MAY 07 2020 CCK

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

5000-45A
N45
May 4, 2020

CERTIFIED NO: 7019 2970 0001 7433 3479

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 APRIL
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 April 23, 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 front, middle, and outer edge soil vapor monitoring probes were 156 ppbv, 1,027 ppbv, and 1,296 ppbv, respectively. 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 294 ppbv.

All other VOC concentrations measured in March were about 80 to 2,190 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 May 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.JEFFREY.S.1228521821 Digitally signed by LEFEBVRE.JEFFREY.S.1228521821 Date: 2020.05.04 07:31:34 -10'00'

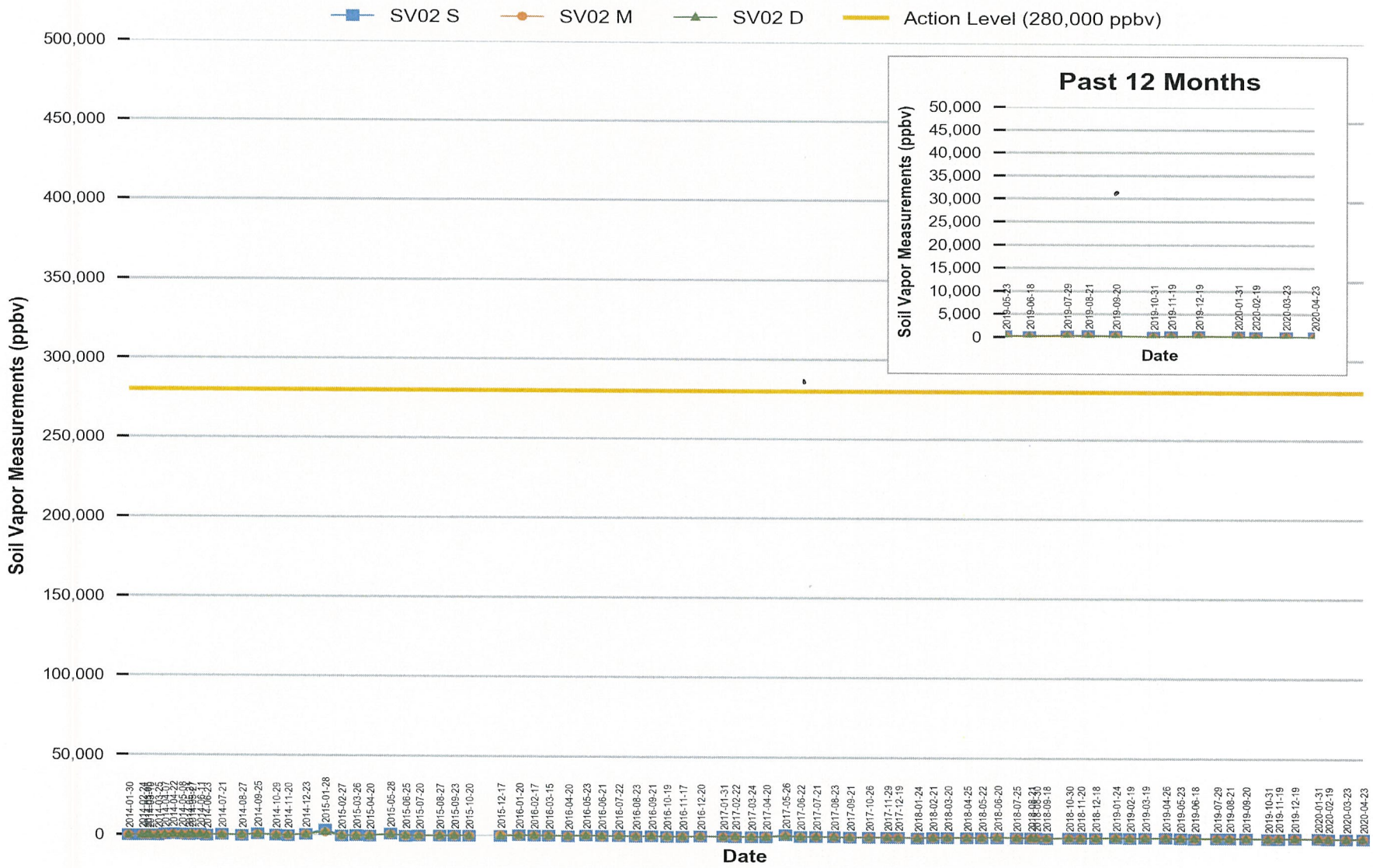
JEFFREY S. LeFEBVRE
Acting Director
Regional Environmental Department
By direction of the
Commander

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

ENCLOSURE( )

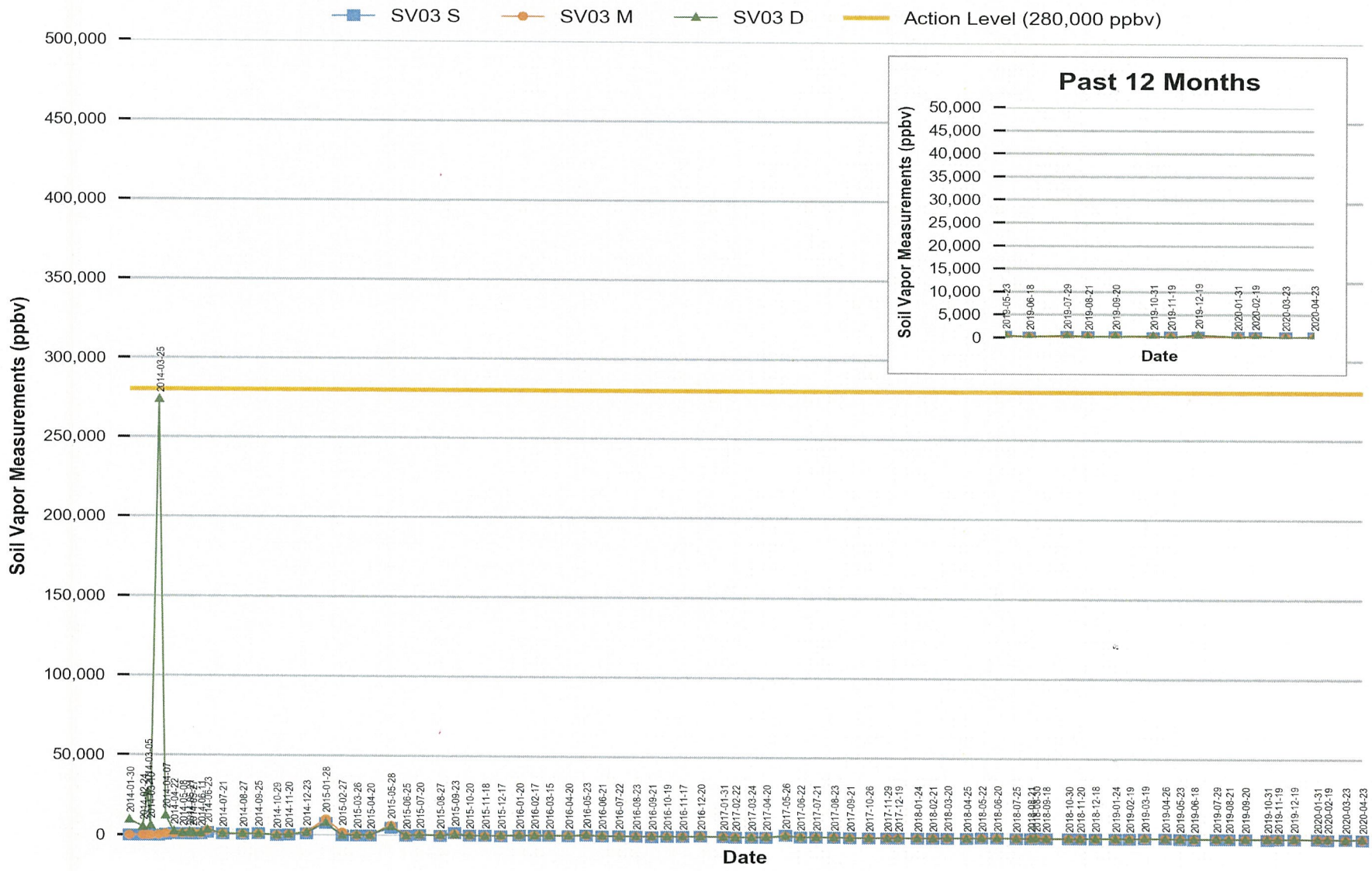
Figure 1
Soil Vapor Measurements - SV02 (F-24)



