



DEPARTMENT OF THE NAVY

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

JUN 27 2019 ~~HA~~

5090  
Ser N45/0575  
June 27, 2019

**CERTIFIED NO: 7018 0040 0001 0225 9869**

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

Dear Mr. Takaba:

SUBJECT: RED HILL TANK COMPLEX  
SOIL VAPOR SAMPLING RESULTS FOR MAY 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 May 23, 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.

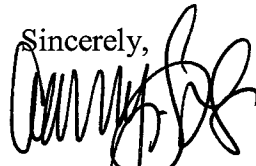
At Tank 5, the concentrations of VOCs detected in the front, middle, and outer edge soil vapor monitoring probes were 586 ppbv, 4,513 ppbv, and 7,026 ppbv, respectively. Tank 5 was emptied in January 2014 and has not contained fuel since that time. VOC concentrations in all down-gradient soil vapor monitors were below 430 ppbv.

All other VOC concentrations measured in May were about 38 to 955 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 2019, 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.

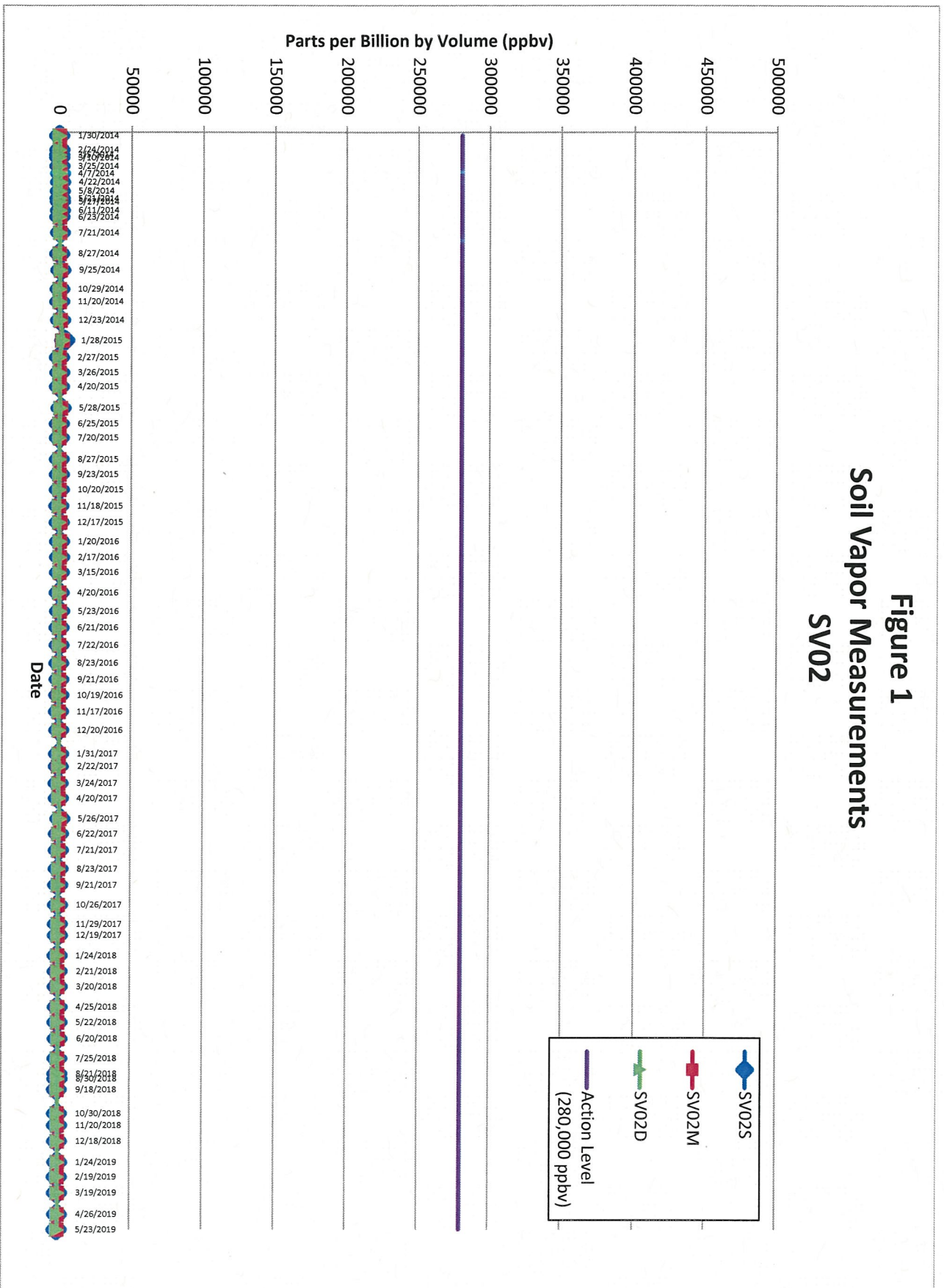
Sincerely,  


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

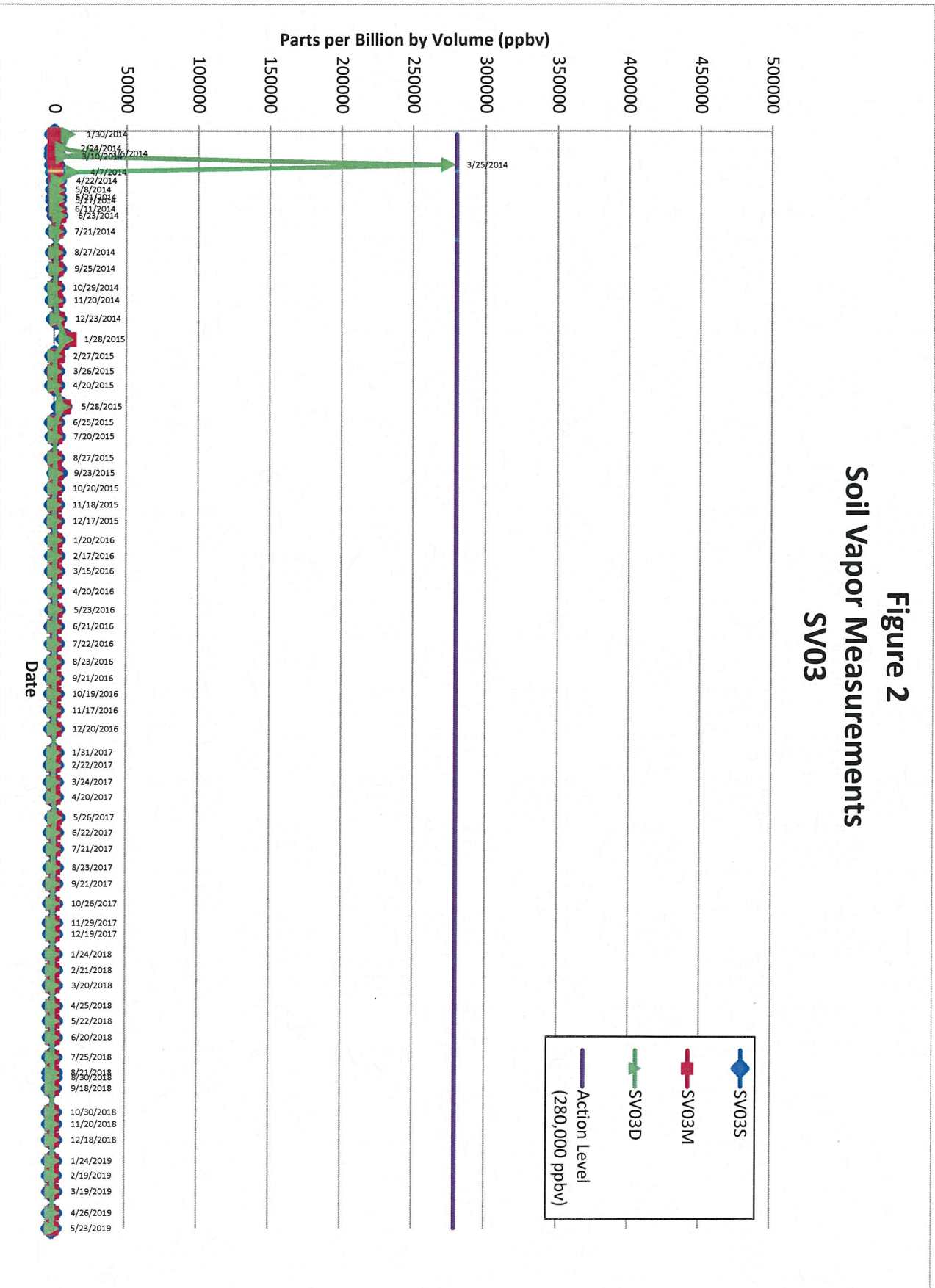
- Enclosures: 1. Summary of Soil Vapor Sampling Results for Tanks 2 through 18 and 20 through May 2019 (18 pages)  
2. NAVSUP FLC Pearl Harbor Causative Research Report IRT Red Hill Soil Vapor Monitoring Report for May 2019

