



**DEPARTMENT OF THE NAVY**

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

JUN 25 2018



5090  
Ser N45/0533  
June 20, 2018

**CERTIFIED NO: 7016 0910 0001 0891 8809**

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 MAY 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 May 22, 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.

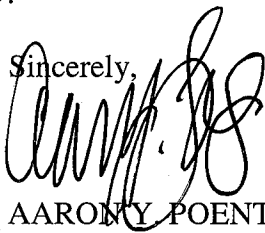
At Tank 5, the concentrations of VOCs detected in the front, middle, and outer edge soil vapor monitoring probes were 2,013 ppbv, 1,630 ppbv, and 2,149 ppbv, respectively. Tank 5 was emptied in January 2014 and has not contained fuel since that time. VOC concentrations in all down-gradient soil vapor monitors were below 560 ppbv.

All other VOC concentrations measured in May were about 40 to 1,025 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 June 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.

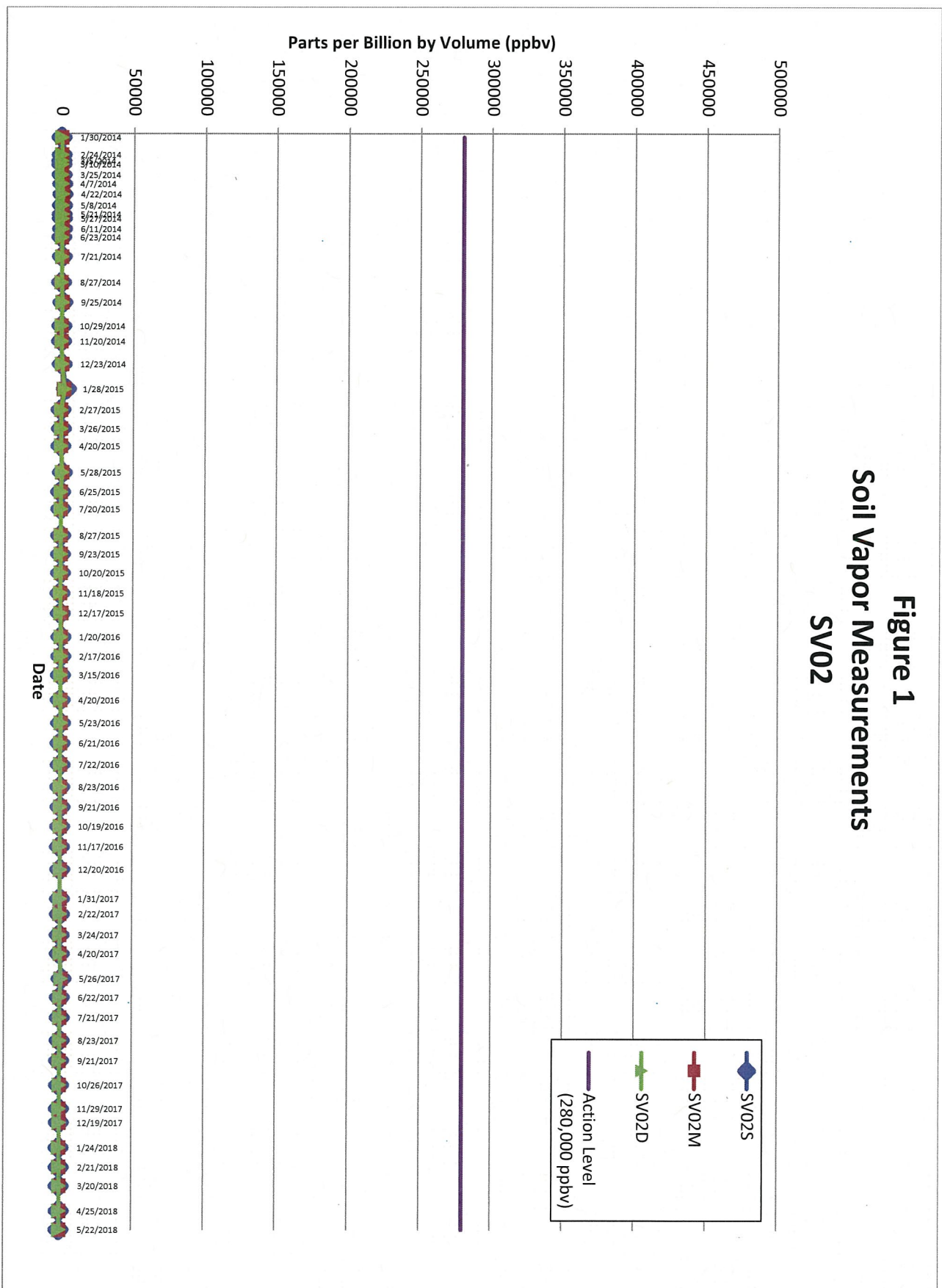
Sincerely,  


AARON 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 May 2018 (18 pages)  
2. NAVSUP FLC Pearl Harbor Causative Research Report IRT Red Hill Soil Vapor Monitoring Report for May 2018

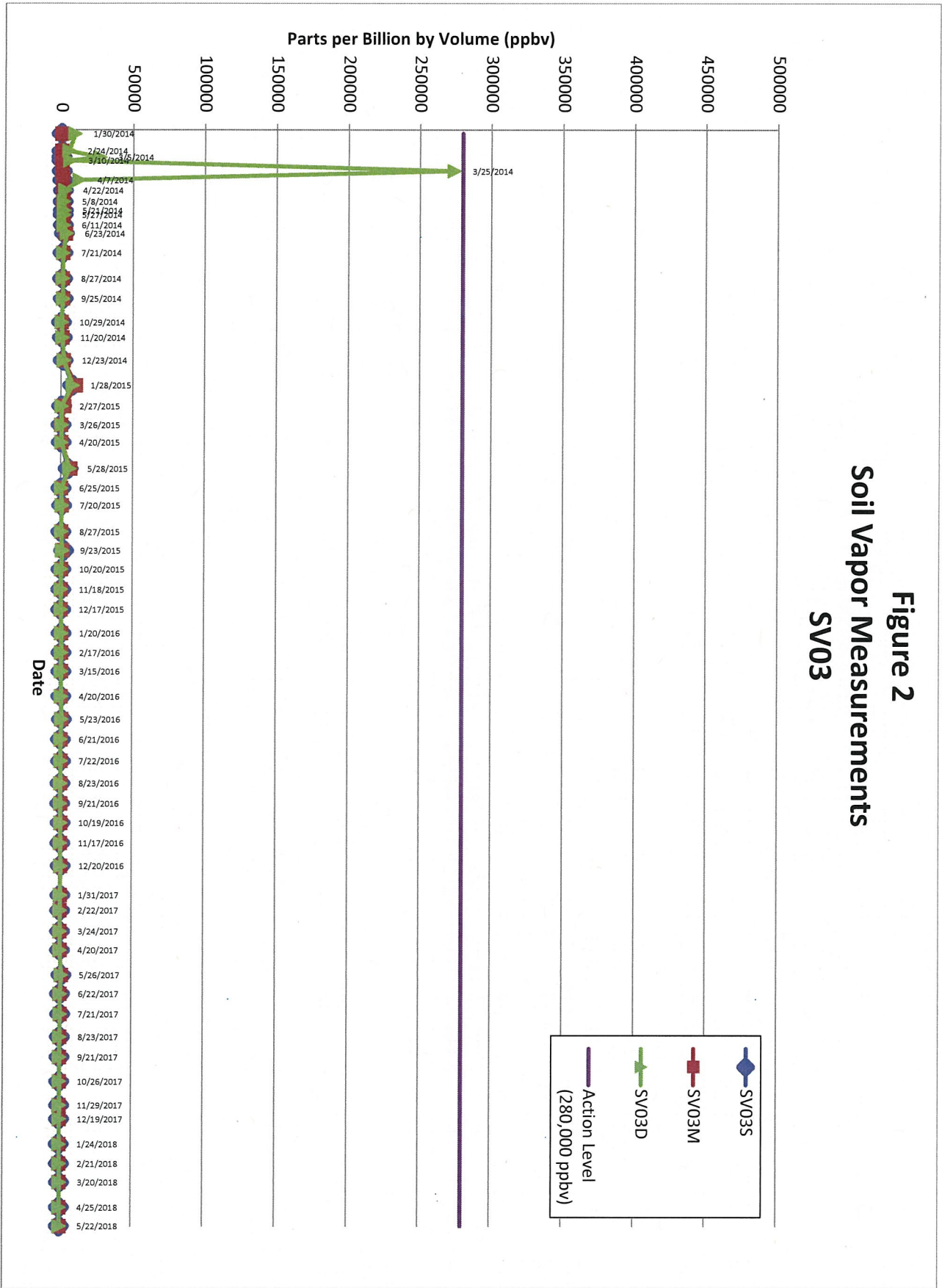
Copy to: Mr. Omer Shalev, U.S. EPA Region 9, Underground Storage Tank Program Office  
Mr. John Floyd, NAVSUP FLC Pearl Harbor  
Mr. Rockne Krill, DLA Energy Pacific