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

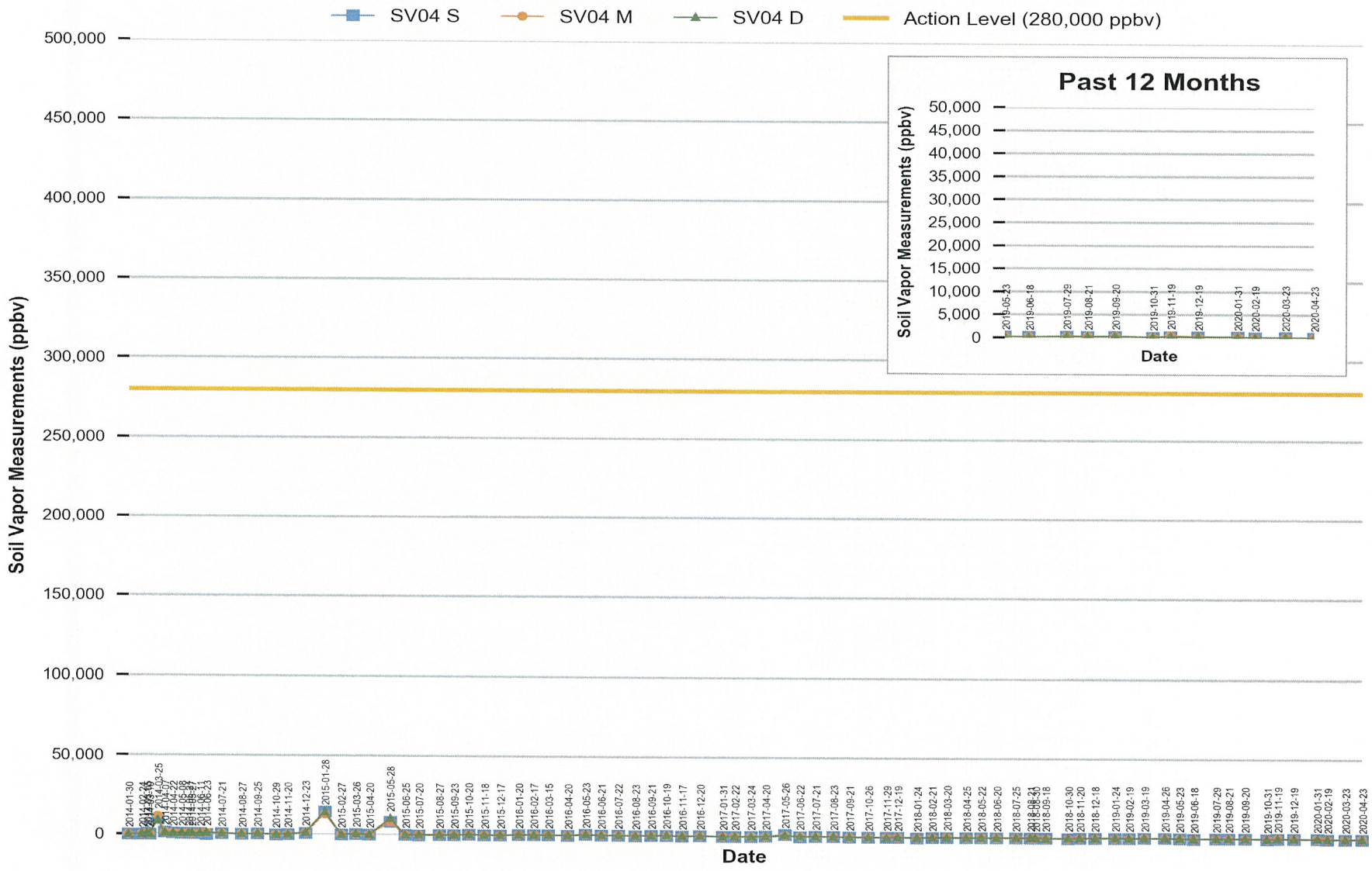
Figure 2
Soil Vapor Measurements - SV03 (F-24)



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

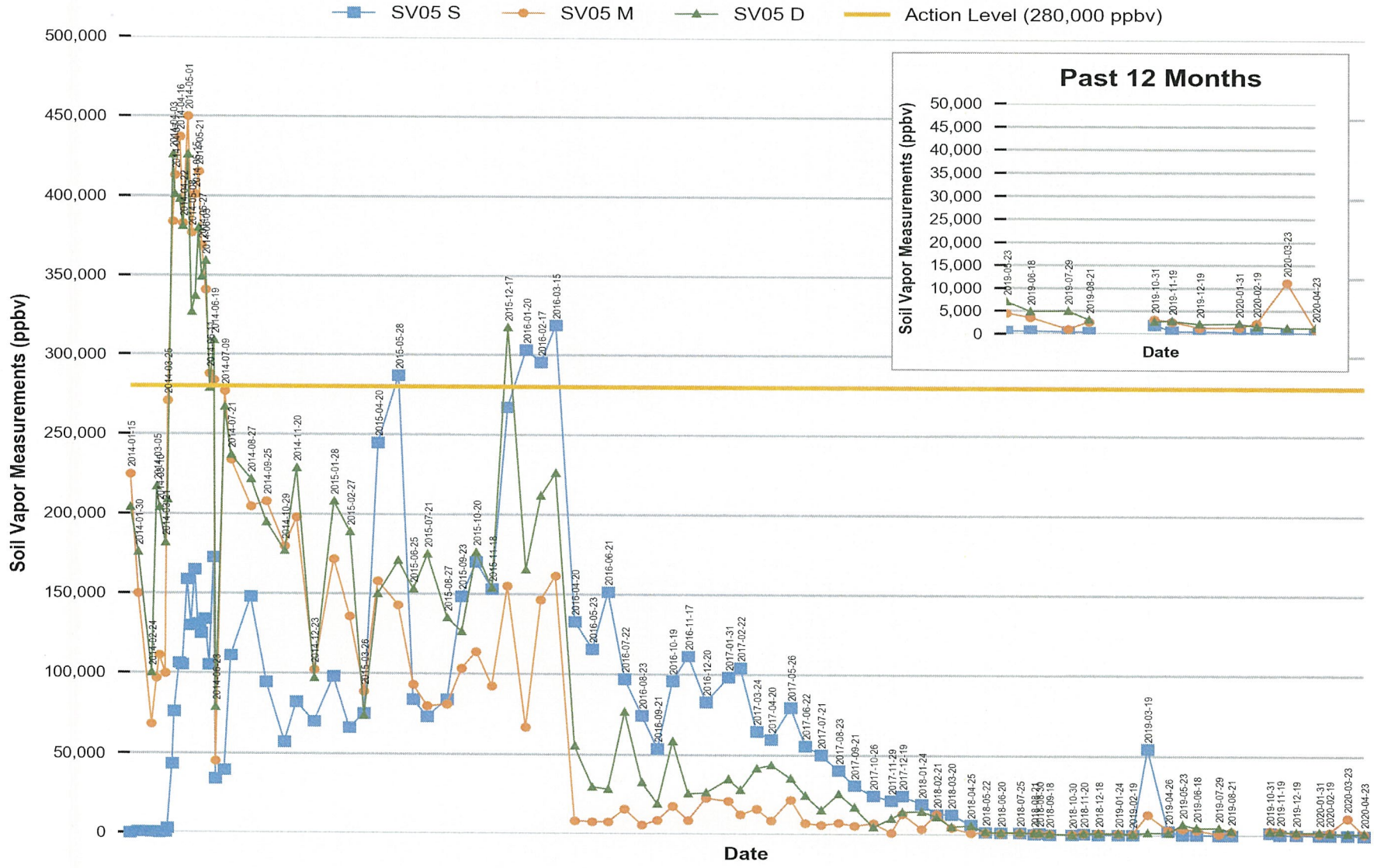
Figure 3
Soil Vapor Measurements - SV04 (F-24)