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**

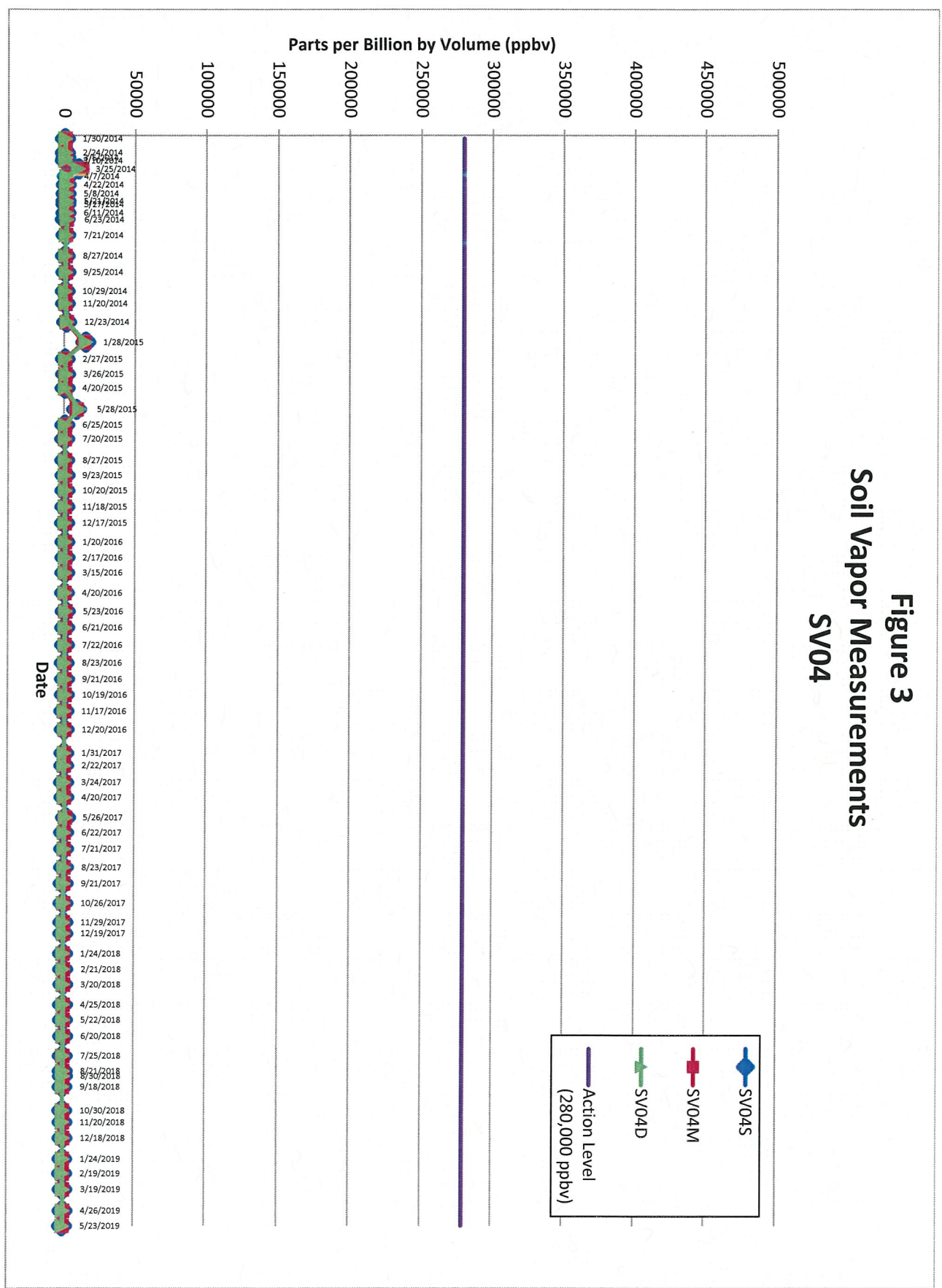


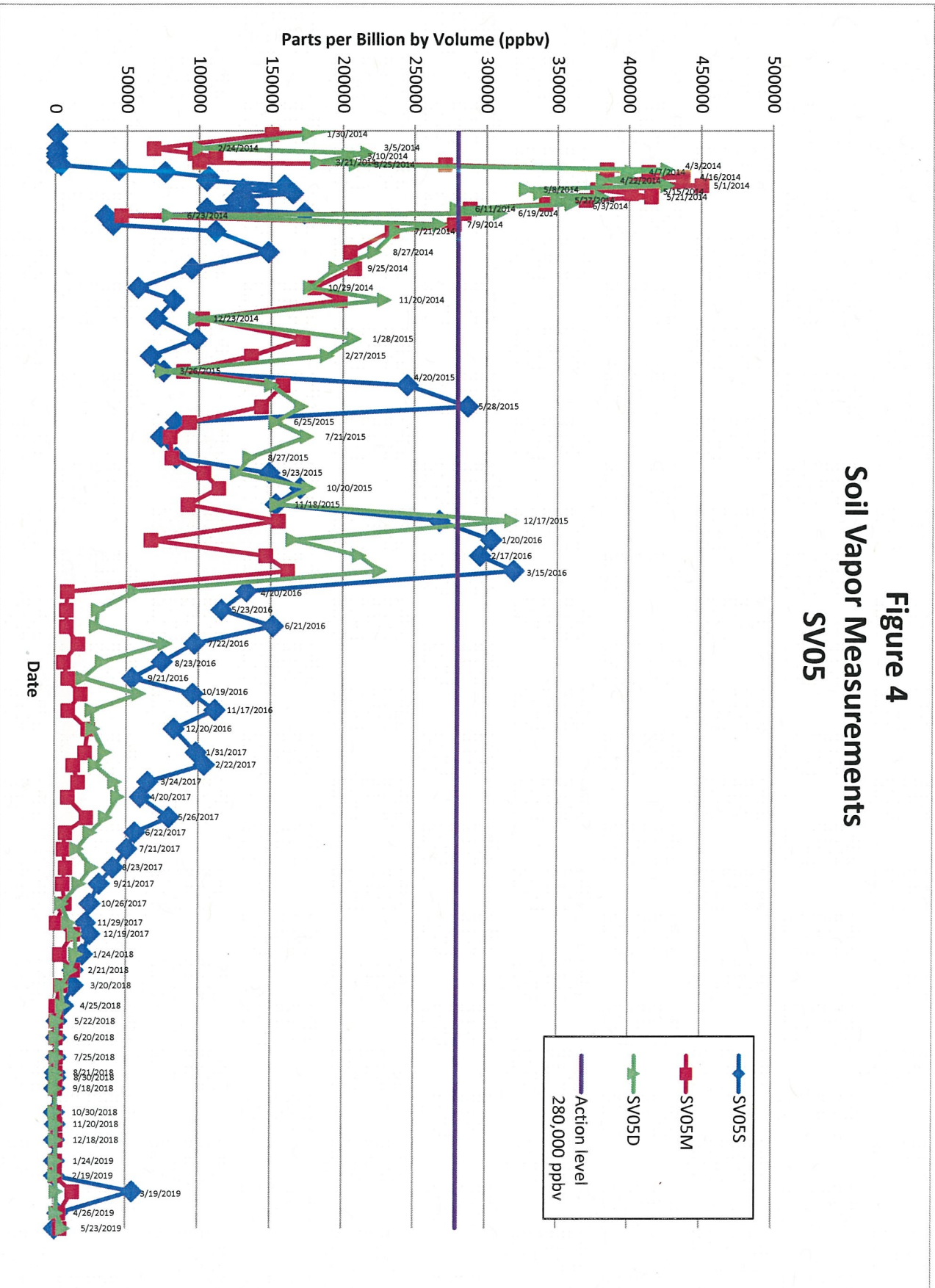
ENCLOSURE( | )



