



JUN 2 2020 *CBK*

DEPARTMENT OF THE NAVY

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

5000-45A
N45
June 12, 2020

CERTIFIED NO: 7019 2970 0001 7433 3592

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 MAY
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, 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 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 middle and outer edge soil vapor monitoring probes were 5,178 ppbv and 887 ppbv, respectively. A sample couldn't be collected from the front soil vapor monitoring probe due to obstructions in the line. Tank 5 was emptied in January 2014 and did not contain fuel until tank refilling activities commenced on February 13, 2020. VOC concentrations in all down-gradient soil vapor monitors were below 488 ppbv.

All other VOC concentrations measured in May were about 54 to 1,400 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,

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rainfall (or lack thereof), by-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 June 2020, 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. Joel Narusawa at (808) 471-4881.

Sincerely,

LEFEBVRE.JEFFR
EY.S.1228521821

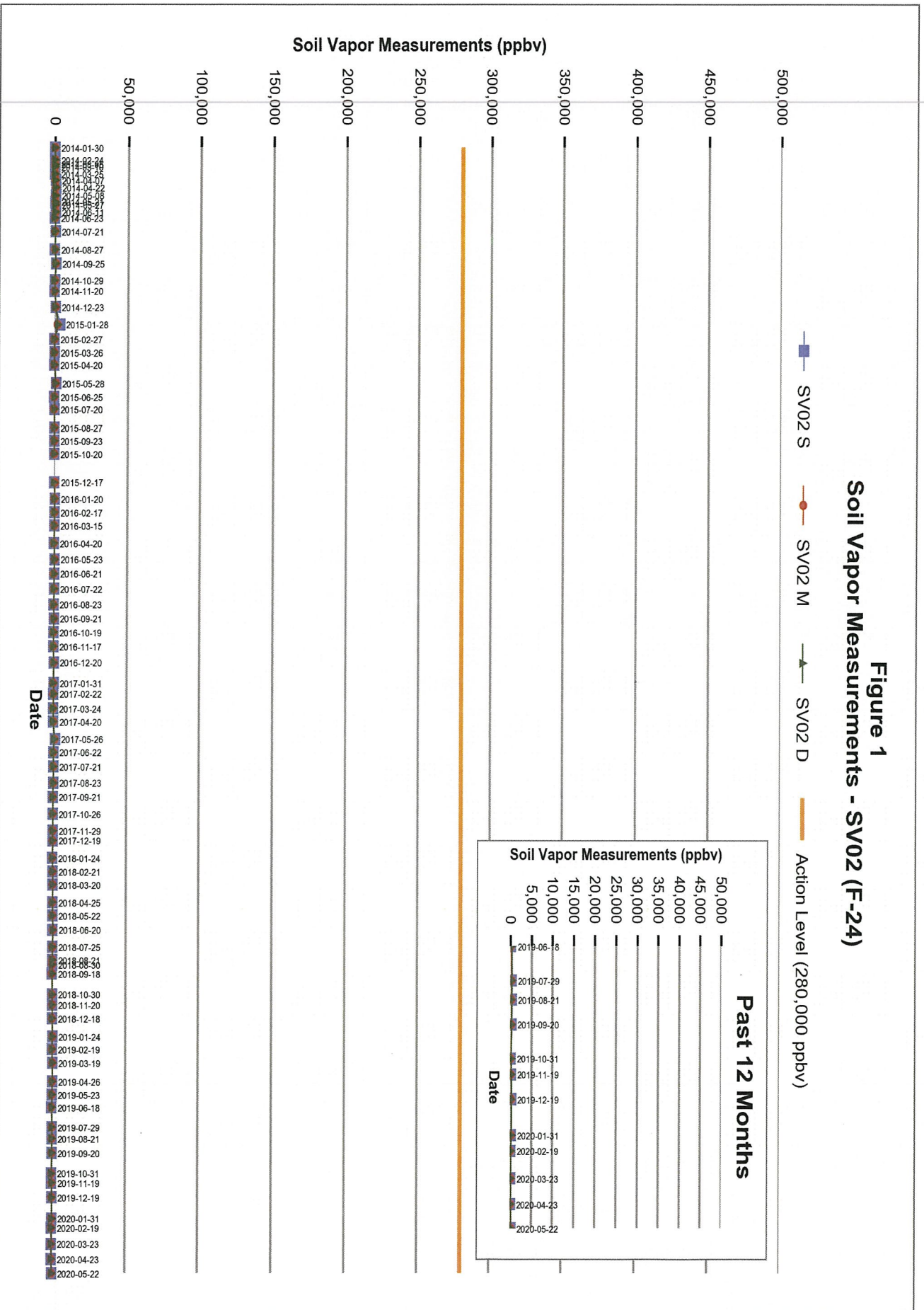
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JEFFREY S. LeFEBVRE
Acting Director
Regional Environmental Department
By direction of the
Commander

- Enclosures: 1. Summary of Soil Vapor Sampling Results for Tanks 2 through 18 and 20 through May 2020 (18 pages)
2. NAVSUP FLC Pearl Harbor Causative Research Report IRT Red Hill Soil Vapor Monitoring Report for May 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

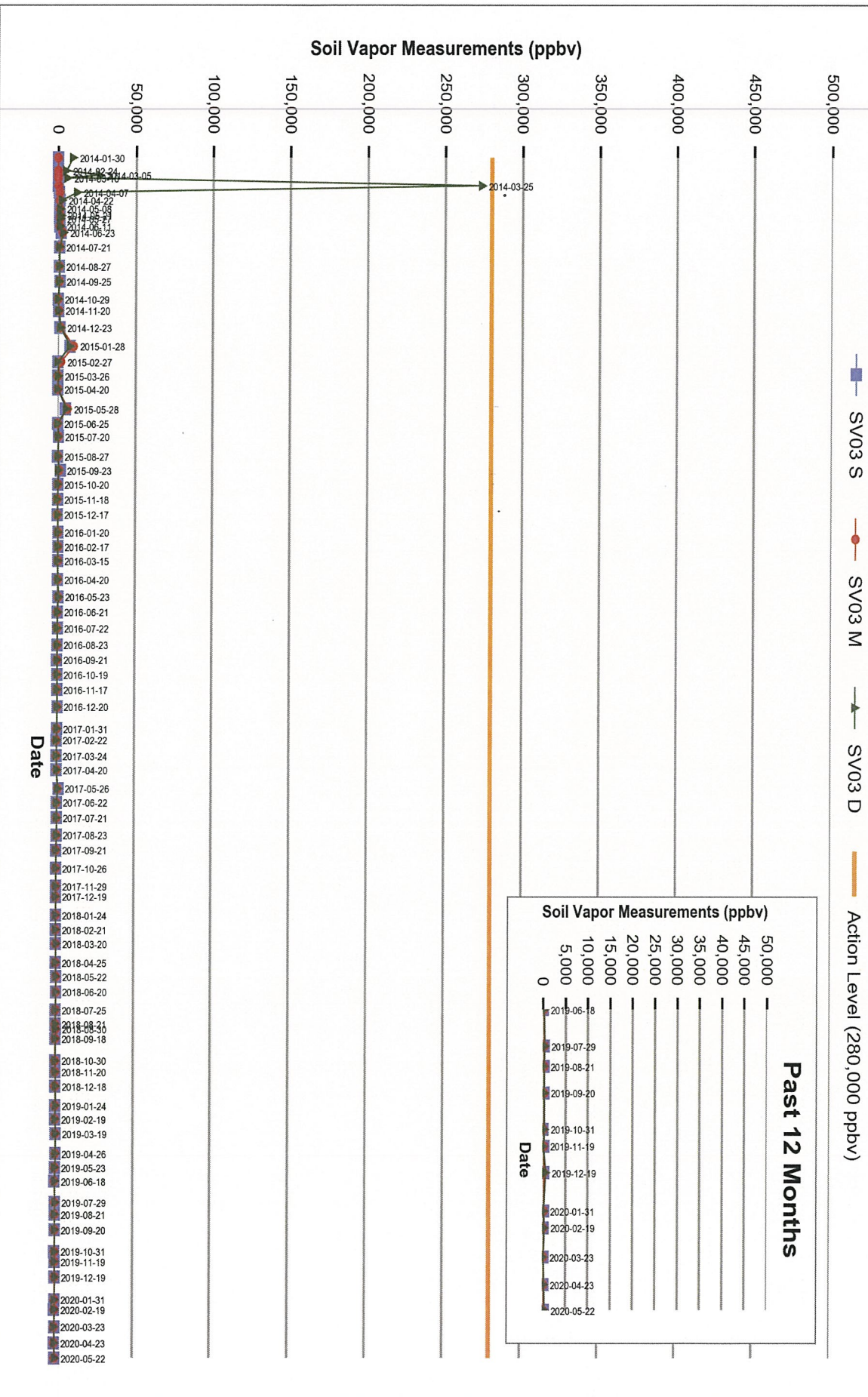
Figure 1
Soil Vapor Measurements - SV02 (F-24)



