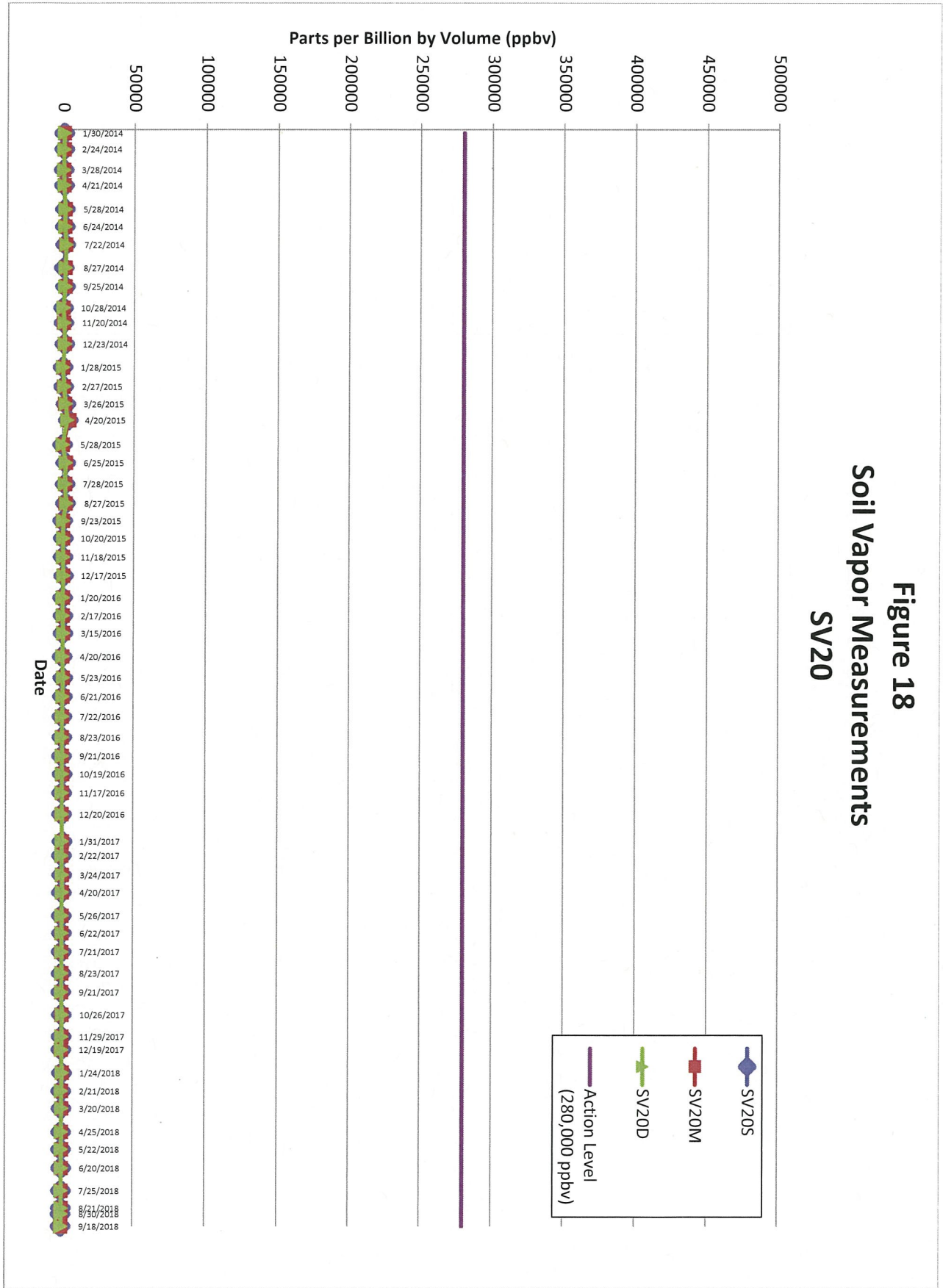
**Figure 16**  
**Soil Vapor Measurements**  
**SV17**



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



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



15 Oct 2018

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 SEPTEMBER 2018

Ref: (a) Red Hill Bulk Fuel Storage Facility Groundwater Protection Plan  
(b) Red Hill Soil Vapor Monitoring Report for Round 126, dtd 24 Sep 2018

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:

Slight increase trends indicated at tanks 3, 17 and 18

2. FLCPH causative research and findings:

- a. Reviewed all AFHE Unscheduled Fuel Movement (UFM) Alarm Summaries and UFM Reports. No alarms could be attributed to a fuel leak or an unscheduled movement of fuel. There were numerous UFM alarms recorded during the period of 31 Aug-13 Sep 2018 that were created during system troubleshooting and testing conducted to correct UFM false alarms caused by a software error. This was a carryover of the testing performed and reported in Jun-Aug 2018. Additional alarms were recorded for the following tanks and all alarms are related to system problems; troubleshooting and analysis of the problem is ongoing:

17 Sep: RH 15 - Occurred after F76 issue; tank data did not update, same system error.

19 Sep: RH 09 - Occurred after JP5 transfer; tank data did not update, same system error.

23-25 Sep: RH02 - UFM's occurred three times on 09/23, twice on 09/24, and twice on 09/25. Control Room Operator set evolution to clear the alarm, sent the RH rovers to investigate, tank was gauged once per shift, and all gauges were within 3/16th of the previous gauges. System error, no unscheduled fuel movement occurred.

26 Sep: RH10 - Occurred after completing an evolution. Control Room Operator set the tank into evolution to clear the alarm. System error, no release of fuel from the tank occurred.

- b. Reviewed Red Hill Inventory Trend Analysis Reports for August 2018; reports did not reveal evidence of a loss of fuel in any Red Hill tank.
- 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.

ENCLOSURE(2)

- 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.

JOHN FLOYD