

AUG 24 2020 *oef*



DEPARTMENT OF THE NAVY

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

5000-45A
N45
August 18, 2020

CERTIFIED NO: 7019 2970 0001 7433 3684

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 JUNE
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 June 19, 2020.

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 F-24 or JP-5, 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 75, 213, and 327 ppbv, respectively. VOC concentrations in all down-gradient soil vapor monitors were below 142 ppbv.

All other VOC concentrations measured in June were about 120 to 25,000 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), by-product of biodegradation, and fuel movement in the tanks and piping.

5000-45A
N45
August 18, 2020

Soil vapor VOC concentration trends will continue to be monitored. A soil vapor sampling event was completed on July 24, 2020, and included collecting samples from soil vapor monitoring probes beneath all active and accessible tanks. Results for the July event will be submitted separately.

If there are any questions regarding this matter, or if more information is needed, please contact Mr. Joel Narusawa at (808) 471-4881.

Sincerely,

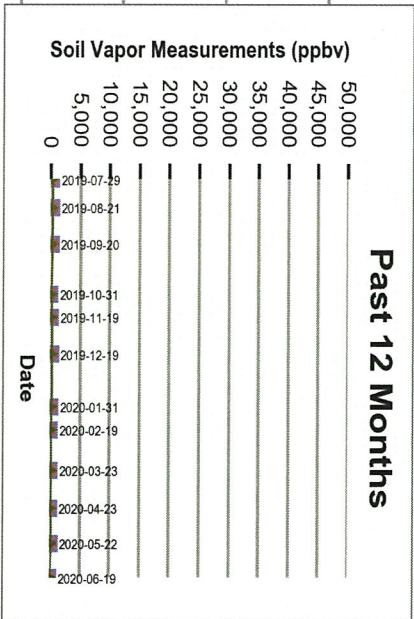
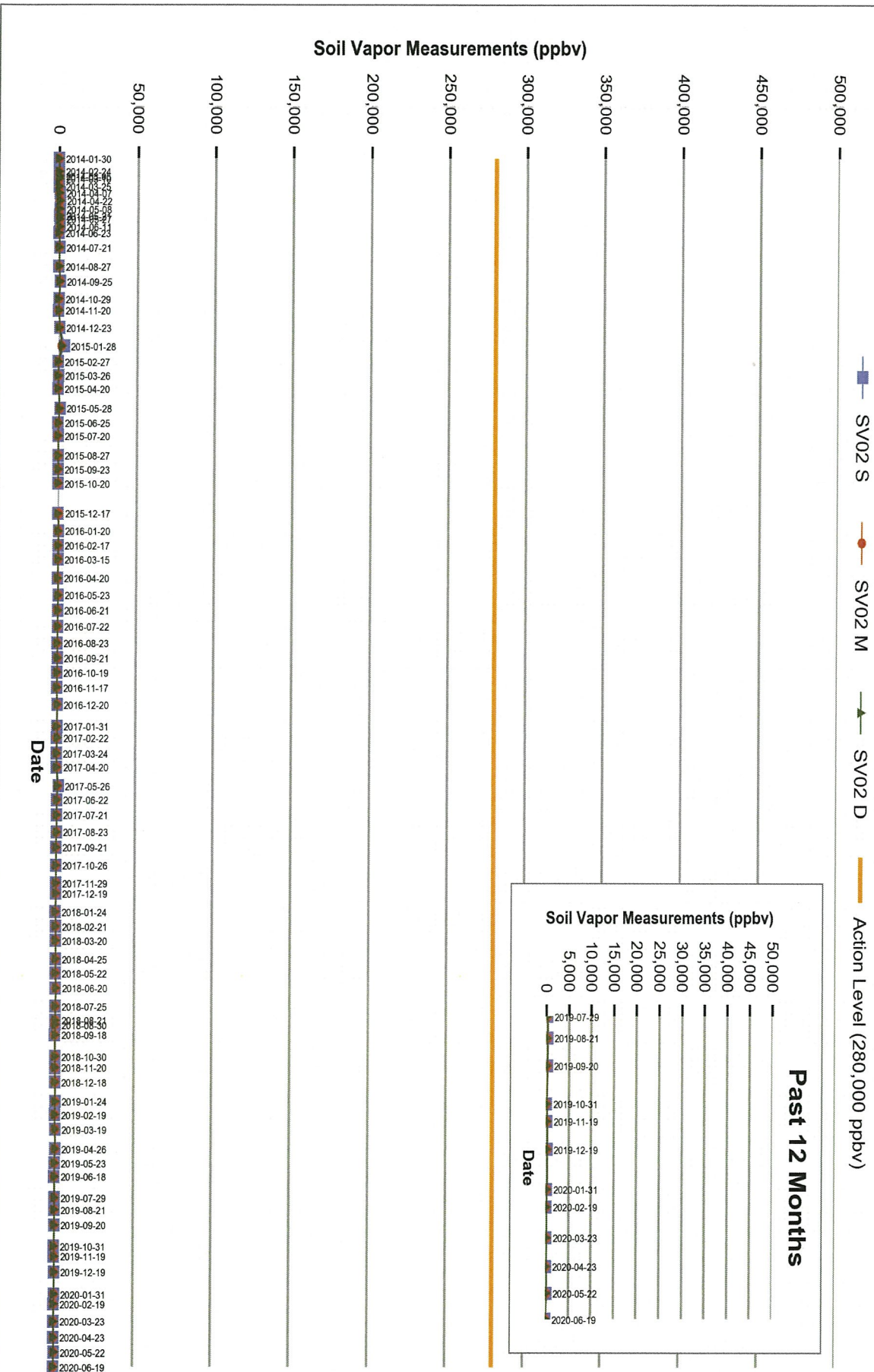
Darrel E Frame

DARREL E. FRAME
CDR, CEC, USN
Acting 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 June 2020 (18 pages)
2. NAVSUP FLC Pearl Harbor Causative Research Report IRT Red Hill Soil Vapor Monitoring Report for June 2020

Copy to: Mr. Steve Linder, 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 (F-24)

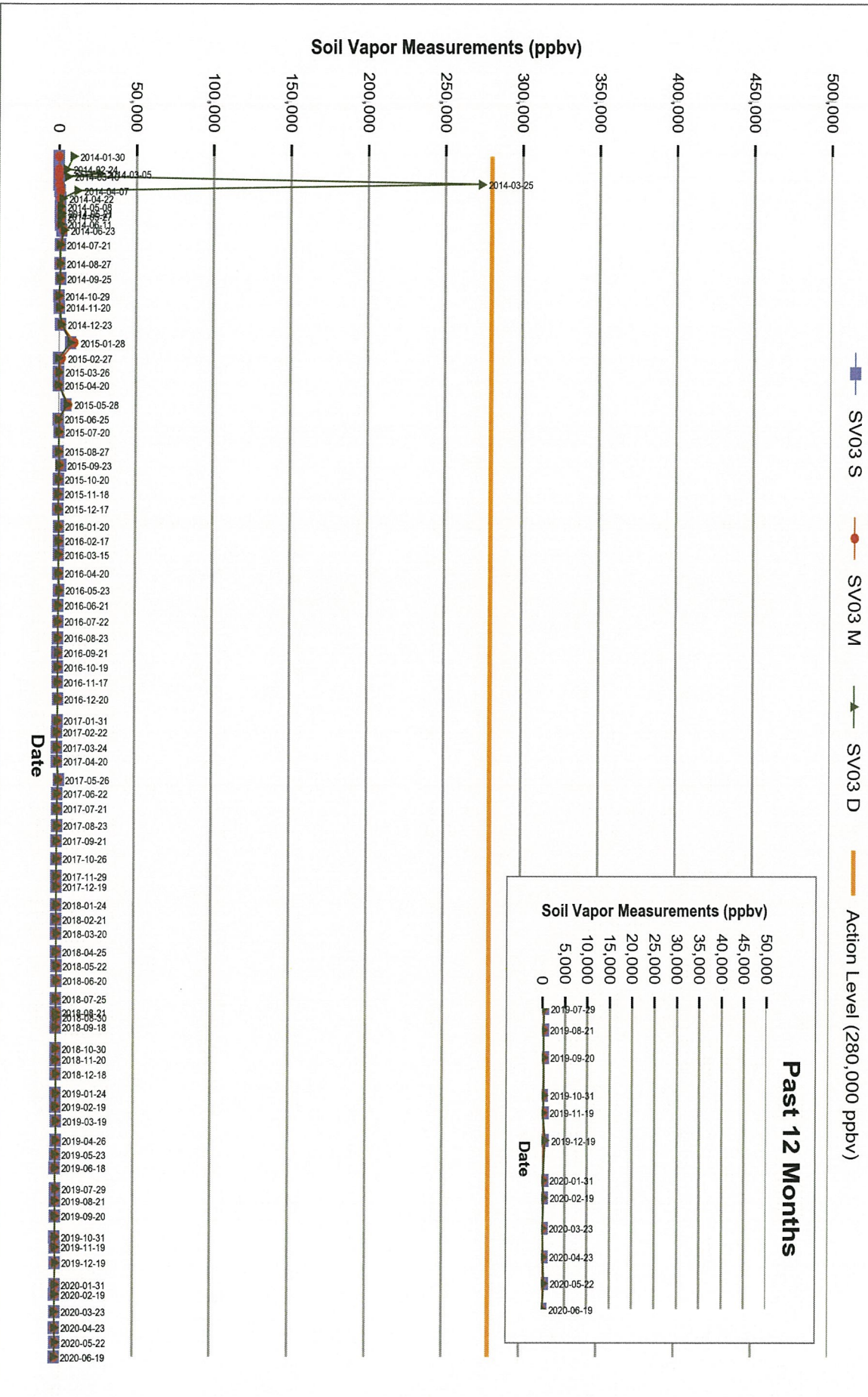


Notes (where applicable):
 ppbv - Parts Per Billion by Volume
 F-24 - Jet Fuel, Fuel Number 24

JP-5 - Jet Fuel, Propellant Number 5
 F-76 - Marine Diesel, Fuel Number 76

ENCLOSURE(1)