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

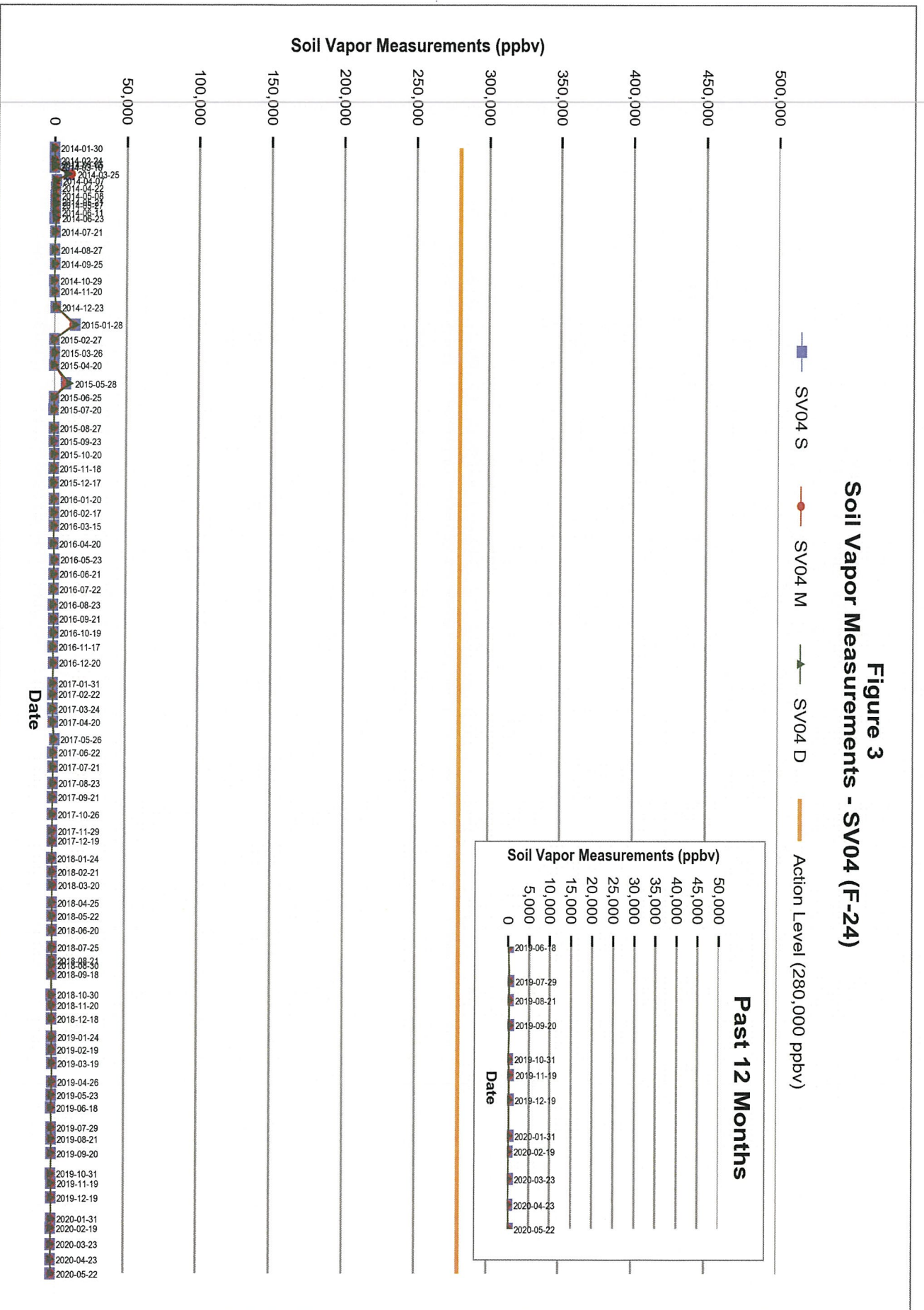
Figure 2
Soil Vapor Measurements - SV03 (F-24)



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

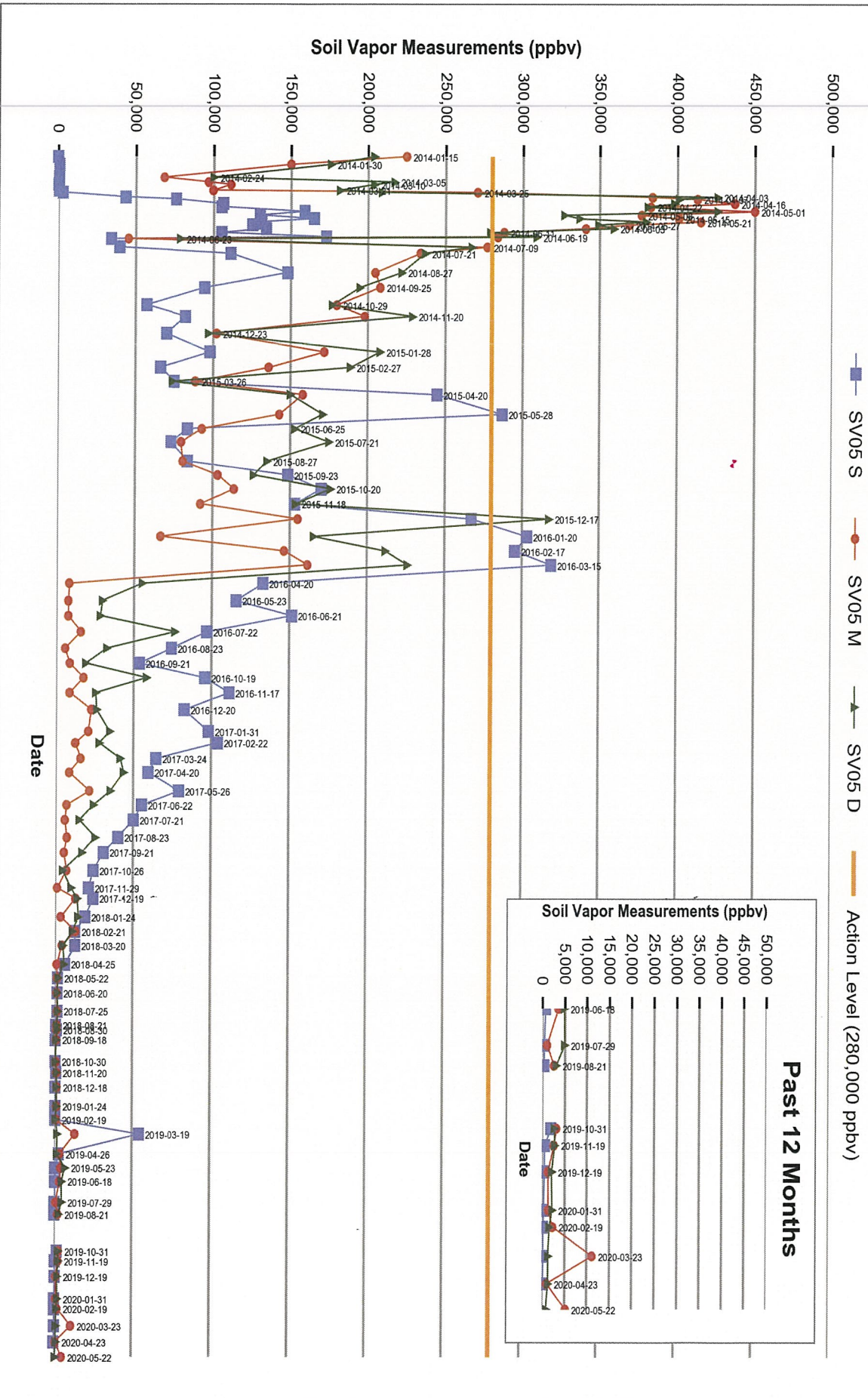
Figure 3
Soil Vapor Measurements - SV04 (F-24)