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

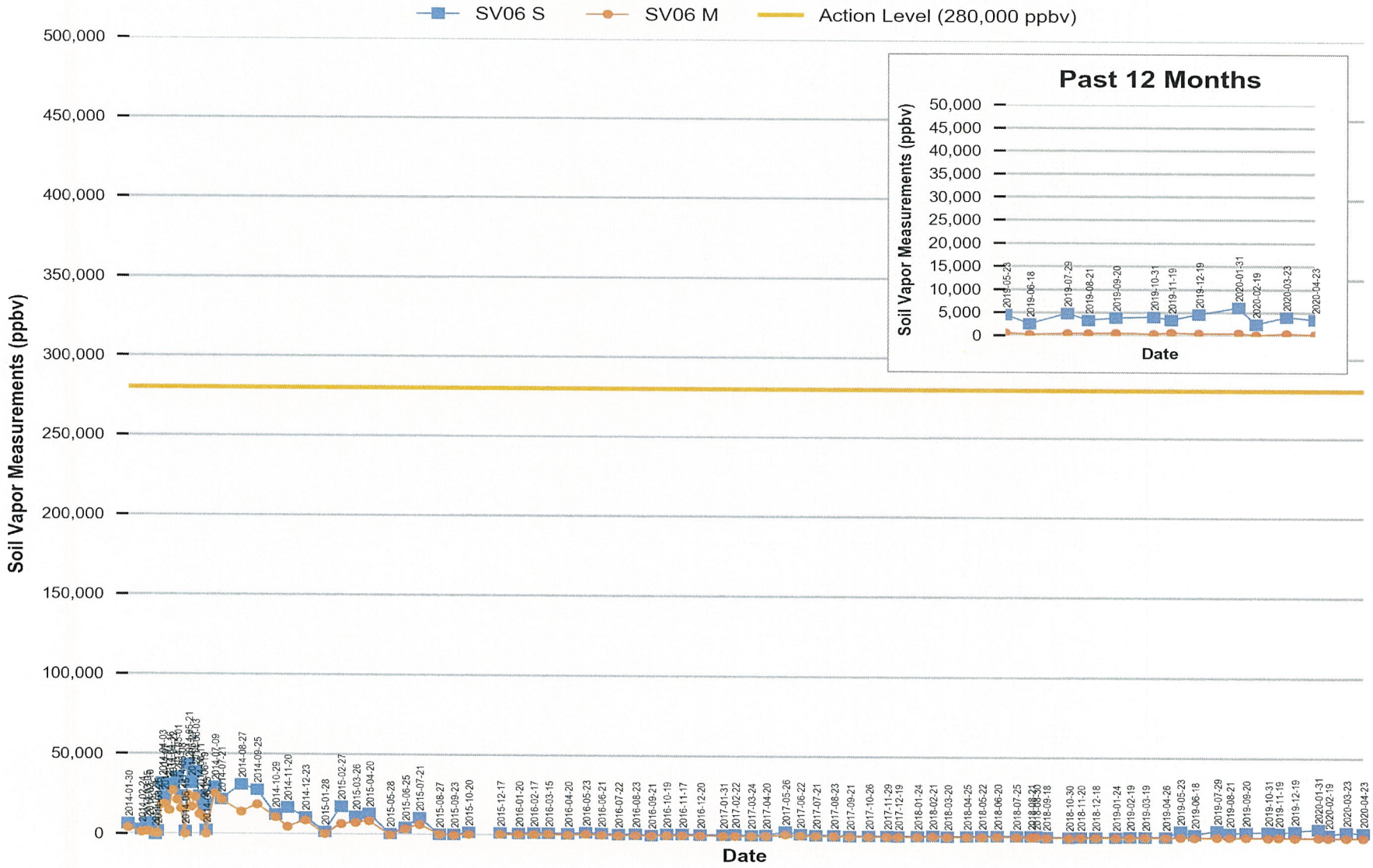
Figure 4
Soil Vapor Measurements - SV05 (F-24)



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

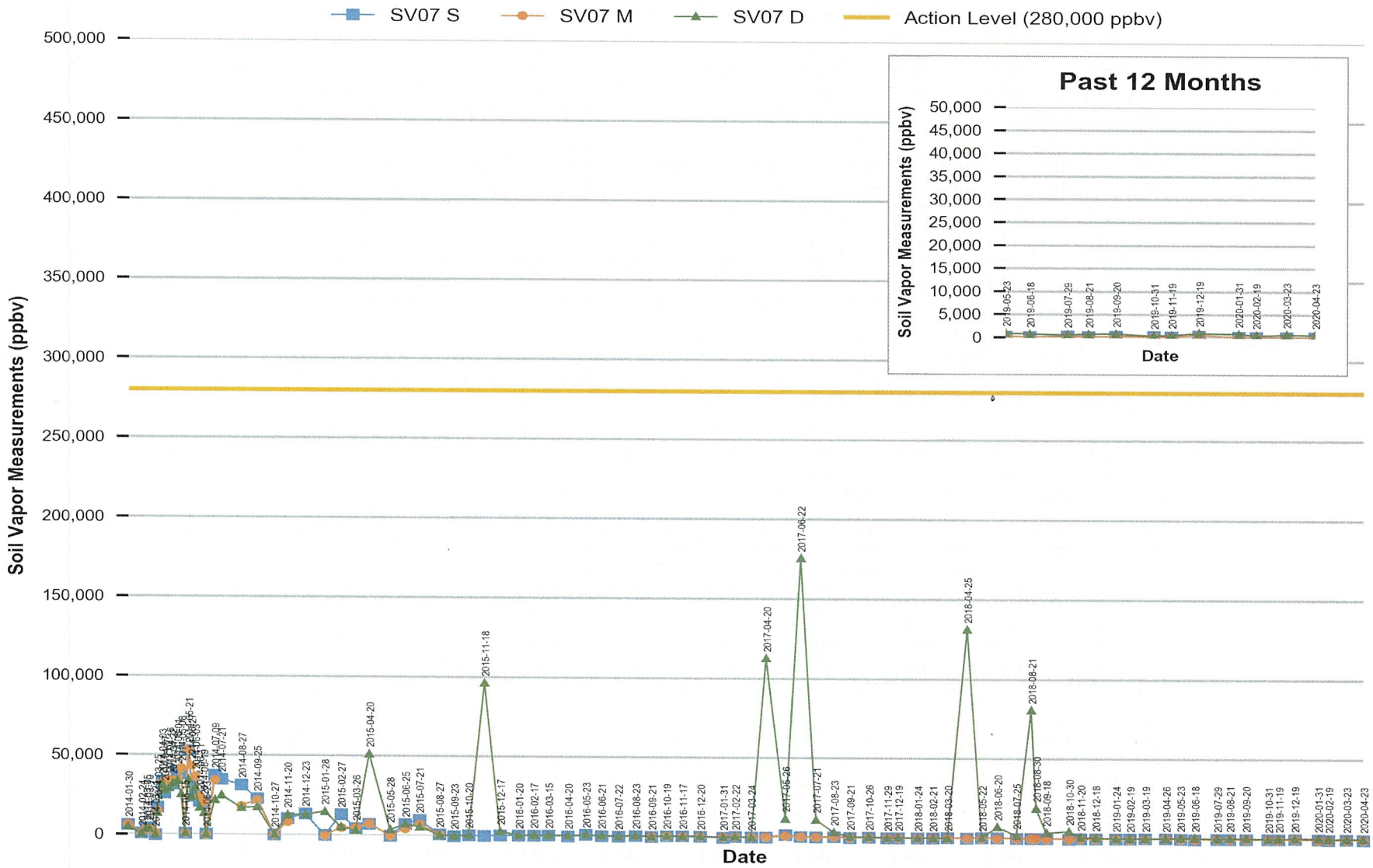
Figure 5
Soil Vapor Measurements - SV06 (F-24)