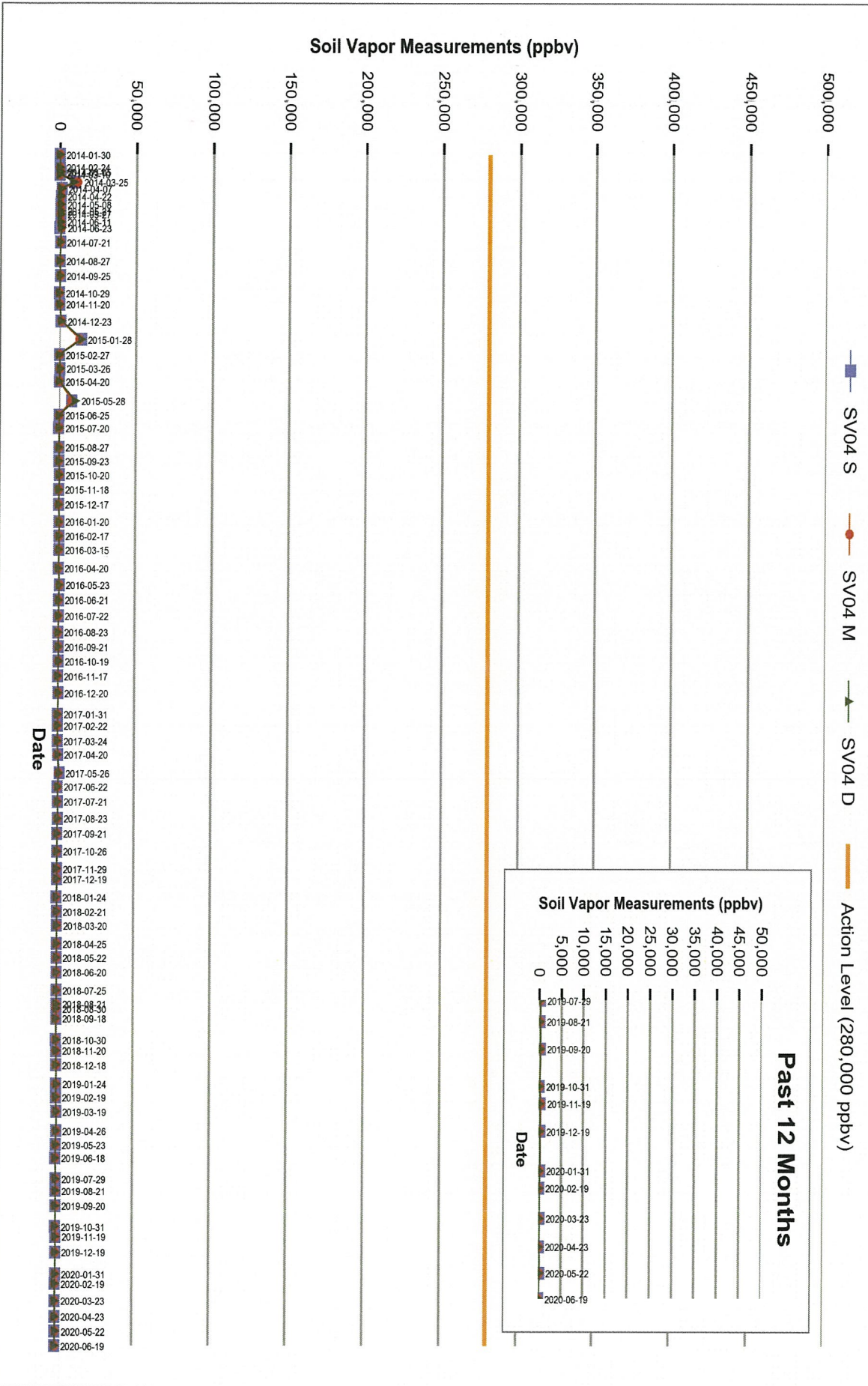
Figure 2
Soil Vapor Measurements - SV03 (F-24)



Notes (where applicable):
 ppbv - Parts Per Billion by Volume
 F-24 - Jet Fuel, Fuel Number 24

JP-5 - Jet Fuel, Propellant Number 5
 F-76 - Marine Diesel, Fuel Number 76

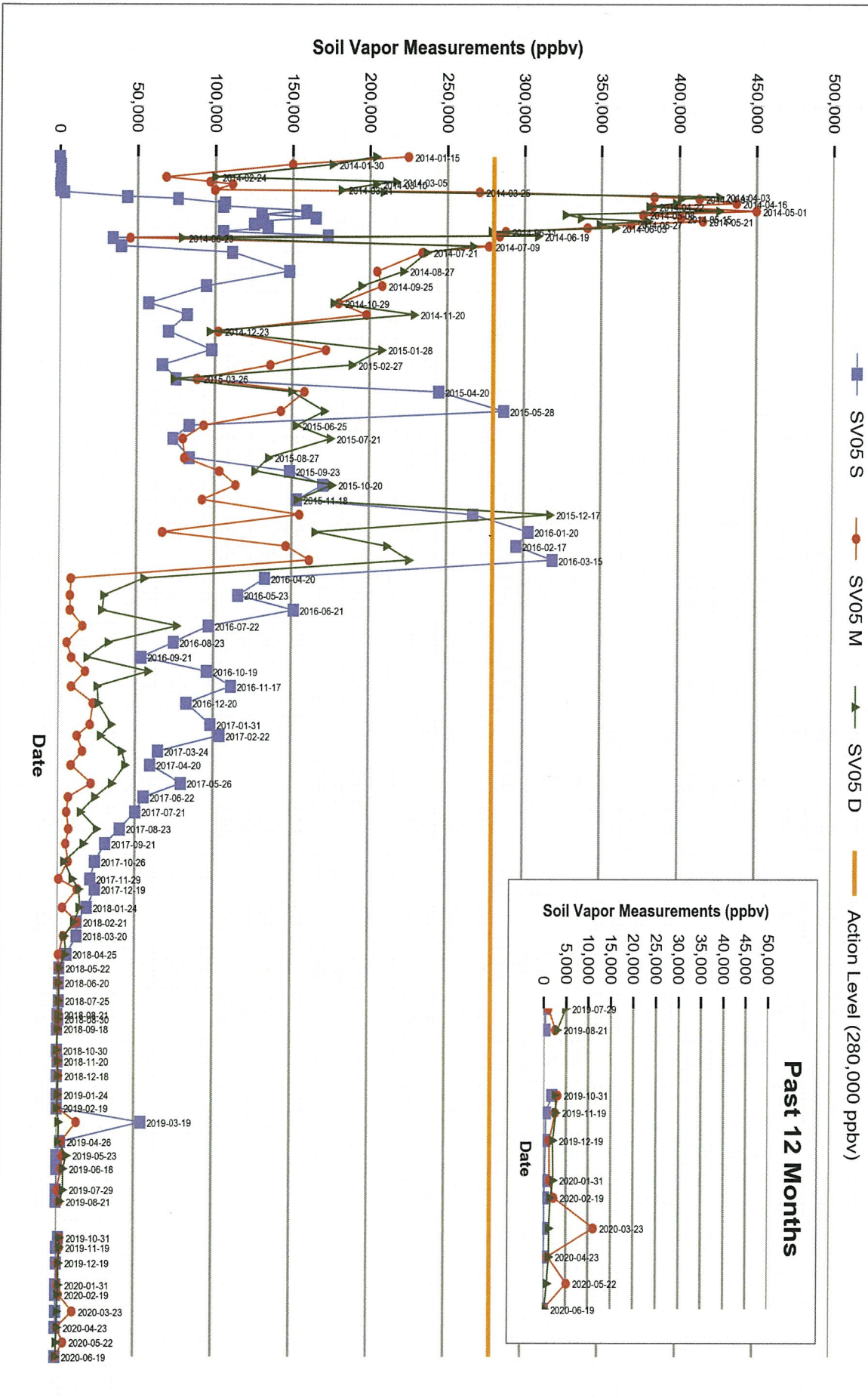
Figure 3
Soil Vapor Measurements - SV04 (F-24)



Notes (where applicable):
 ppbv - Parts Per Billion by Volume
 F-24 - Jet Fuel, Fuel Number 24

JP-5 - Jet Fuel, Propellant Number 5
 F-76 - Marine Diesel, Fuel Number 76

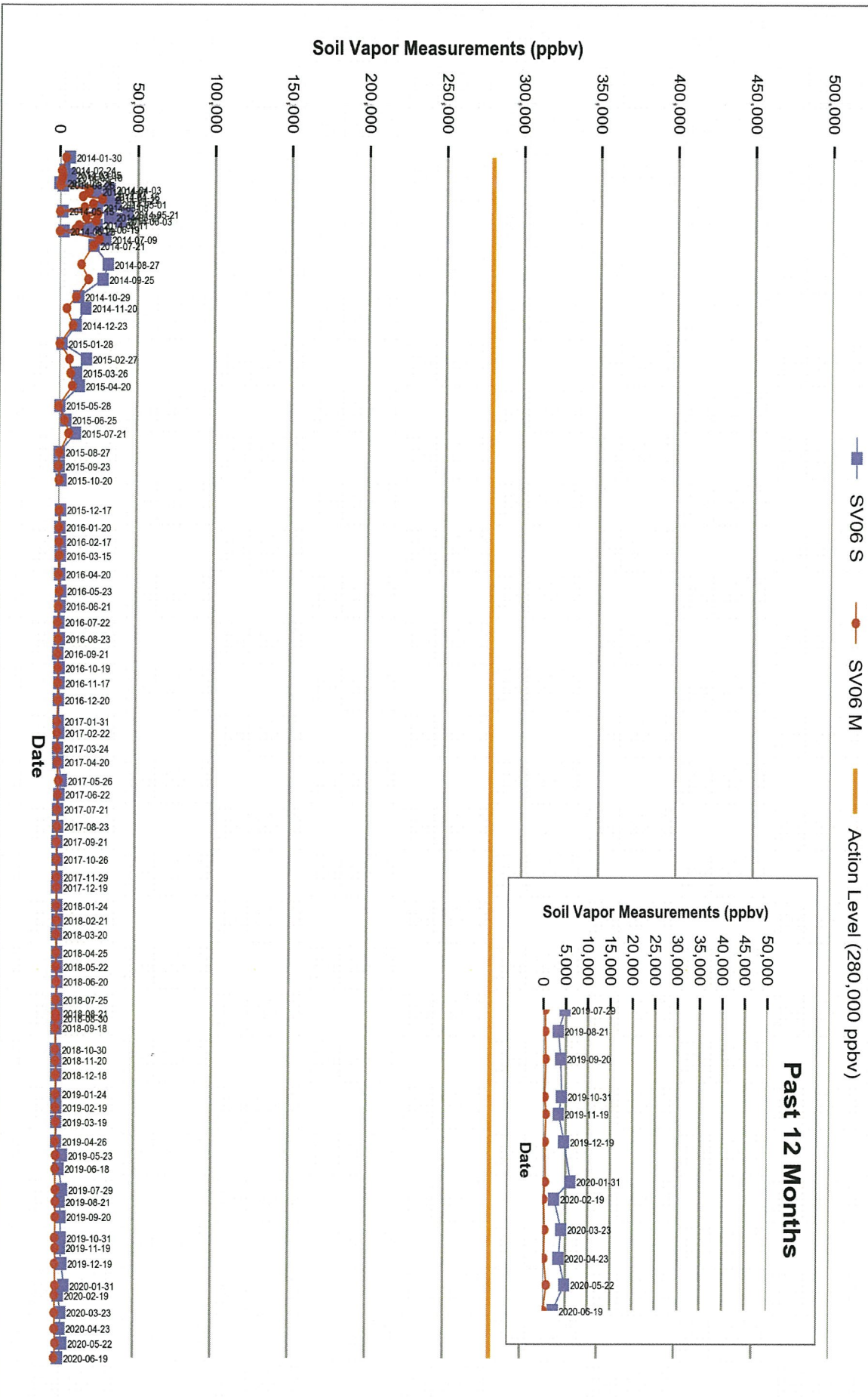
Figure 4
Soil Vapor Measurements - SV05 (F-24)



