August 12, 2024

Luke LeMond
Site Manager
Solid Waste Program
State of Washington Dept. of Ecology
Central Regional Office
1250 West Alder St.
Union Gap, WA 98903-0009

Re: DTG Yakima – Agreed Order No. DE 21624 – Monthly Progress Letter – July

Dear Mr. LeMond:

In accordance with Section 7.3 of Agreed Order (AO) No. DE 21624, the following is a description of the actions taken during July 2024 to implement the requirements of this AO.

Activities:
On-site activities included weekly gas probe and every other week ambient monitoring. The once per month regulatory review meeting was also held on July 18, 2024 to assess conditions and the data. The data summary through July 2024 from Landfill Fire Control, Inc. (LFCI) is attached. Some Draeger data points are not included due to the equipment being sent in for calibration.

Parametrix submitted a revised statistical evaluation approach to the groundwater monitoring data. Based on acceptance Q1 and Q2 groundwater monitoring reports will be finalized.

PFAS-free pump assemblies were ordered for MW-5S and MW-6S.

Deviations from Plans (if any):
None.

Deviations Description from the Scope of Work and Schedule:
None.

All Data Received or Collected:
Ambient and gas probe data for gases and temperature were emailed, separately, to Ecology weekly after measurements were taken. Gas probe data was entered into the tracking spreadsheets and assessed by LFCI. The summary of the data has been included as an attachment.

Deliverables for the Upcoming Month:
Deliverables will include:

- Responses to Ecology comments to the Draft Limited RI Work Plan (pending Ecology comments)
- Final Emission Assessment Memorandum
- Weekly ambient and gas probe data
- Revised Q1 Groundwater Report
- Q2 Groundwater Report
- August Progress Report

Please contact me to discuss any of the above items.

Respectfully,

Ian Sutton
Director of Engineering
DTG Recycle
isutton@dtgrecycle.com

Enclosures: LFCI Data Update – July 2024

cc: mbrady@parametrix.com
steven.newchurch@co.yakima.wa.us

August 8th, 2024 LFCIPRJ-2023-001

Mr. Ian Sutton, Director of Engineering
DTG Recycle
P.O. Box 14302 Mill Creek, WA 98082

By email: isutton@dtgrecycle.com

Re: Monthly Data Assessment Report DTG Yakima Landfill Fire Incident – July 2024

Dear Mr. Sutton,

LFCI has prepared a monthly review and update of gas and temperature monitoring data that is being collected at the DTG Recycle Landfill Fire in Yakima, Washington. The update includes maps showing the spatial distribution of heat and O2 within the monitoring area and presents the data collected, highlighting trends and interpreting the results.

Considering the available data, the oxygen suppression appears to be working, but the fire suppression response is slow on account of low biological activity within the landfill. Nevertheless, the highest observed temperatures at GP-3 continue to decline at a steady rate. Temperatures continue to decline throughout the hotspot area. The landfill gas composition data is also indicating that the subsurface smolder is becoming less and less active with CO, H2, VOC's and H2S all trending downward.

Plotting of the temperature data in plan view clearly shows that the area affected by fire has markedly decreased over time. Based on the available data, LFCI believes that a small smolder continues to be active in close proximity to GP-3, and that the rate of combustion of the smolder is steadily decreasing.

Based on this, LFCI recommends that monitoring continue on a weekly basis until it can be shown that CO levels in all locations have decreased to below 200ppm. At that time, monitoring can be decreased for prevention purposes.

We trust that this report provides the information you require, and should you need anything else please don't hesitate to contact the undersigned.

Sincerely,

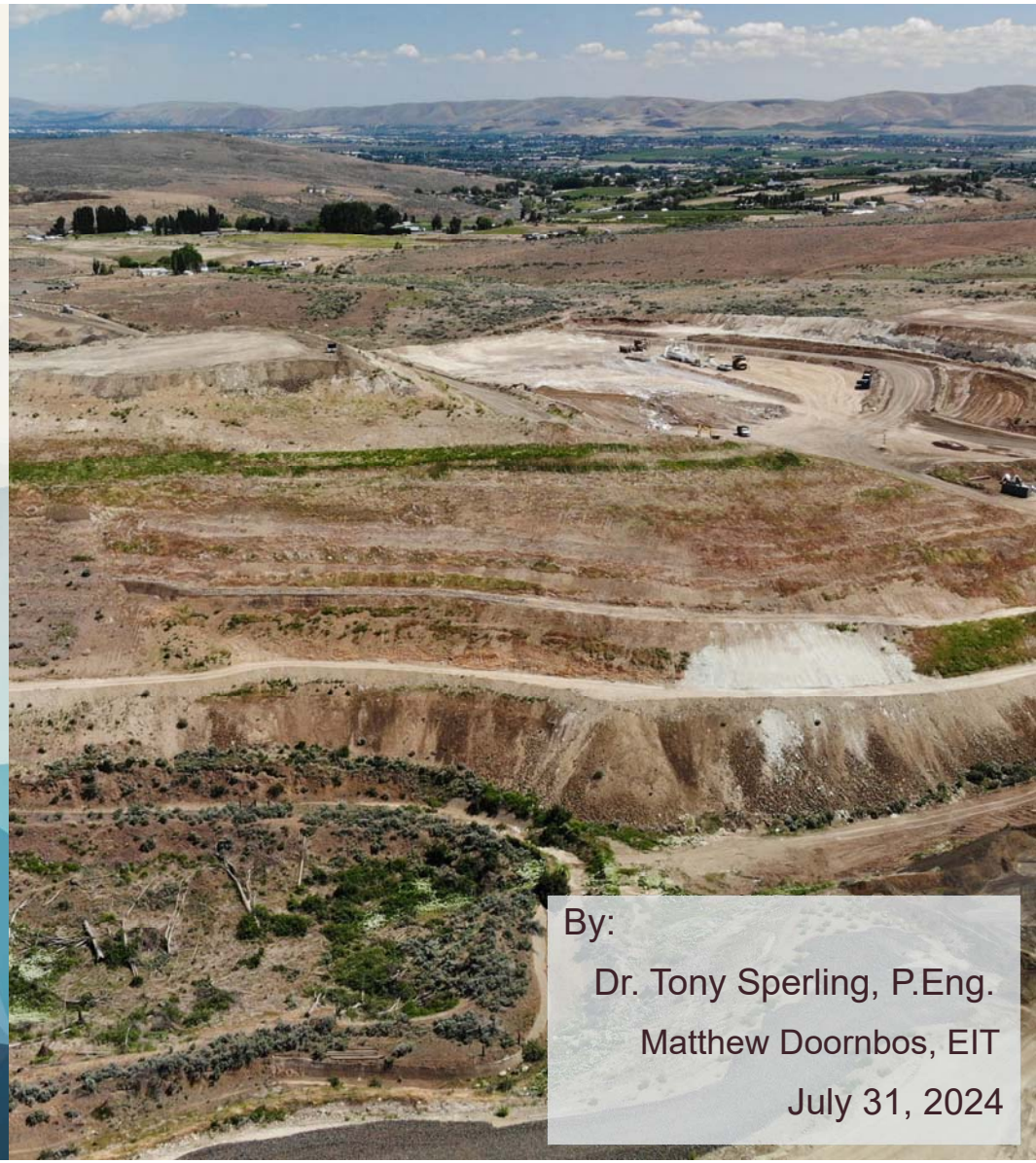
LANDFILL FIRE CONTROL INC.