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

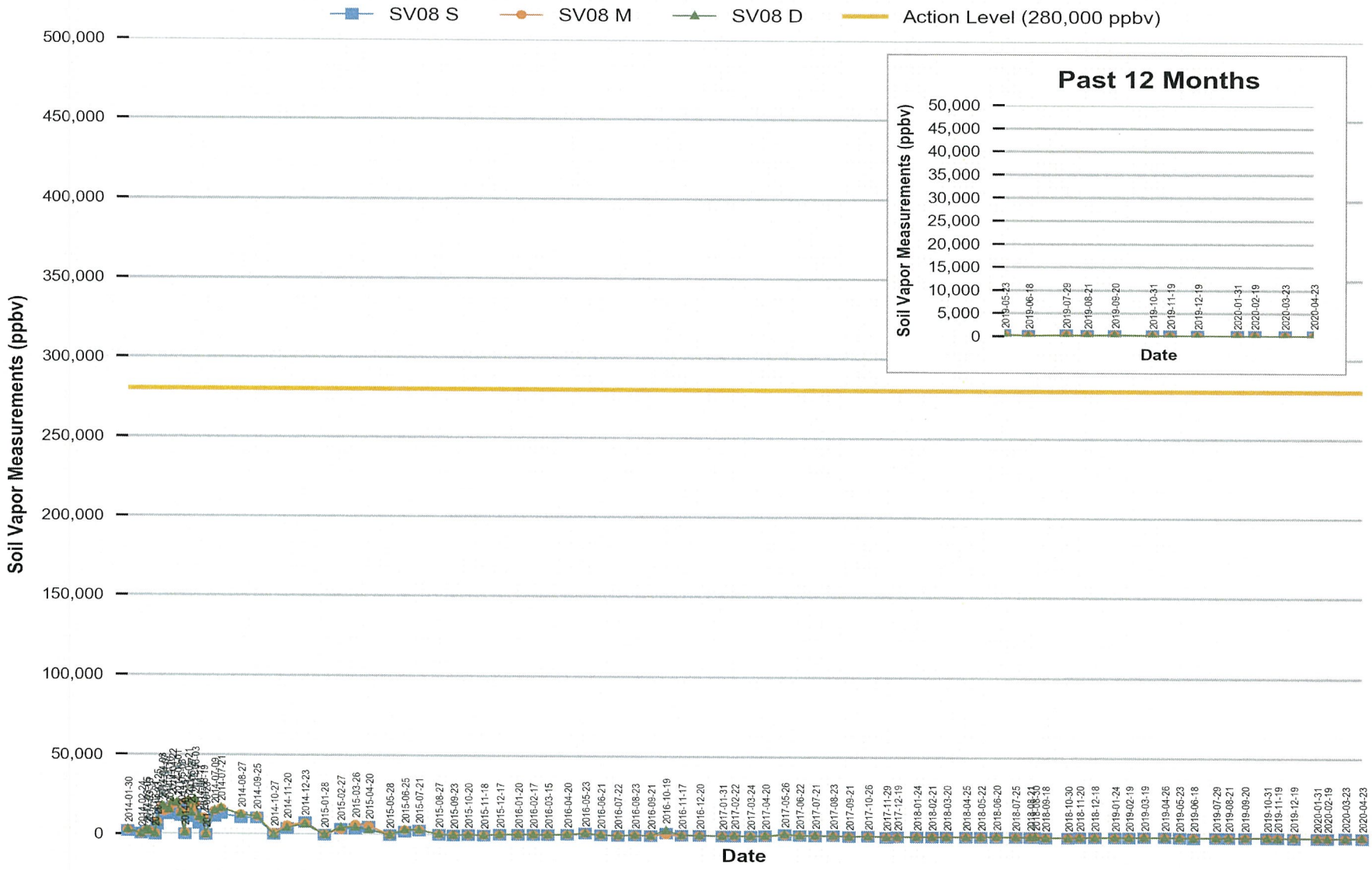
Figure 6
Soil Vapor Measurements - SV07 (JP-5)



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

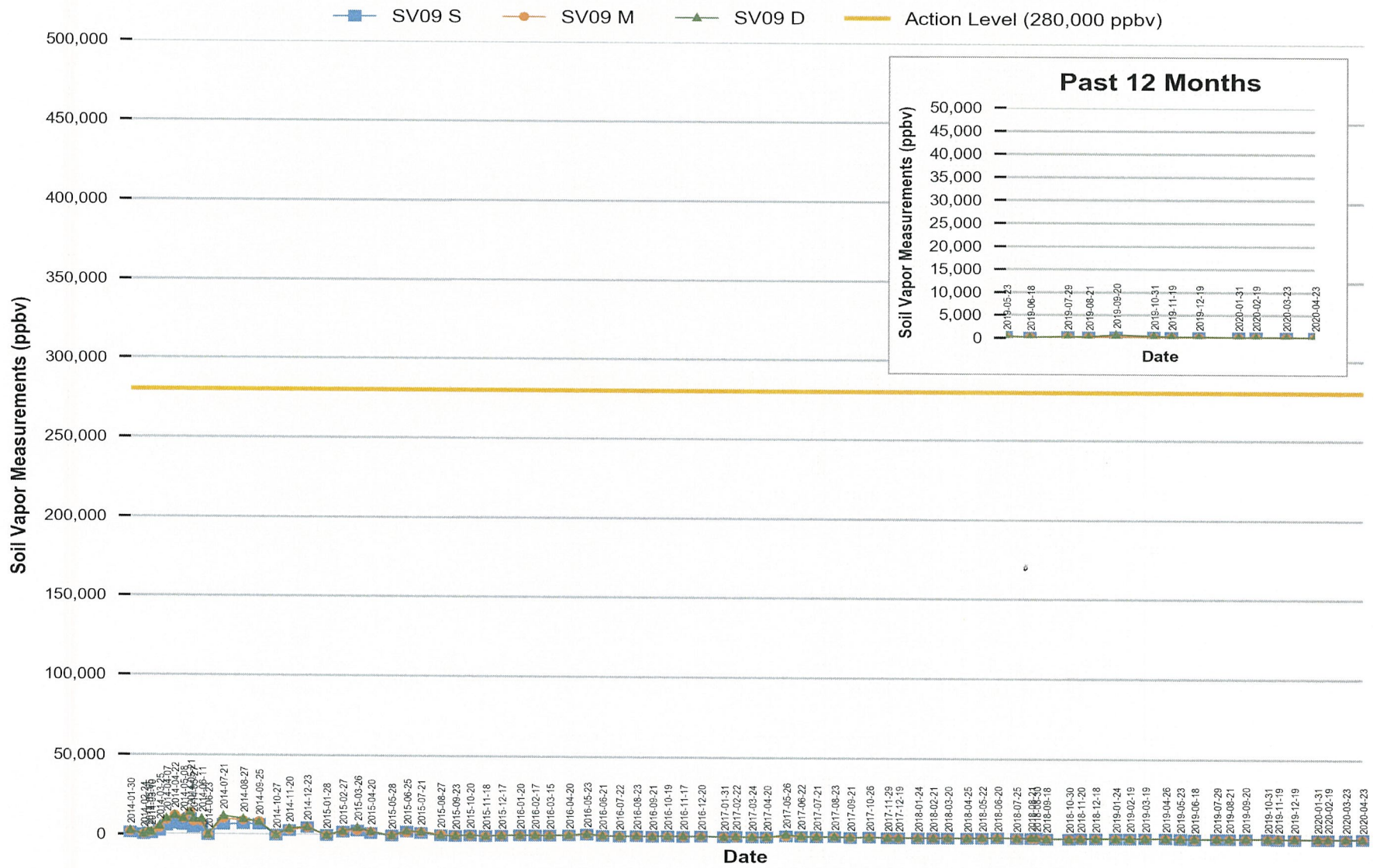
Figure 7
Soil Vapor Measurements - SV08 (JP-5)



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

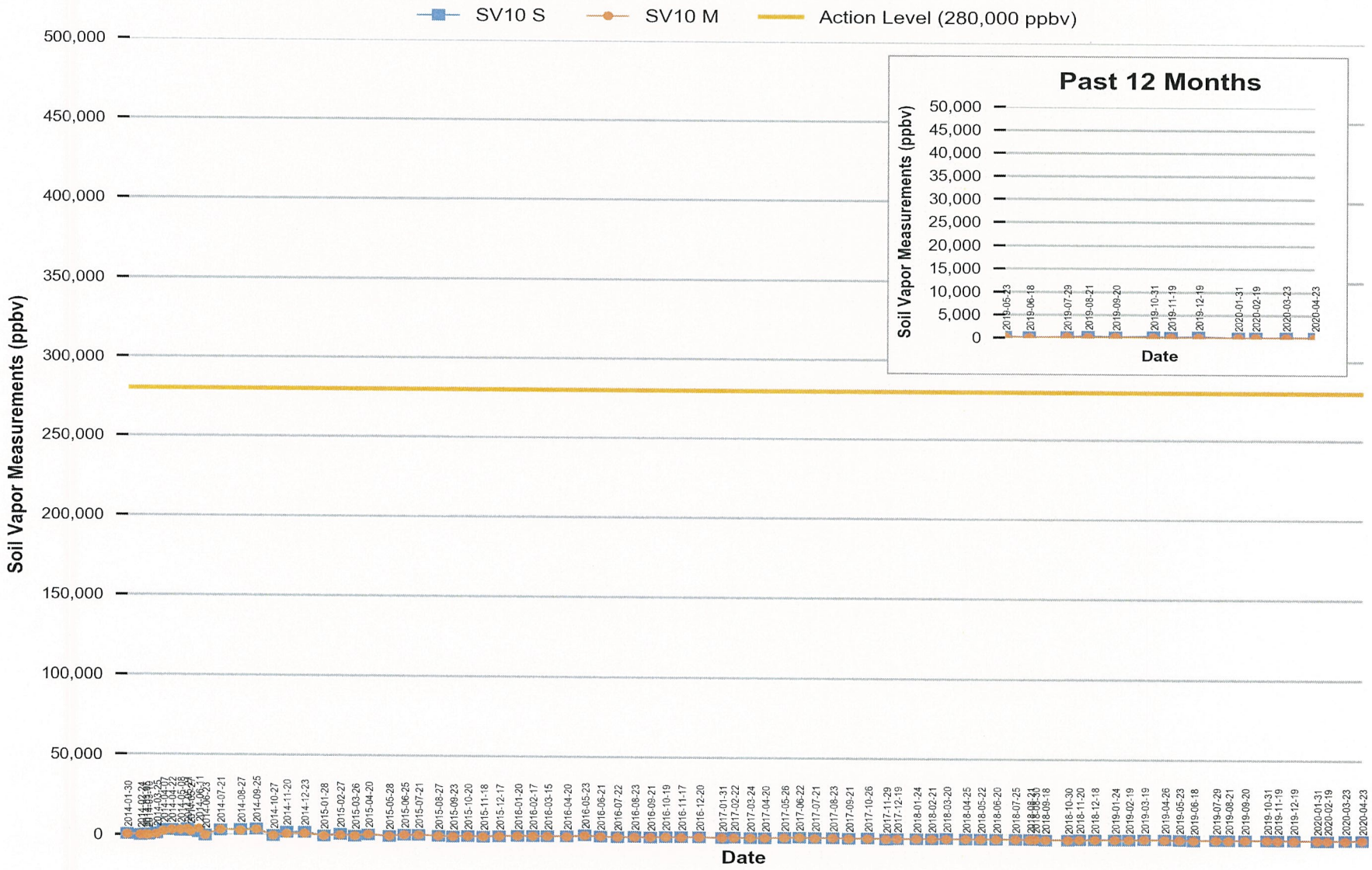
Figure 8
Soil Vapor Measurements - SV09 (JP-5)