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

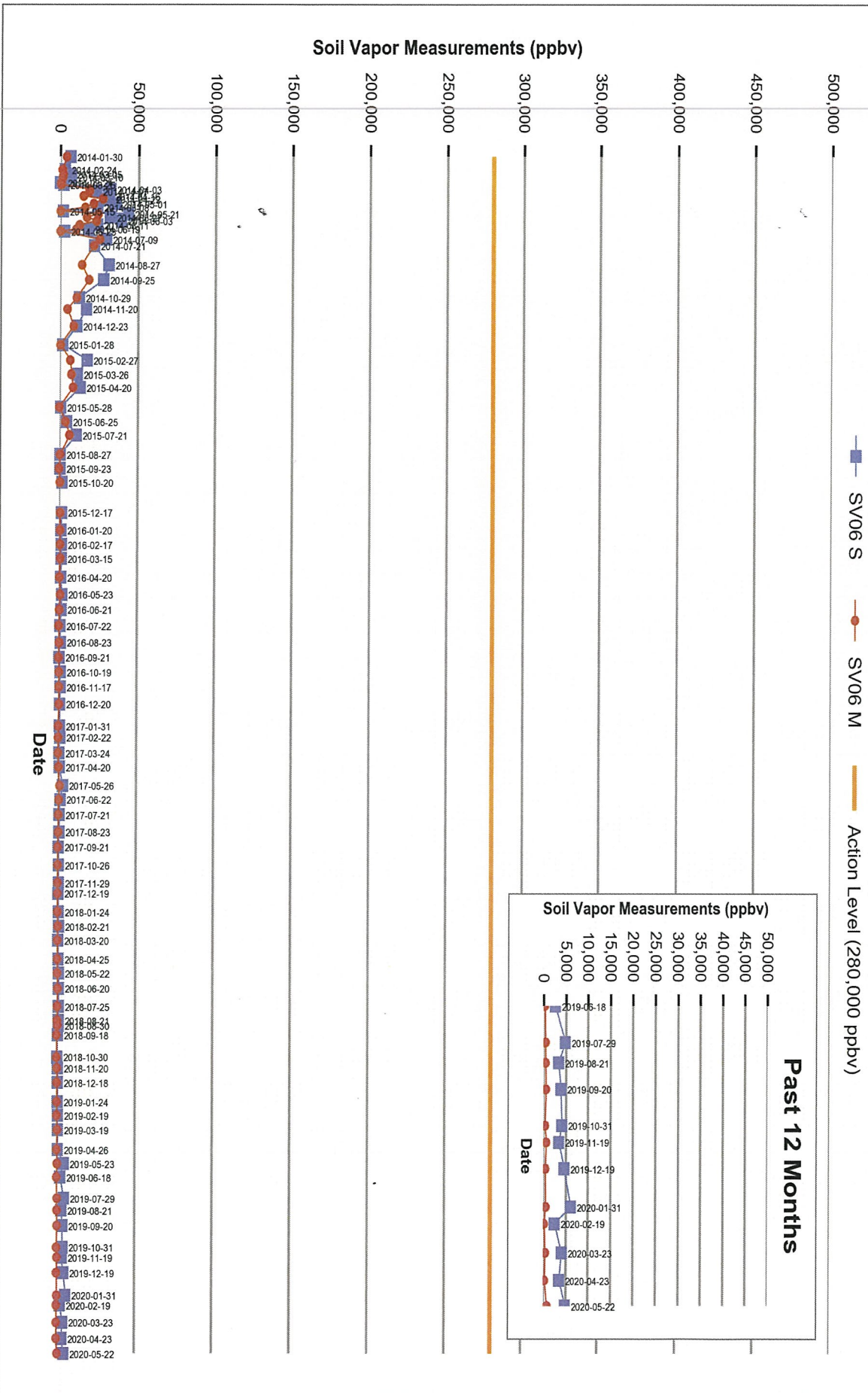
Figure 4
Soil Vapor Measurements - SV05 (F-24)



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

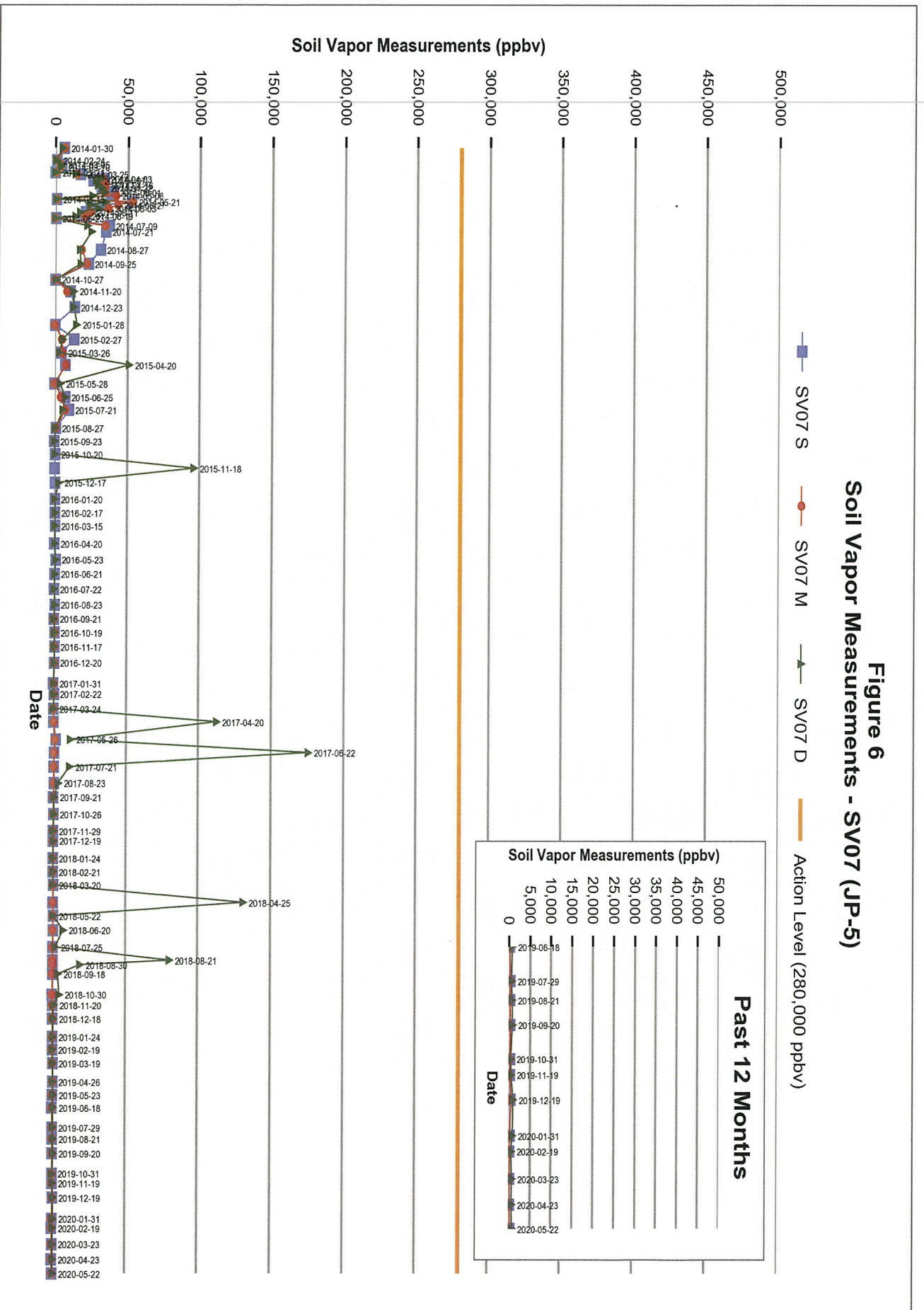
Figure 5
Soil Vapor Measurements - SV06 (F-24)



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

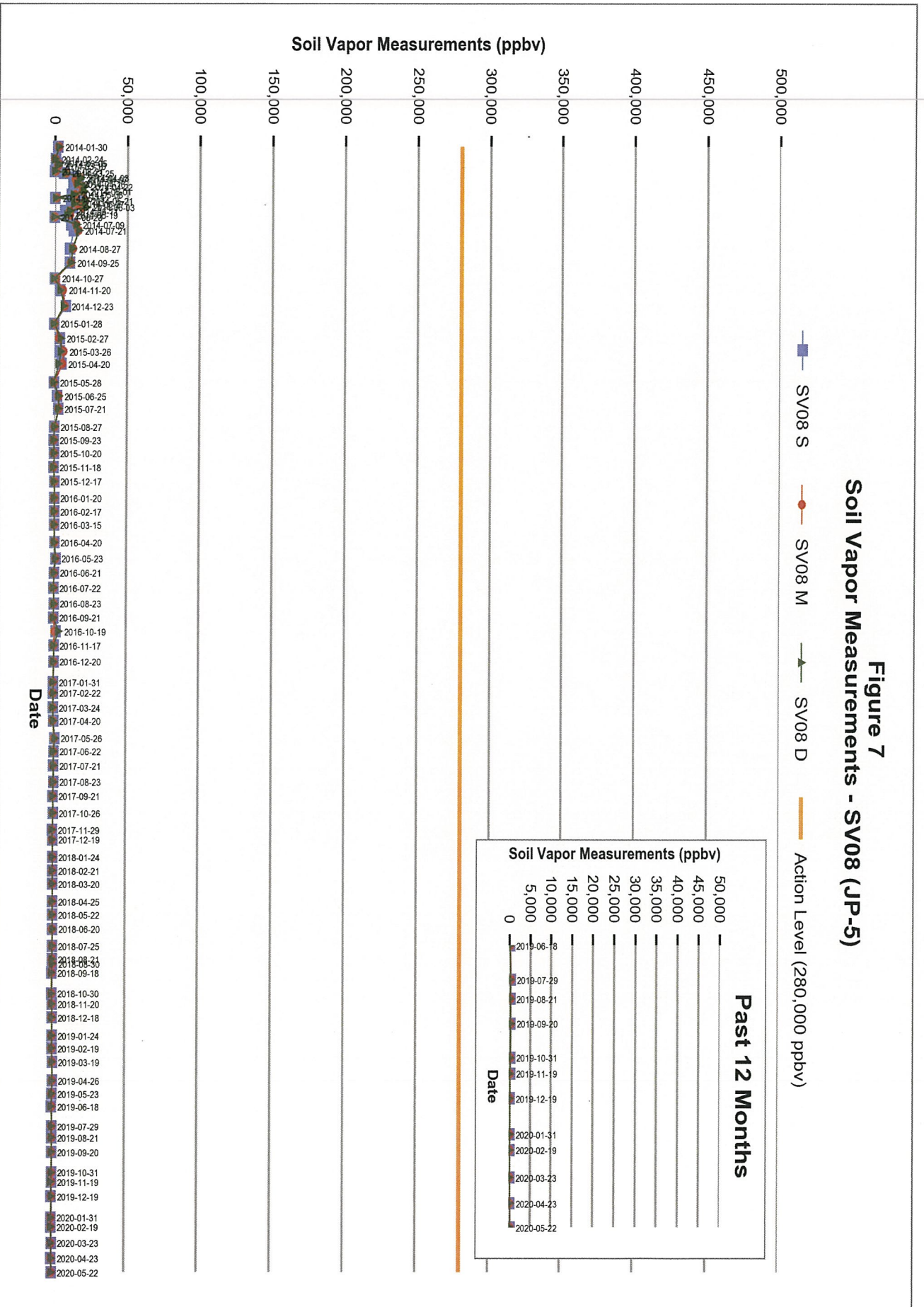
Figure 6
Soil Vapor Measurements - SV07 (JP-5)