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



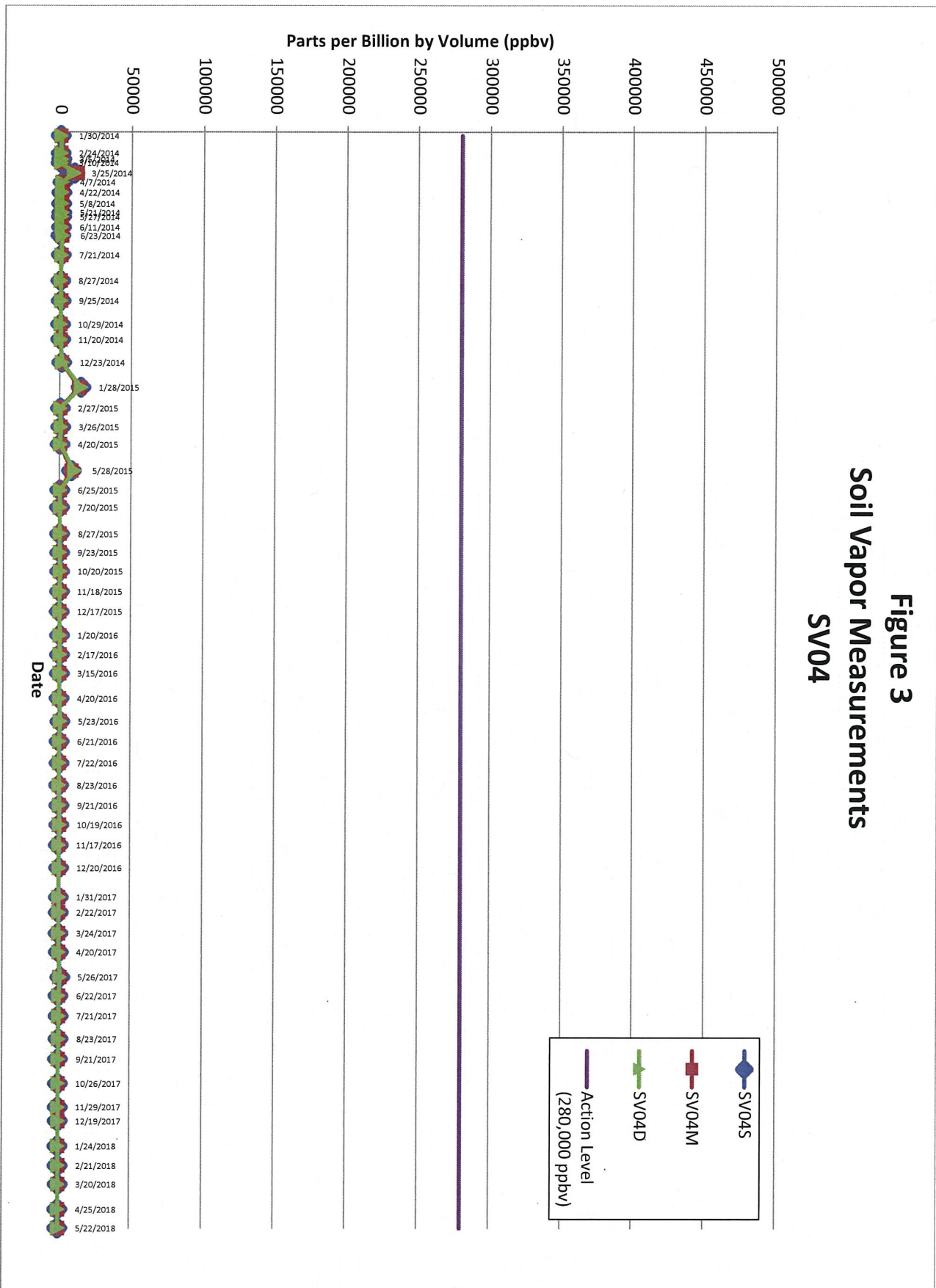
ENCLOSURE(1)

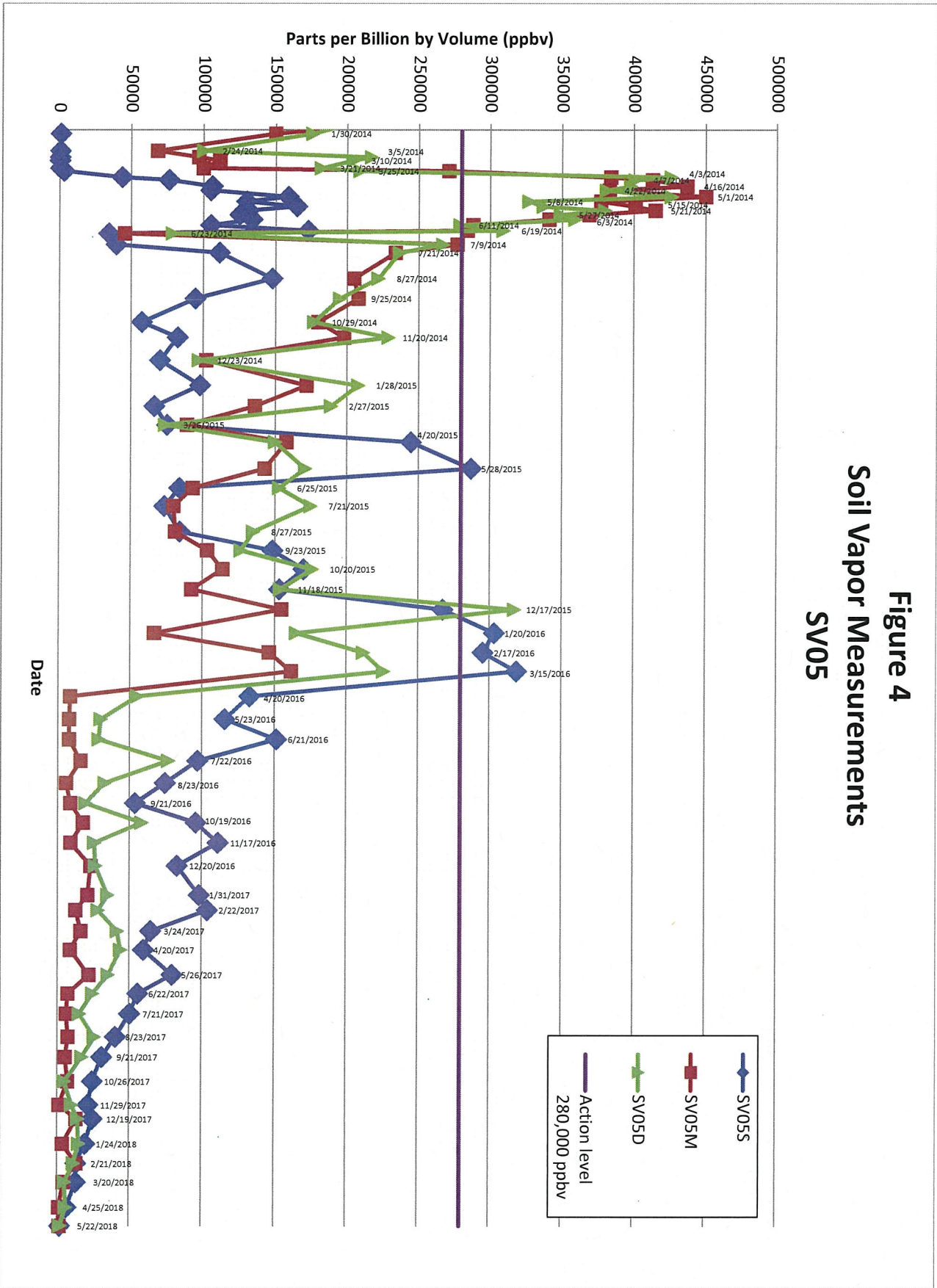
**Figure 2**  
**Soil Vapor Measurements**  
**SV03**