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

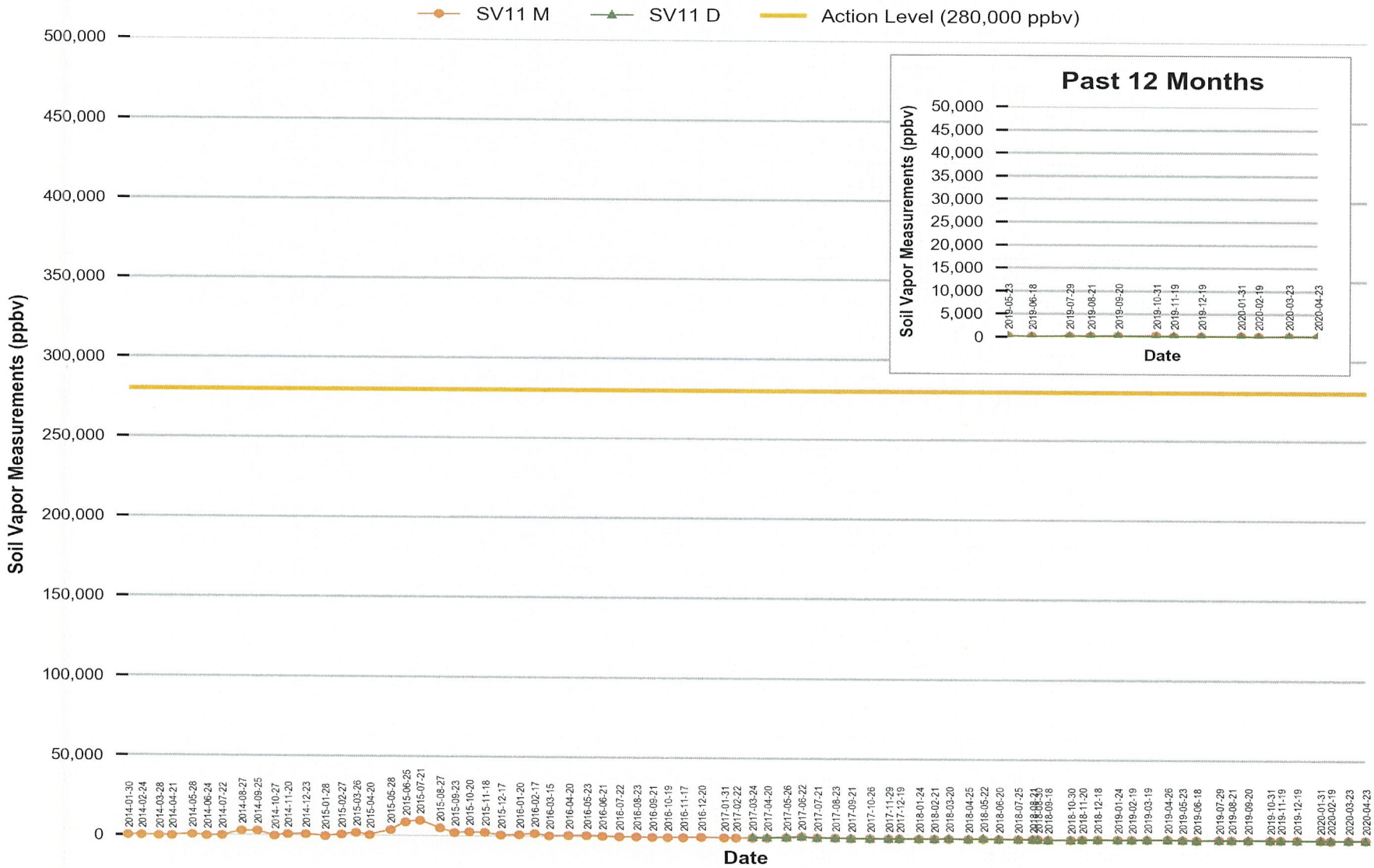
Figure 9
Soil Vapor Measurements - SV10 (JP-5)



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

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

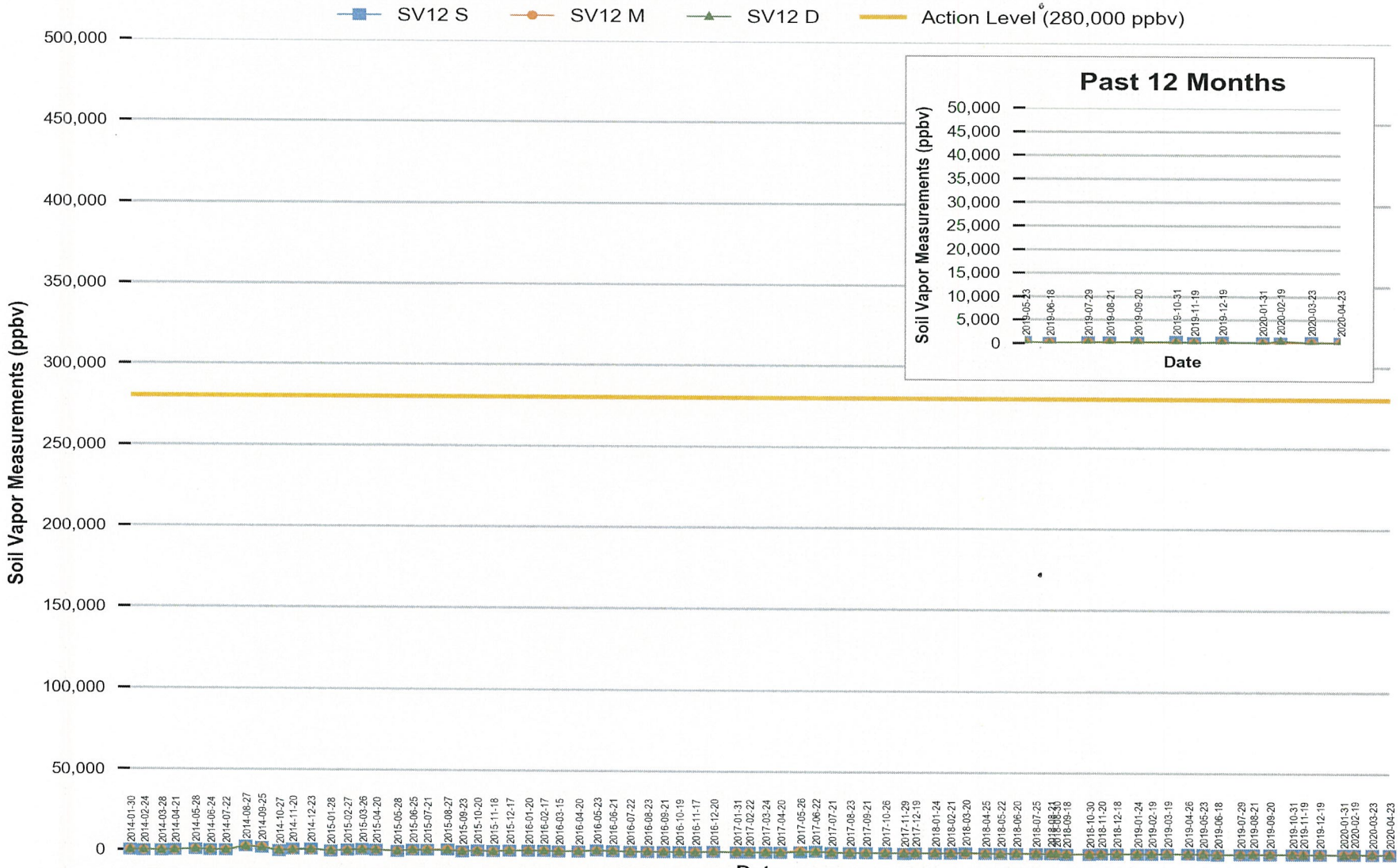
Figure 10
Soil Vapor Measurements - SV11 (JP-5)