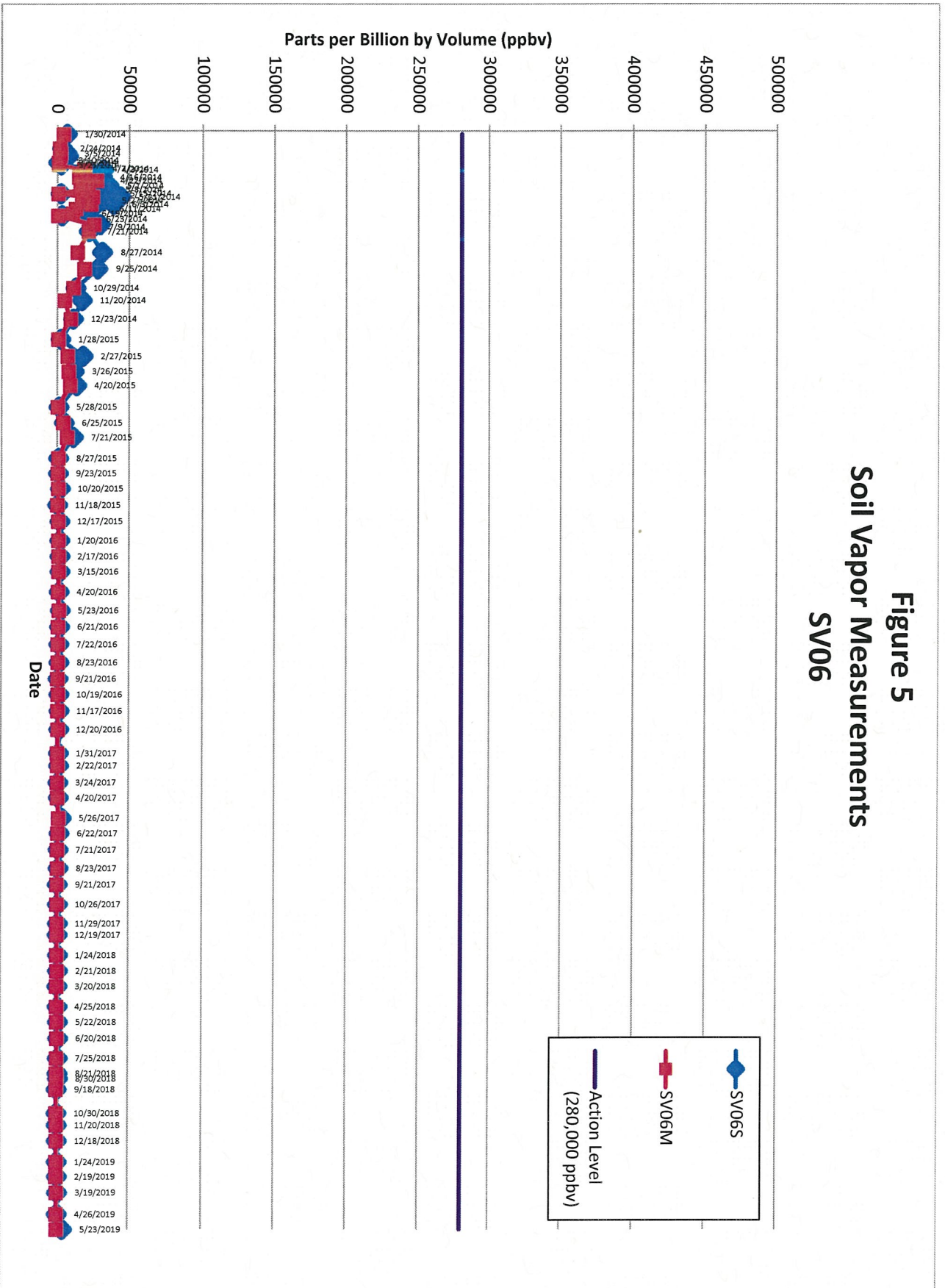
**Figure 2**  
**Soil Vapor Measurements**  
**SV03**

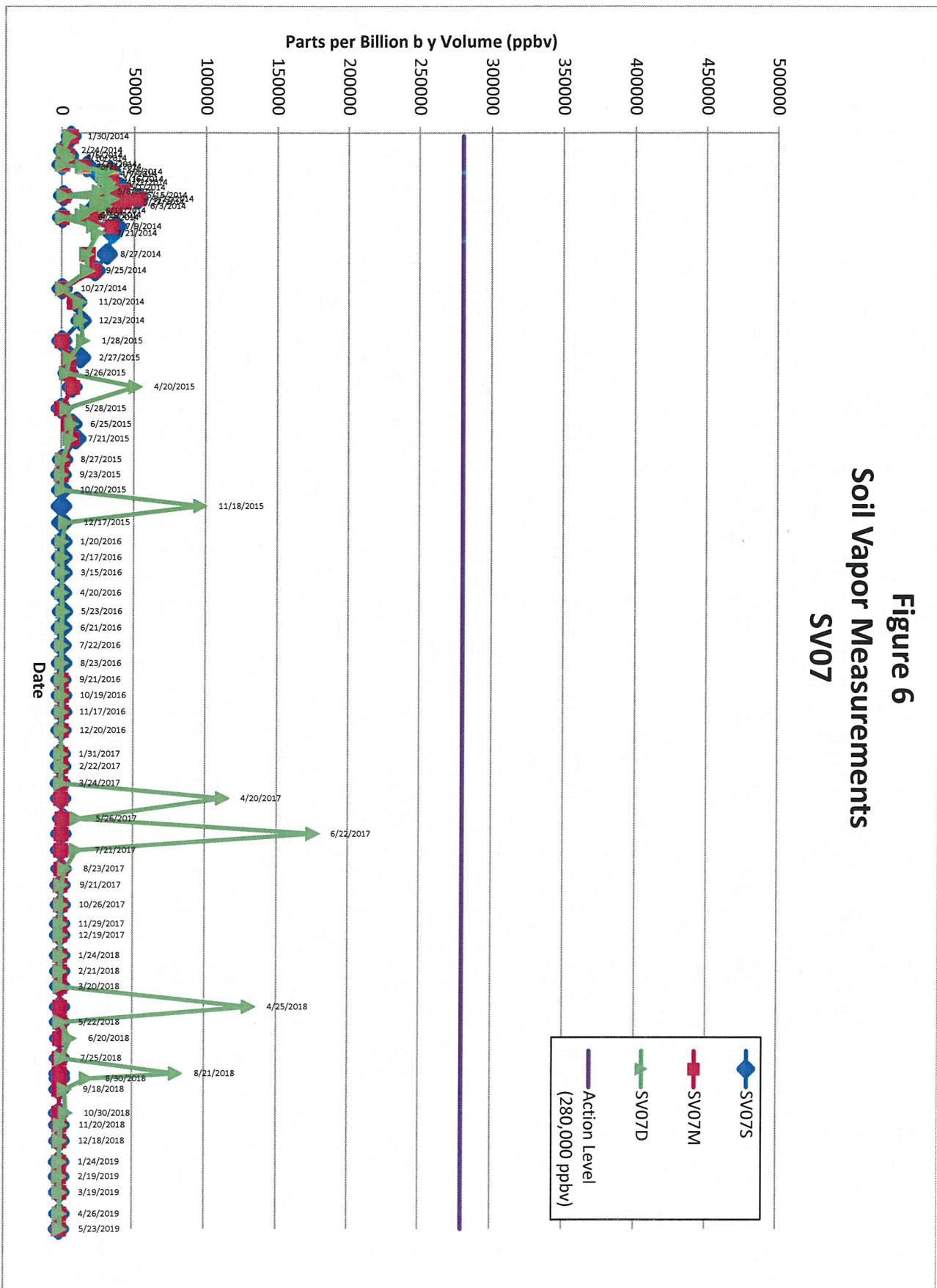
**Figure 3**  
**Soil Vapor Measurements**  
**SV04**





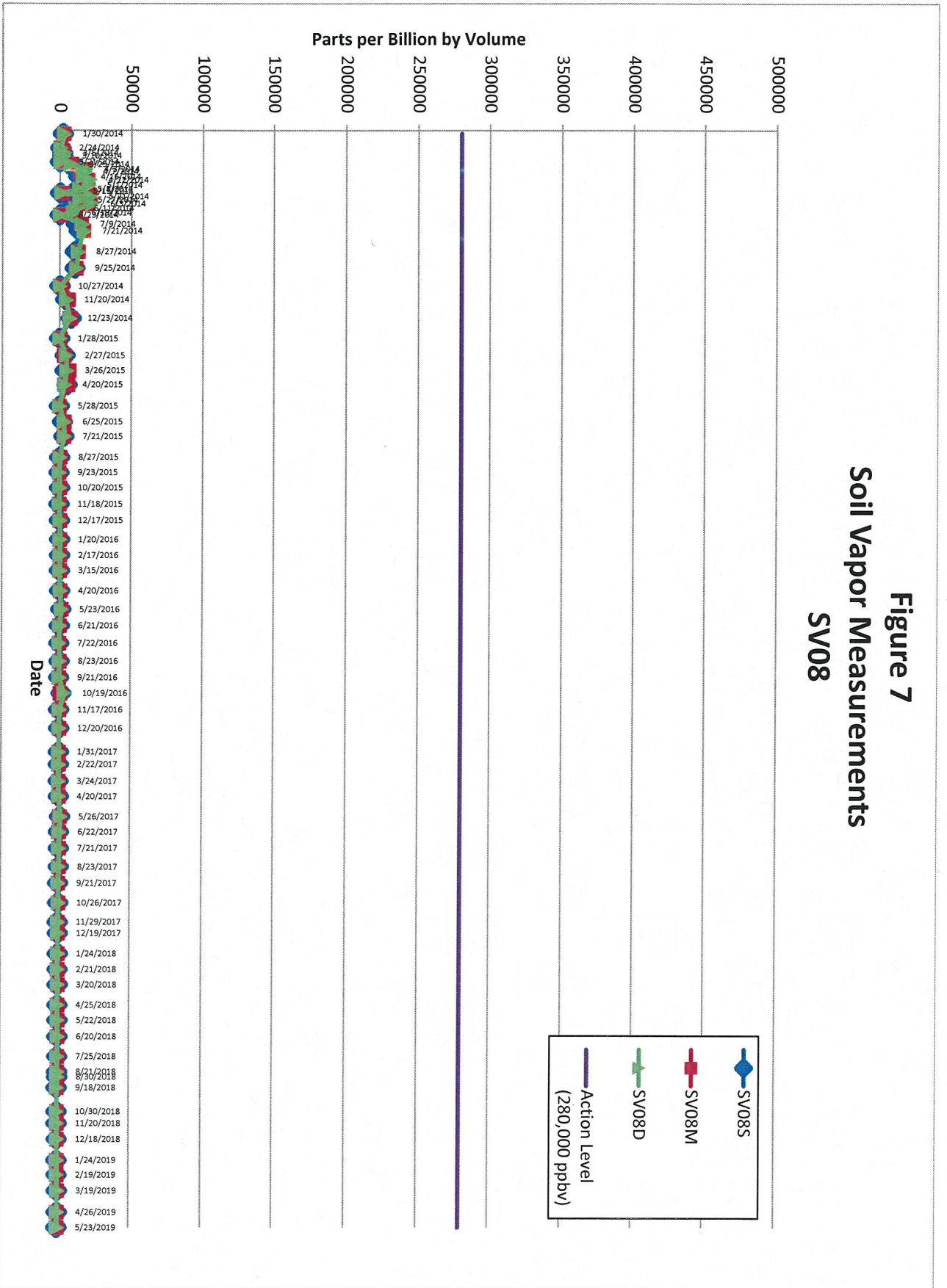
**Figure 5**  
**Soil Vapor Measurements**  
**SV06**