Dr. Tony Sperling, P.Eng.
President

August 8th, 2024

DTG LPL LANDFILL FIRE INVESTIGATIONS AND MITIGATION

Monthly Monitoring Data Review



By:
Dr. Tony Sperling, P.Eng.
Matthew Doornbos, EIT
July 31, 2024

Agenda

Monitoring Data Review

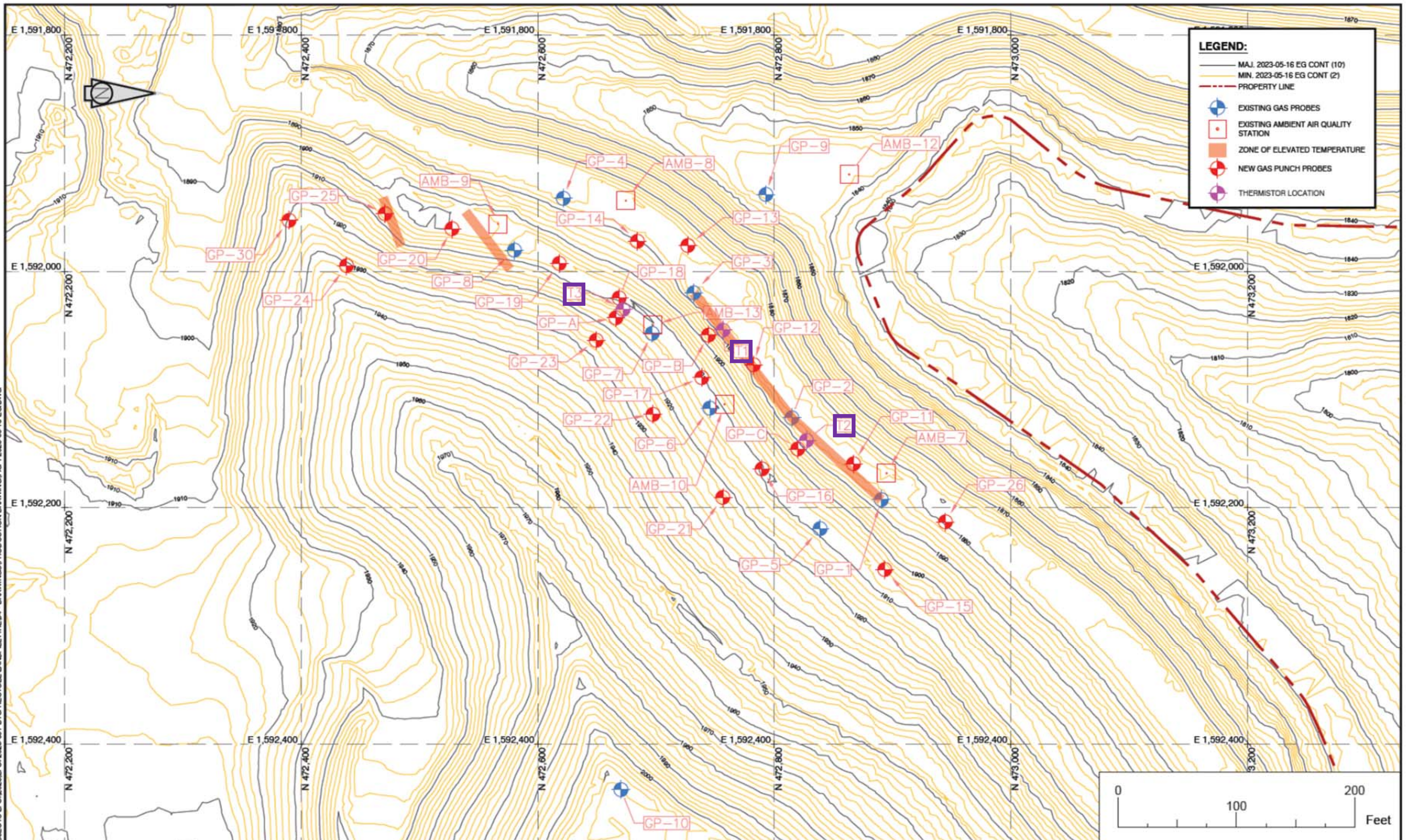
CO, Temp, O_2, VOC, H_2S, LEL, CH_4

Thermistor Temperature Data

Overall Interpretation


LANDFILLFIRE.com


Existing GPs
New GPs
GP-21
GP-22
GP-23
GP-15
5
GP-16
6
GP-17
7
T3
GP-18
GP-19
8
GP-20
GP-24
GP-25
1
GP-11
2
T2
GP-12
T1
3
GP-14
4
GP-13



PDF GENERATED by: Eduardo Kugler Pamplona | 10/5/2023 6:02 AM
X:\LANDFILL\FIRECONTROL\PROJECTS LFC\2023\LFC-2023-001 DTG RECYCLE LANDFILL FIRE\04 - DRAWINGS\PRODUCTION DRAWINGS\FIG 1 2023-05-16 EG.DWG

SPERLING HANSEN ASSOCIATES

Landfill Services Group
- Landfill Siting
- Design & Operations Plans
- Landfill Closure
- Environmental Monitoring

#8 - 1225 Keith Road East
North Vancouver, B.C. V7J 1J3
Phone: (604) 986-7723

SEAL

No.	DATE yy/mm/dd	REVISIONS	DRAWN	CHK'D	APP'D

CLIENT:

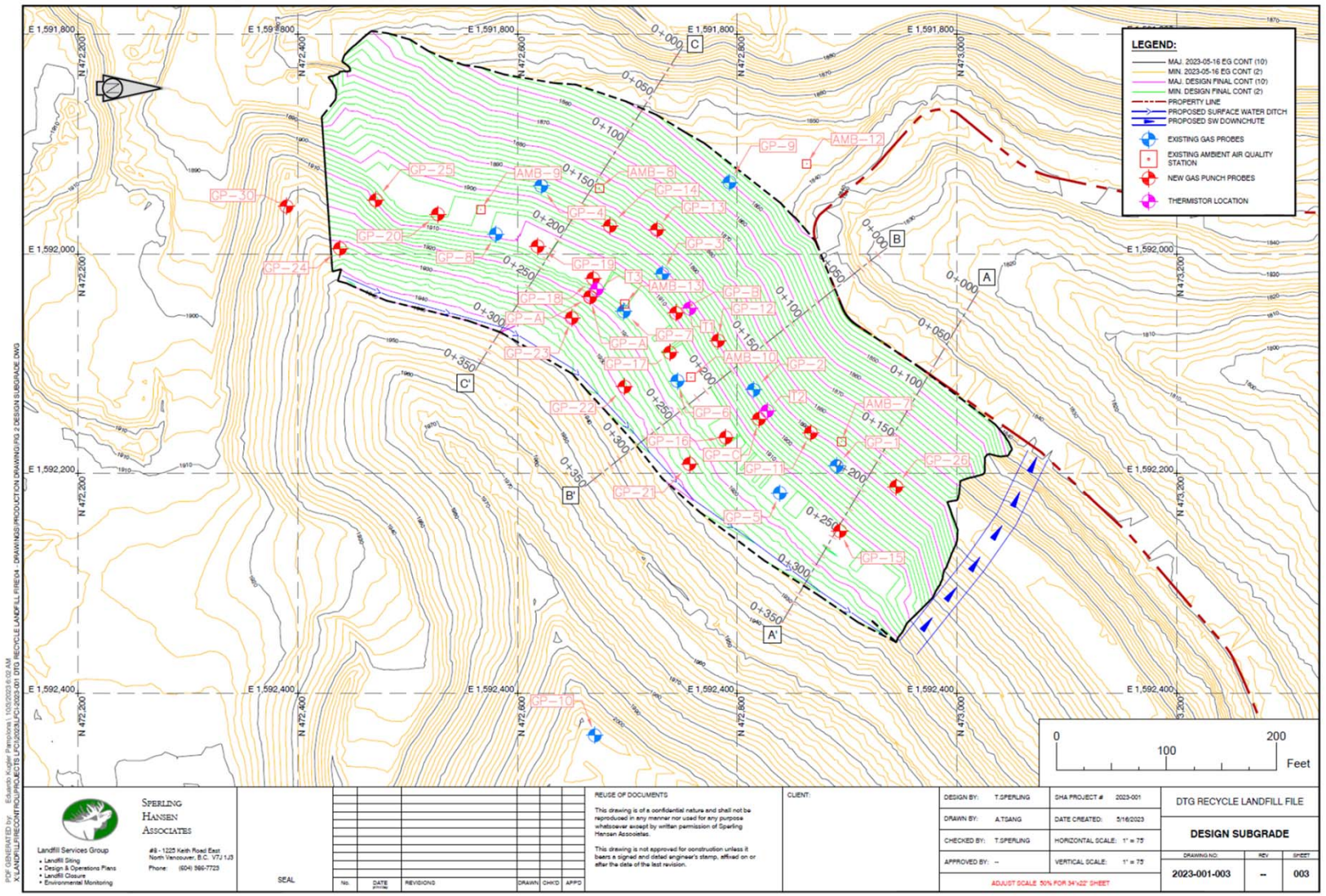
DESIGN BY:	T.SPERLING	SHA PROJECT #	2023-001
DRAWN BY:	A.TSANG	DATE CREATED:	5/16/2023
CHECKED BY:	T.SPERLING	HORIZONTAL SCALE:	1" = 75'
APPROVED BY:	--	VERTICAL SCALE:	1" = 75'

ADJUST SCALE 50% FOR 34"x22" SHEET

DTG RECYCLE LANDFILL FILE

EXISTING TOPOGRAPHY
2023-05-16

DRAWING NO:	REV	SHEET
2023-001-001	--	001



PDF GENERATED by: Eduardo Kugler Pamplona | 10/2/2023 6:02 AM
X:\LANDFILL\RECONTROL\PROJECTS UPC\2023\UPC\2023-001 DTG RECYCLE LANDFILL FIRE\04 - DRAWINGS\PRODUCTION DRAWING\FIG 2 DESIGN SUBGRADE.DWG

SPERLING HANSEN ASSOCIATES

Landfill Services Group
- Landfill Siting
- Design & Operations Plans
- Landfill Closure
- Environmental Monitoring

#8 - 1225 Keith Road East
North Vancouver, B.C. V7J 1J3
Phone: (604) 986-7723

SEAL

No.	DATE yy/mm/dd	REVISIONS	DRAWN	CHK'D	APP'D

CLIENT:

DESIGN BY:	T.SPERLING	SHA PROJECT #	2023-001
DRAWN BY:	A.TSANG	DATE CREATED:	5/16/2023
CHECKED BY:	T.SPERLING	HORIZONTAL SCALE:	1" = 75'
APPROVED BY:	--	VERTICAL SCALE:	1" = 75'