Notes (where applicable):
 ppbv - Parts Per Billion by Volume
 F-24 - Jet Fuel, Fuel Number 24

JP-5 - Jet Fuel, Propellant Number 5
 F-76 - Marine Diesel, Fuel Number 76

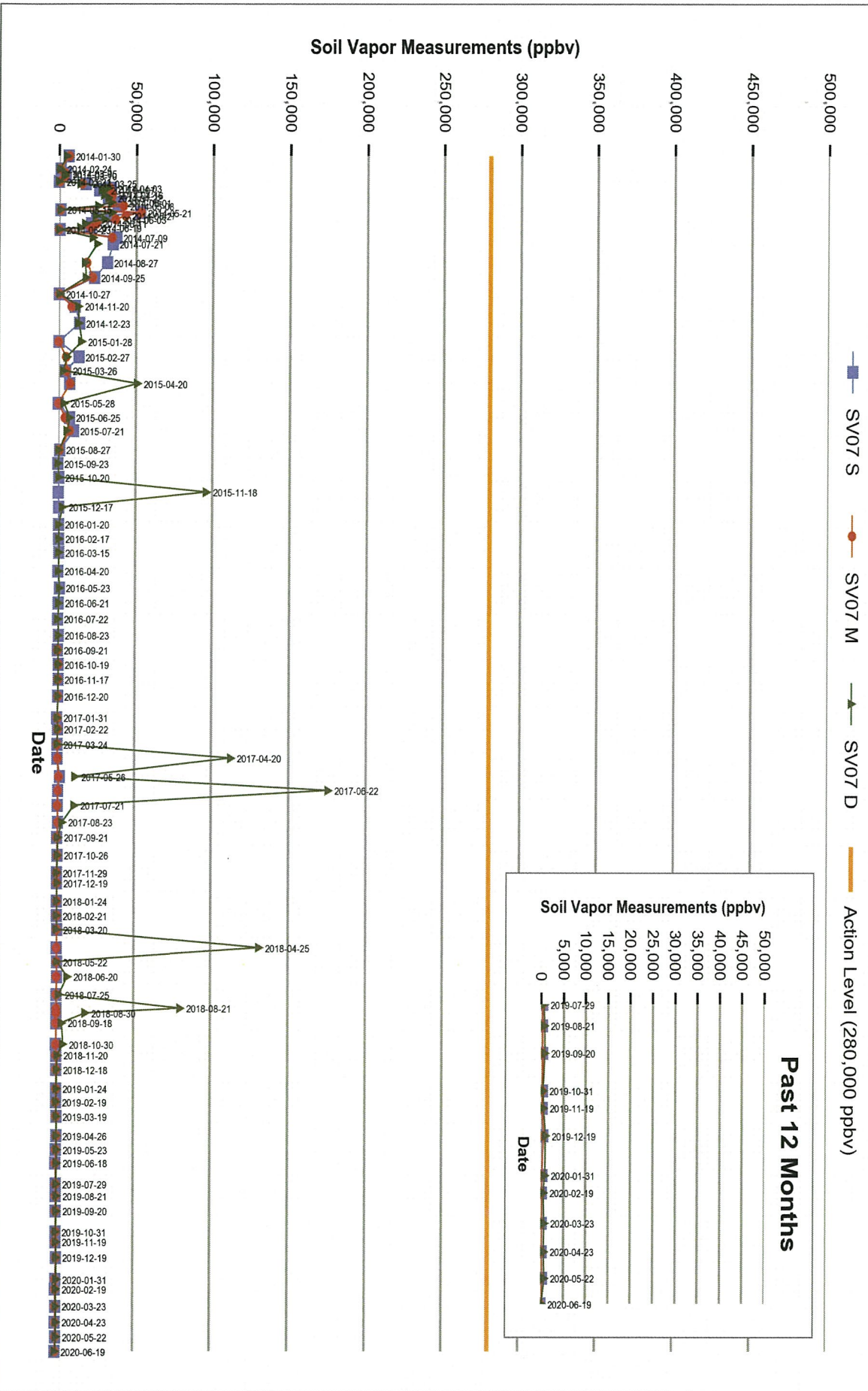
Figure 5
Soil Vapor Measurements - SV06 (F-24)



Notes (Where applicable):
 ppbv - Parts Per Billion by Volume
 F-24 - Jet Fuel, Fuel Number 24

JP-5 - Jet Fuel, Propellant Number 5
 F-76 - Marine Diesel, Fuel Number 76

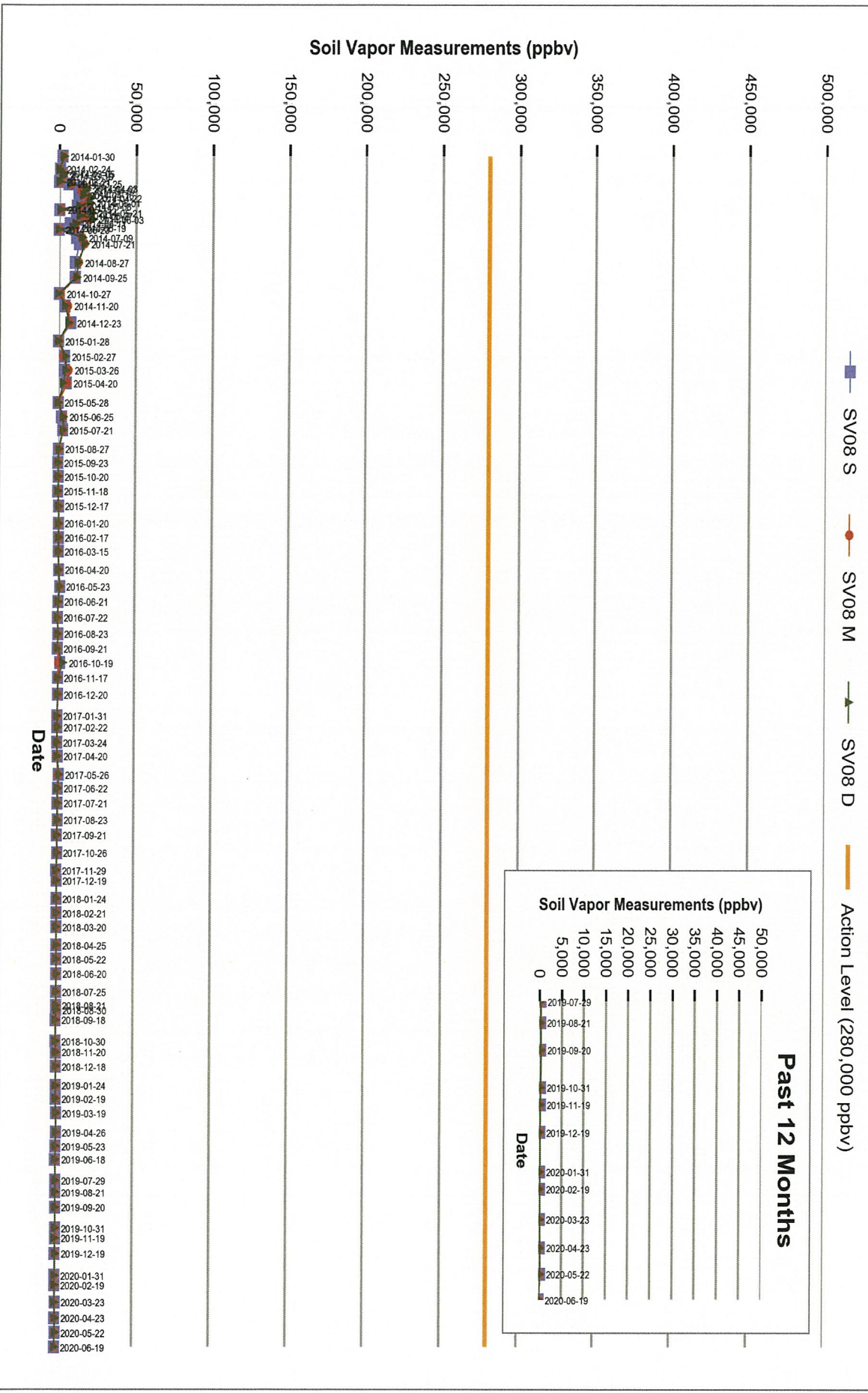
**Figure 6
Soil Vapor Measurements - SV07 (JP-5)**



Notes (where applicable):
 ppbv - Parts Per Billion by Volume
 F-24 - Jet Fuel, Fuel Number 24