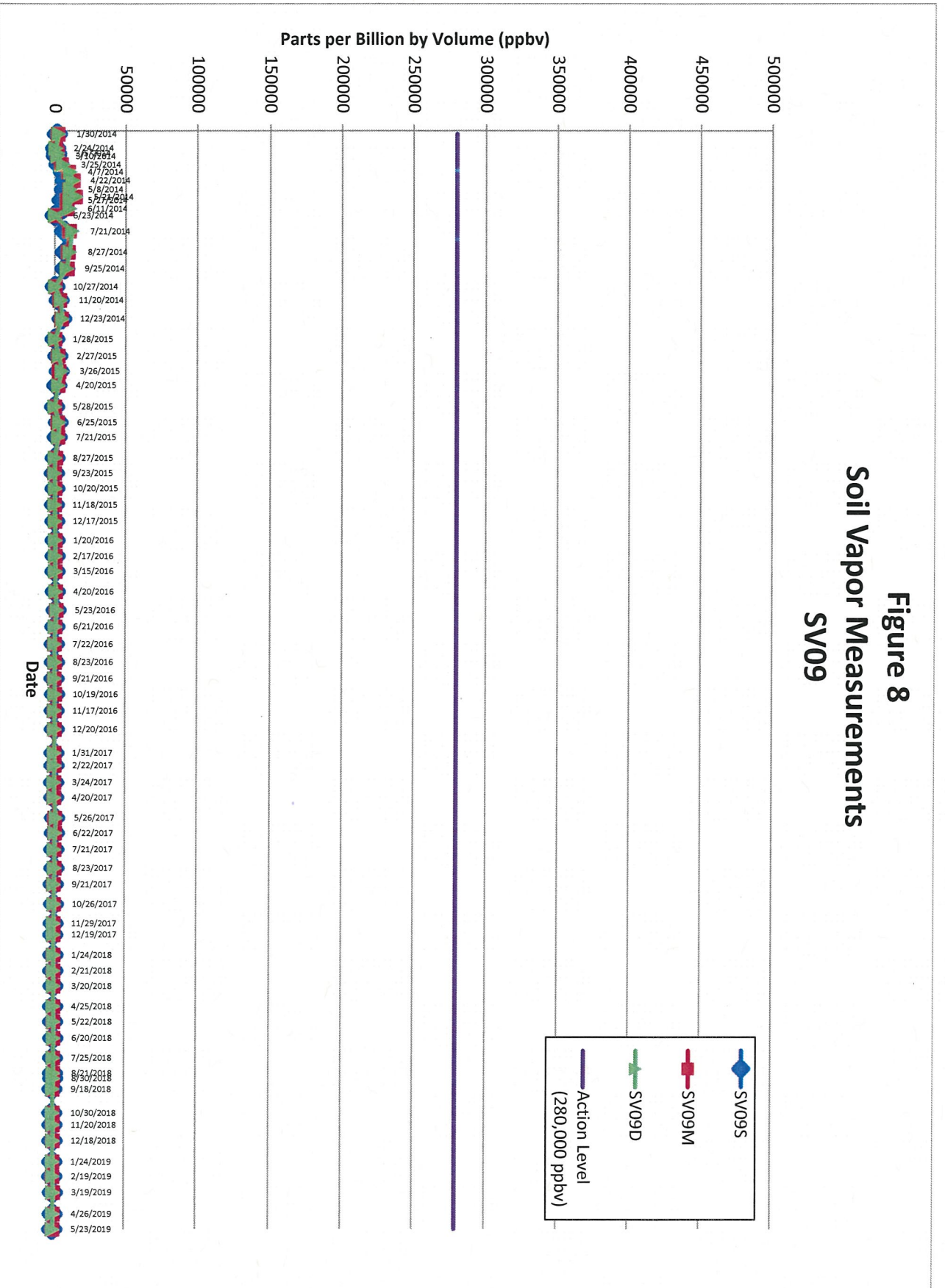




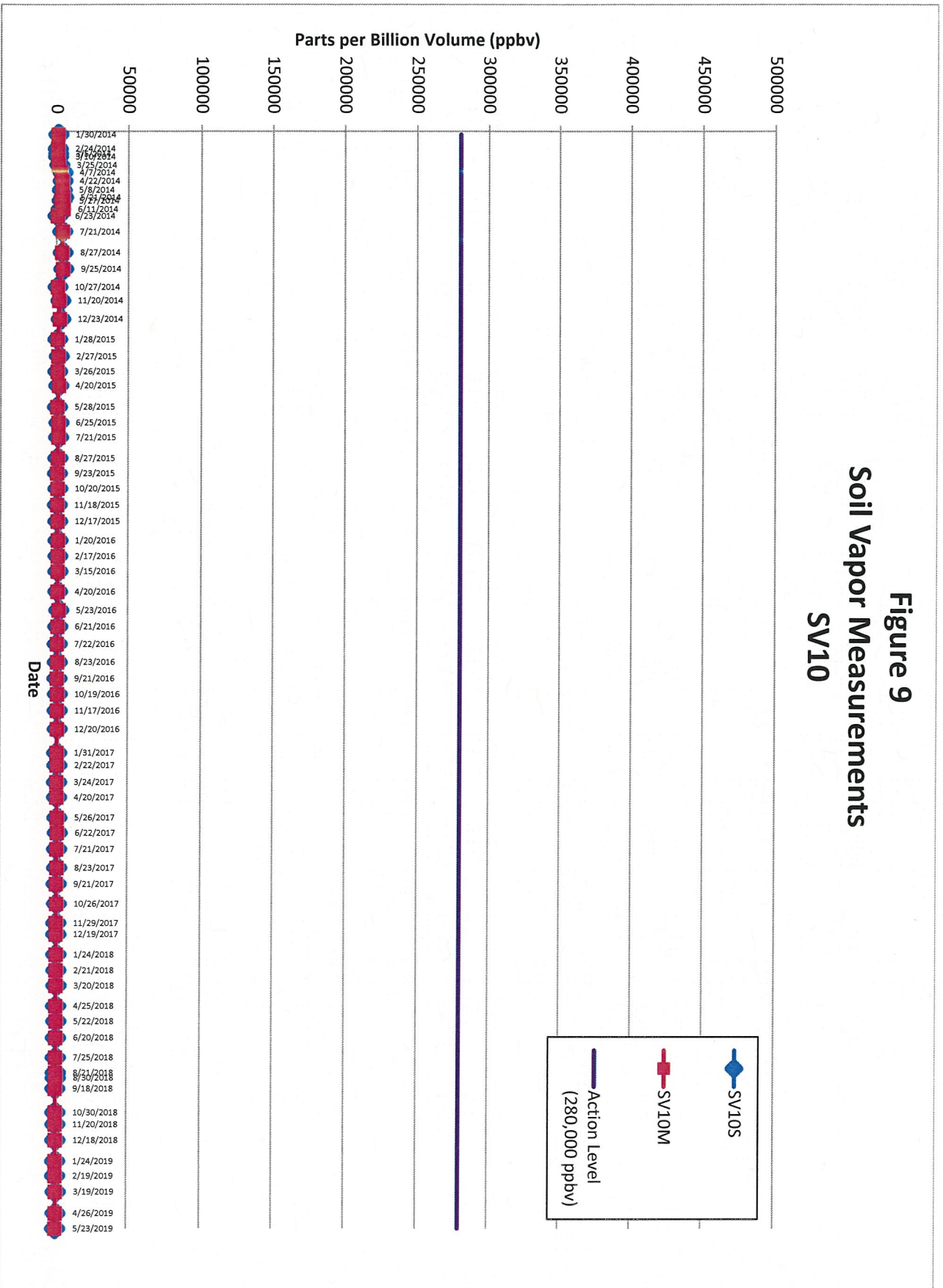
**Figure 7**  
**Soil Vapor Measurements**  
**SV08**