ADJUST SCALE: 50% FOR 34"x22" SHEET

DTG RECYCLE LANDFILL FILE

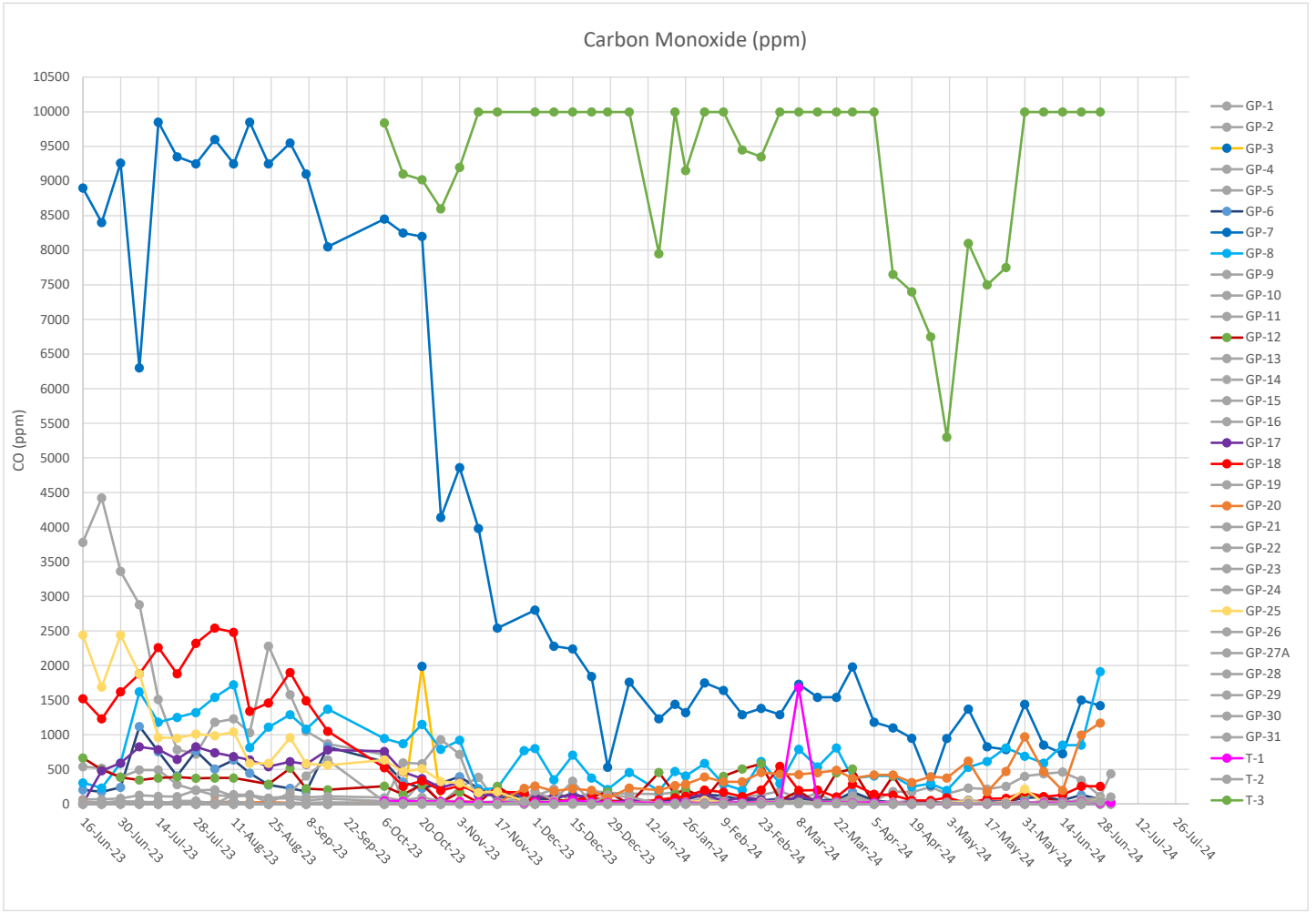
DESIGN SUBGRADE

DRAWING NO.	REV	SHEET
2023-001-003	--	003

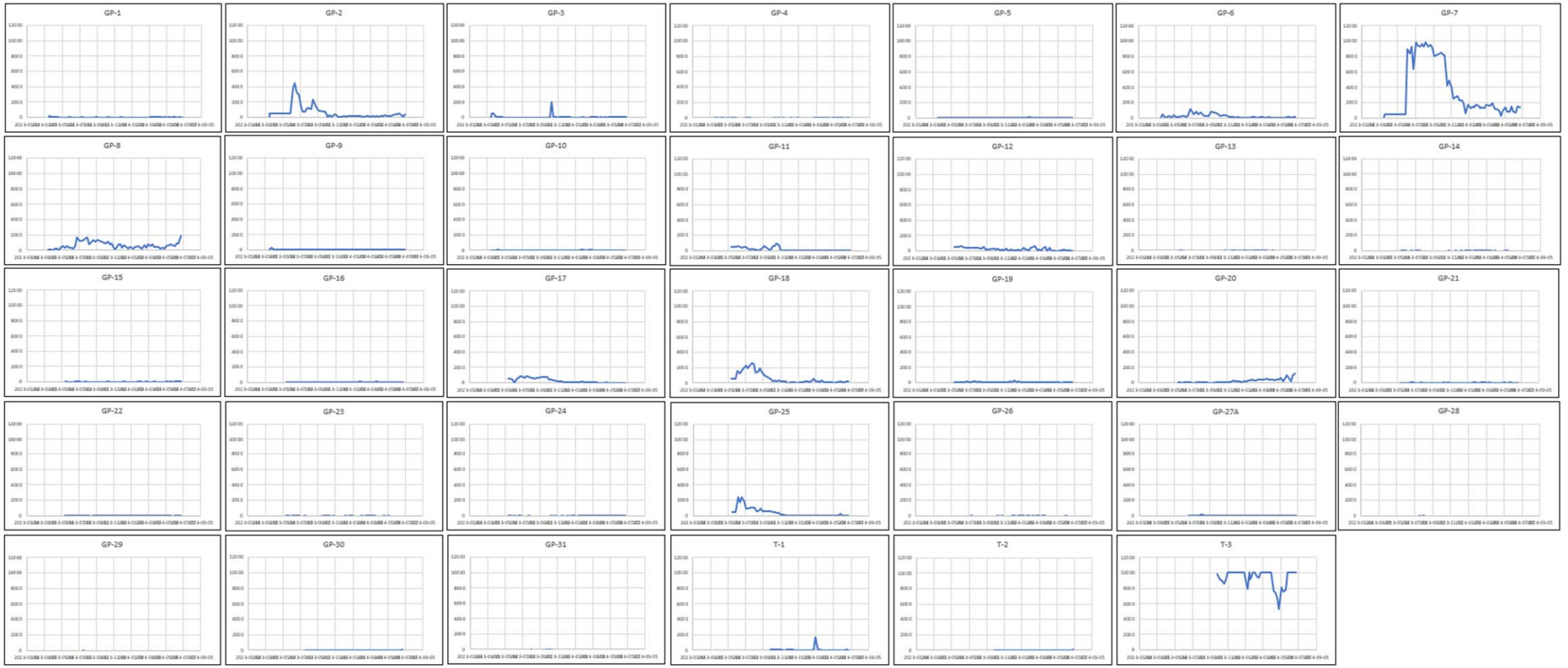
Carbon Monoxide

The Draeger instrument has been sent away for recalibration, and as such no consistent CO data was collected for July.

As of June 30, CO remained 10,000 ppm in T-3. CO in GP-7 has dropped from very high levels to less than 1,000 ppm.



CO Levels by Individual Wells



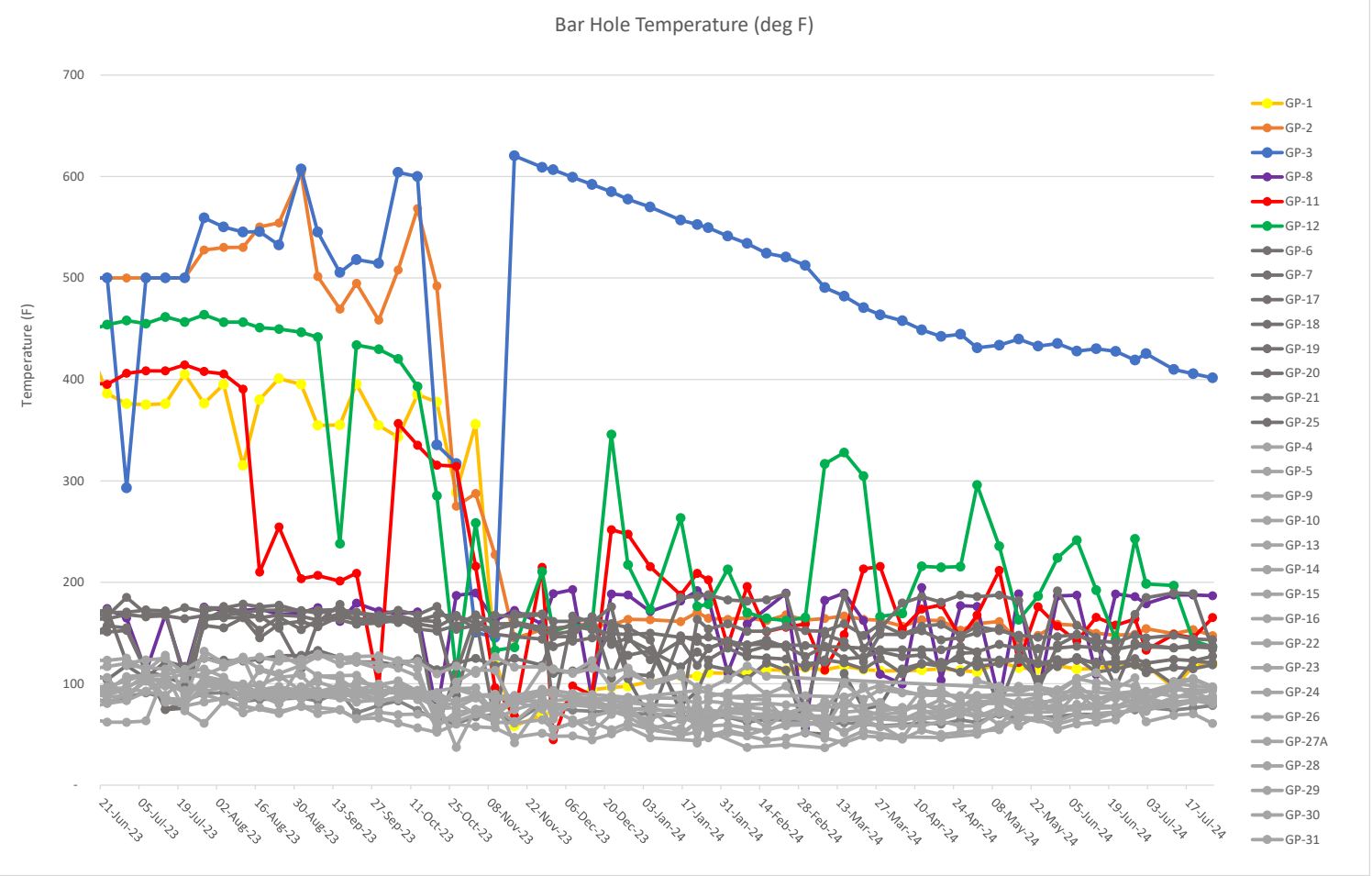
Temperature (F)