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

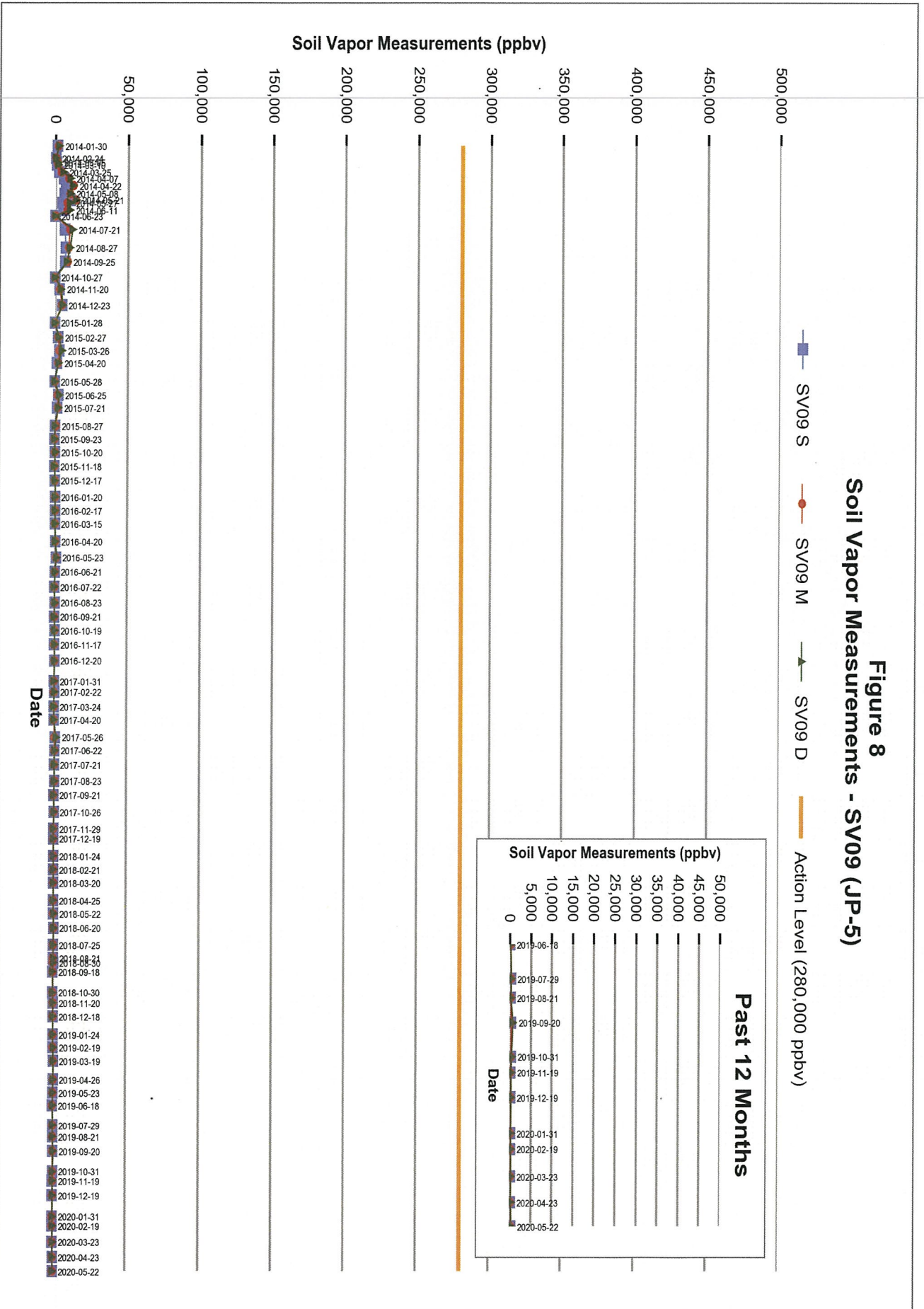
Figure 7
Soil Vapor Measurements - SV08 (JP-5)



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

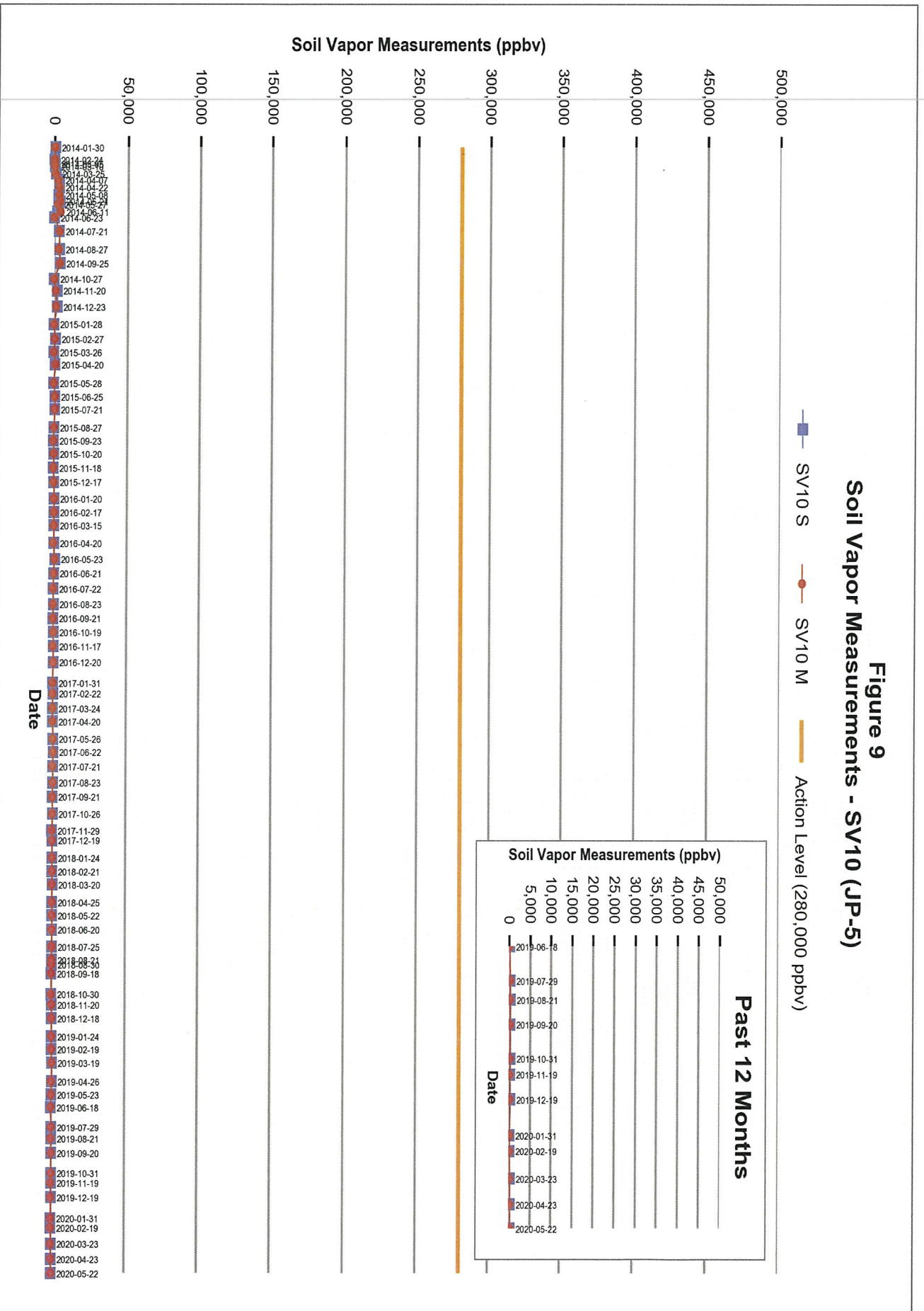
Figure 8
Soil Vapor Measurements - SV09 (JP-5)