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

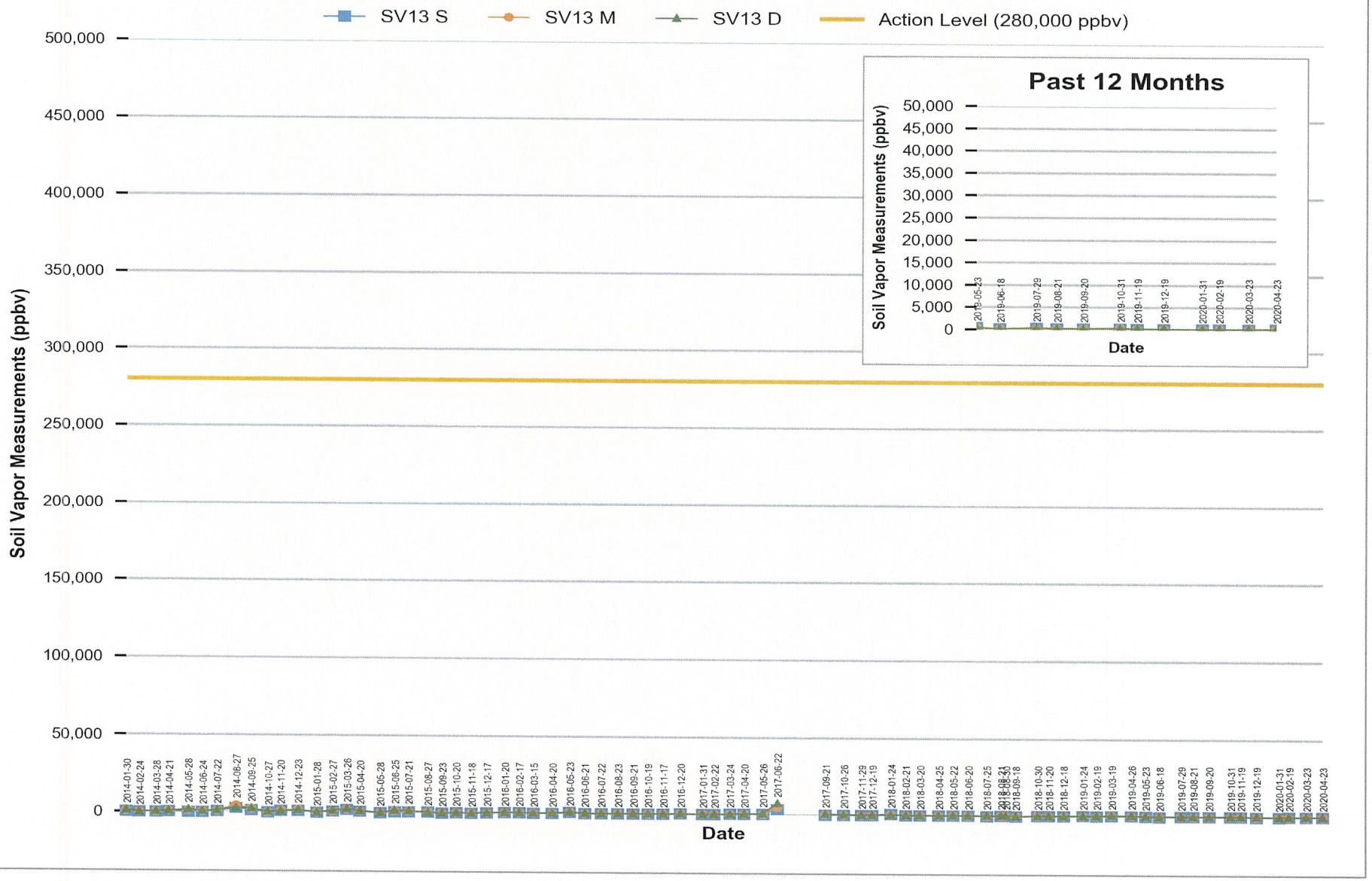
Figure 11
Soil Vapor Measurements - SV12 (JP-5)



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

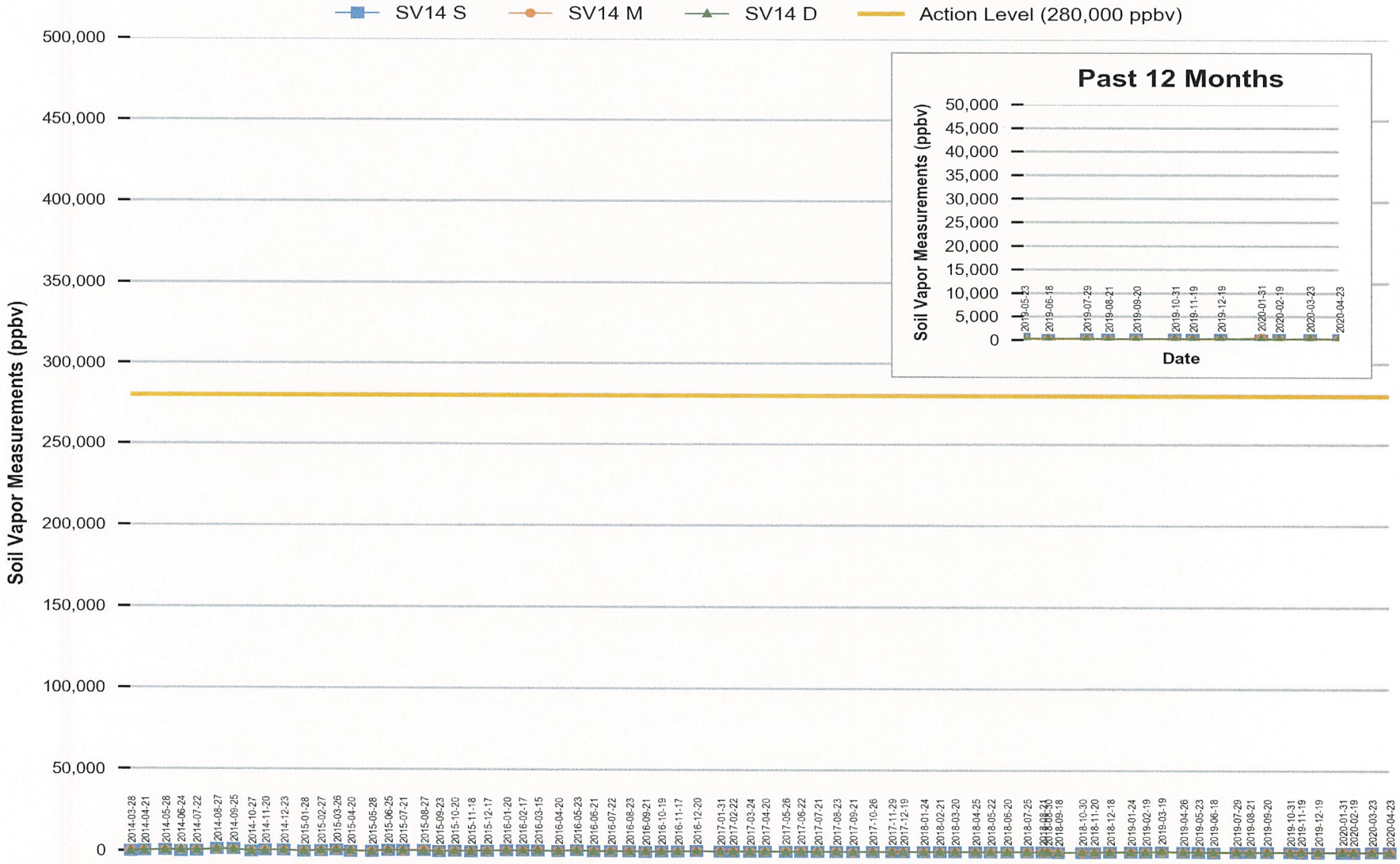
Figure 12
Soil Vapor Measurements - SV13 (JP-5)