Temperature has continued to decrease in GP-3, down to 400F

This matches with higher temperatures in T-1 at 30’ below ground, currently around 315F.

All other wells have remained low, with some variability possibly caused by atmospheric pressure swings.

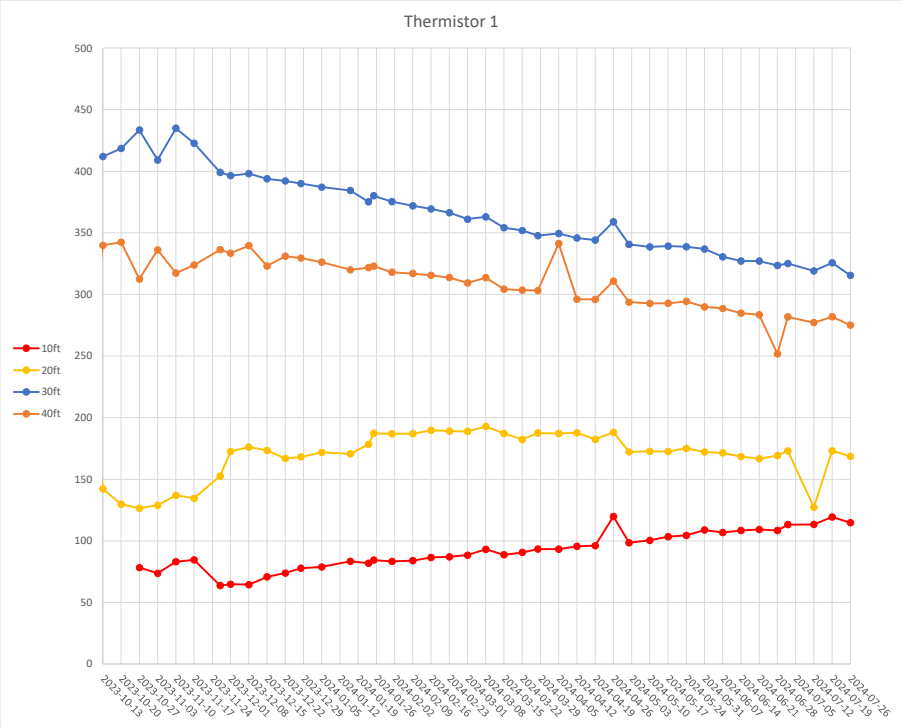
GP-12 seems to be especially susceptible to atmospheric pressure.