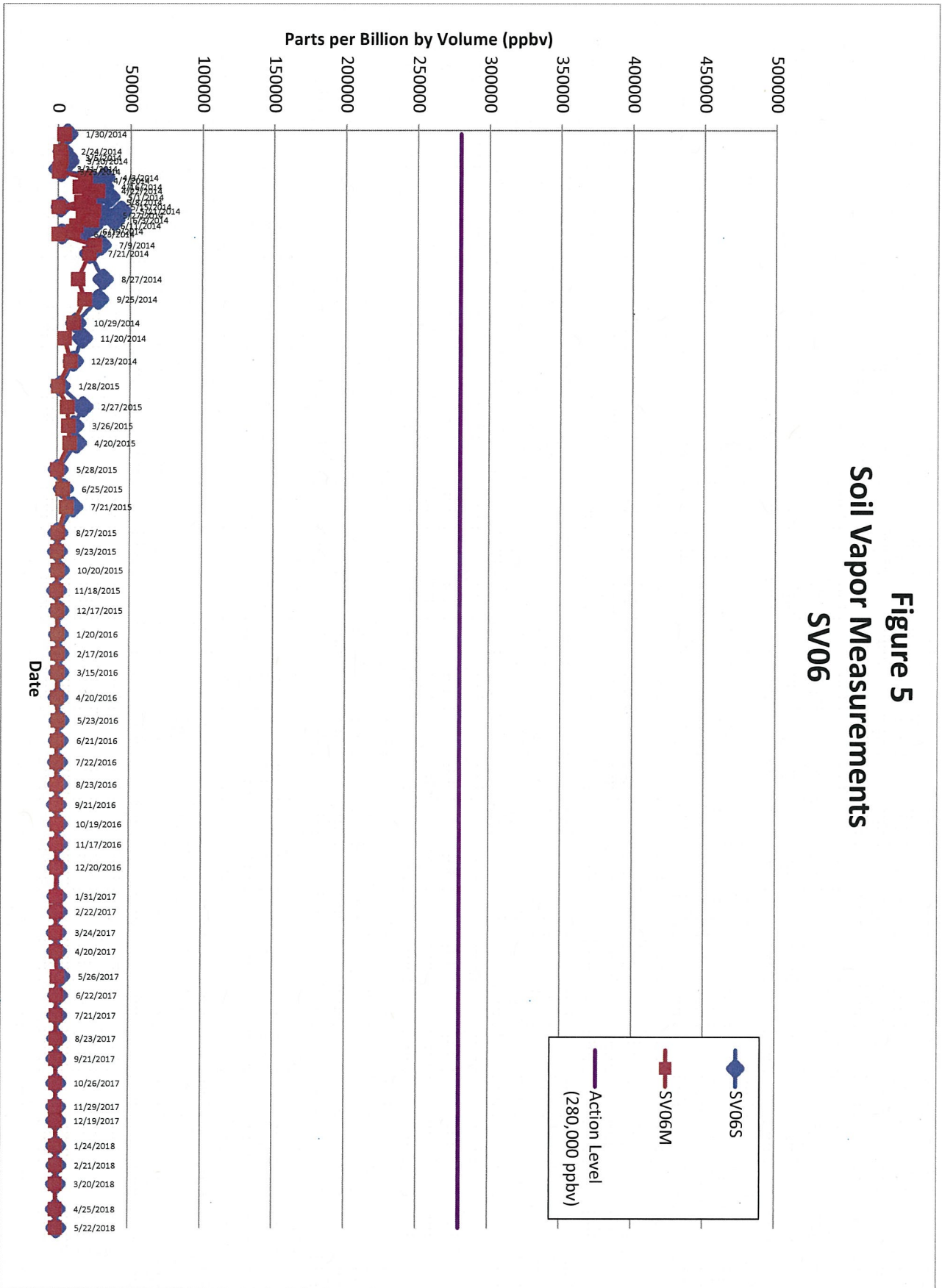


**Figure 3**  
**Soil Vapor Measurements**  
**SV04**

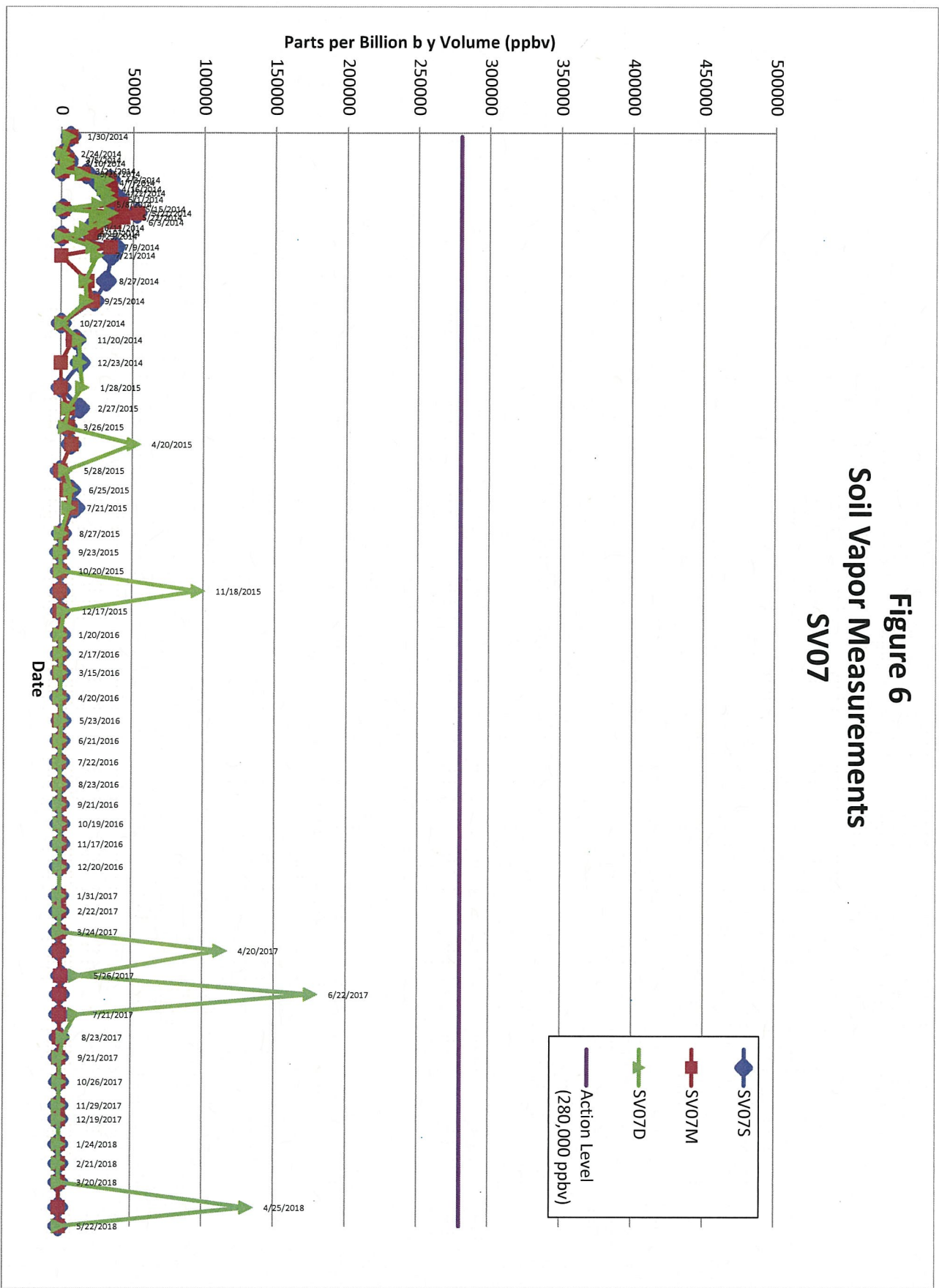




**Figure 5**  
**Soil Vapor Measurements**  
**SV06**