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

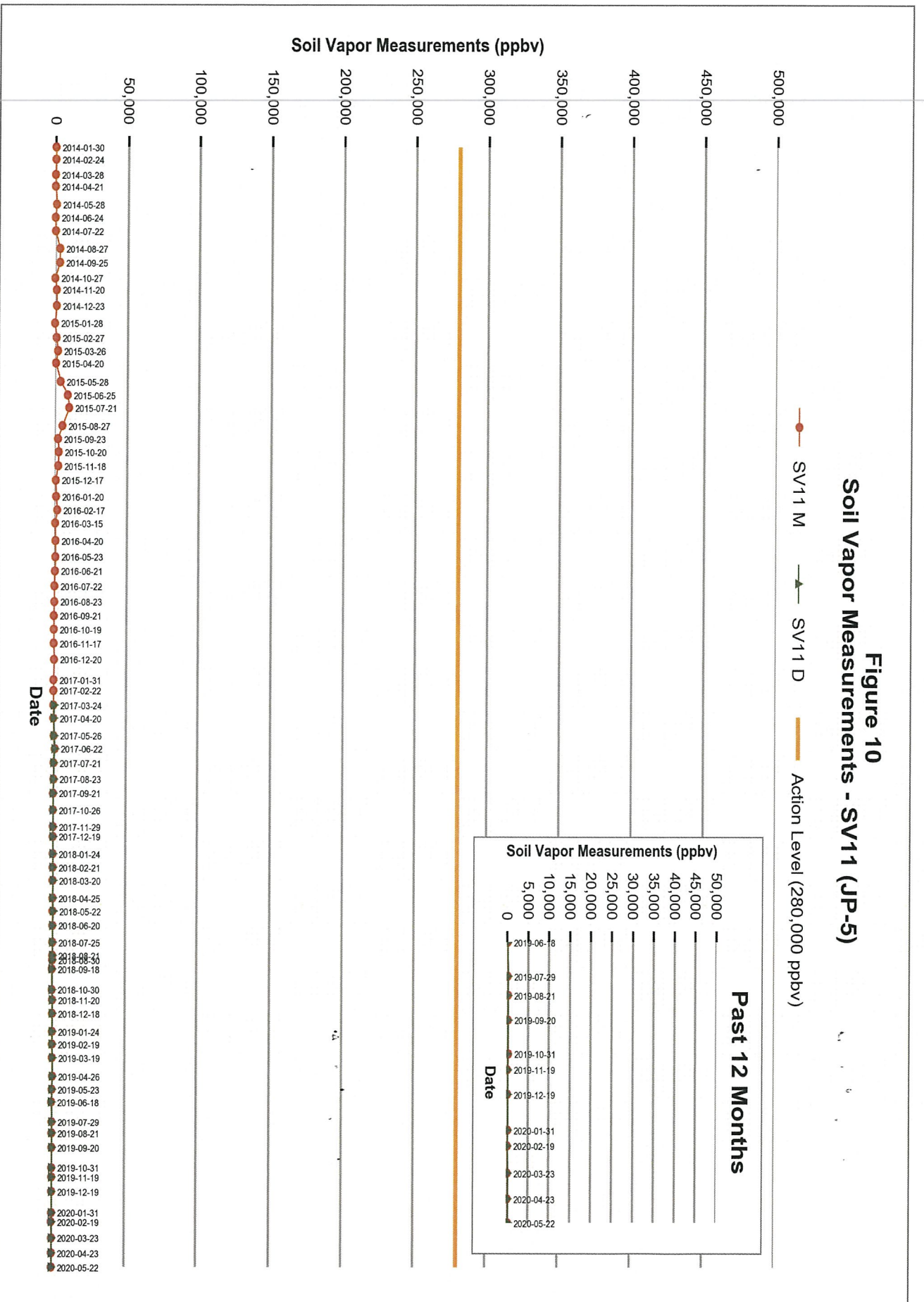
Figure 9
Soil Vapor Measurements - SV10 (JP-5)



Notes (where applicable):
 ppbv: Parts Per Billion by Volume
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JP-5: Jet Fuel, Propellant Number 5
 F-76: Marine Diesel, Fuel Number 76

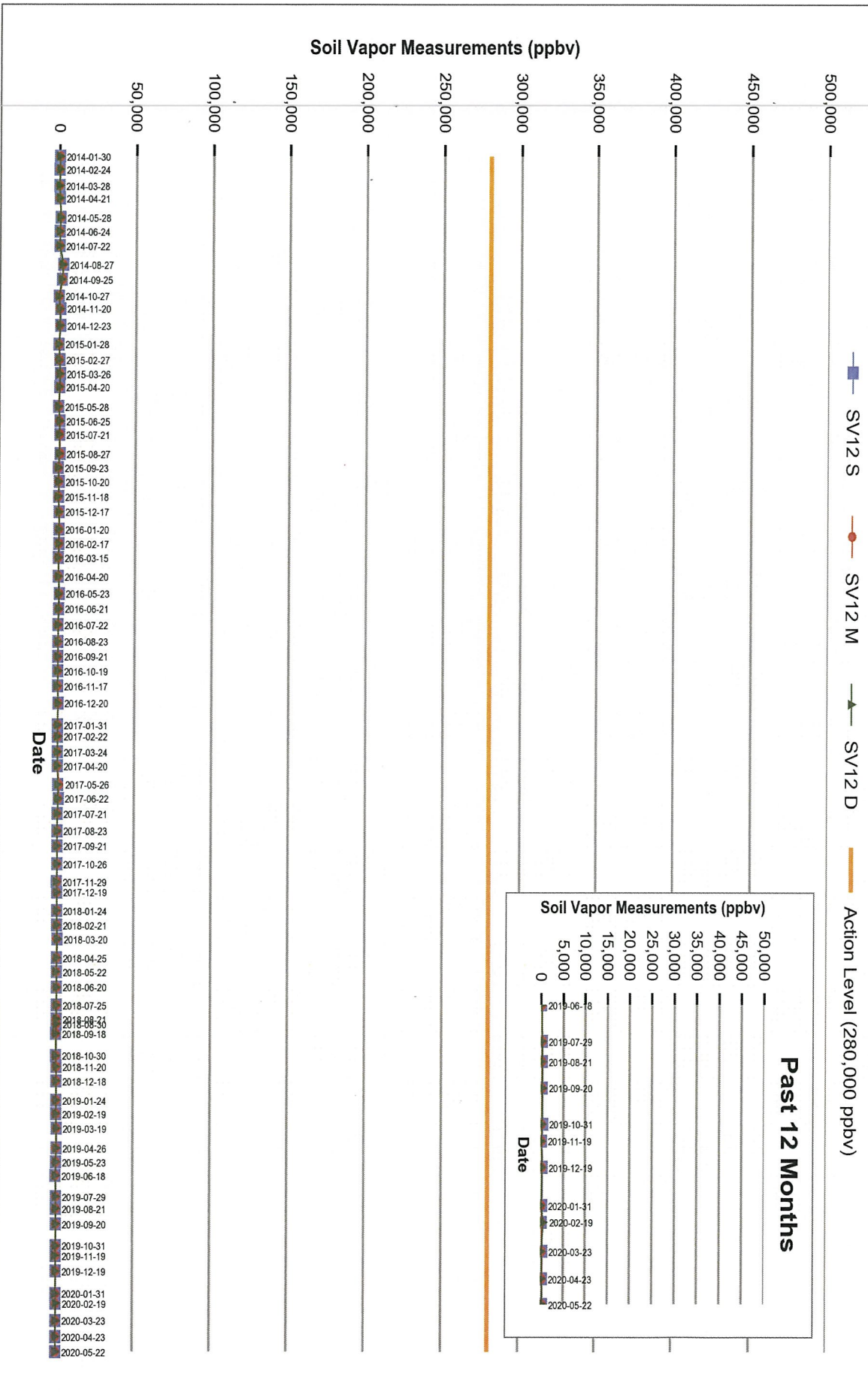
Figure 10
Soil Vapor Measurements - SV11 (JP-5)