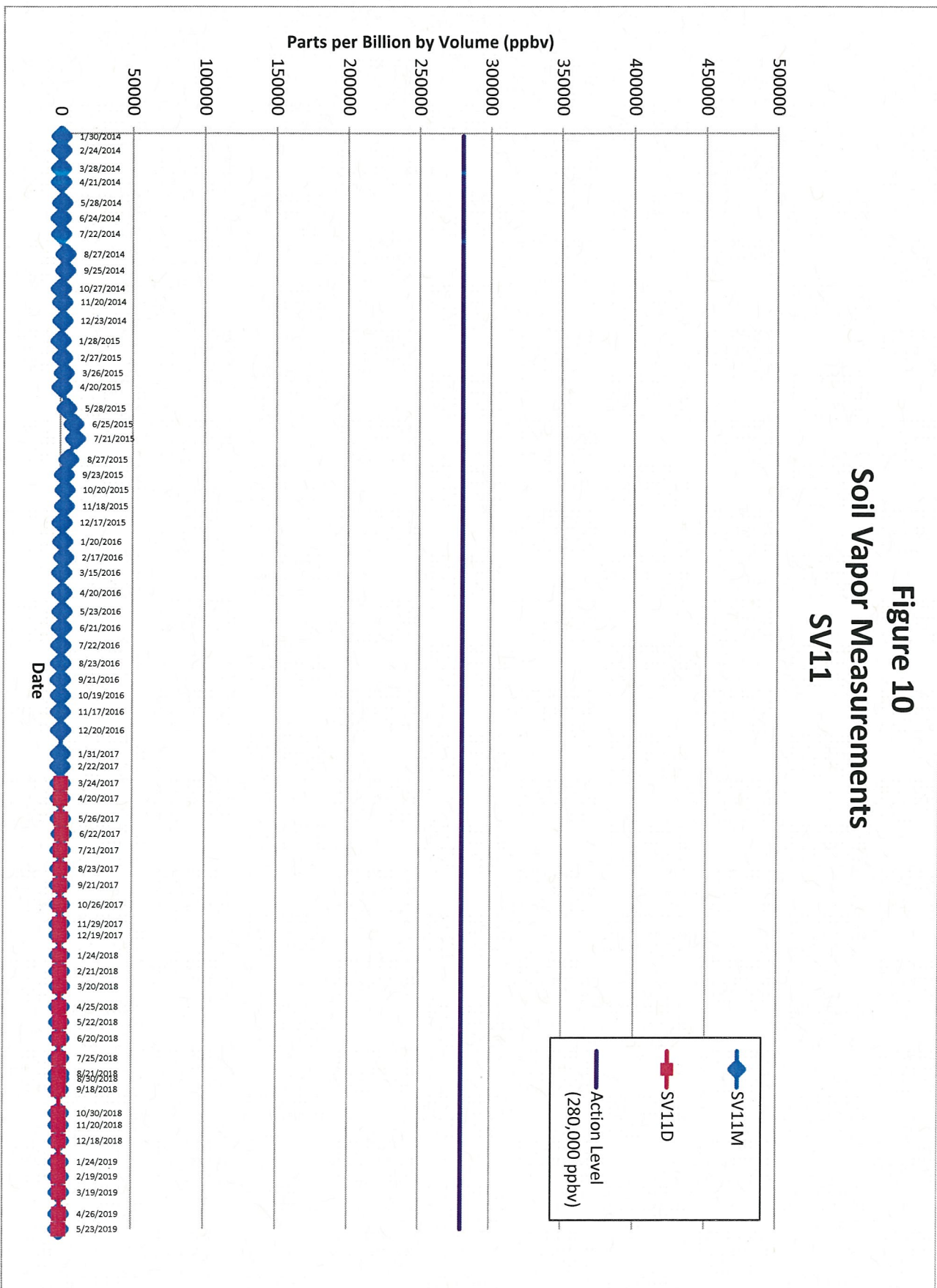
**Figure 8**  
**Soil Vapor Measurements**  
**SV09**



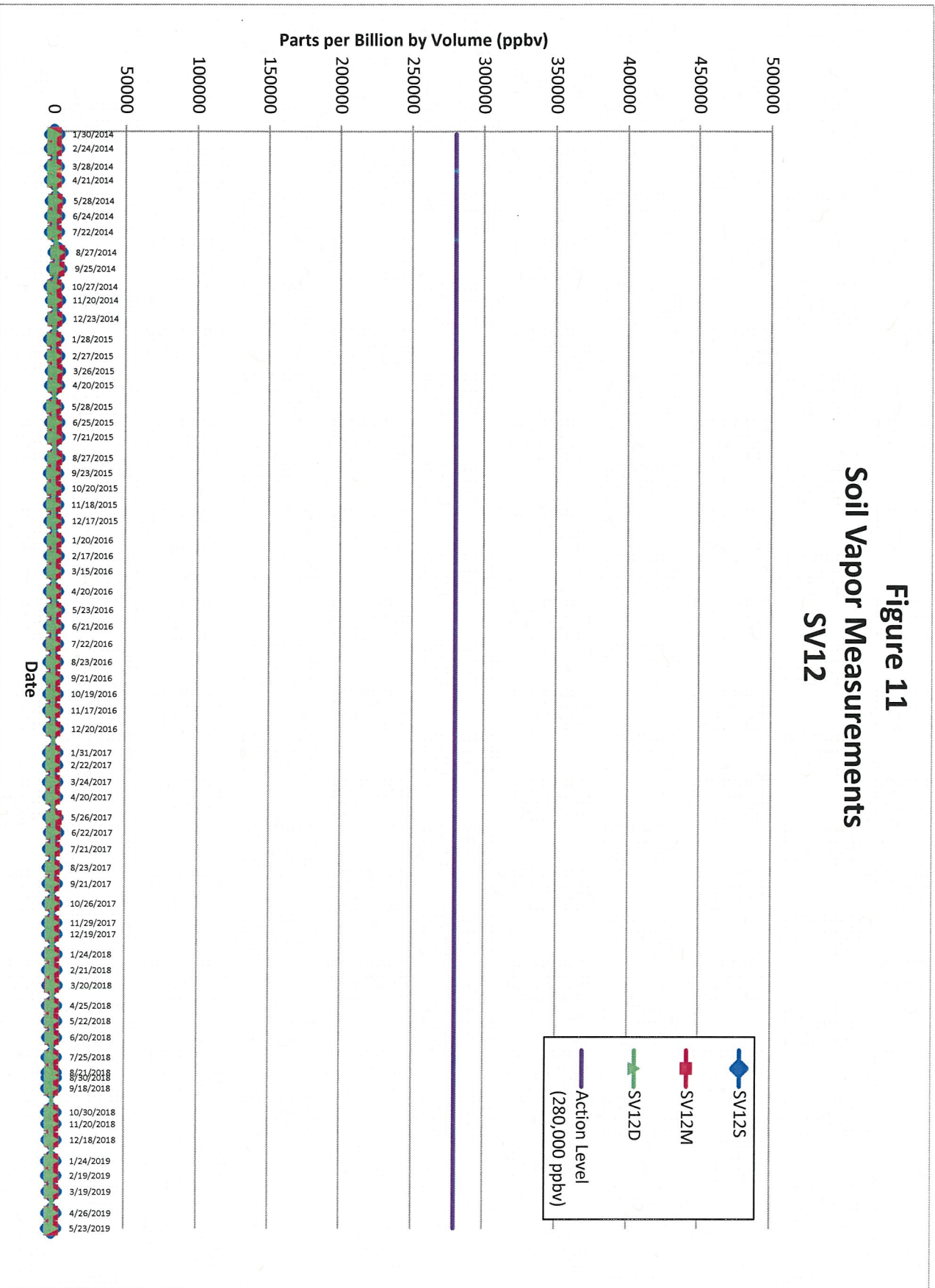
**Figure 9**  
**Soil Vapor Measurements**  
**SV10**