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





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

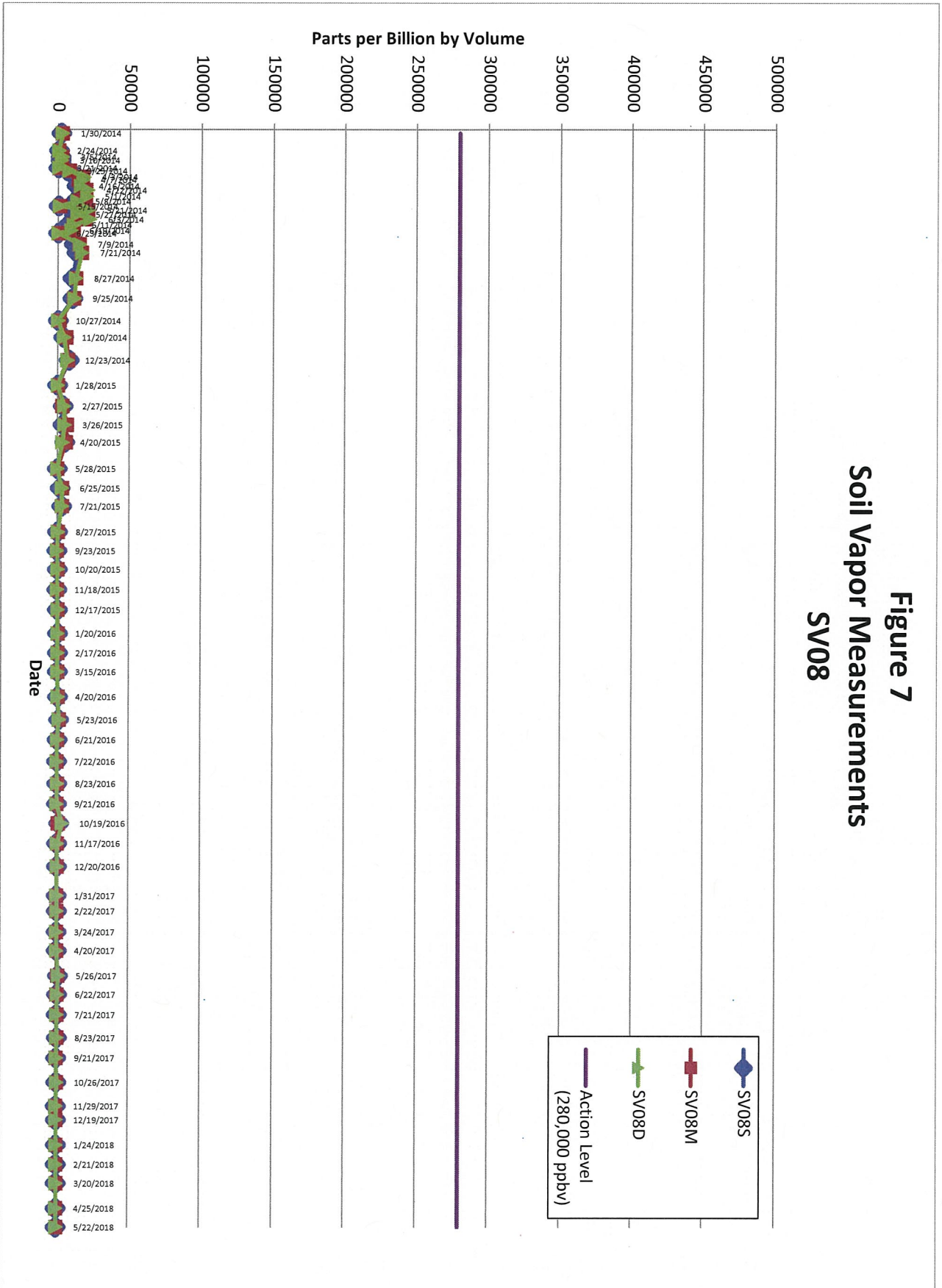
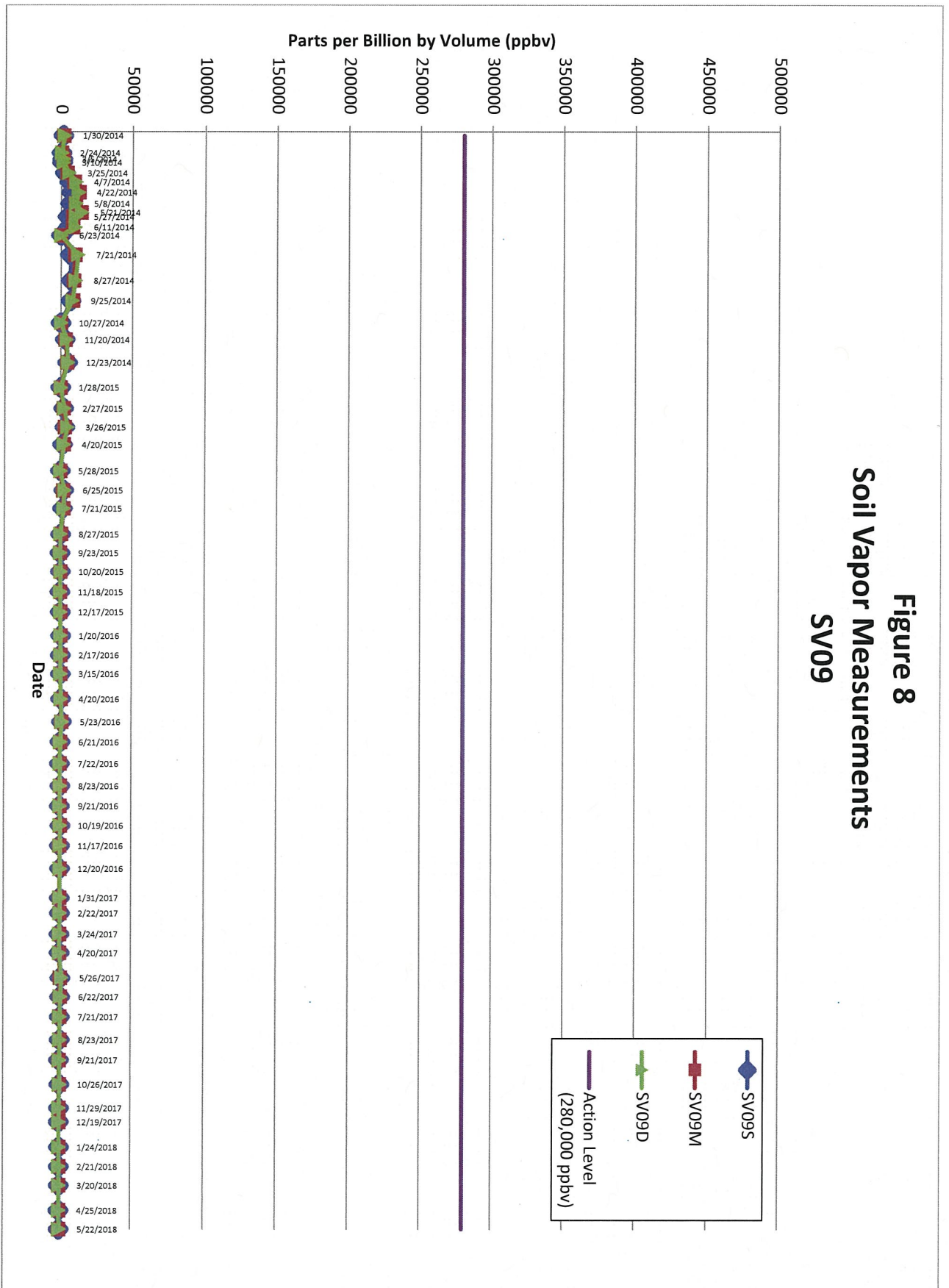
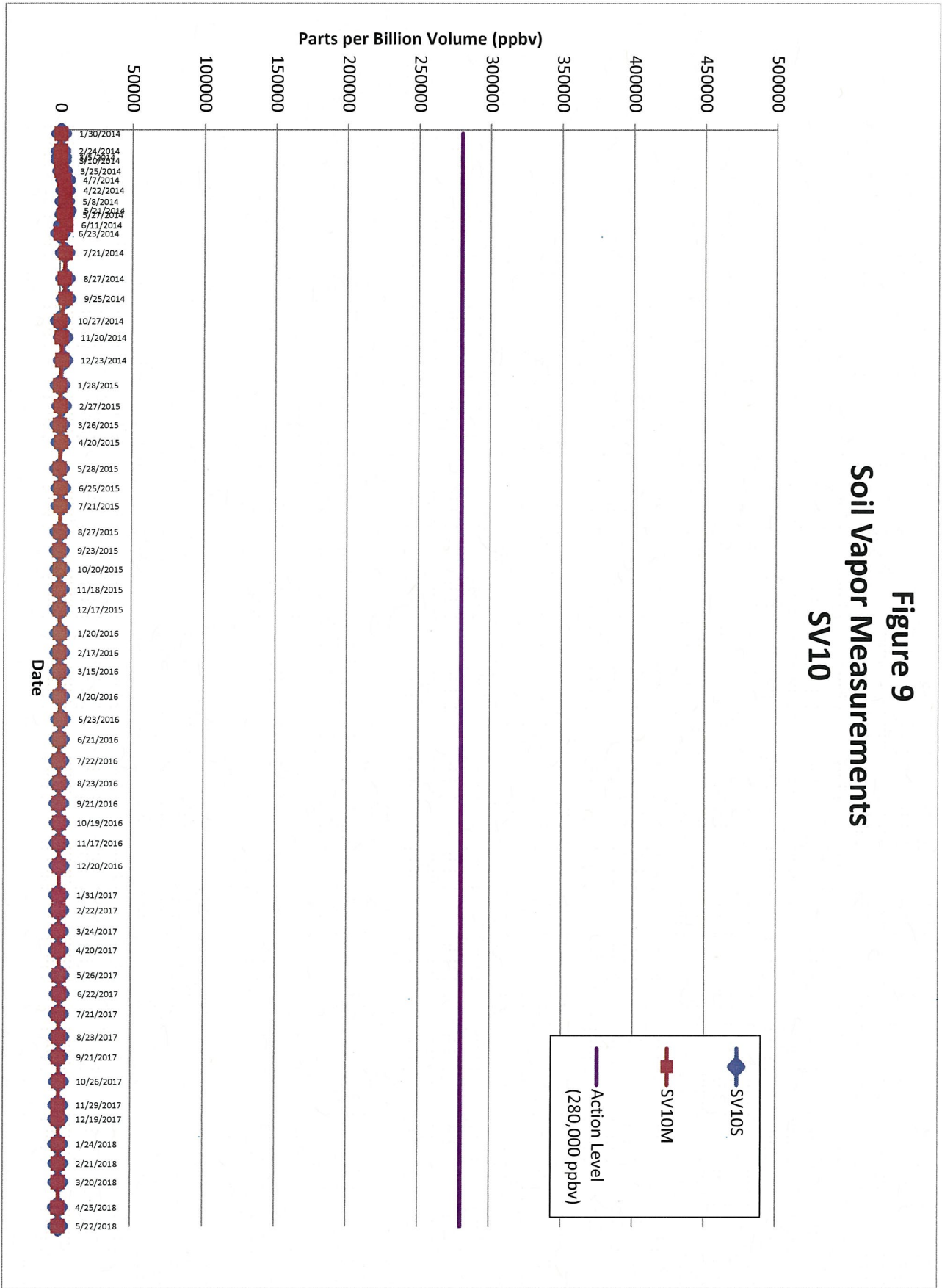