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

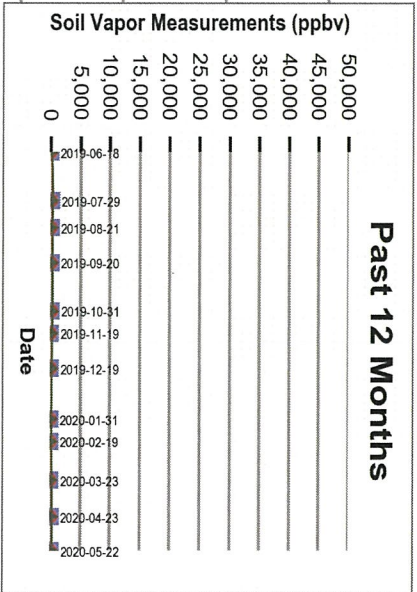
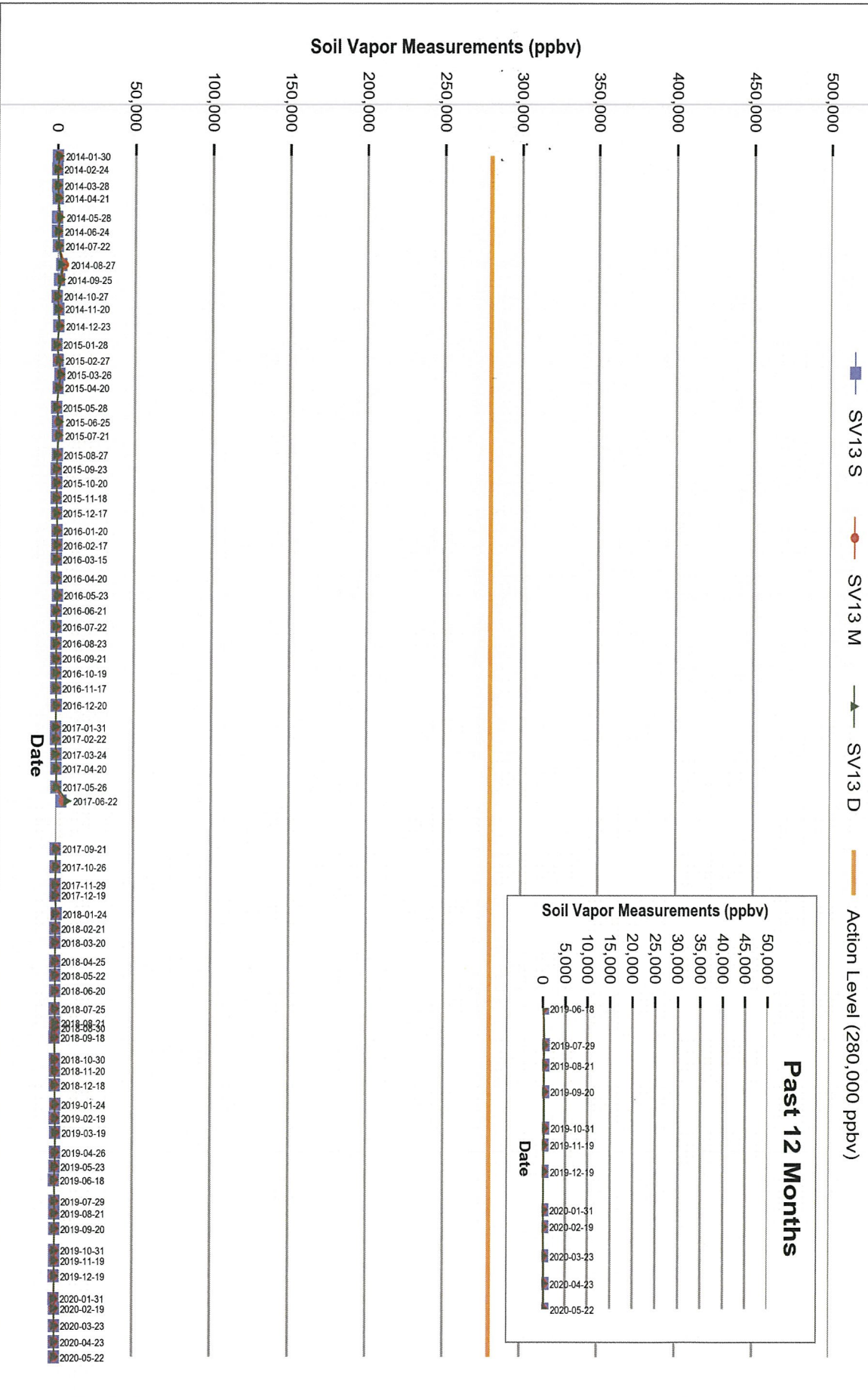
Figure 11
Soil Vapor Measurements - SV12 (JP-5)



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

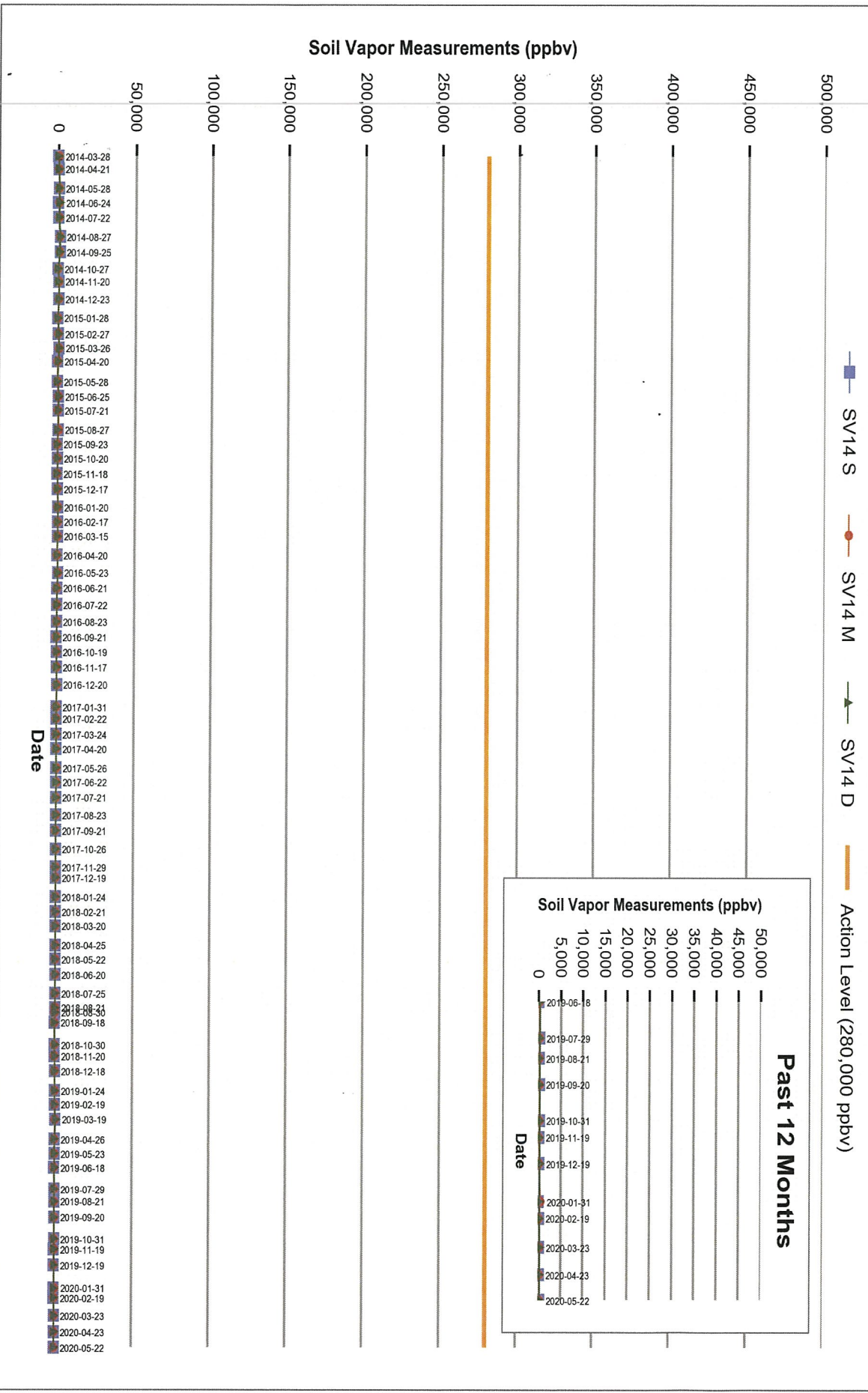
Figure 12
Soil Vapor Measurements - SV13 (JP-5)



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

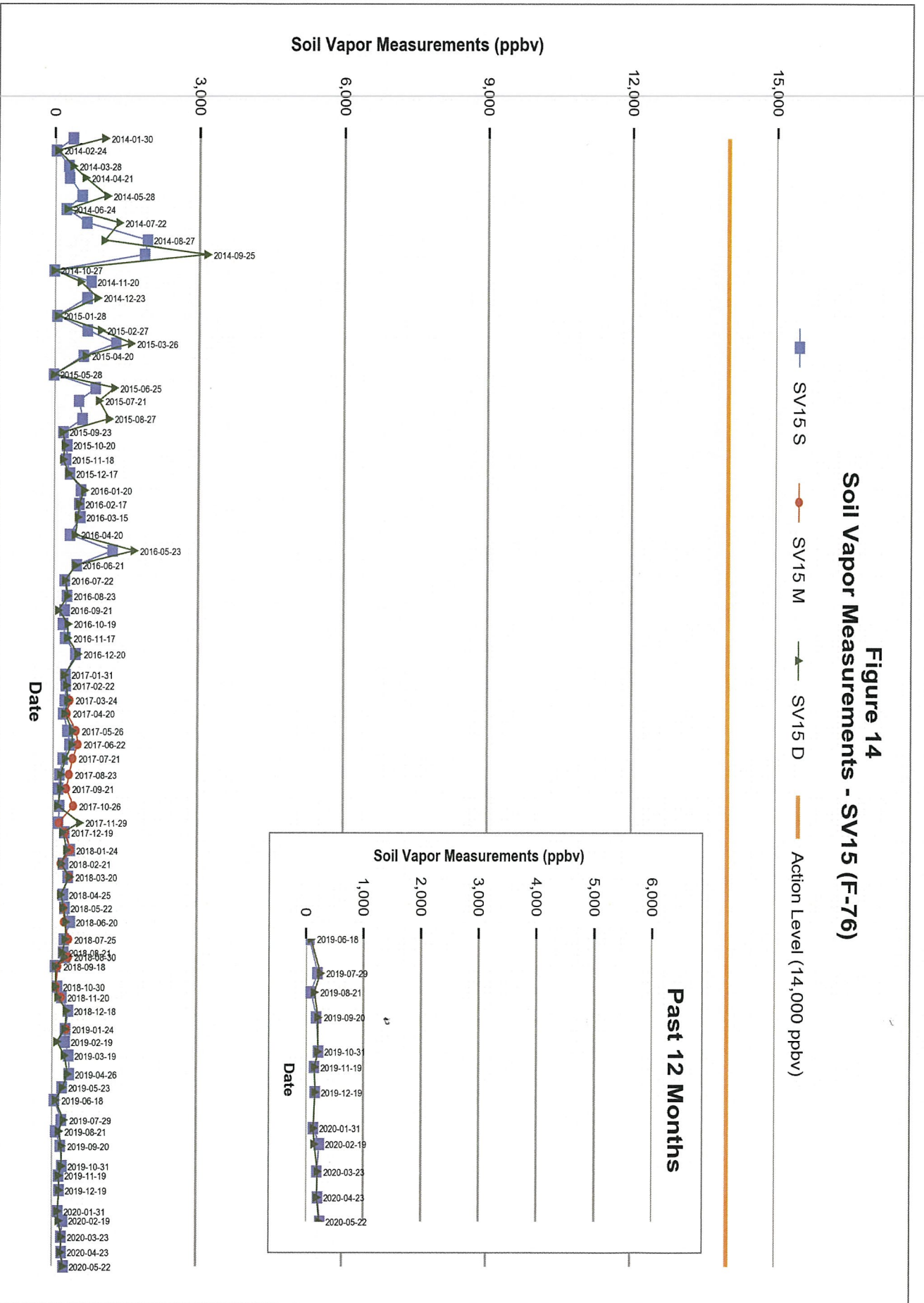
Figure 13
Soil Vapor Measurements - SV14 (JP-5)