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

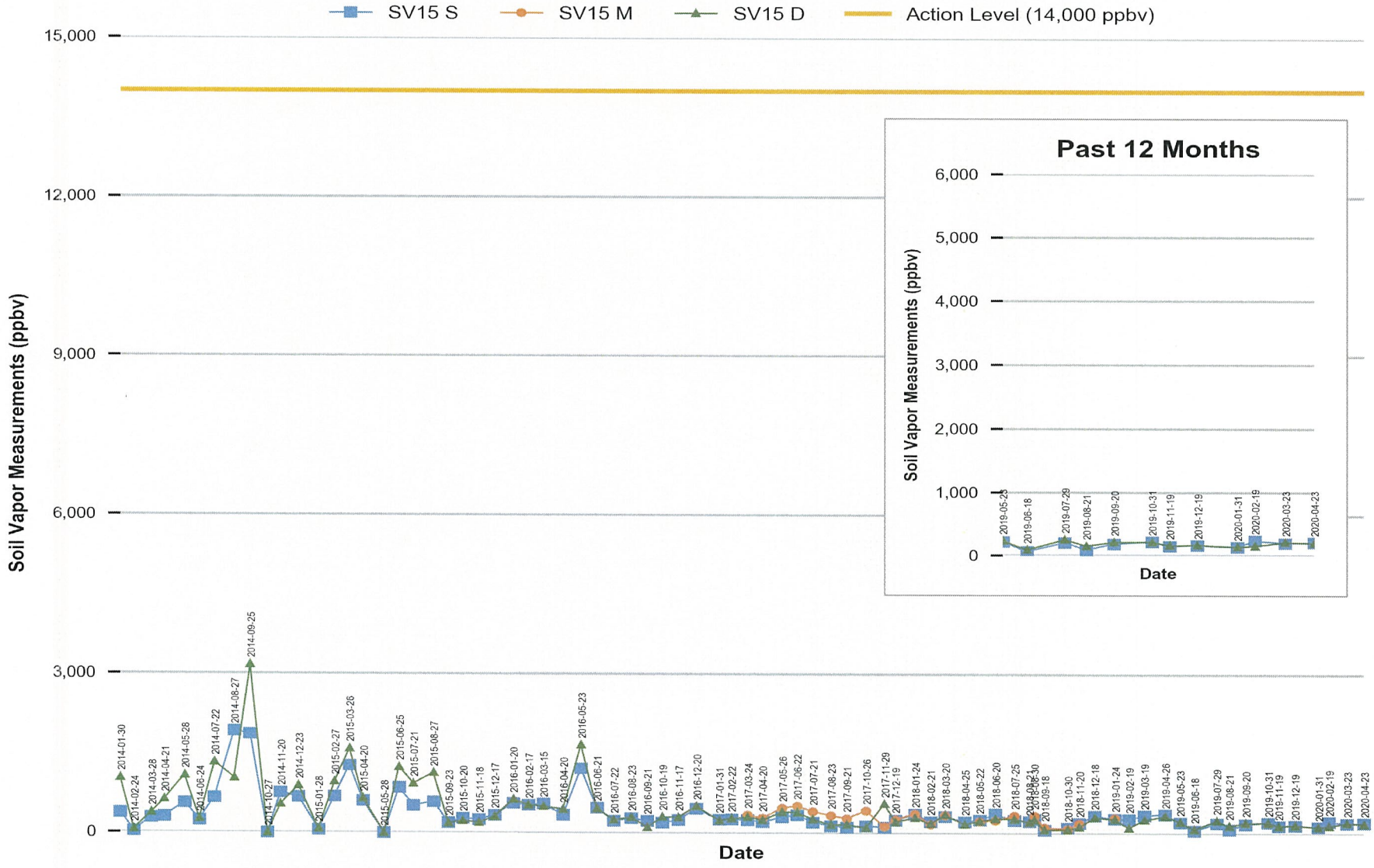
JP-5: Jet Fuel, Propellant Number 5
F-76: Marine Diesel, Fuel Number 76

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



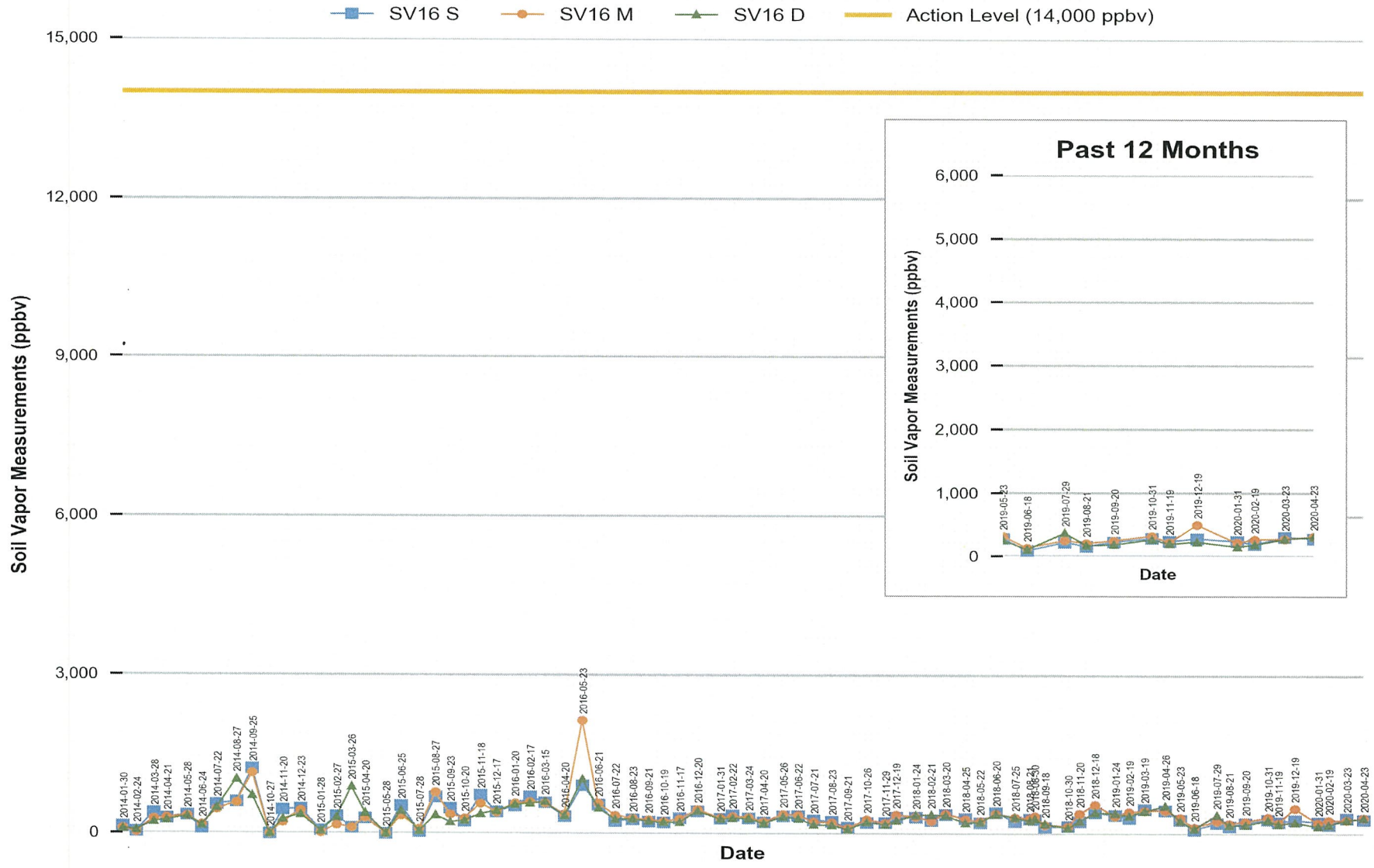
Notes (where applicable):
ppbv: Parts Per Billion by Volume
F-24: Jet Fuel, Fuel Number 24
JP-5: Jet Fuel, Propellant Number 5
F-76: Marine Diesel, Fuel Number 76