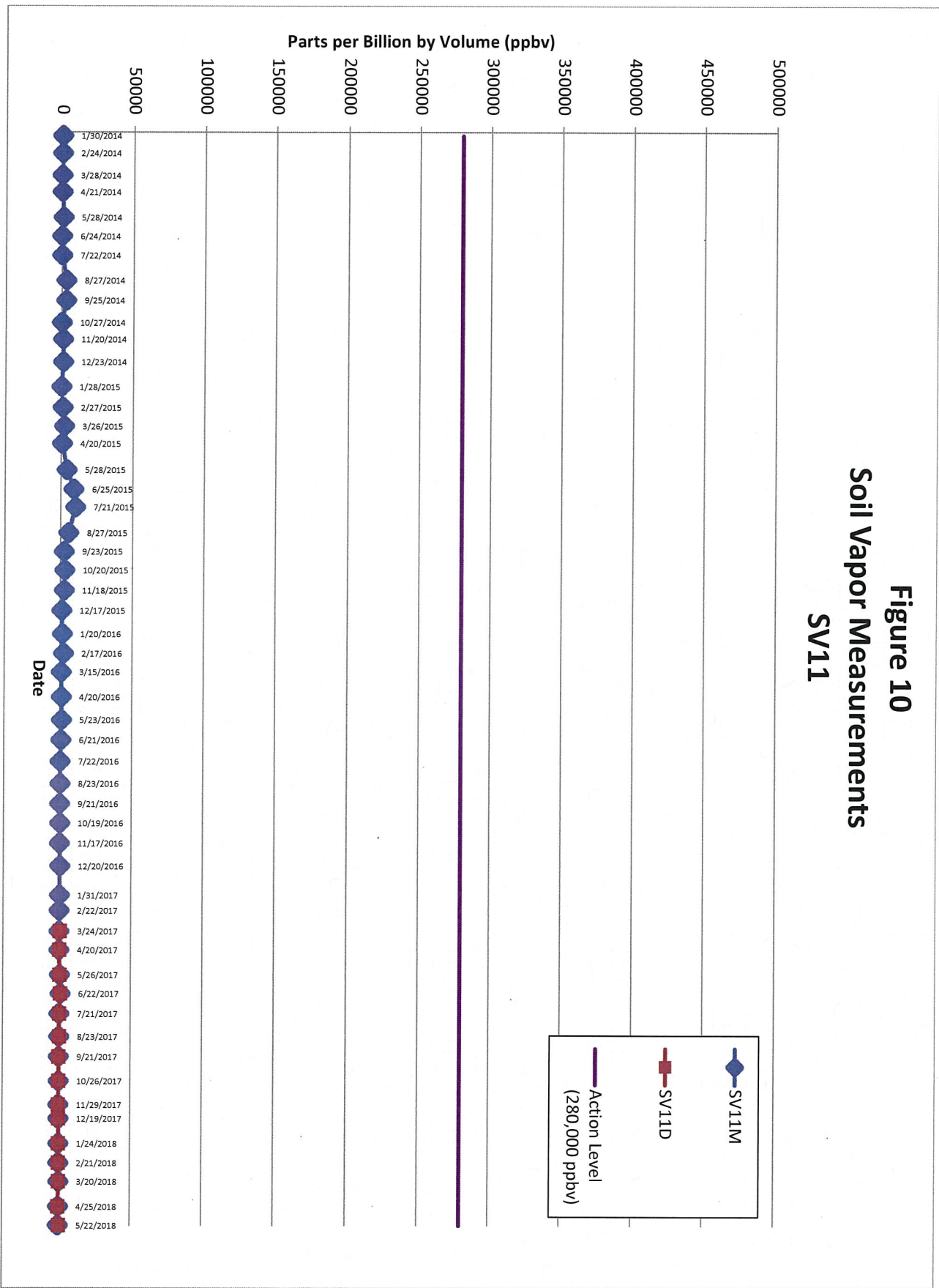
Figure 8  
Soil Vapor Measurements  
SV09



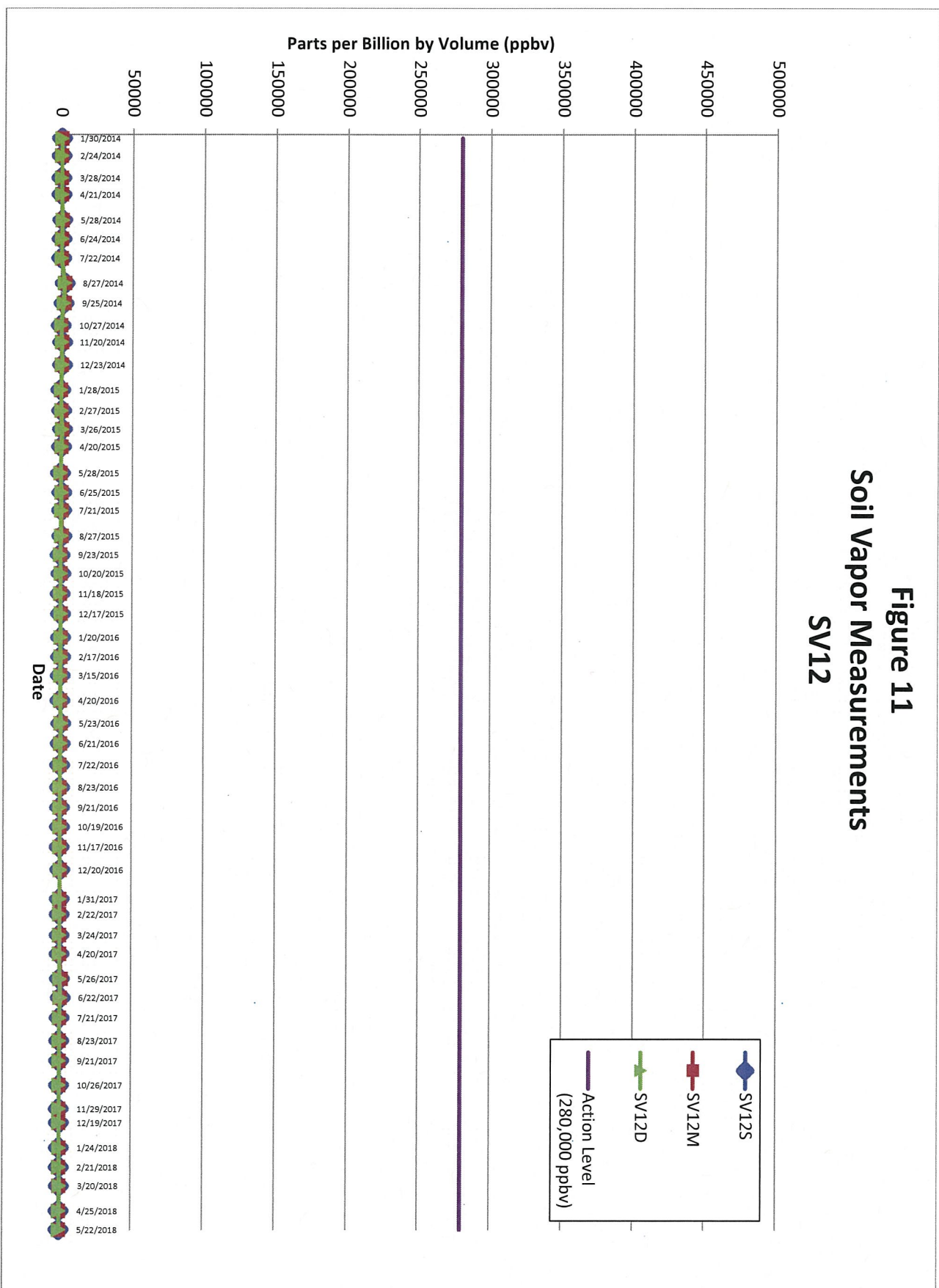
**Figure 9**  
**Soil Vapor Measurements**  
**SV10**