JP-5 - Jet Fuel, Propellant Number 5
 F-76 - Marine Diesel, Fuel Number 76

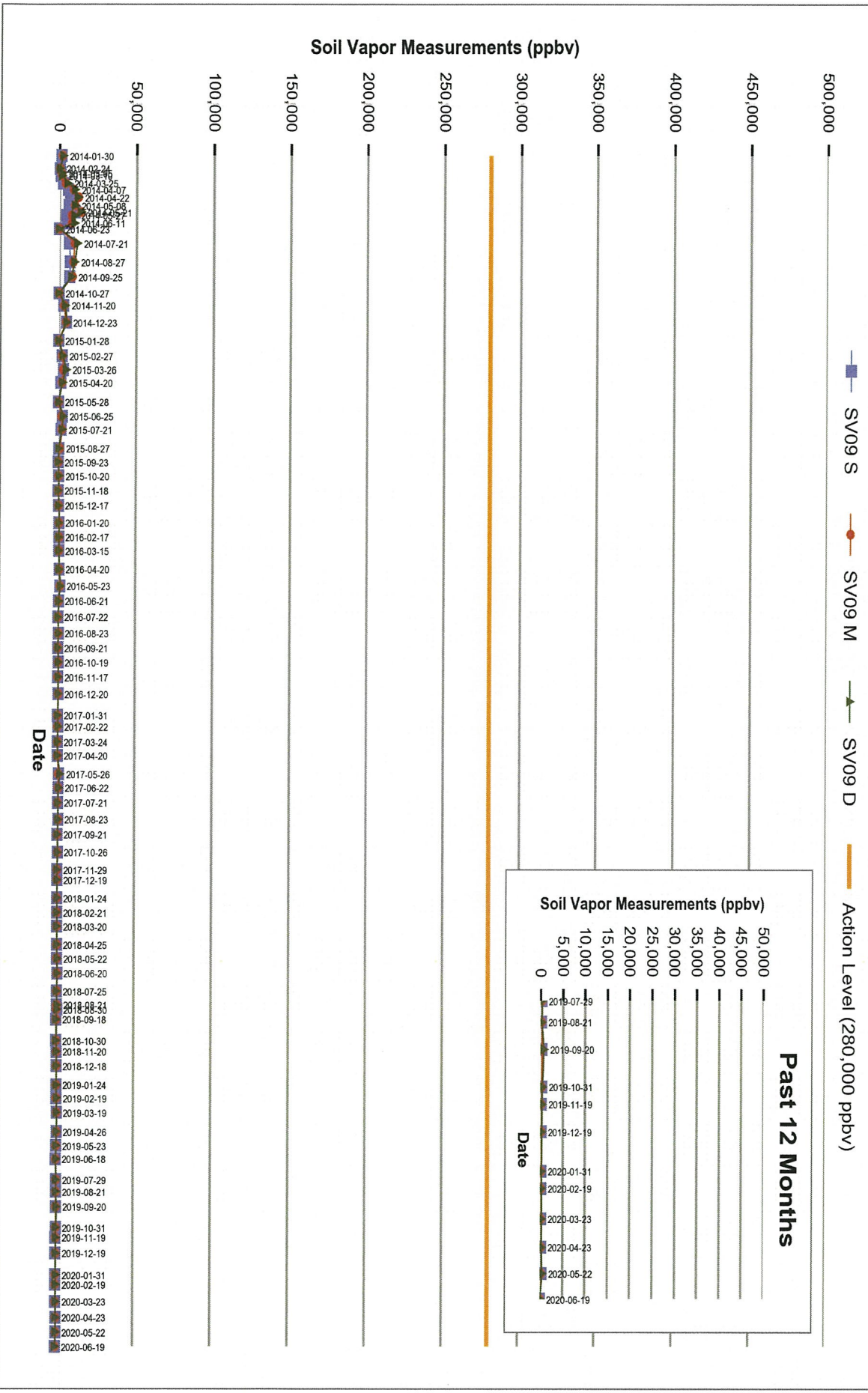
Figure 7
Soil Vapor Measurements - SV08 (JP-5)



Notes (where applicable):
 ppbv - Parts Per Billion by Volume
 F-24 - Jet Fuel, Fuel Number 24

JP-5 - Jet Fuel, Propellant Number 5
 F-76 - Marine Diesel, Fuel Number 76

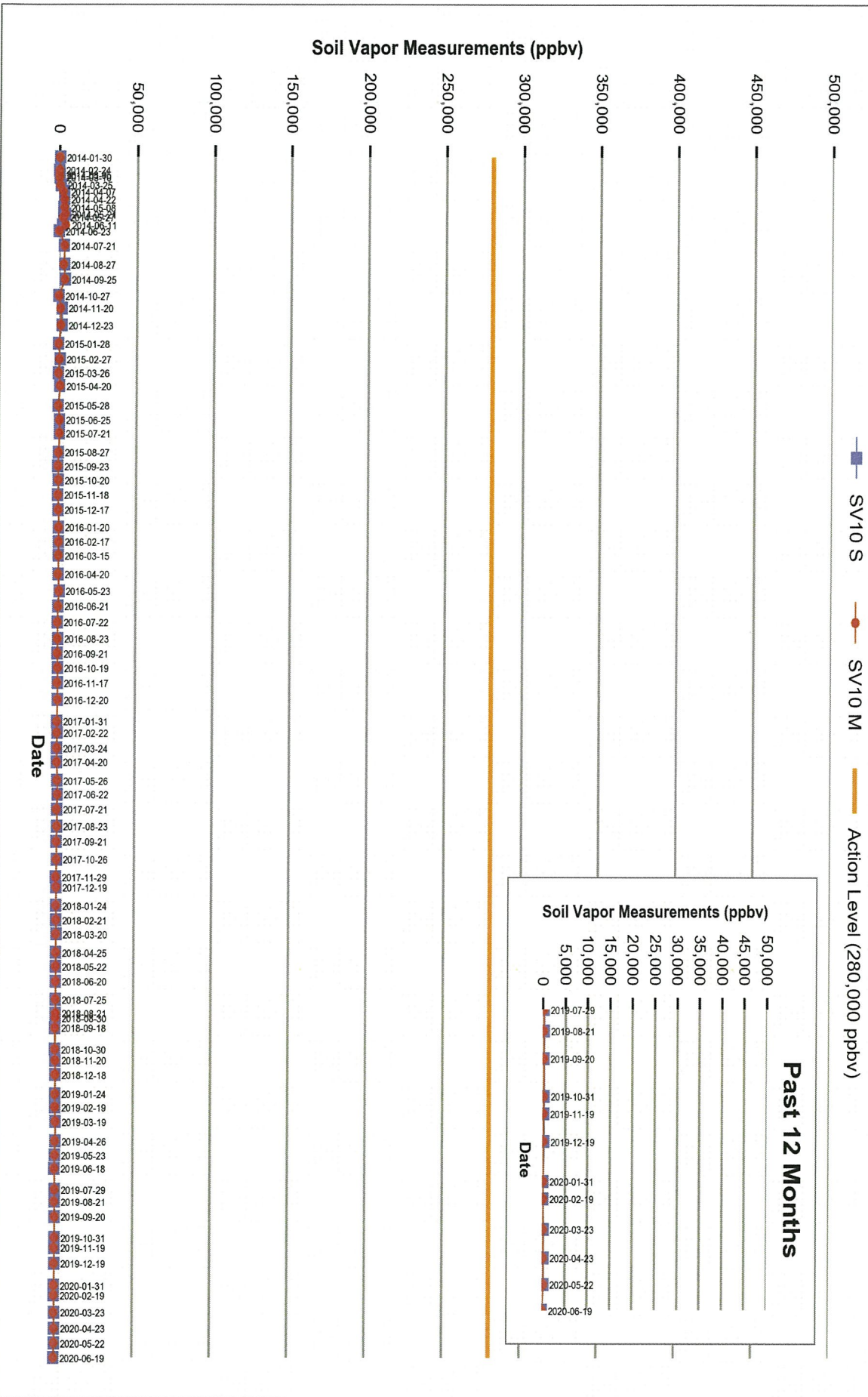
Figure 8
Soil Vapor Measurements - SV09 (JP-5)



Notes (where applicable):
 ppbv - Parts Per Billion by Volume
 F-24 - Jet Fuel, Fuel Number 24