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

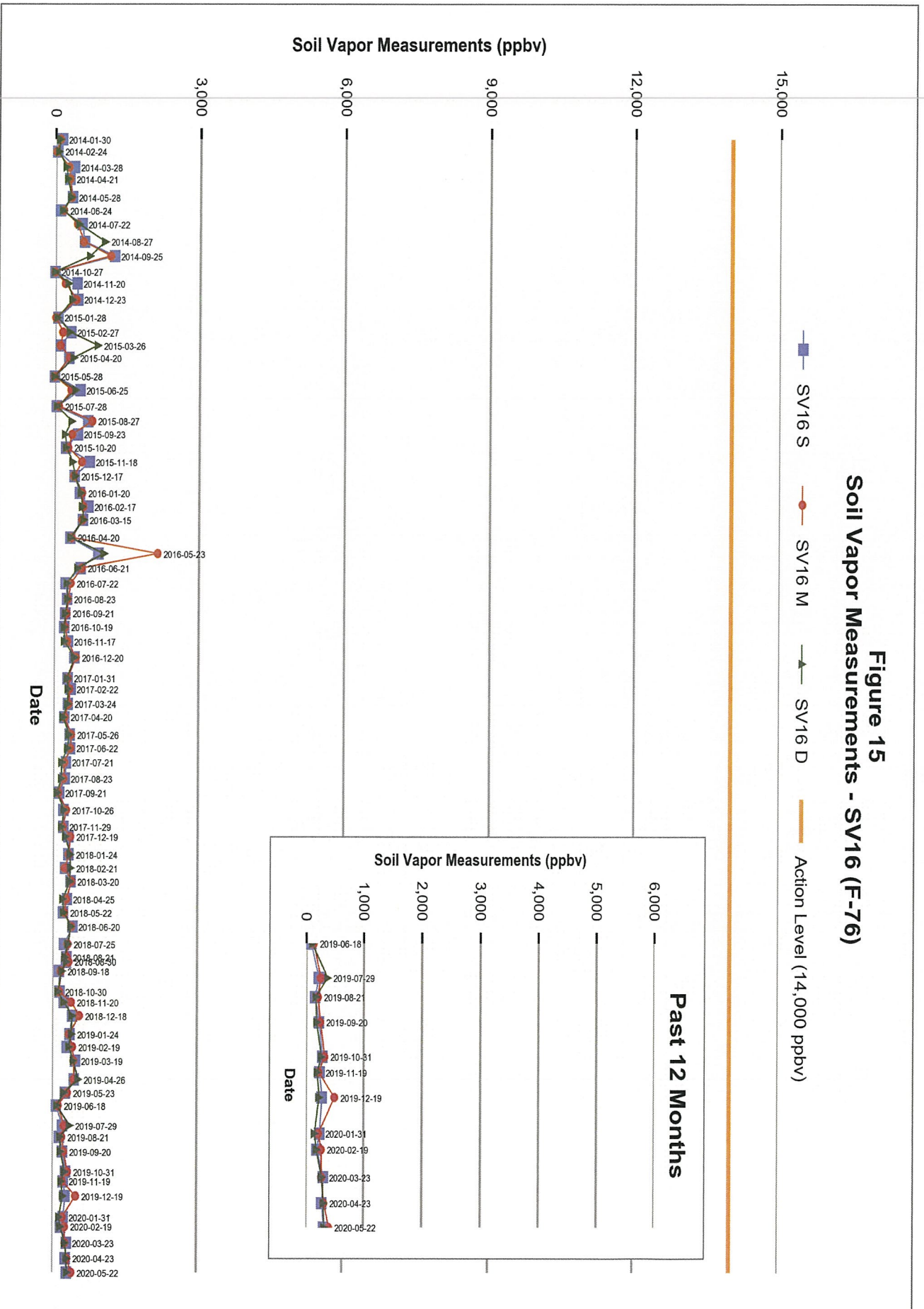
Figure 14
Soil Vapor Measurements - SV15 (F-76)



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

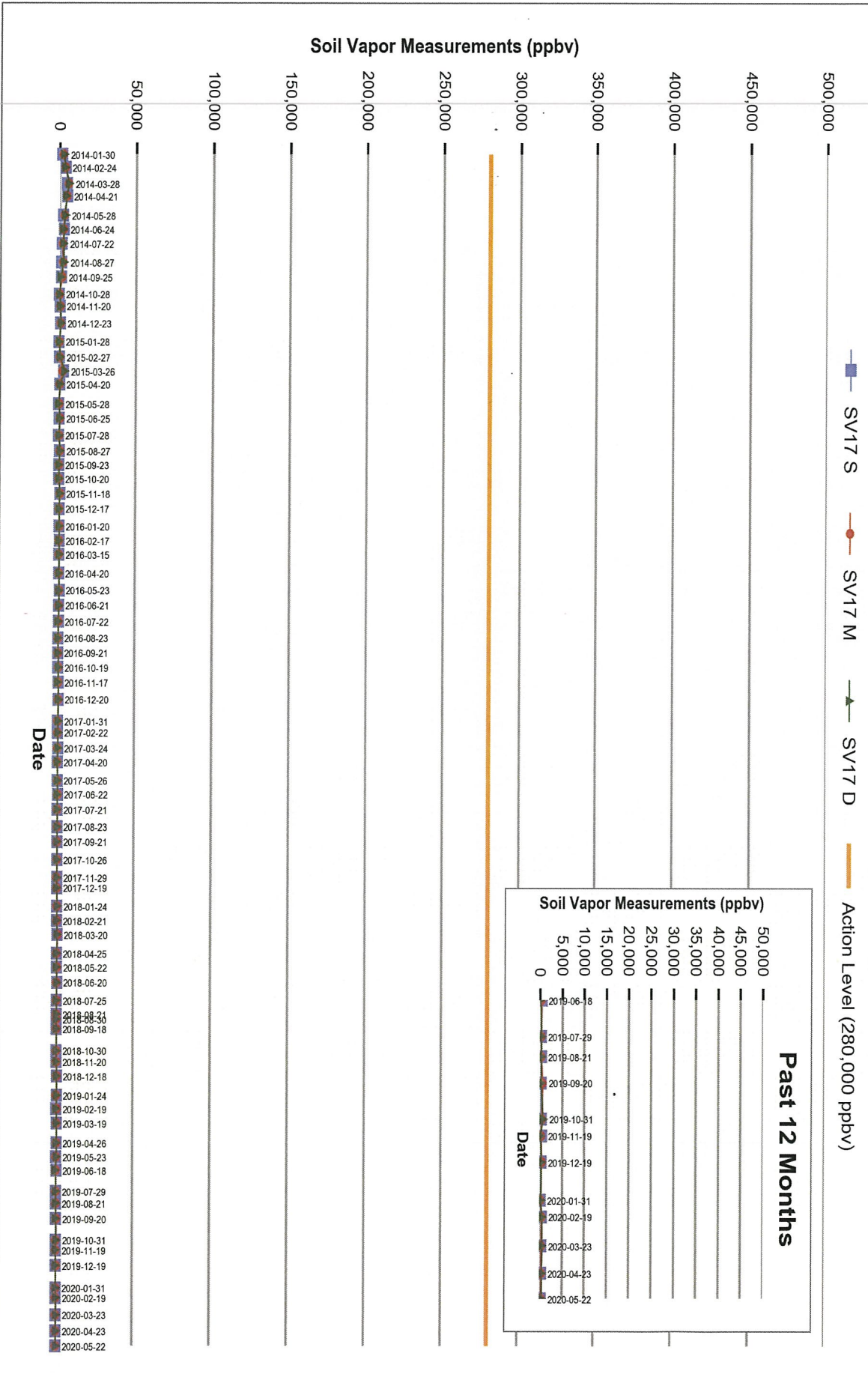
Figure 15
Soil Vapor Measurements - SV16 (F-76)