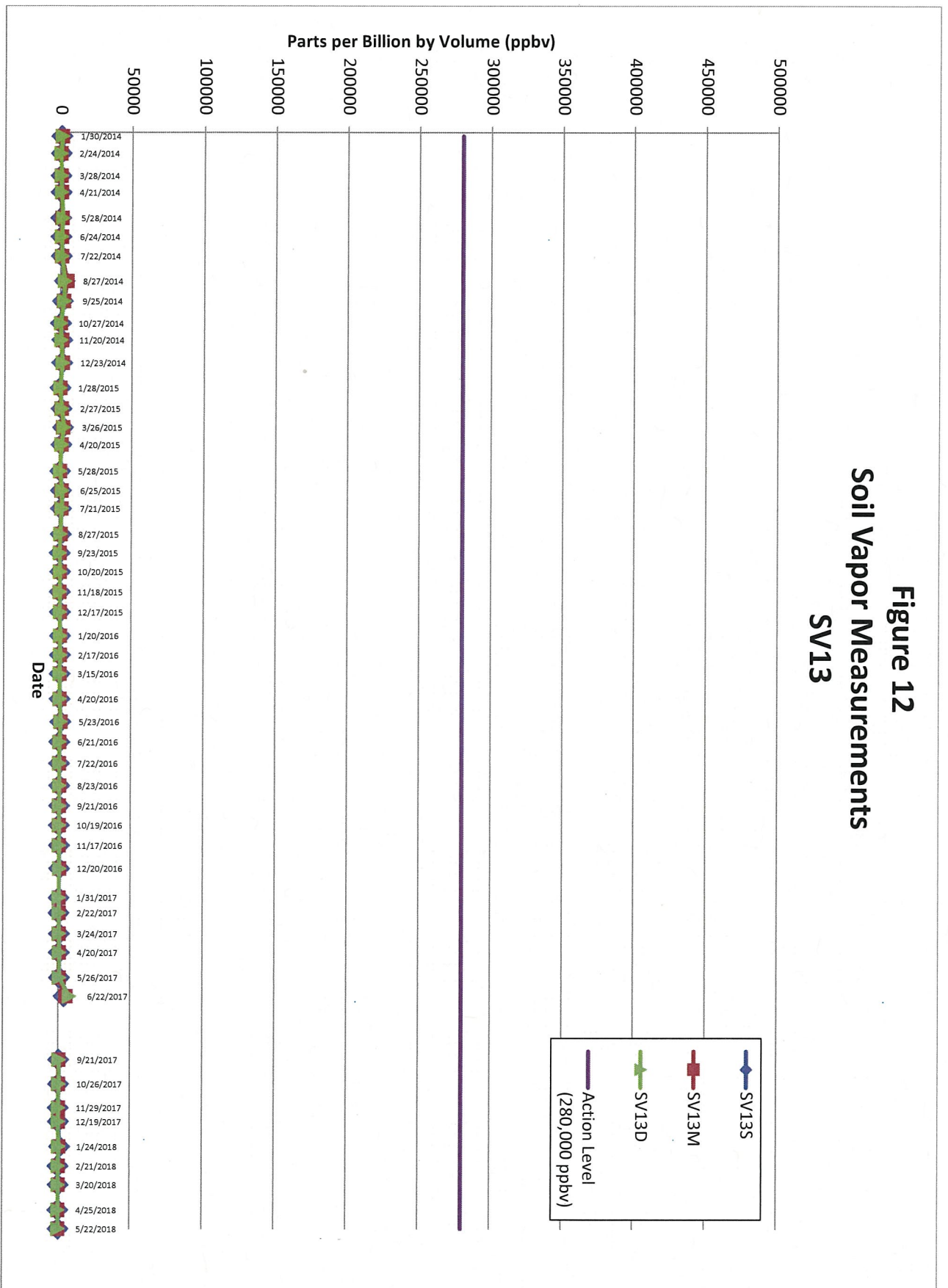
**Figure 10**  
**Soil Vapor Measurements**  
**SV11**