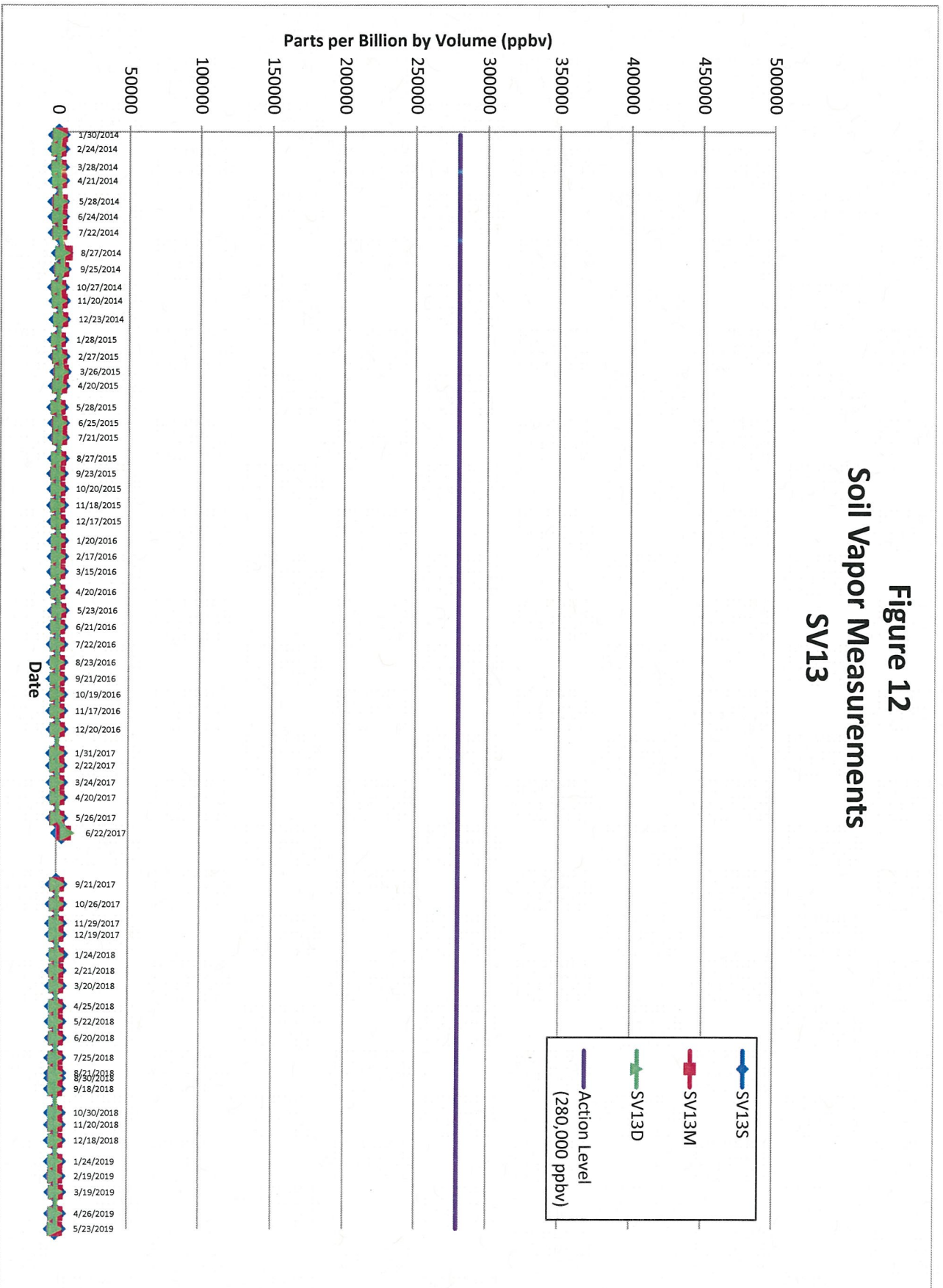
**Figure 10**  
**Soil Vapor Measurements**  
**SV11**



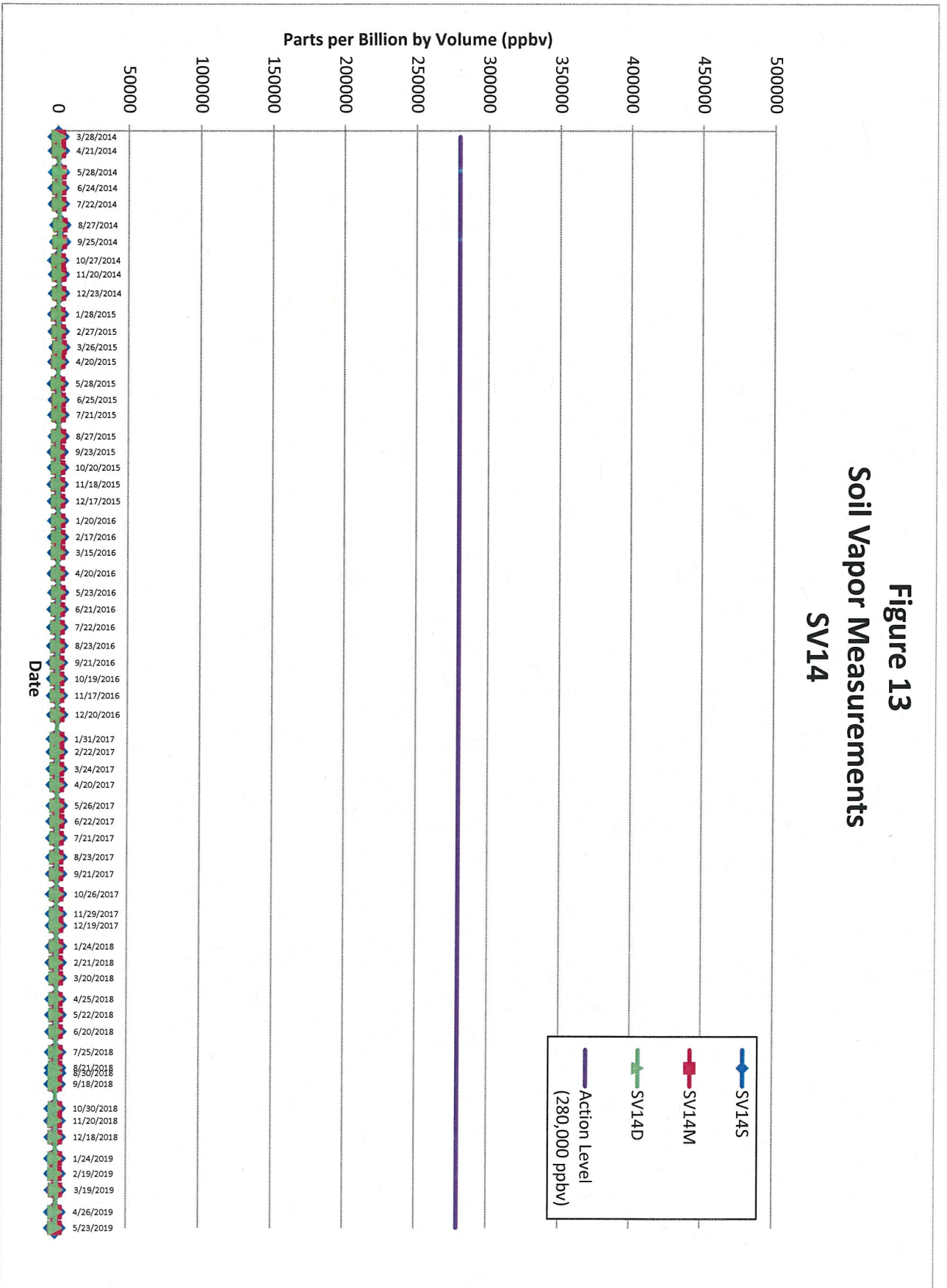
**Figure 11**  
**Soil Vapor Measurements**  
**SV12**