JP-5 - Jet Fuel, Propellant Number 5
 F-76 - Marine Diesel, Fuel Number 76

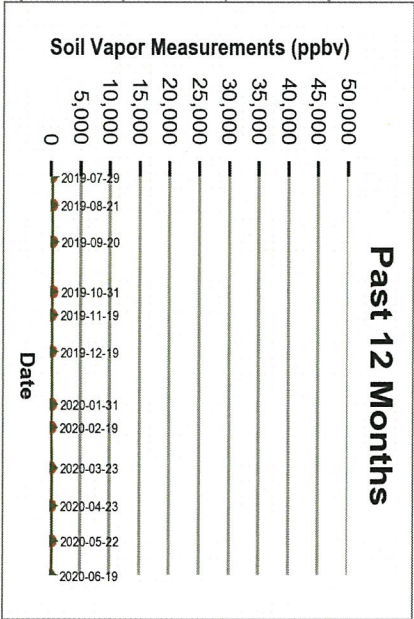
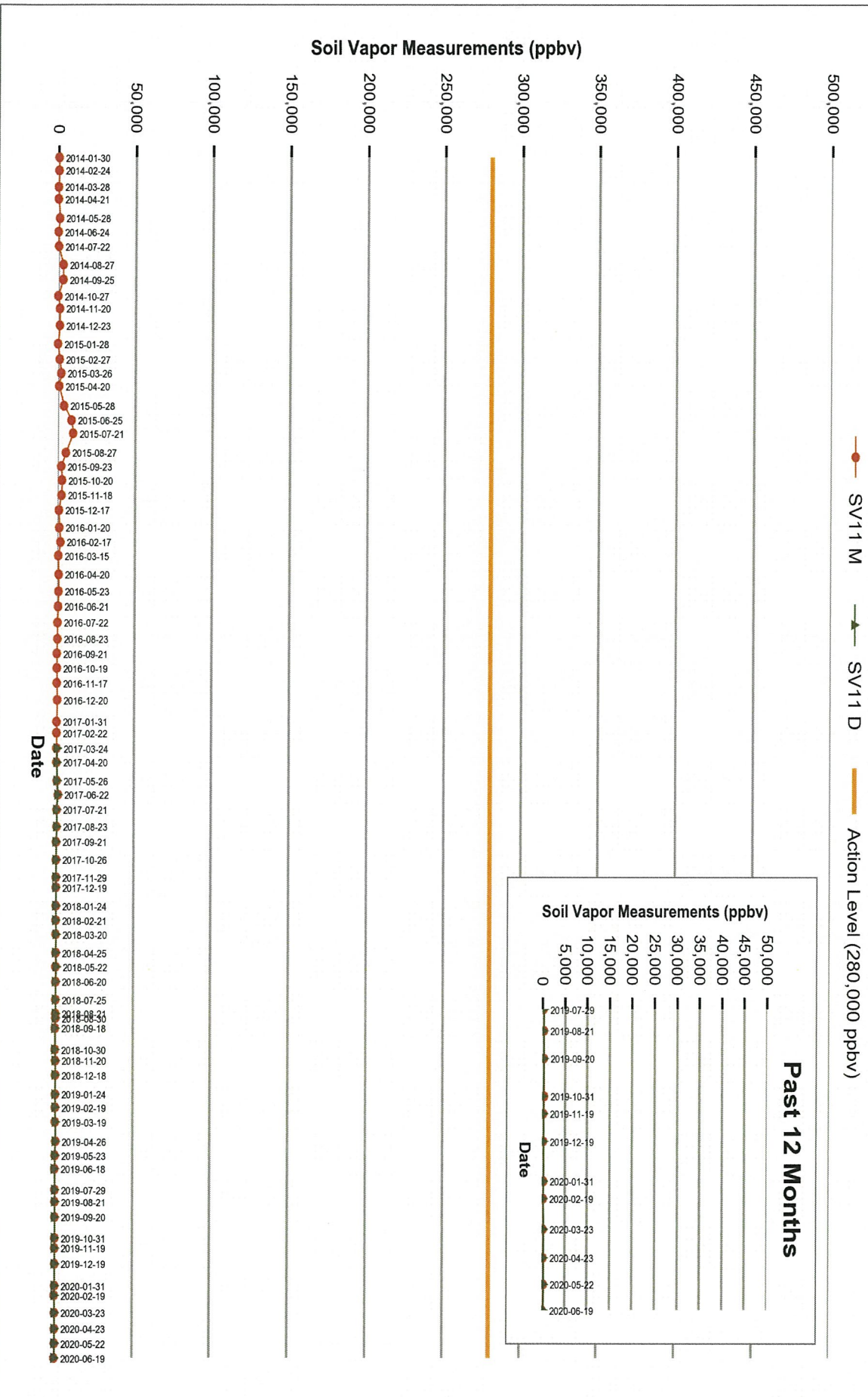
Figure 9
Soil Vapor Measurements - SV10 (JP-5)



Notes (where applicable):
 ppbv - Parts Per Billion by Volume
 F-24 - Jet Fuel, Fuel Number 24

JP-5 - Jet Fuel, Propellant Number 5
 F-76 - Marine Diesel, Fuel Number 76

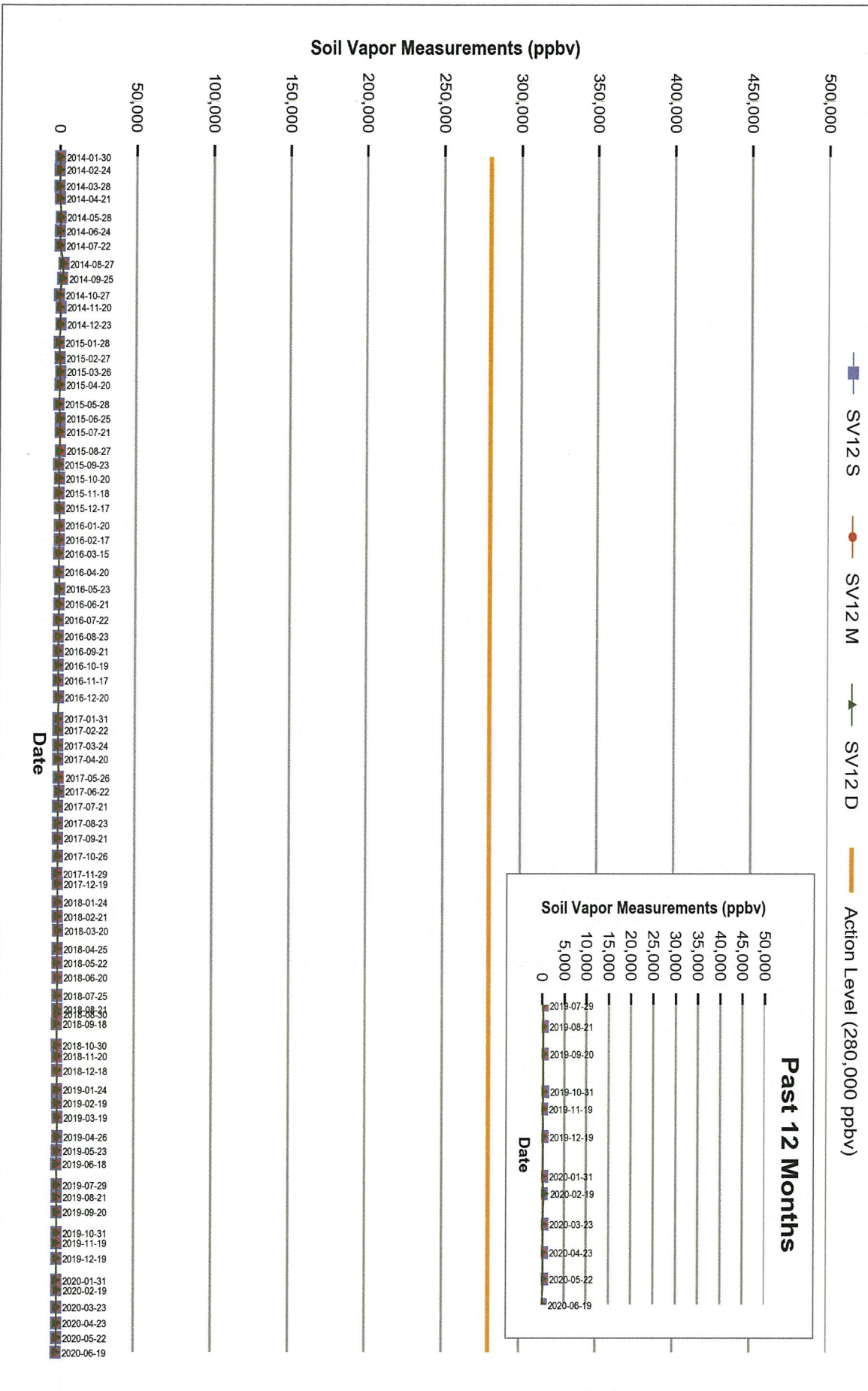
Figure 10
Soil Vapor Measurements - SV11 (JP-5)



Notes (where applicable):
 ppbv - Parts Per Billion by Volume
 F-24 - Jet Fuel, Fuel Number 24

JP-5 - Jet Fuel, Propellant Number 5
 F-76 - Marine Diesel, Fuel Number 76

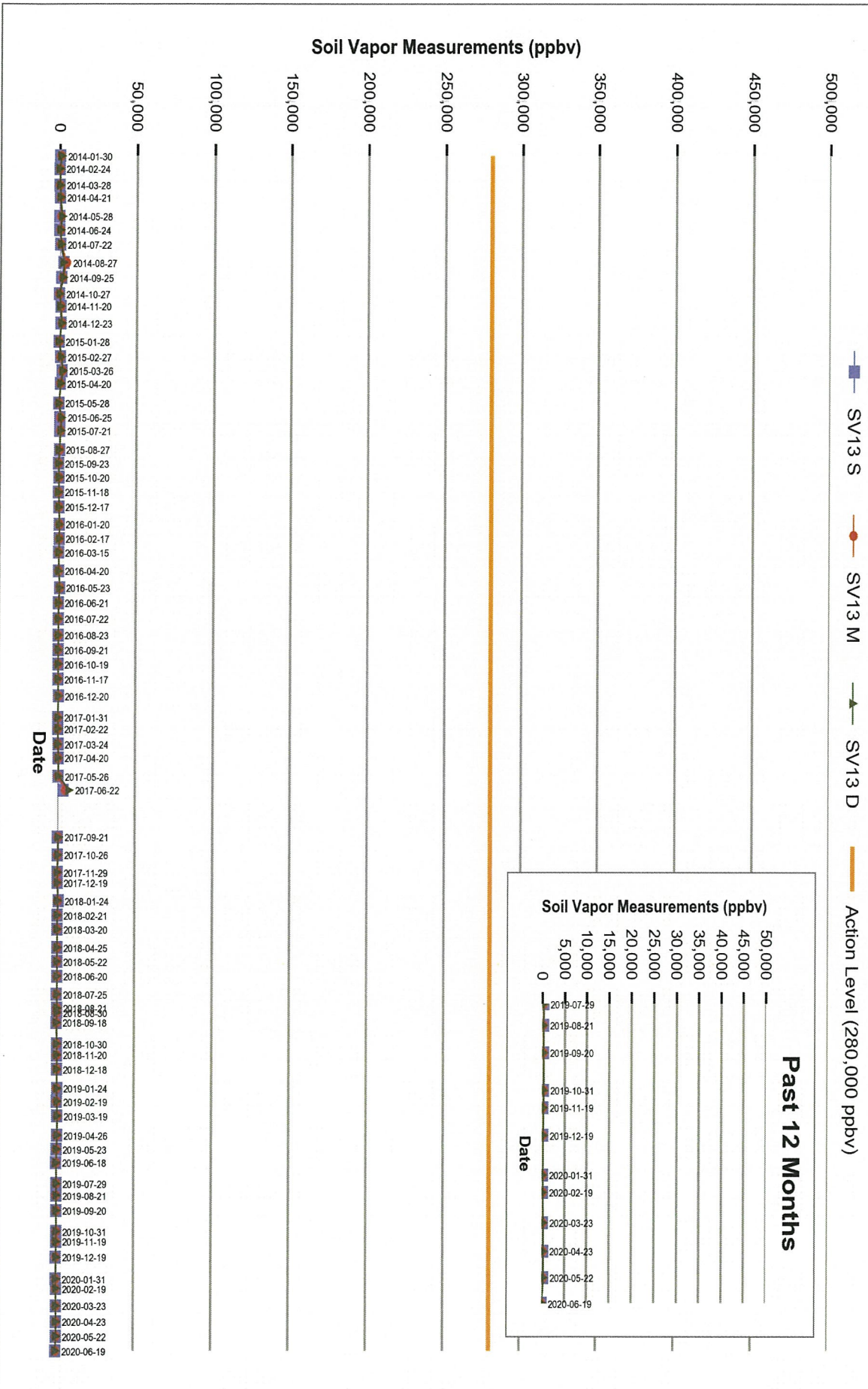
Figure 11
Soil Vapor Measurements - SV12 (JP-5)