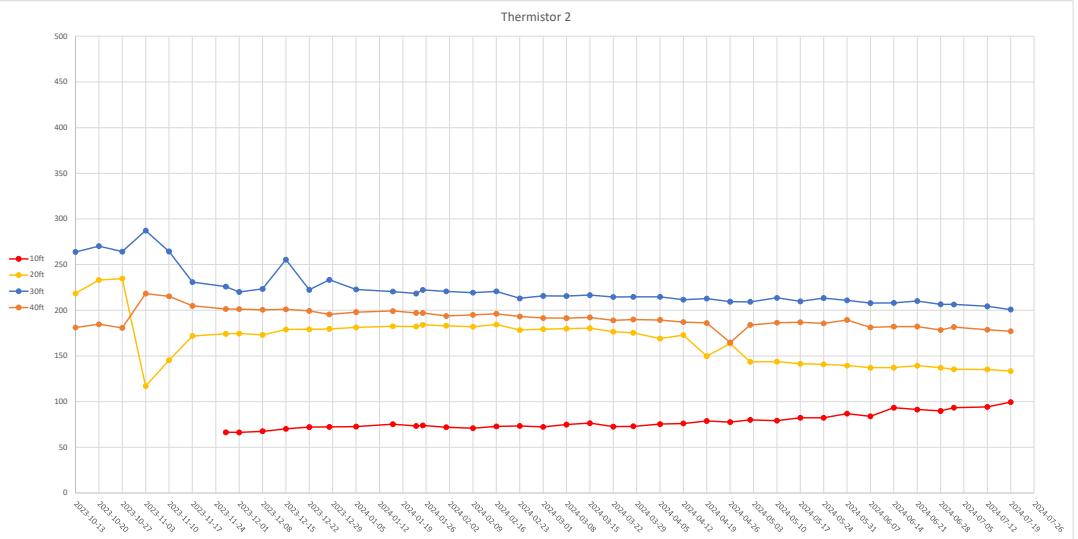


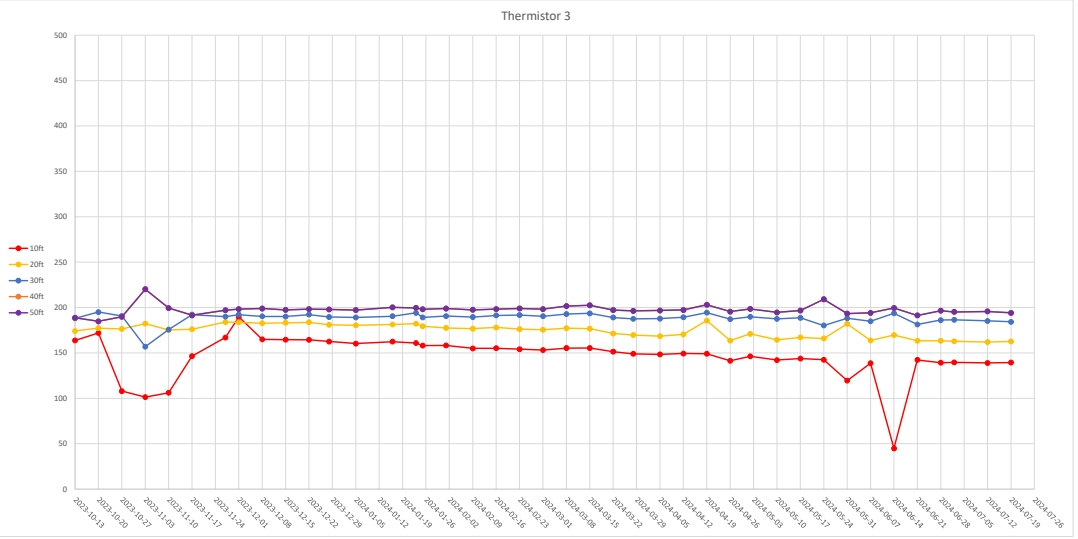
Thermistor Temperatures

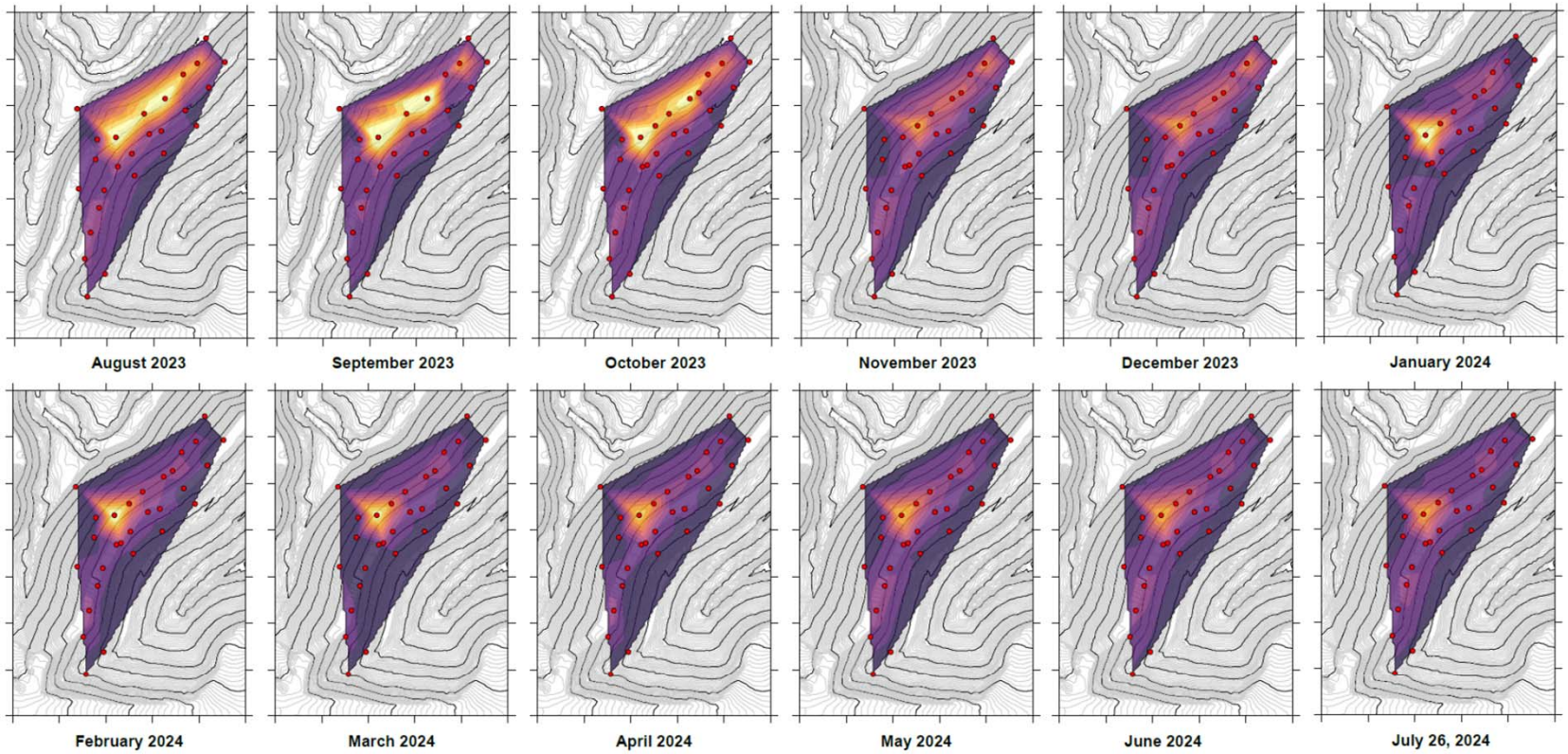
Thermistor temperatures mostly stable, with levelling trend continuing.

Will keep a close eye on T-1 to ensure no major changes.









- Data taken from first monitoring event of each month
- Data was linearly interpolated between data points
- Datapoints (probe locations) represented in red
- Temperatures measured in Degrees Farenheit
- Contours are of existing ground at beginning of project, with design contours added for after addition of fill

No.	DATE yr/m/day	REVISIONS	DRAWN	CHK'D	APP'D
1	2024/08/01	ISSUED FOR REVIEW	MD	TS	TS

DESIGN BY:	T. SPERLING
DRAWN BY:	M. DOORNBOS
DATE CREATED:	2024/08/01
SHA PROJECT #	LFCI-2023-001

DTG RECYCLE LANDFILL FIRE

MONTHLY MONITORING SUMMARY SPATIAL MAPS - TEMP

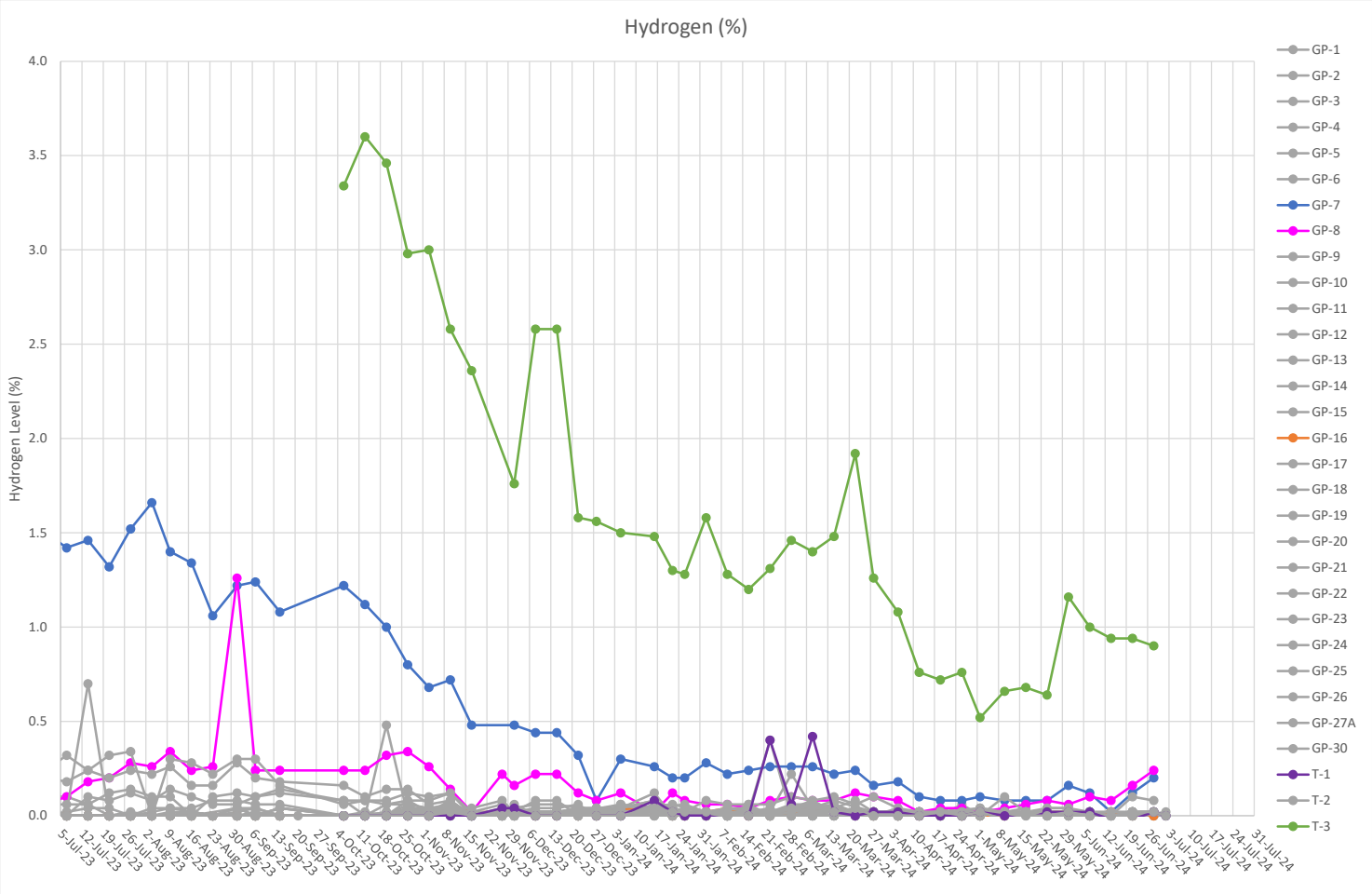
DRAWING NO.	REV	SHEET
LFCI-2023-001-07-TEMP	1	1