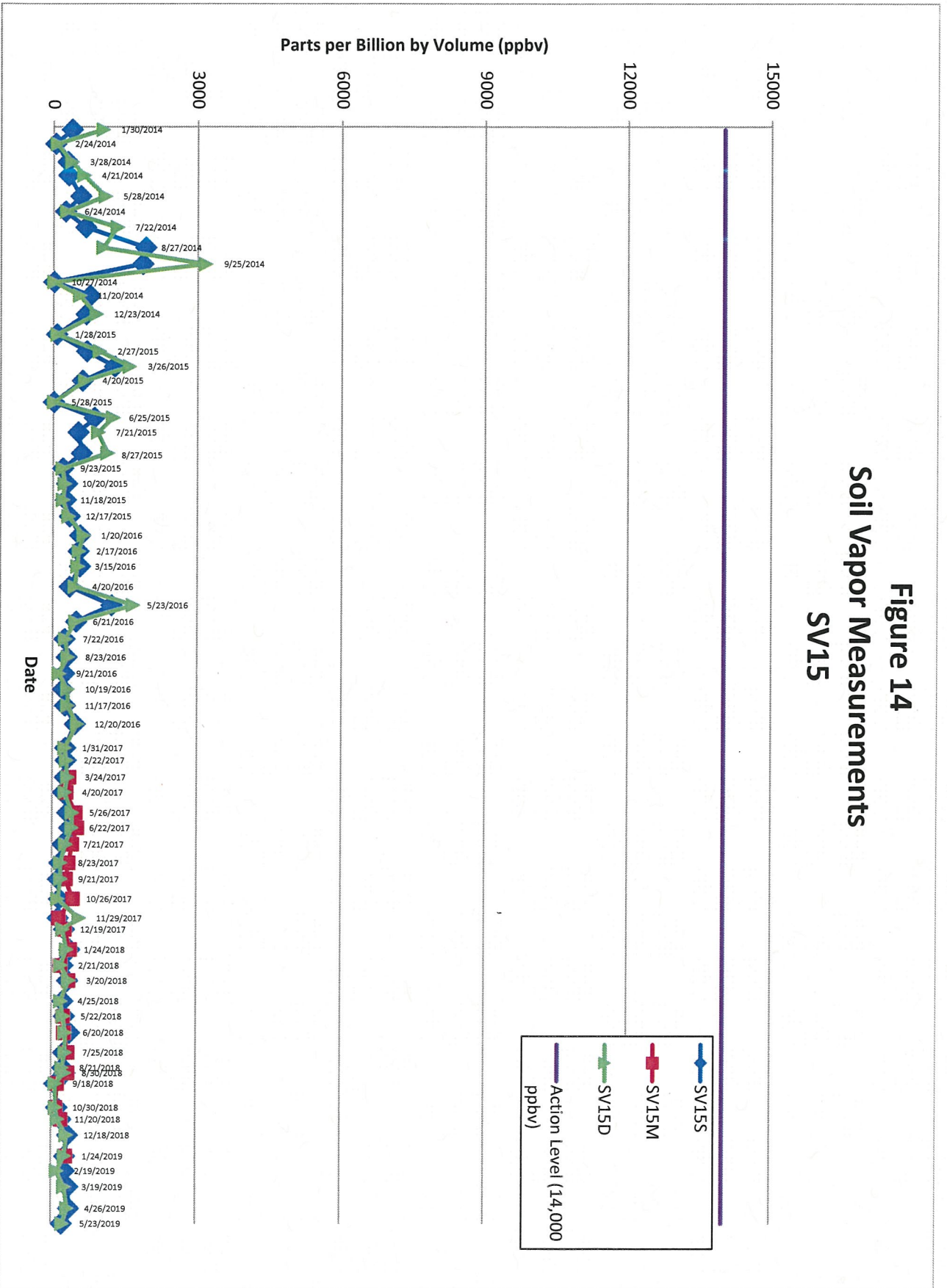


**Figure 12**  
**Soil Vapor Measurements**  
**SV13**



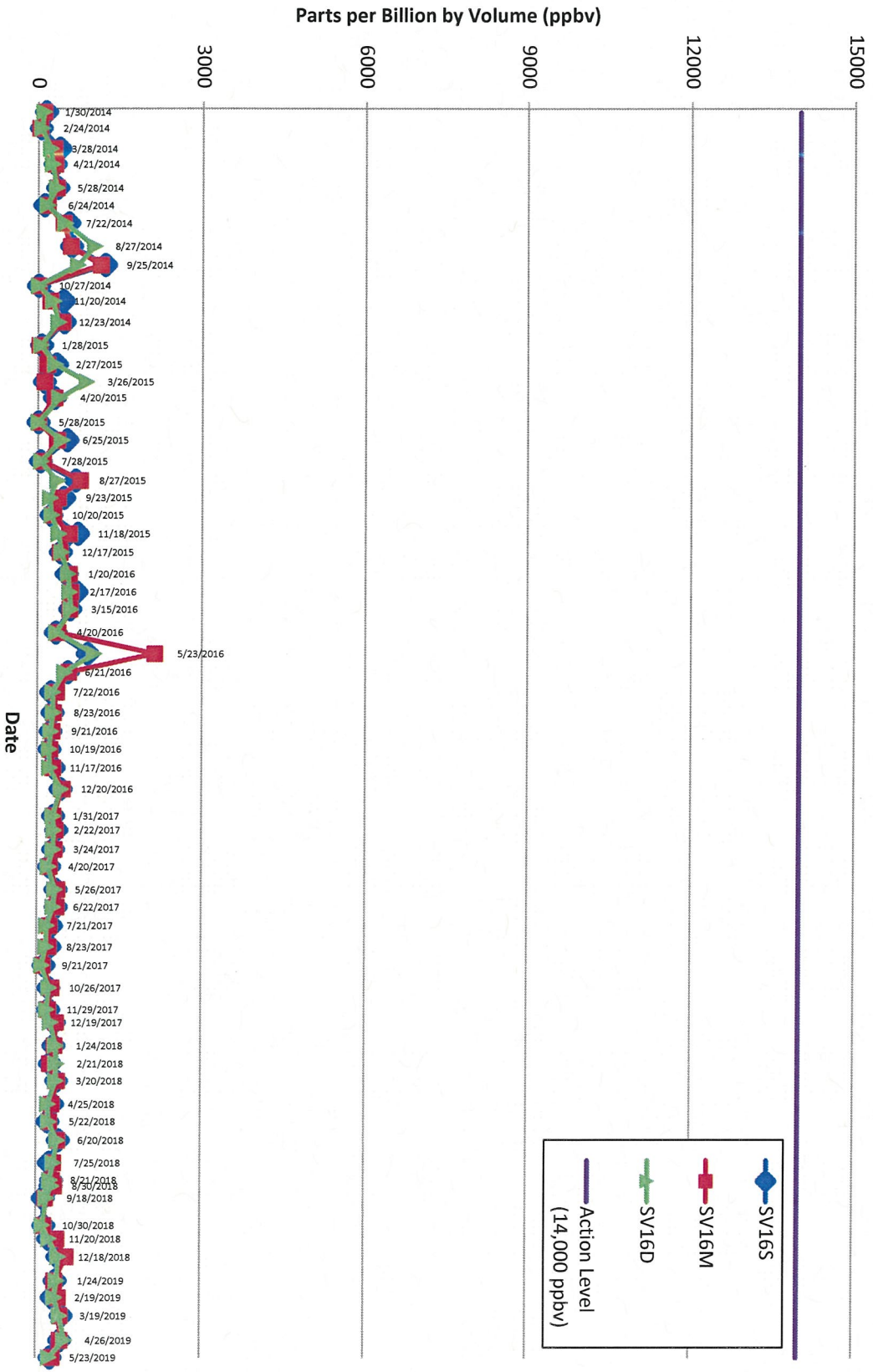
**Figure 13**  
**Soil Vapor Measurements**  
**SV14**