Notes (where applicable):
 ppbv - Parts Per Billion by Volume
 F-24 - Jet Fuel, Fuel Number 24

JP-5 - Jet Fuel, Propellant Number 5
 F-76 - Marine Diesel, Fuel Number 76

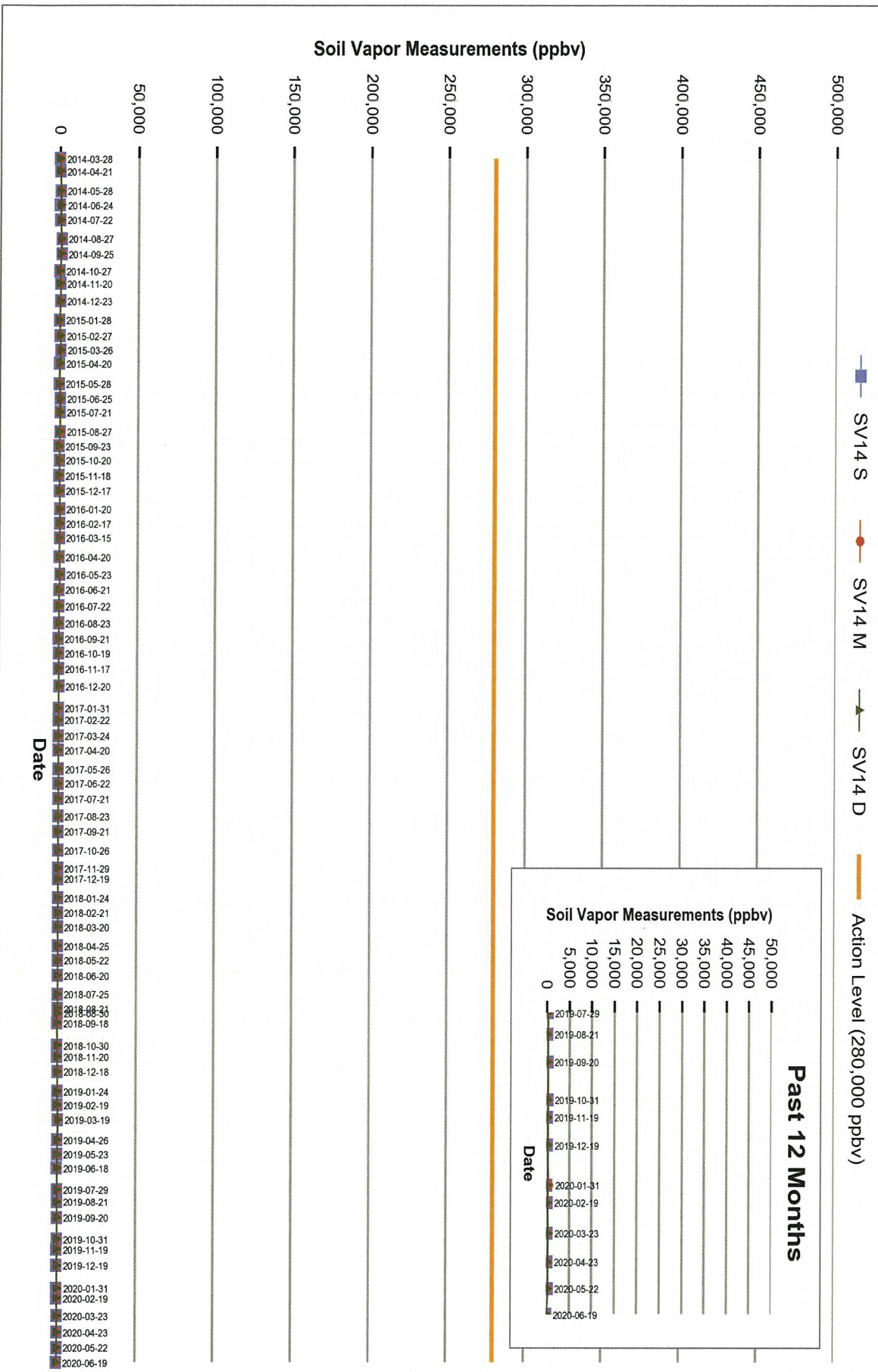
Figure 12
Soil Vapor Measurements - SV13 (JP-5)



Notes (where applicable):
 ppbv - Parts Per Billion by Volume
 F-24 - Jet Fuel, Fuel Number 24

JP-5 - Jet Fuel, Propellant Number 5
 F-76 - Marine Diesel, Fuel Number 76

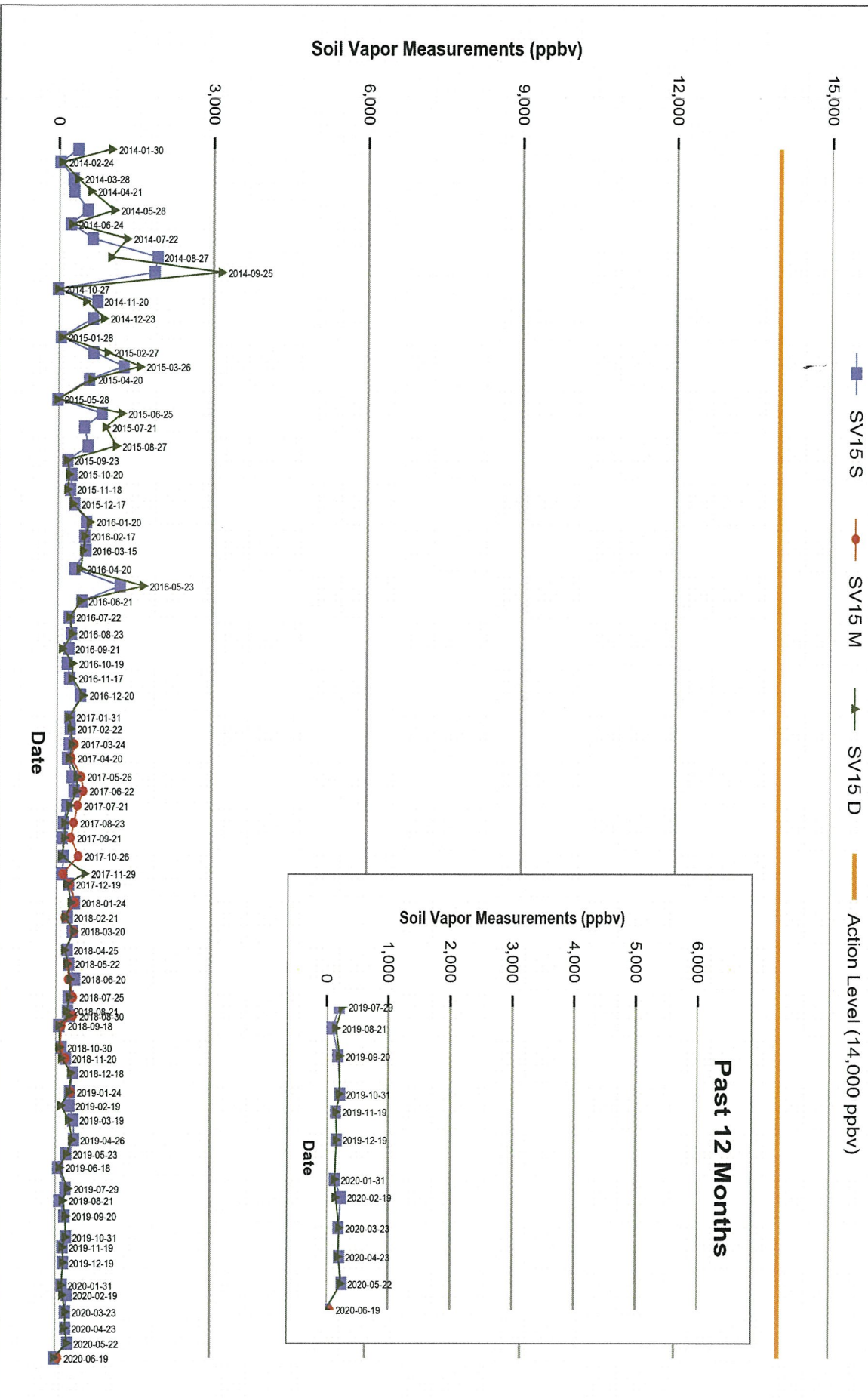
Figure 13
Soil Vapor Measurements - SV14 (JP-5)



Notes (where applicable):
 ppbv - Parts Per Billion by Volume
 F-24 - Jet Fuel, Fuel Number 24