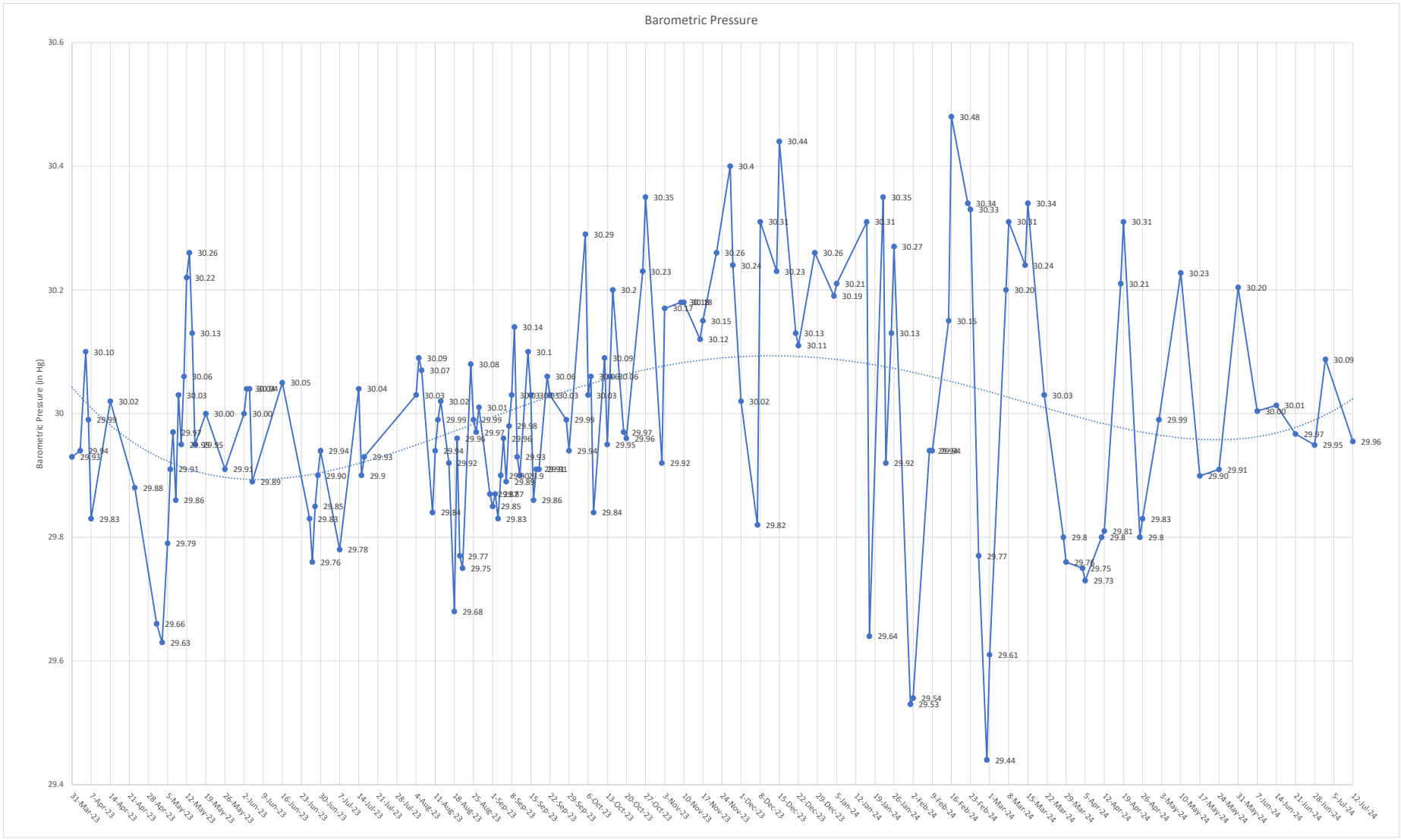
H_2

The Draeger instrument has been sent away for recalibration, and as such no Hydrogen data was collected for July.

Deep thermistor T-3 has reported the highest H2 levels, followed by GP-7.

Production of H2 is often observed with smouldering of waste. Fact that H2 is dropping indicates fire is less active.




Barometric Pressure
Barometric Pressure (in Hg)
30.6
30.4
30.2
30
29.8
29.6
29.4
31-Mar-23
7-Apr-23
14-Apr-23
21-Apr-23
28-Apr-23
5-May-23
12-May-23
19-May-23
26-May-23
2-Jun-23
9-Jun-23
16-Jun-23
23-Jun-23
30-Jun-23
7-Jul-23
14-Jul-23
21-Jul-23
28-Jul-23
4-Aug-23
11-Aug-23
18-Aug-23
25-Aug-23
1-Sep-23
8-Sep-23
15-Sep-23
22-Sep-23
29-Sep-23
6-Oct-23
13-Oct-23
20-Oct-23
27-Oct-23
3-Nov-23
10-Nov-23
17-Nov-23
24-Nov-23
1-Dec-23
8-Dec-23
15-Dec-23
22-Dec-23
29-Dec-23
5-Jan-24
12-Jan-24
19-Jan-24
26-Jan-24
2-Feb-24
9-Feb-24
16-Feb-24
23-Feb-24
1-Mar-24
8-Mar-24
15-Mar-24
22-Mar-24
29-Mar-24
5-Apr-24
12-Apr-24
19-Apr-24
26-Apr-24
3-May-24
10-May-24
17-May-24
24-May-24
31-May-24
7-Jun-24
14-Jun-24
21-Jun-24
28-Jun-24
5-Jul-24
12-Jul-24

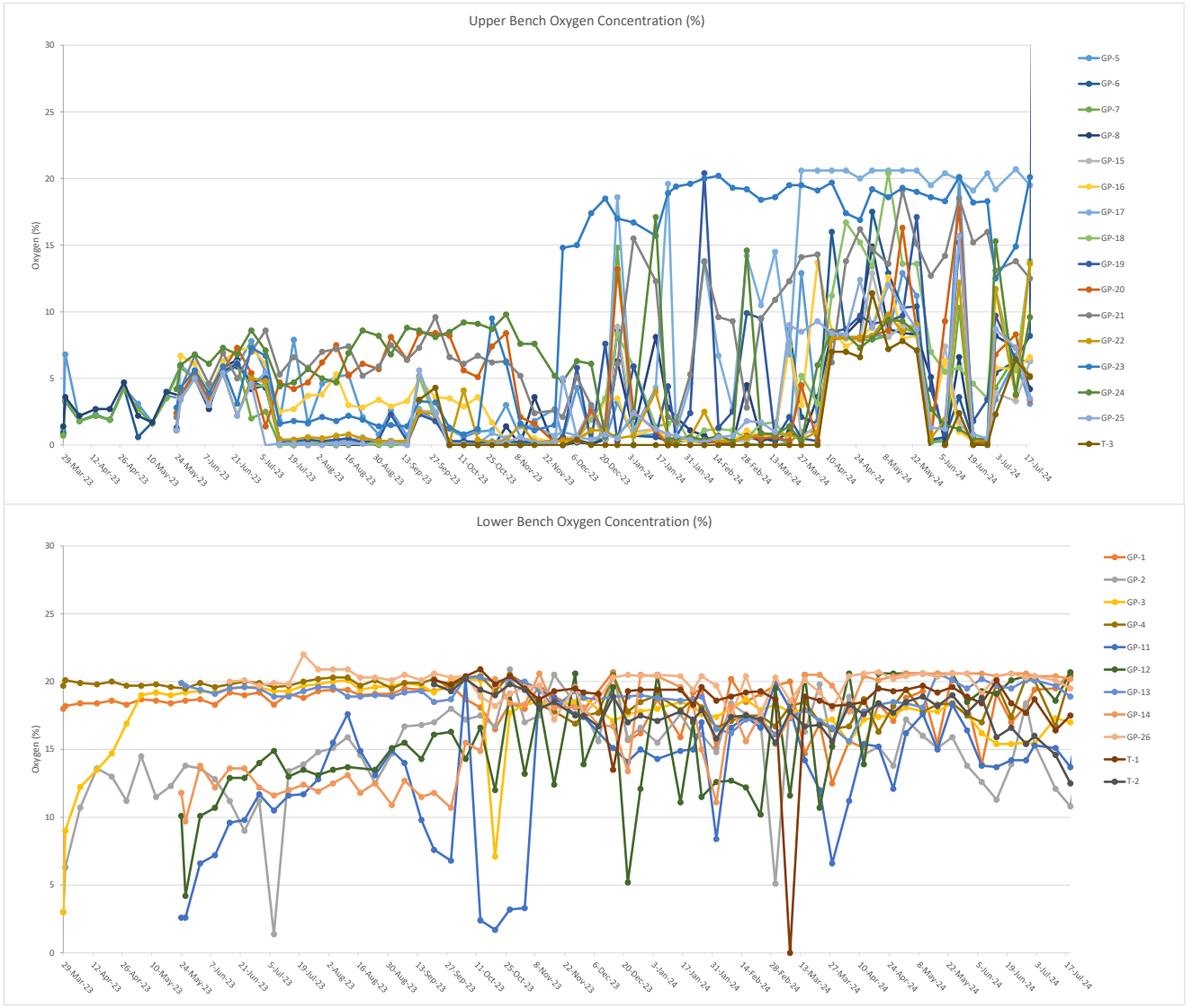
O_2

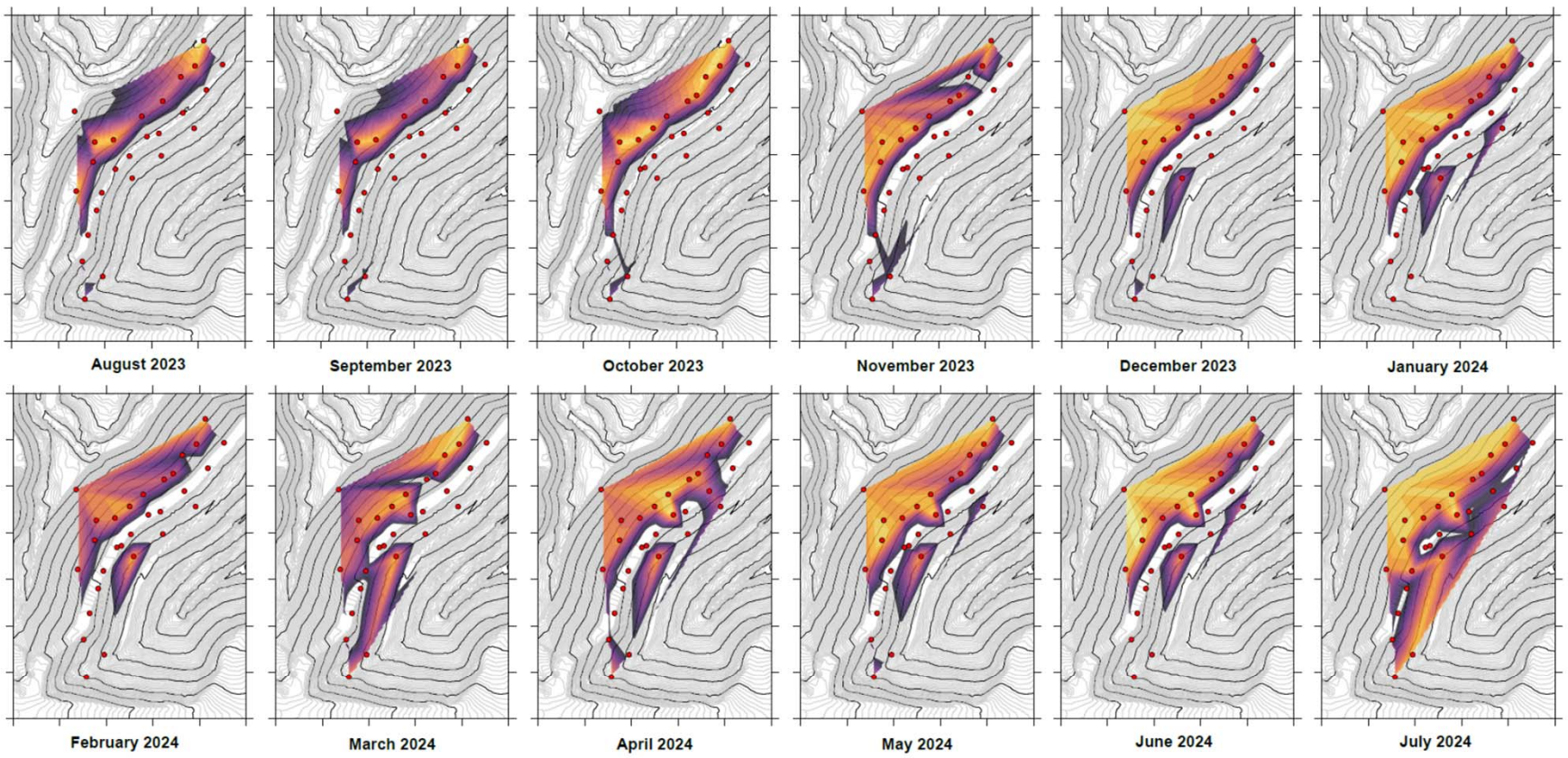
Oldest portion of Landfill (at depth) is known to be relatively inert and biologically inactive, producing very little methane. As a result, pore space is full of atmospheric air.