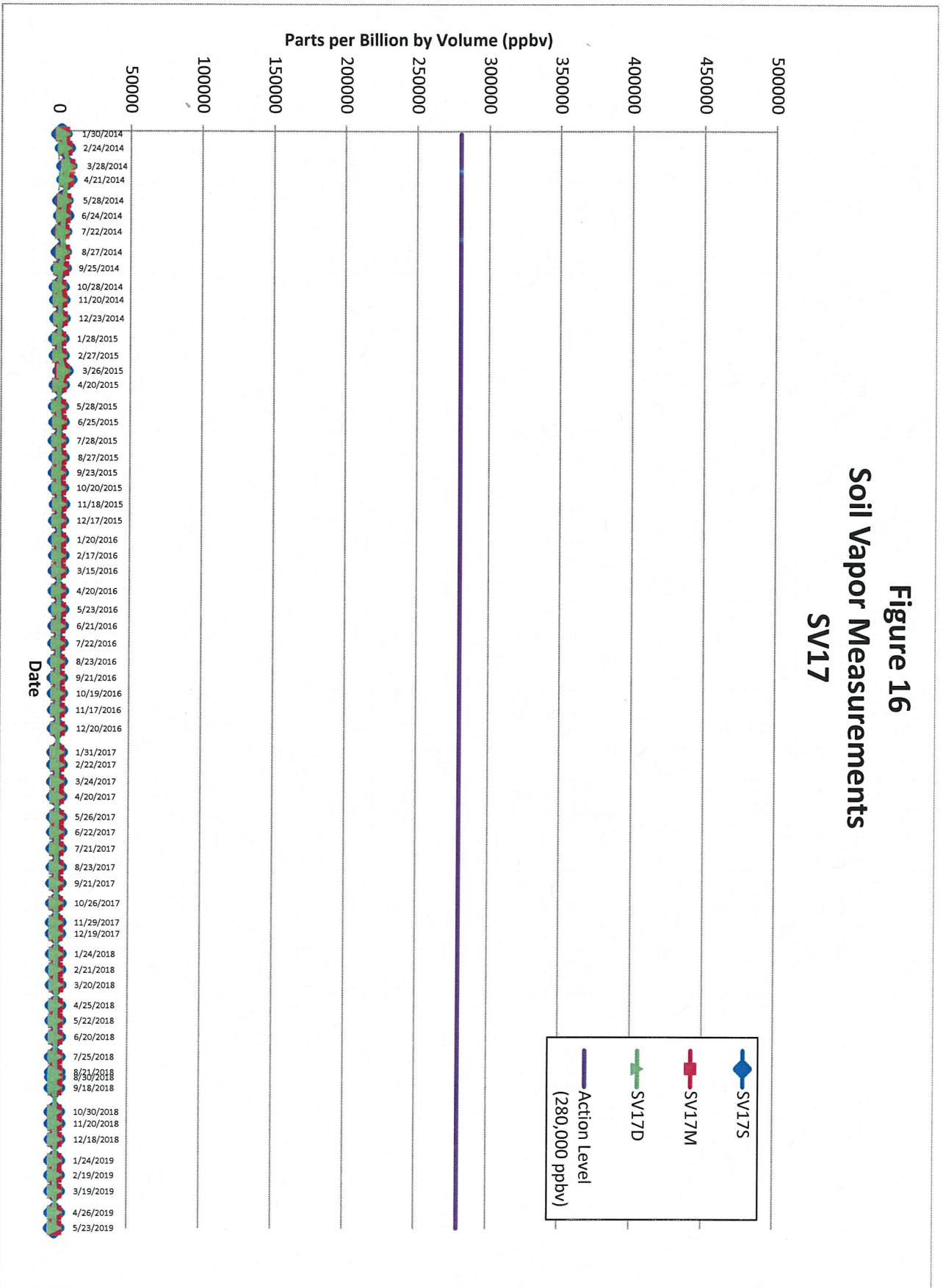




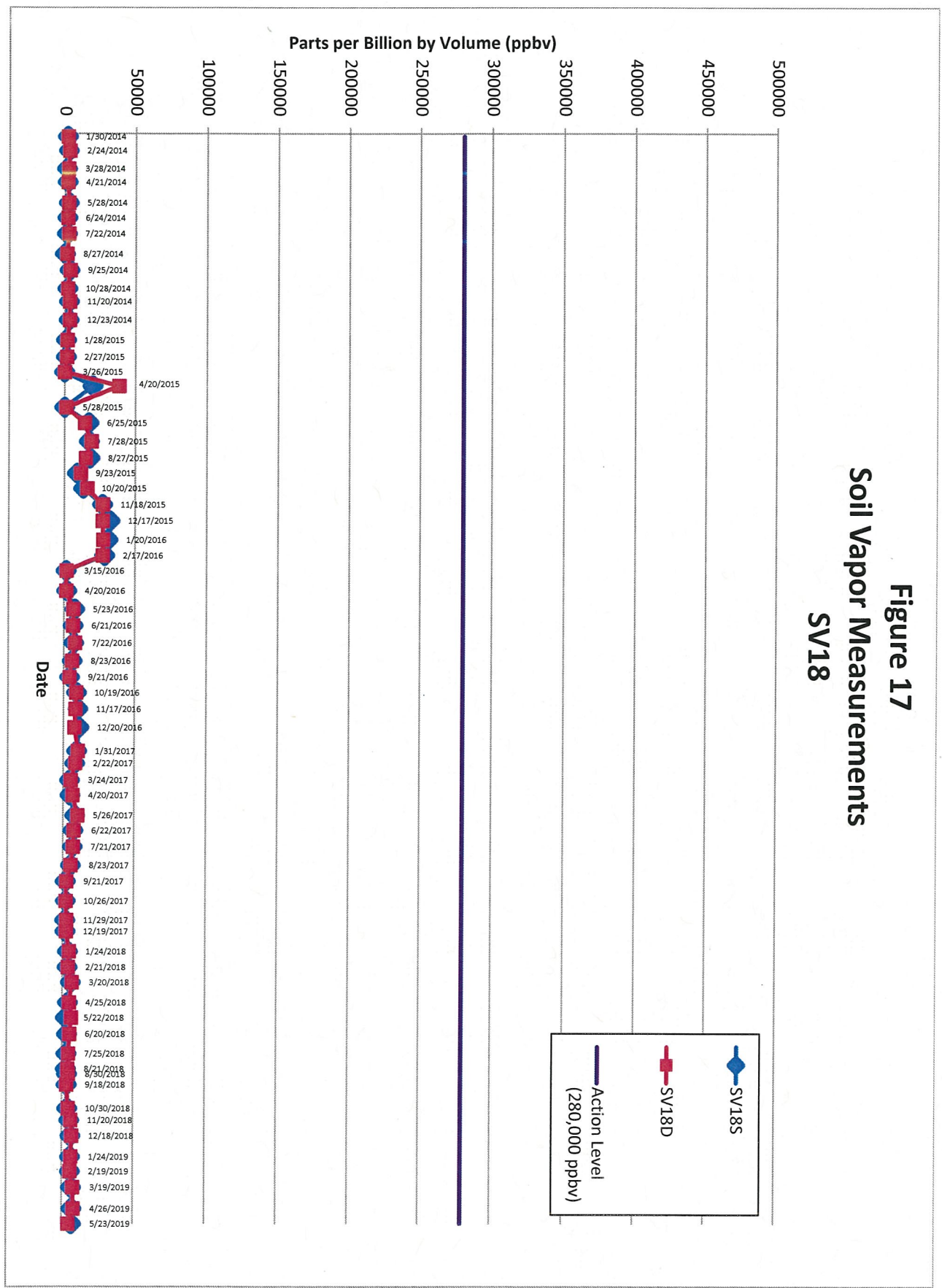
**Figure 15**  
**Soil Vapor Measurements**  
**SV16**



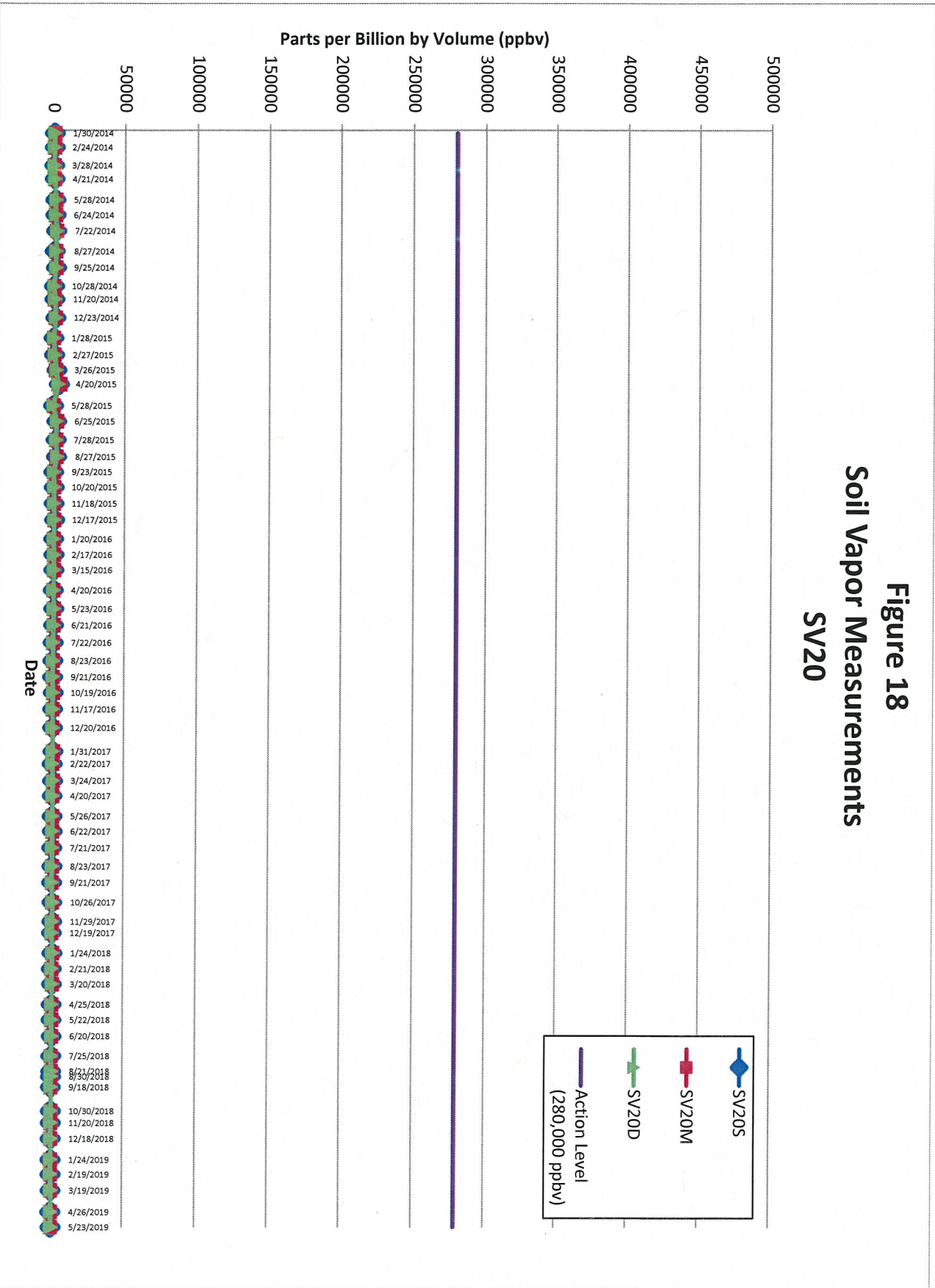
**Figure 16**  
**Soil Vapor Measurements**  
**SV17**



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



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



25 June 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 MAY 2019

Ref: (a) Red Hill Bulk Fuel Storage Facility Groundwater Protection Plan  
(b) Red Hill Soil Vapor Monitoring Report for Round 134, dtd 30 May 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:

- Strongly increasing trends at tanks 5 and 6
- Moderately increasing trend at tank 18
- Slightly increasing trends at tanks 2-4, 7-15, 17, and 20

2. FLCPH causative research and findings:

- a. Reviewed all AFHE Unscheduled Fuel Movement (UFM) Alarm Summaries and UFM Reports. The following UFM's were recorded between sampling events 133 and 134 during the period of 24 Mar – 24 April:

26 April: RH 15: A high level UFM warning occurred moments after completing transfer evolution. Inspected RH 15 galleries, valves, and piping and there was no evidence of a leak or spill. Tank was manually top-gauged, and the level was in tolerance. Confirmed no release of fuel from the tank occurred. RH 15 successfully completed Tank Tightness Testing on 22 Apr 2019. UFM alarms after completion of an evolution is a reoccurring problem with this tank; possible software coding error. Trouble ticket initiated and the maintenance contractor deployed a Systems Analyst to the field on 24 June 2019 to troubleshoot the problem.

30 April: RH 09: A high UFM warning occurred after completing an evolution. Rover conducted tank inspection; tank appeared to be normal, all valves closed and there was no evidence of a leak or spill. Tank was manually top-gauged, and the level was in tolerance. Confirmed no release of fuel from the tank occurred. RH 09 successfully completed tank tightness testing on June 01, 2019. Rogue UFM alarms are a problem with this tank; trouble ticket initiated and the maintenance contractor deployed a Systems Analyst to the field on 24 June 2019 to troubleshoot the problem.

- b. Reviewed Red Hill Inventory Trend Analysis Reports for May 2019; 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.

ENCLOSURE(2)

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

- 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 is 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.LEWIS  
S.1064149357  
JOHN FLOYD

Digitally signed by FLOYD.JOHN.LEWIS.1064149357  
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