JP-5 - Jet Fuel, Propellant Number 5
 F-76 - Marine Diesel, Fuel Number 76

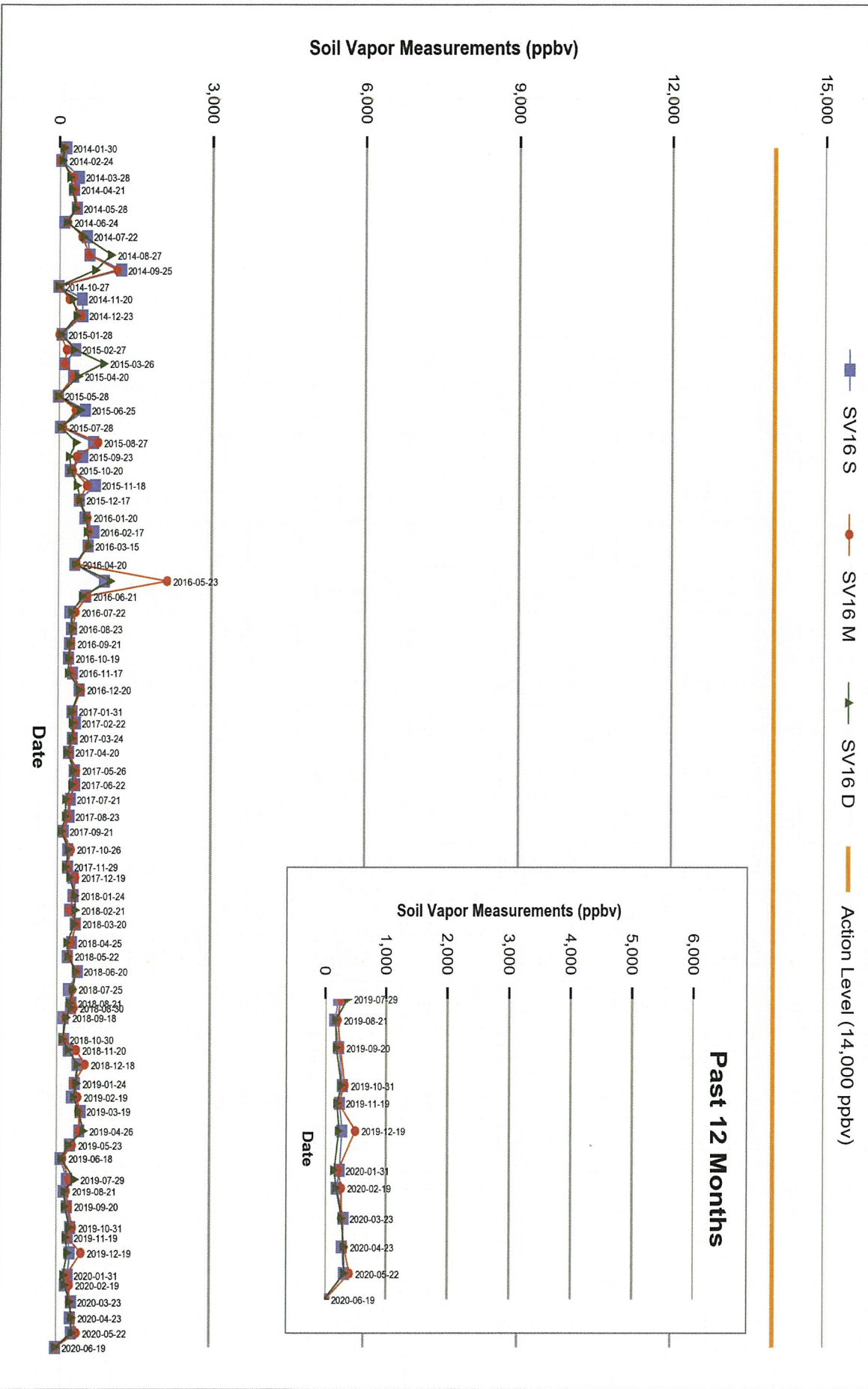
Figure 14
Soil Vapor Measurements - SV15 (F-76)



Notes (where applicable):
 ppbv - Parts Per Billion by Volume
 F-24 - Jet Fuel, Fuel Number 24

JP-5 - Jet Fuel, Propellant Number 5
 F-76 - Marine Diesel, Fuel Number 76

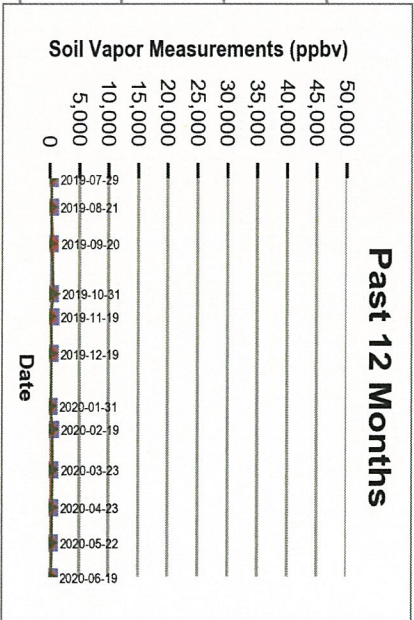
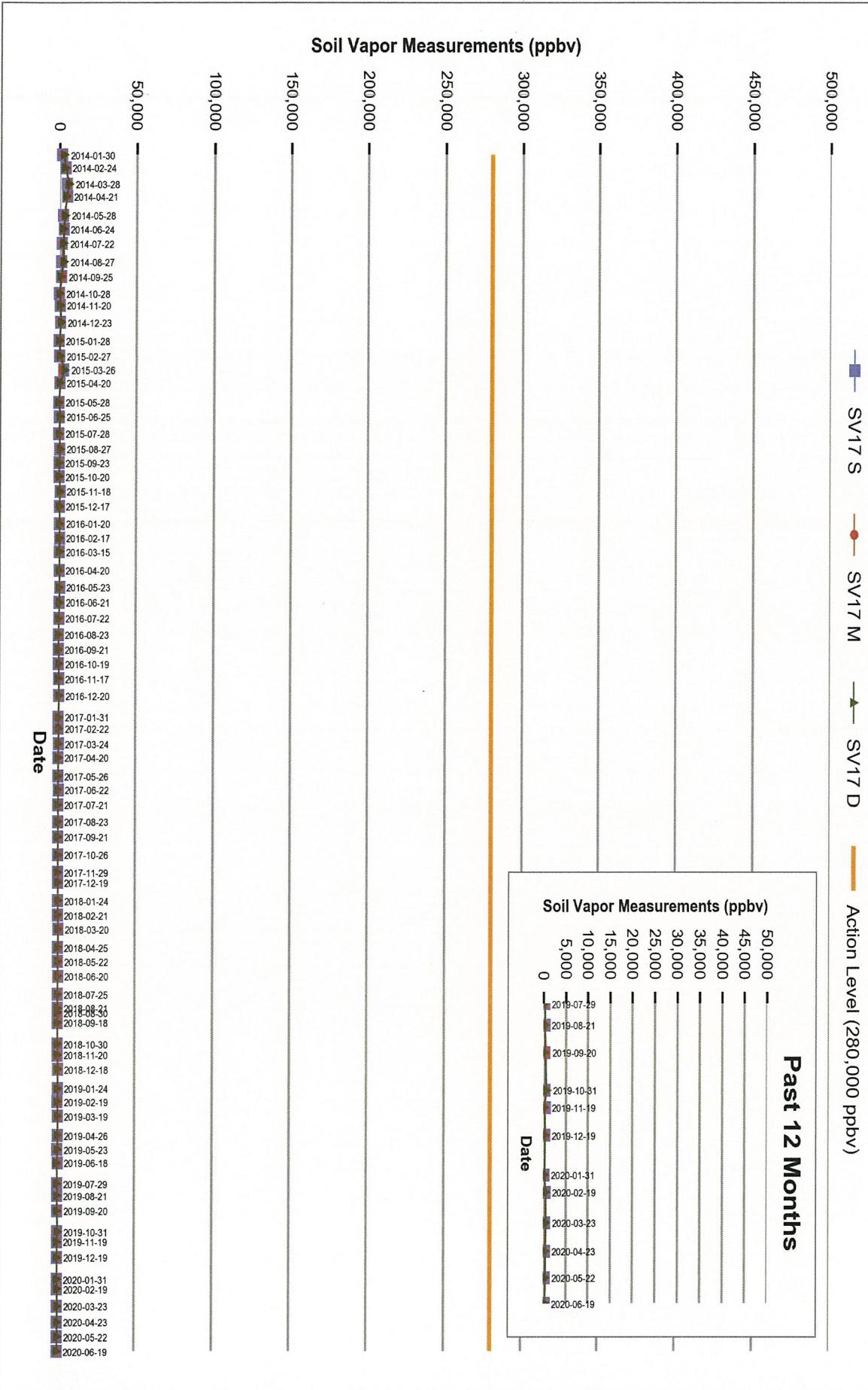
Figure 15
Soil Vapor Measurements - SV16 (F-76)



Notes (where applicable):
 ppbv - Parts Per Billion by Volume
 F-24 - Jet Fuel, Fuel Number 24