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



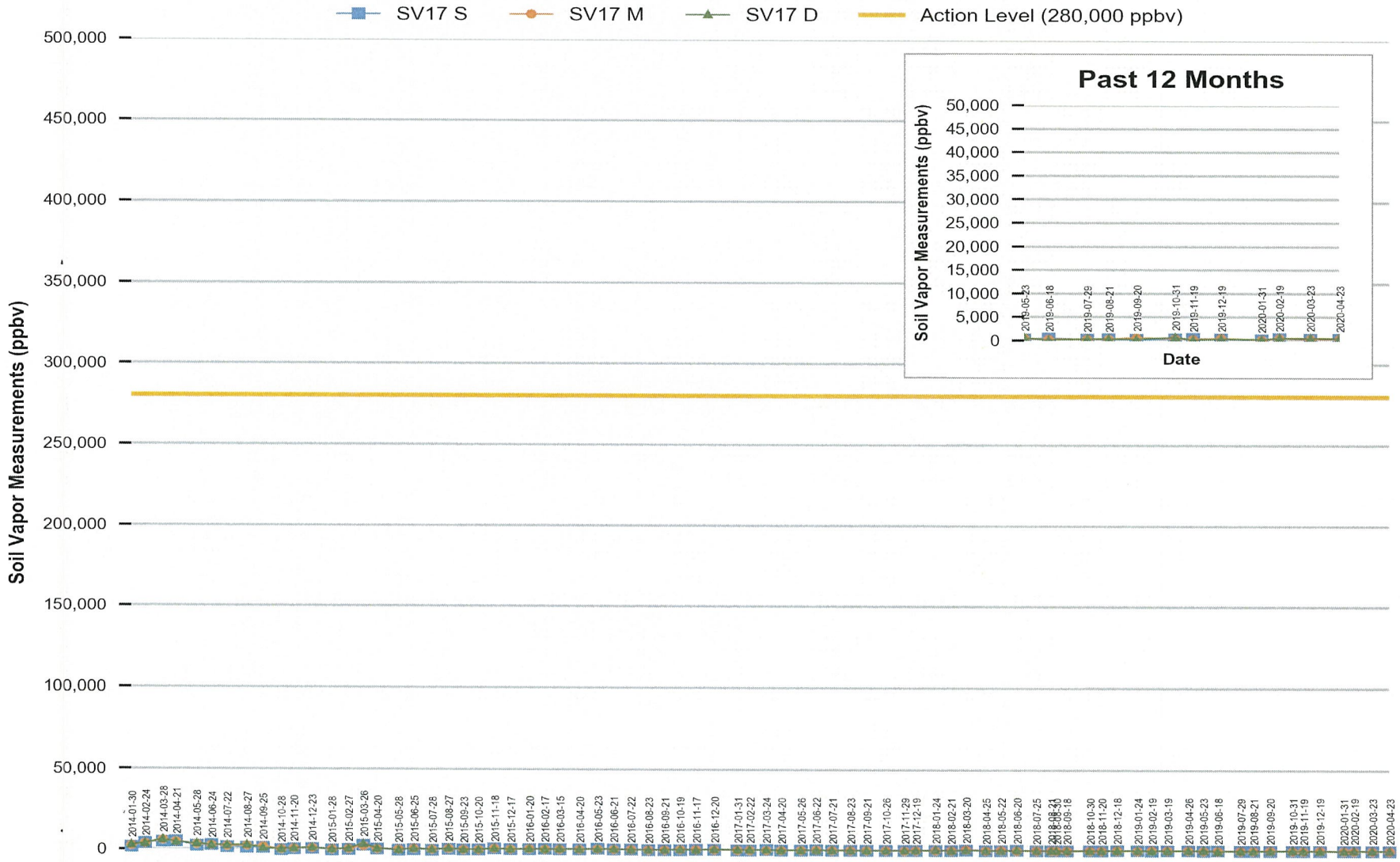
Notes (where applicable):
ppbv: Parts Per Billion by Volume
F-24: Jet Fuel, Fuel Number 24
JP-5: Jet Fuel, Propellant Number 5
F-76: Marine Diesel, Fuel Number 76

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



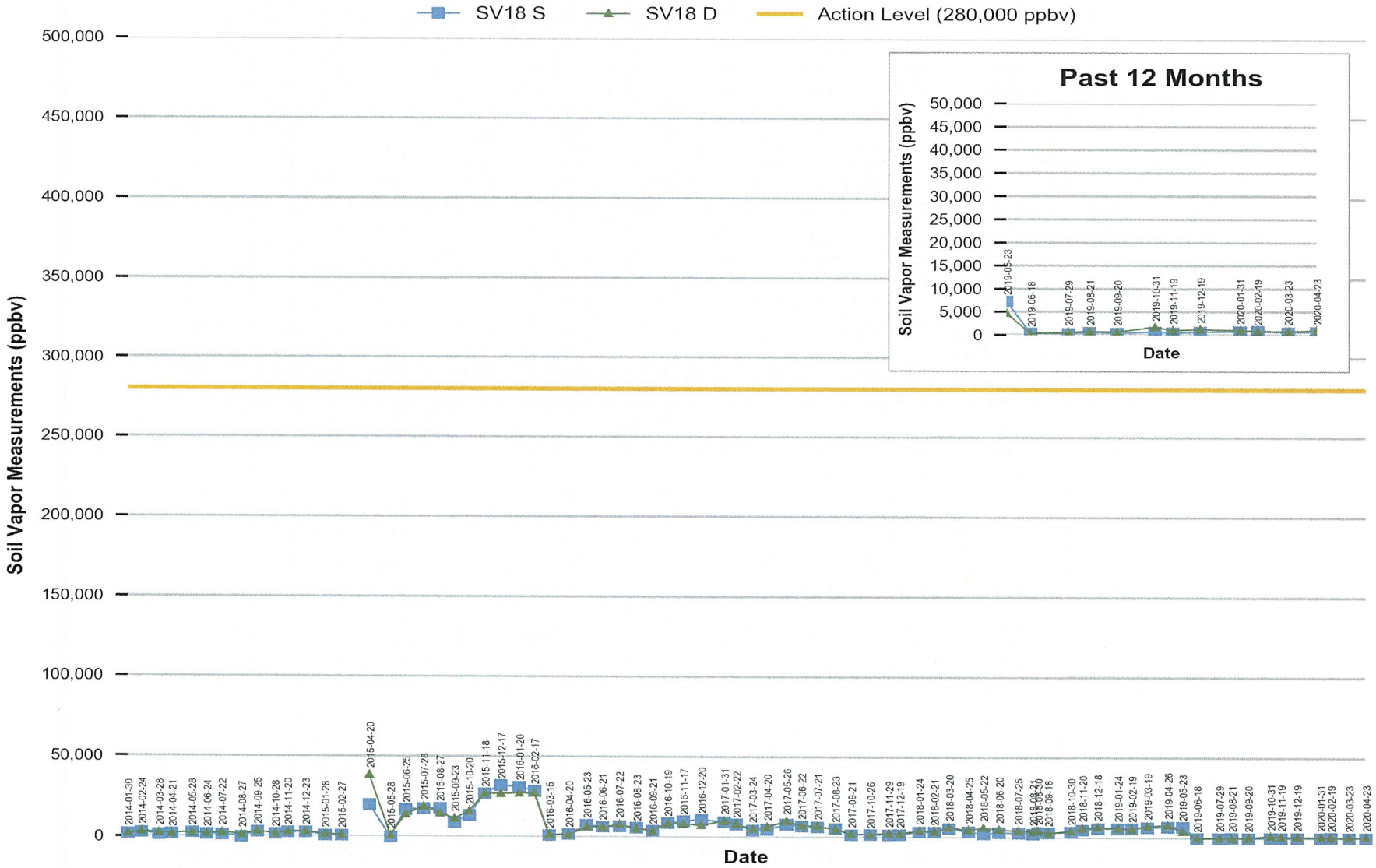
Notes (where applicable):
ppbv: Parts Per Billion by Volume
F-24: Jet Fuel, Fuel Number 24
JP-5: Jet Fuel, Propellant Number 5
F-76: Marine Diesel, Fuel Number 76

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

30 April 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 April 2020

Ref: (a) Red Hill Bulk Fuel Storage Facility Groundwater Protection Plan
(b) Red Hill Soil Vapor Monitoring Report for Round 145, dated 29 April 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 8 through 17, and 20.
- Strong increasing trend in VOC concentrations at Tank 5.

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. RH 18 is pending turnover to contractor to initiate Tank CIR Process. RH 05 has completed incremental fills and passed the final Tank Tightness Testing (TTT) Return to Service (RTS).

b. Reviewed all AFHE Unscheduled Fuel Movement (UFM) Alarm Summaries and UFM Reports. There were no Red Hill UFMs recorded between sampling events 144 and 145 during the period of 23 March 2020 – 23 April 2020:

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 March 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. FLCPH cannot determine the reason for the strong increasing trend in VOC concentrations at SV05 M of RH 05, but the readings of 1027 ppbv is significantly less than the 11225 pppv that was recorded for the April 2020 samplings.

g. 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 APRIL 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.

SANTOS.RICHARD.ENRIQUE.1167010233
Richard Santos

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Date: 2020.05.01 14:01:40 -10'00'