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

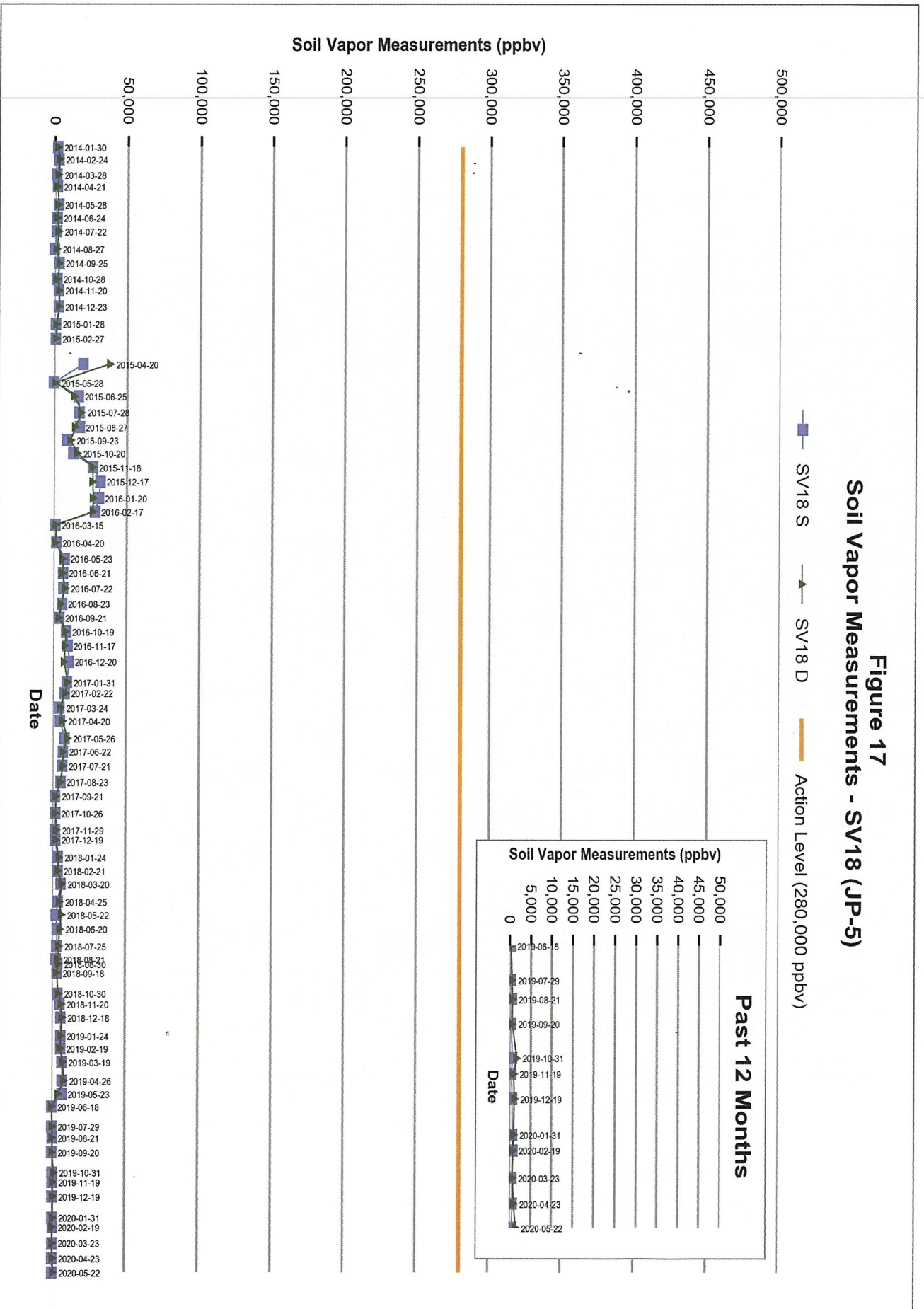
Figure 16
Soil Vapor Measurements - SV17 (JP-5)



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

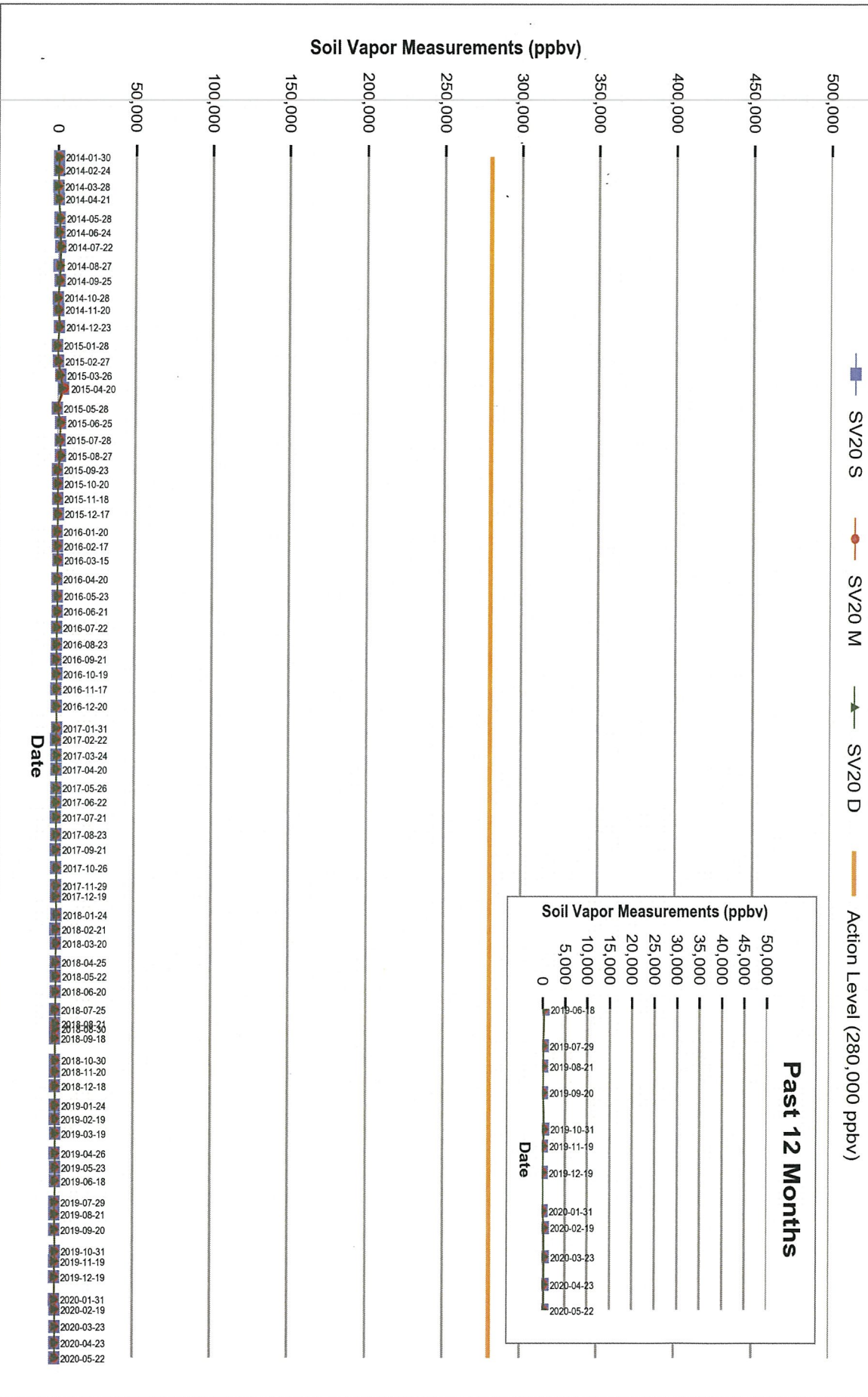
Figure 17
Soil Vapor Measurements - SV18 (JP-5)



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

11 June 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 May 2020

Ref: (a) Red Hill Bulk Fuel Storage Facility Groundwater Protection Plan
(b) Red Hill Soil Vapor Monitoring Report for Round 146, dated 28 May 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 2, 3, 4, 7 through 16 and 20.
- Strong increasing trend in VOC concentrations at Tank 6.

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 one (1) UFM recorded between sampling events 145 and 146 during the period of 23 April 2020 – 22 May 2020:

15 May20 – RH15: A low level UFM alarm occurred on RH15 while the Tank was idle and ENGlobal Maintenance Team was conducting Tank Calibration. ENGlobal technician rebooted the local computer system while tank calibration was being conducted which created the UFM. Dispatched Kuahua Rover to tank to investigate tank, pipeline, and all accessories and conducted a manual gauge which resulted in all conditions were normal and no change in inventory. Control Room Operator provided all supporting documentation to verify UFM alarm. Investigative actions confirmed no release of fuel from the tank occurred. No trouble ticket required. UFM alarm was result of operator error.

c. Red Hill maintenance and repair contractors did not report any factors that could have influenced increase in trends.

d. Reviewed Red Hill Inventory Trend Analysis Reports for April and May 2020; reports did not reveal evidence of a loss of fuel in any Red Hill tank.

e. 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.

f. All active tanks have passed tank tightness testing within the required periodicity.

ENCLOSURE(2)

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

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.

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