JP-5 - Jet Fuel, Propellant Number 5
 F-76 - Marine Diesel, Fuel Number 76

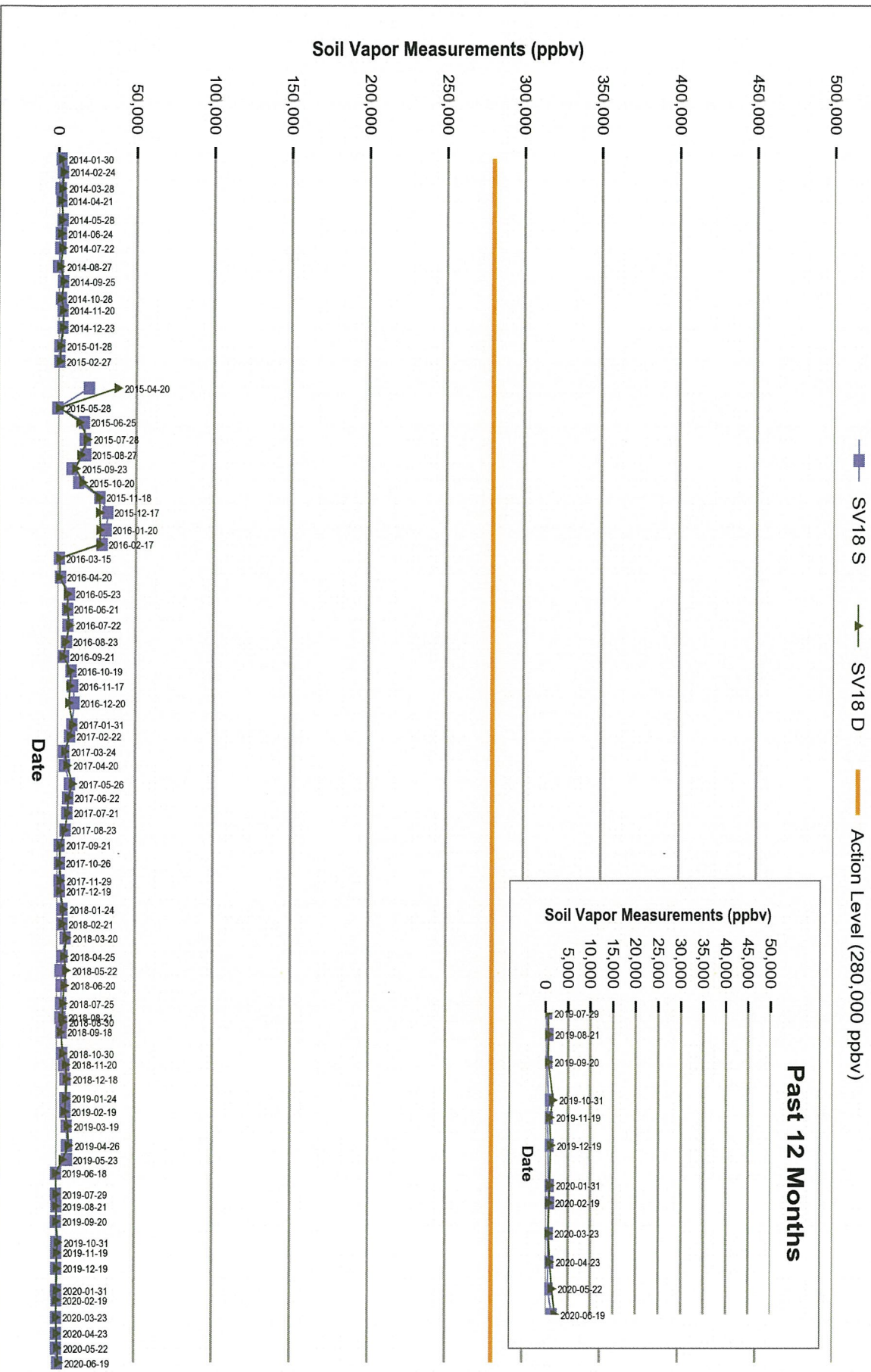
Figure 16
Soil Vapor Measurements - SV17 (JP-5)



Notes (where applicable):
 ppbv - Parts Per Billion by Volume
 F-24 - Jet Fuel, Fuel Number 24

JP-5 - Jet Fuel, Propellant Number 5
 F-76 - Marine Diesel, Fuel Number 76

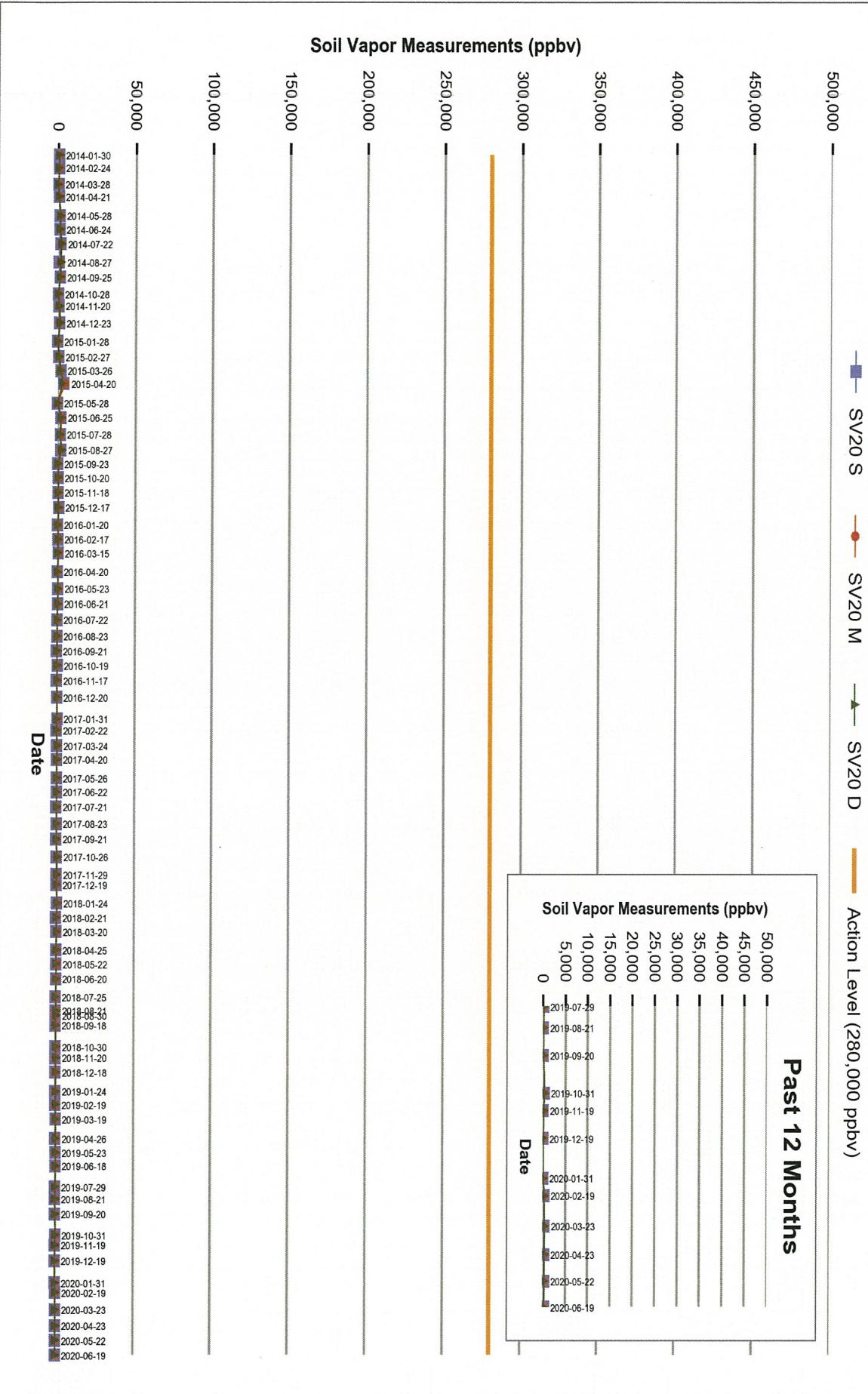
Figure 17
Soil Vapor Measurements - SV18 (JP-5)



Notes (Where applicable):
 ppbv - Parts Per Billion by Volume
 F-24 - Jet Fuel, Fuel Number 24

JP-5 - Jet Fuel, Propellant Number 5
 F-76 - Marine Diesel, Fuel Number 76

Figure 18
Soil Vapor Measurements - SV20 (JP-5)



Notes (where applicable):
 ppbv - Parts Per Billion by Volume
 F-24 - Jet Fuel, Fuel Number 24

JP-5 - Jet Fuel, Propellant Number 5
 F-76 - Marine Diesel, Fuel Number 76

14 August 2020

From: Environmental Protection Specialist, 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 JUNE 2020

Ref: (a) Red Hill Bulk Fuel Storage Facility Groundwater Protection Plan
(b) Red Hill Soil Vapor Monitoring Report for Round 147, dated 26 June 2020

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 trend in VOC concentrations at tanks 3, 17, and 20.
- Moderate increasing trend in VOC concentrations at Tank 18.

2. FLCPH causative research and findings:

- a. The following Red Hill Fuel Storage Facility Underground Storage Tanks (USTs) are Out of Service for Clean, Inspect and Repair (CIR): Tanks 13, 14, 17, 18.
- b. Reviewed all AFHE Unscheduled Fuel Movement (UFM) Alarm Summaries and UFM Reports. There was a total of three (3) UFM recorded between sampling events 146 and 147 during the period of 22 May 2020 – 19 June 2020:

15 Jun 20 – RH12: A low level UFM alarm occurred on RH12 after creating an evolution. The UFM occurred due to “operator error”, when the Control Room Operator set an evolution and didn’t initiate the evolution in time to issue to a commercial truck. Dispatched Rover to tank to investigate tank, pipeline, and manually gauge the tank. All conditions were normal. Investigative actions confirmed no release of fuel from the tank occurred. No trouble ticket required. UFM alarm was result of operator error.

16 Jun 20 – RH12: A low level UFM alarm occurred on RH12 after creating an evolution. The UFM occurred due to “operator error”, when the Control Room Operator set an evolution and didn’t initiate the evolution in time to issue to a commercial truck. Dispatched Rover to tank to investigate tank, pipeline, and manually gauge the tank. All conditions were normal. Investigative actions confirmed no release of fuel from the tank occurred. No trouble ticket required. UFM alarm was result of operator error.

17 Jun 20 – RH16: A high level UFM alarm occurred on RH16 after creating an evolution. The UFM occurred due to “operator error”, when the Control Room Operator set an evolution and didn’t initiate the evolution in time to issue to a commercial truck. Dispatched Rover to tank to investigate tank, pipeline, and manually gauge the tank. All conditions were normal. Investigative actions confirmed no release of fuel from the tank occurred. No trouble ticket required. UFM alarm was result of operator error.

ENCLOSURE(2)

Subj: NAVSUP FLC PEARL HARBOR CAUSATIVE RESEARCH REPORT IRT RED HILL
SOIL VAPOR MONITORING REPORT FOR JUNE 2020

- c. Control Room Operators are being retrained and monitored by supervisors to prevent future UFM occurrences.
 - d. Red Hill maintenance and repair contractors did not report any factors that could have influenced increase in trends.
 - e. Reviewed Red Hill Inventory Trend Analysis Reports for May and June 2020; reports did not reveal evidence of a loss of fuel in any Red Hill tank.
 - f. Inspection of the area surrounding all Red Hill tanks did not show evidence of a fuel leak or evidence that any fuel had spilled in the area.
 - g. All active tanks have passed tank tightness testing within the required periodicity.
3. 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.

SANTOS.RICHARD.EN Digitally signed by
RIQUE.1167010233 SANTOS.RICHARD.EN/RIQUE.1167010233
Date: 2020.06.14 15:53:39 -0500
RICHARD SANTOS