Some GPs susceptible to swings in pressure – LFCI believes this is causing the spikes.

Very large pressure oscillations Jan-24 through March-24.

Average pressures increasing May-2024 to present, increasing pressure pushes more air into landfill.





- Data taken from first monitoring event of each month
- Data was linearly interpolated between data points
- Datapoints (probe locations) represented in red
- O2 levels are measured in % composition
- Ground contours are of existing ground at beginning of project, with design contours added for after addition of fill

No.	DATE yr/m/day	REVISIONS	DRAWN	CHK'D	APP'D
1	2024/08/01	ISSUED FOR REVIEW	MD	TS	TS

DESIGN BY:	T. SPERLING
DRAWN BY:	M. DOORNBOS
DATE CREATED:	2024/08/01
SHA PROJECT #	LFCI-2023-001

DTG RECYCLE LANDFILL FIRE

MONTHLY MONITORING SUMMARY SPATIAL MAPS - O2

DRAWING NO.	REV	SHEET
LFCI-2023-001-07-O2	1	1

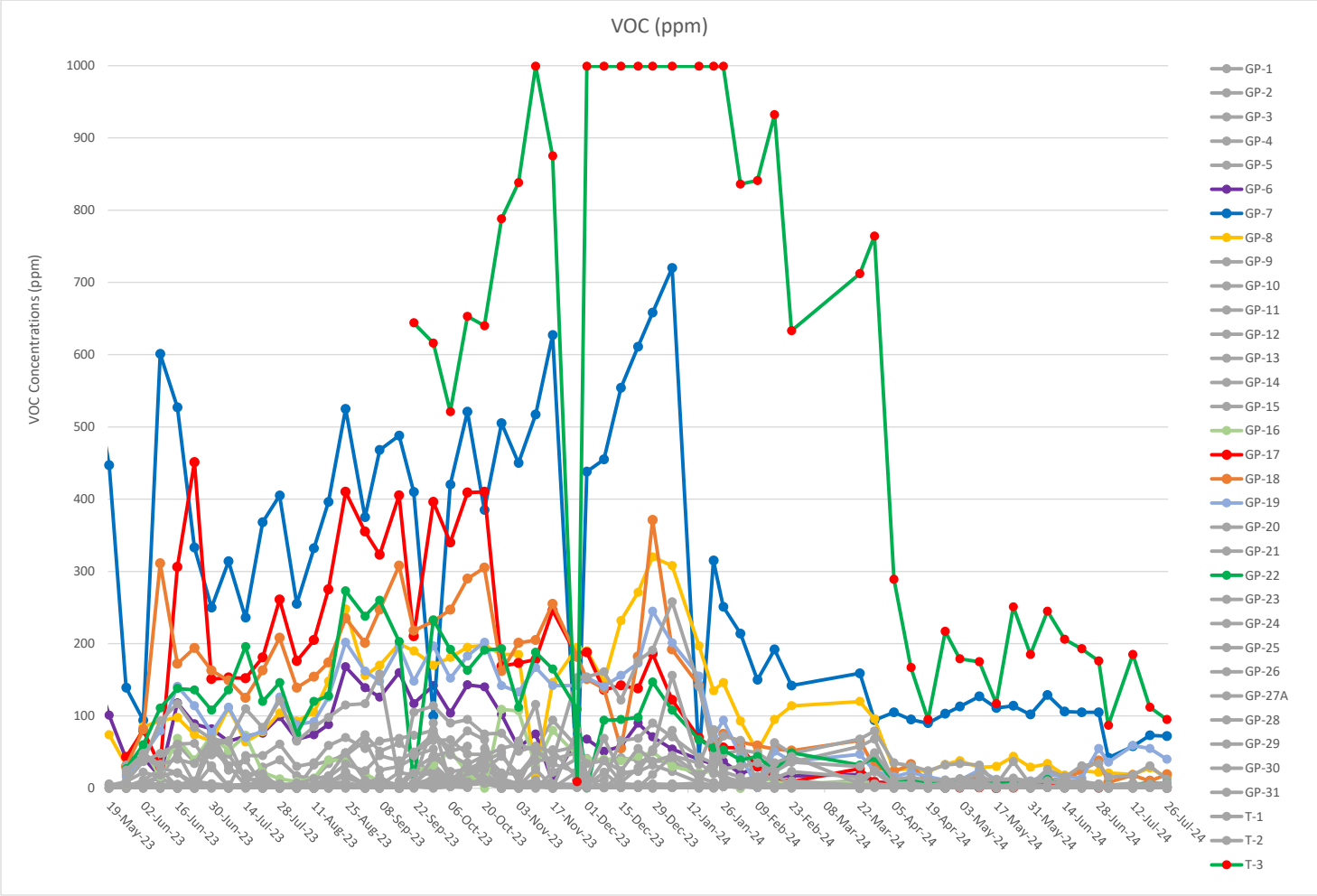
VOC’s

T-3 has remained stable between 100 and 200ppm, seems to be decreasing further.

Production of VOC’s is associated with smoulder.

Large decrease in past few months, will monitor to ensure no major changes.

Drop in levels indicates that smoulder is much less active.



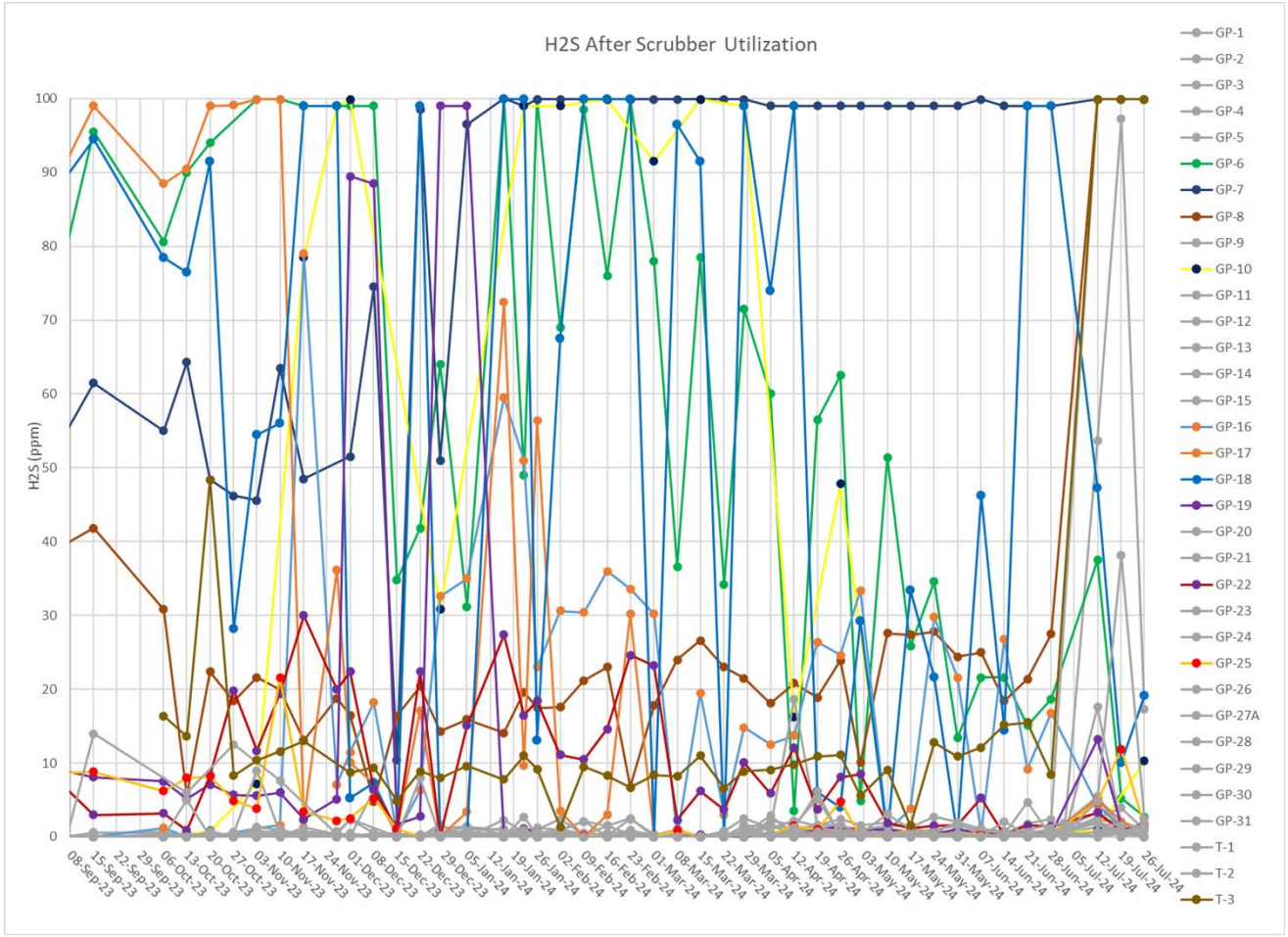
H_2S

H_2S data continues to be noisy, likely affected by atmospheric pressure fluctuation. Decreasing trend visible in past months.