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

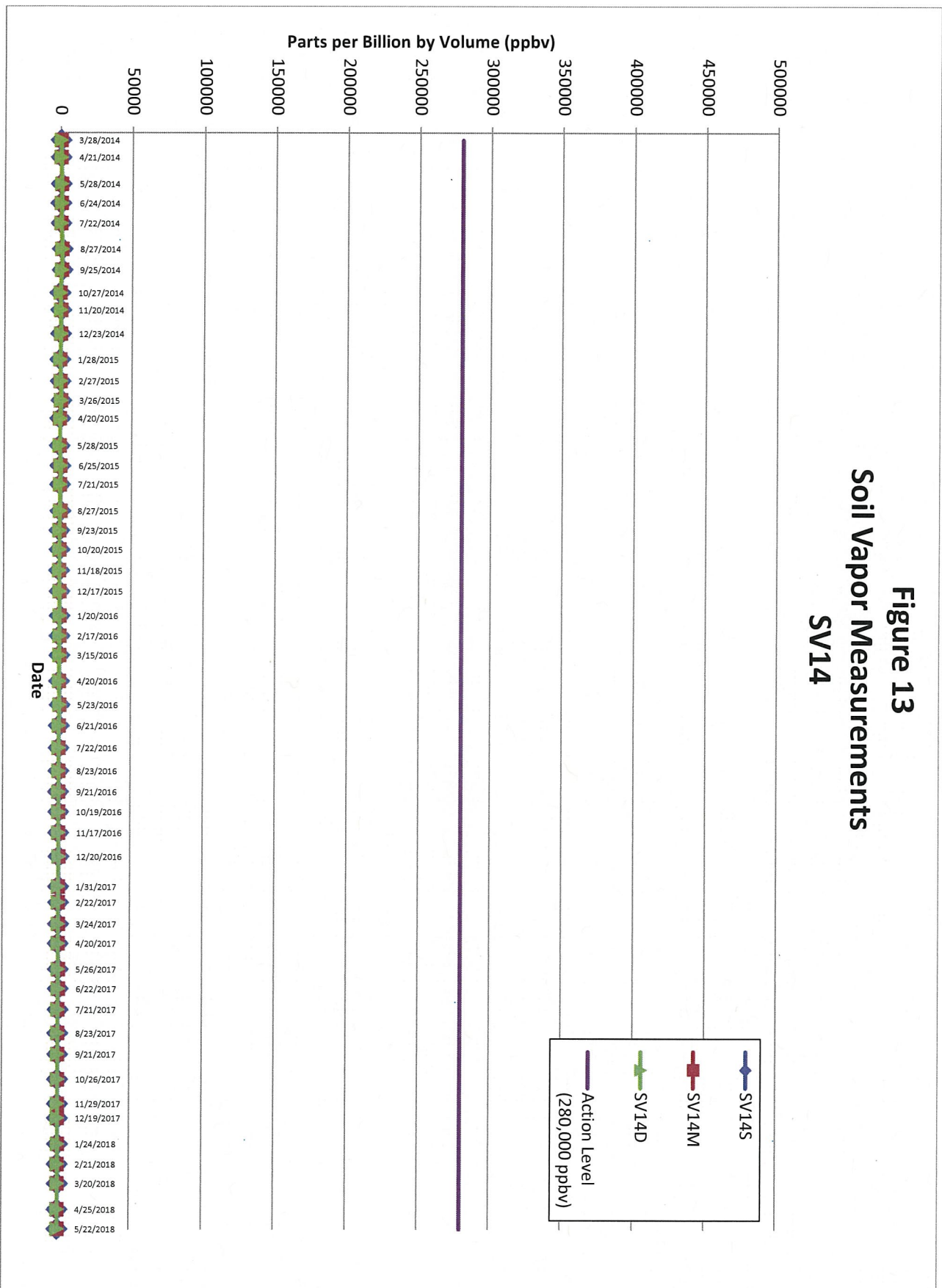


**Figure 12**  
**Soil Vapor Measurements**  
**SV13**

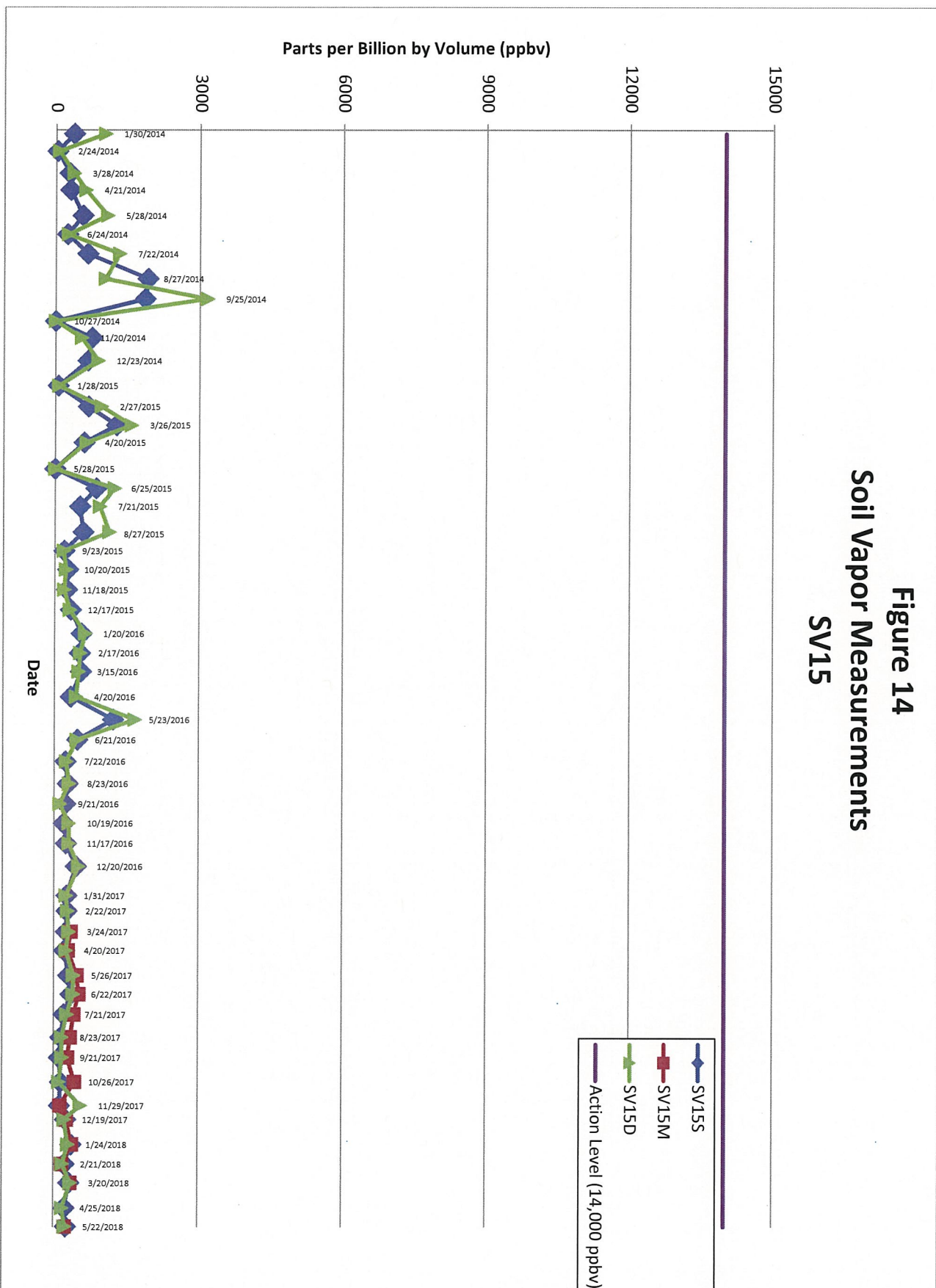




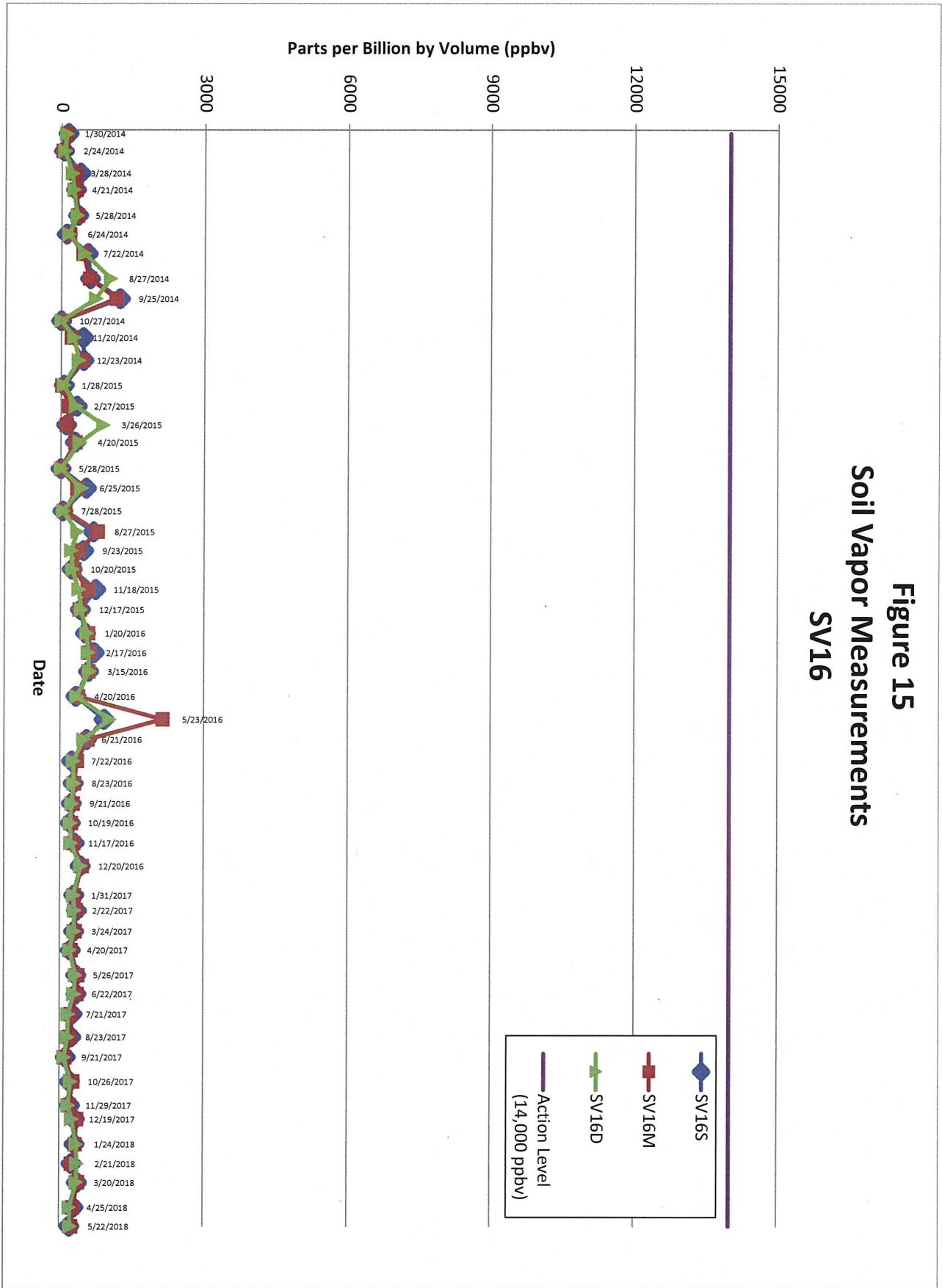
**Figure 13**  
**Soil Vapor Measurements**  
**SV14**



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



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



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

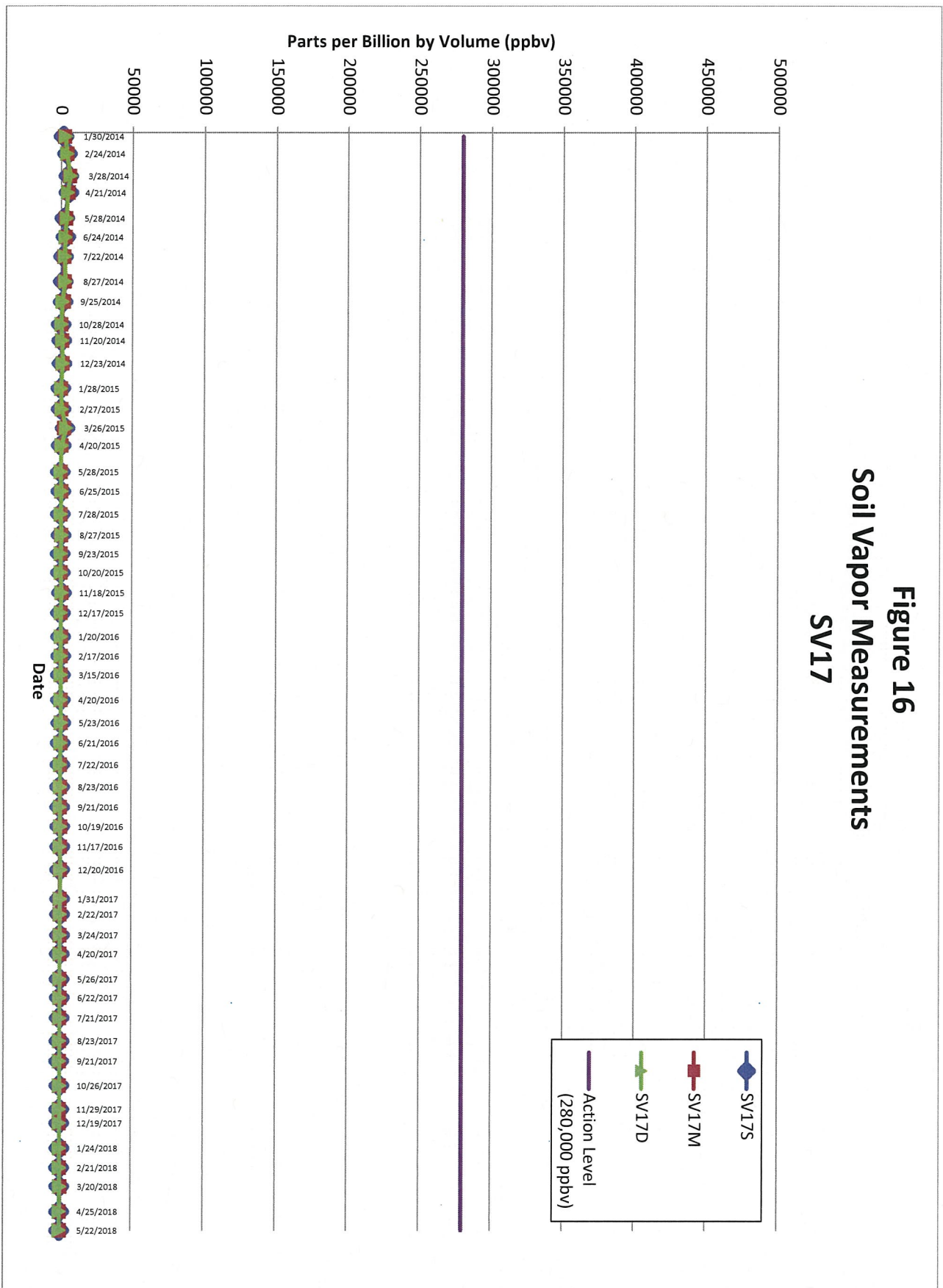
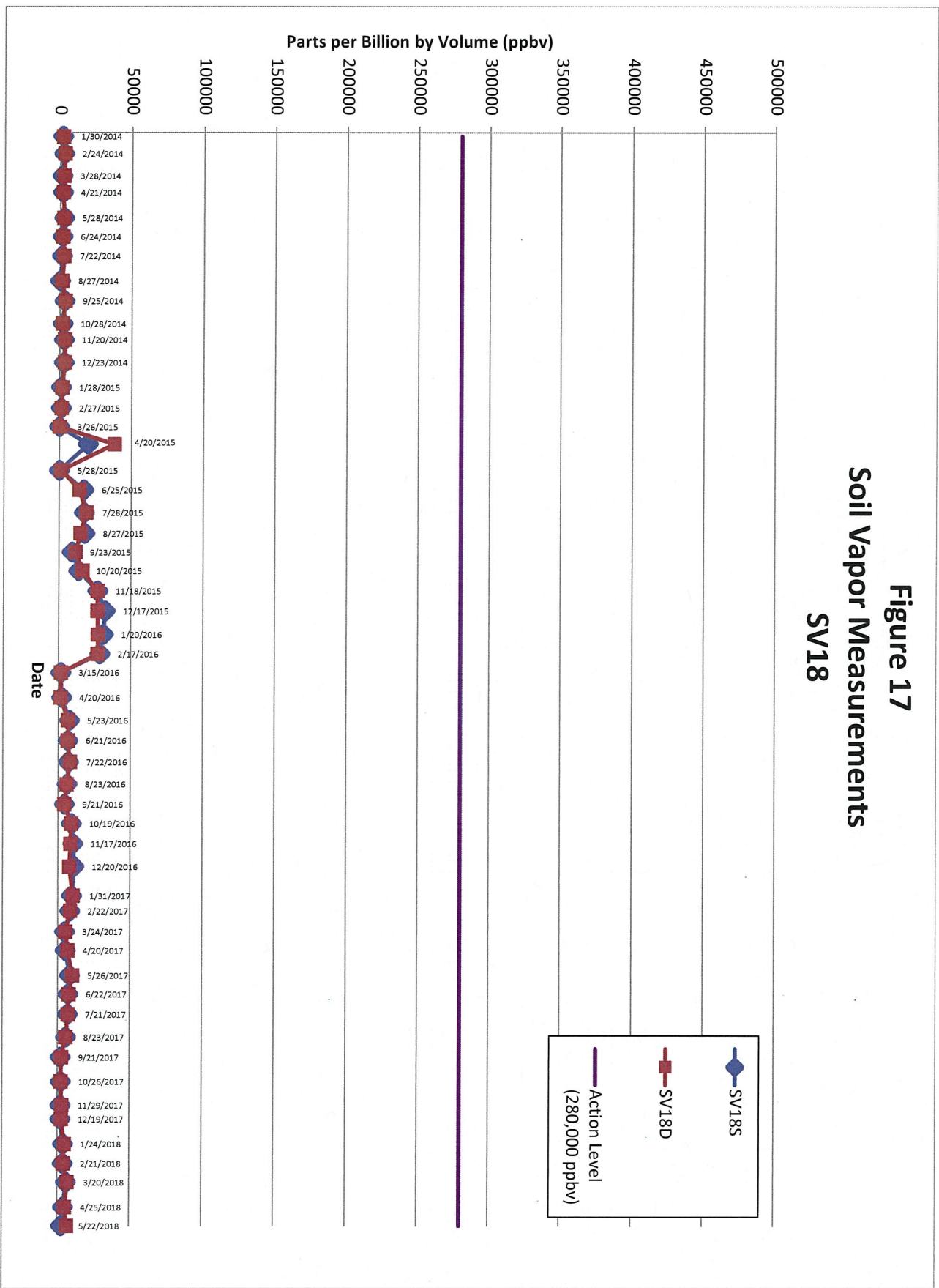
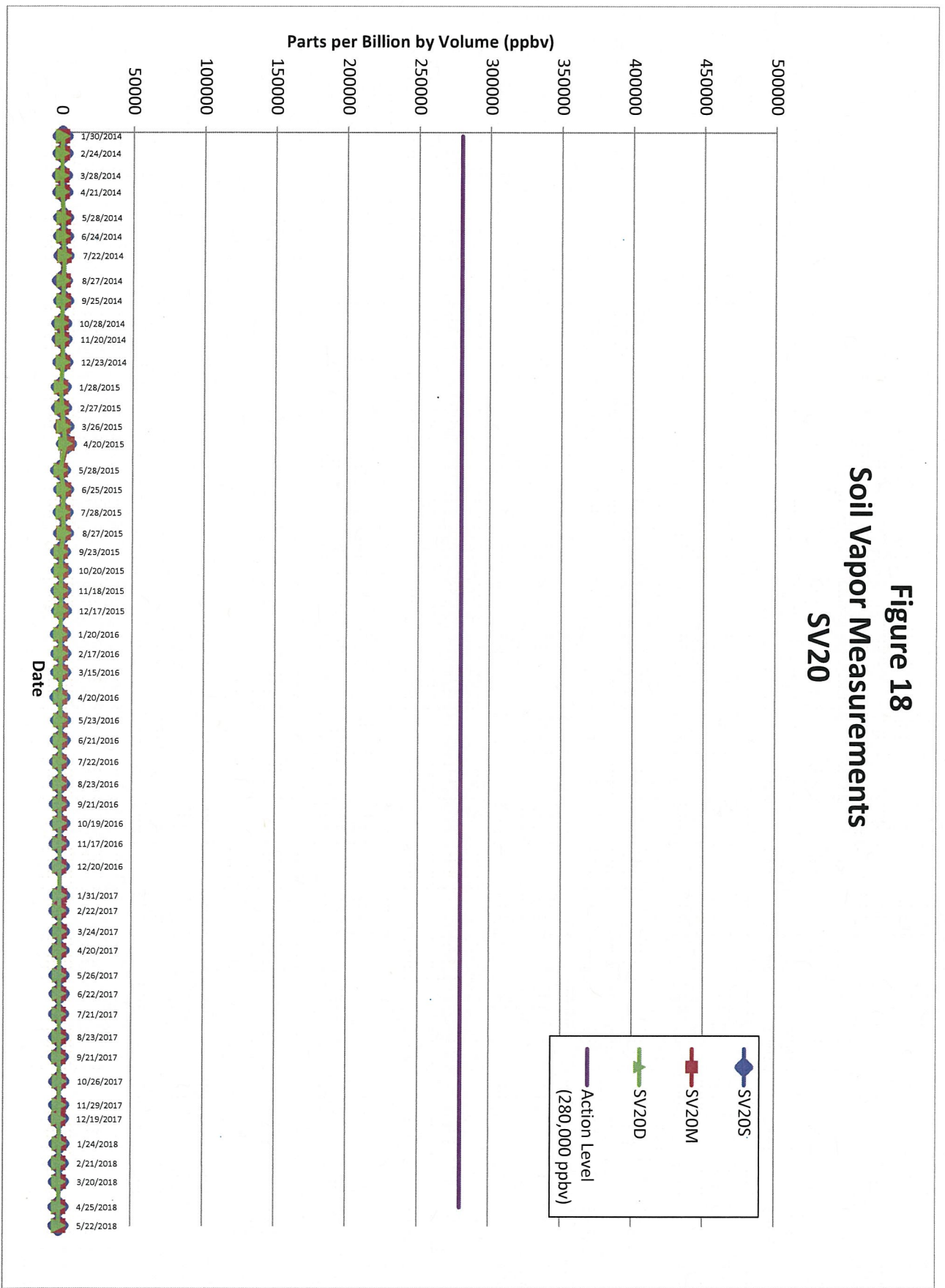


Figure 17  
Soil Vapor Measurements  
SV18





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



15 Jun 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 MAY 2018

Ref: (a) Red Hill Bulk Fuel Storage Facility Groundwater Protection Plan  
(b) Red Hill Soil Vapor Monitoring Report for Round 121, dtd 29 May 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:

- a. A strong increase in trends at tank 7
- b. Moderate increase in trend at tank 18
- c. A slight increase in slope trends at tanks 2, 3, 6, 8-11, 13, 14, 17 and 20

2. FLCPH causative research and findings:

- a. Reviewed all AFHE Unscheduled Fuel Movement (UFM) Alarm Summaries and UFM Reports. There were 5 UFM alarms recorded for the month of May 2018; 4 alarms were caused by AFHE error and 1 alarm was caused by operator error:

14 May 18 – tank 16 - AFHE Error

22 May 18 – tank 16 – operator error. Input for the evolution source tank was incorrect

23 May 18 – tank 02 - AFHE Error

23 May 18 – tank 02 - AFHE Error

25 May 18 – tank 16 - AFHE Error

A senior Systems Analyst is currently on-site correcting the problem of the system errors.

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

FLOYD.JOHN.LE  
WIS.1064149357  
JOHN FLOYD

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ou=US, o=U.S. Government, ou=DOD, ou=PKI  
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**ENCLOSURE(2)**