GP-7 and GP-18 are high, all other monitoring locations have now decreased.

GP-7 and GP-18 are situated close to T-3.

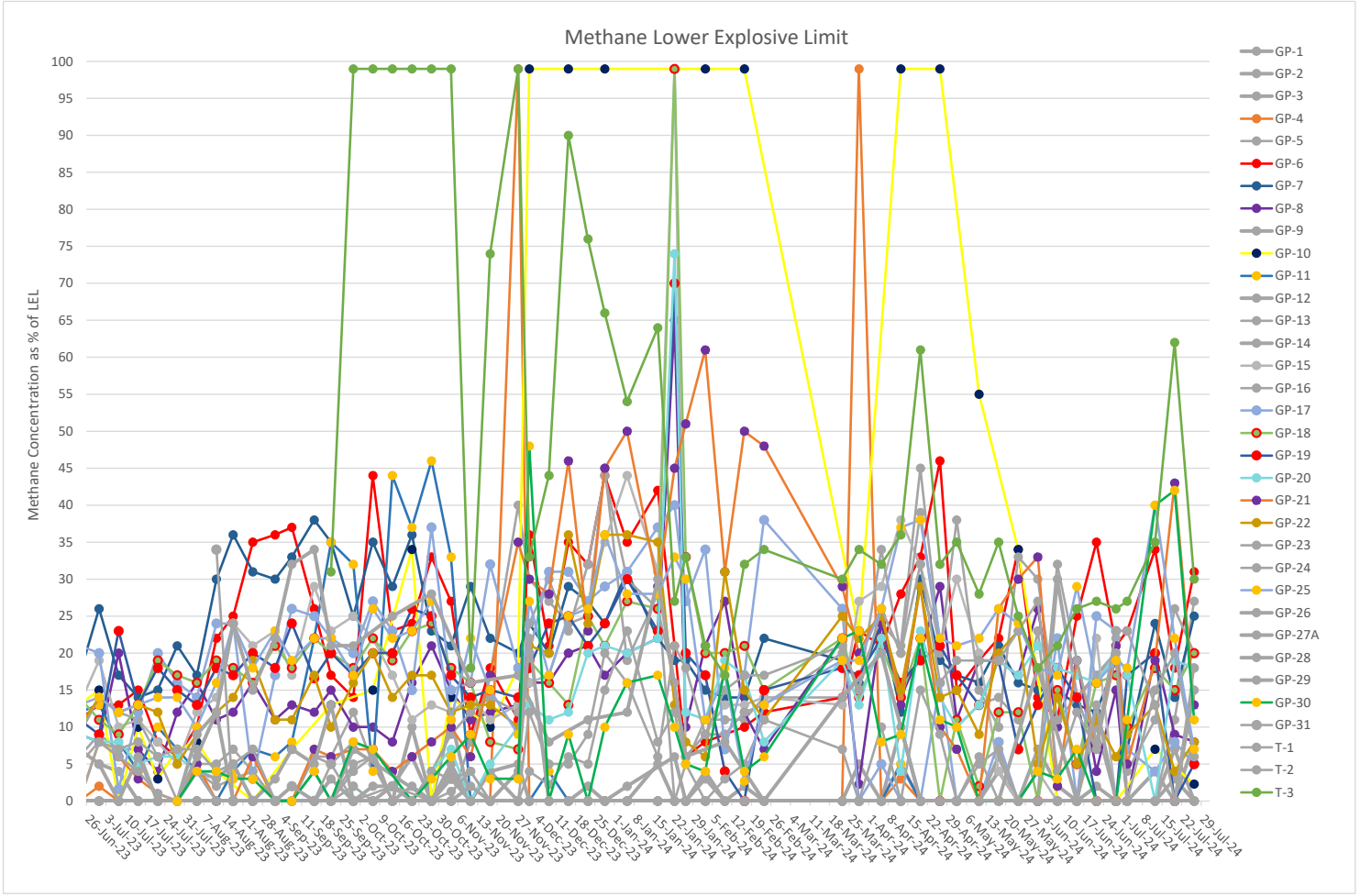
It is possible that H2S sensor is being impacted by CO cross interference.



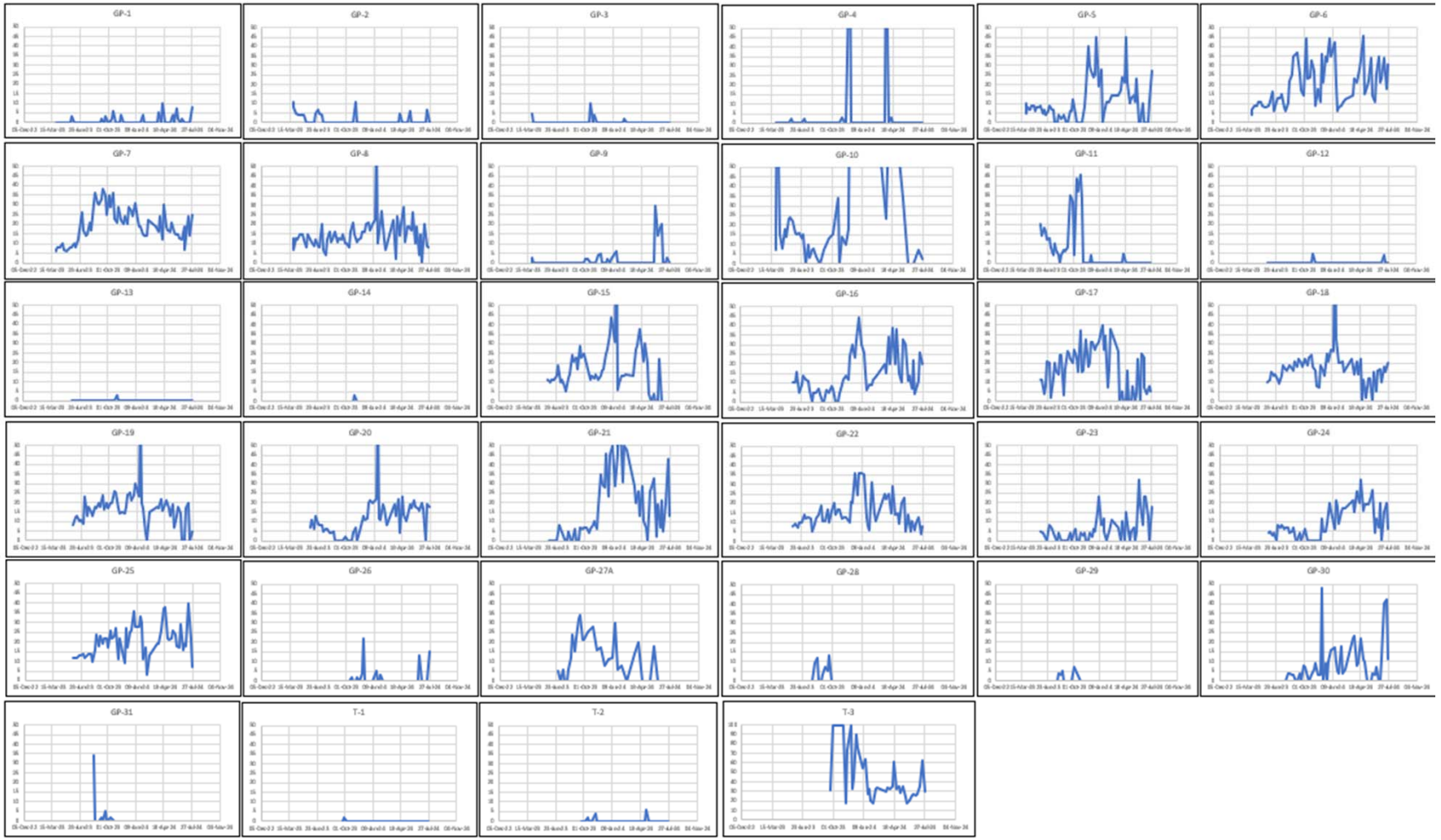
Lower Explosive Limit

Many data points fluctuating wildly – methane composition is a better indicator of levels within the landfill.

LEL has remained mostly consistent over the last month, under 35% except for spike in mid July.

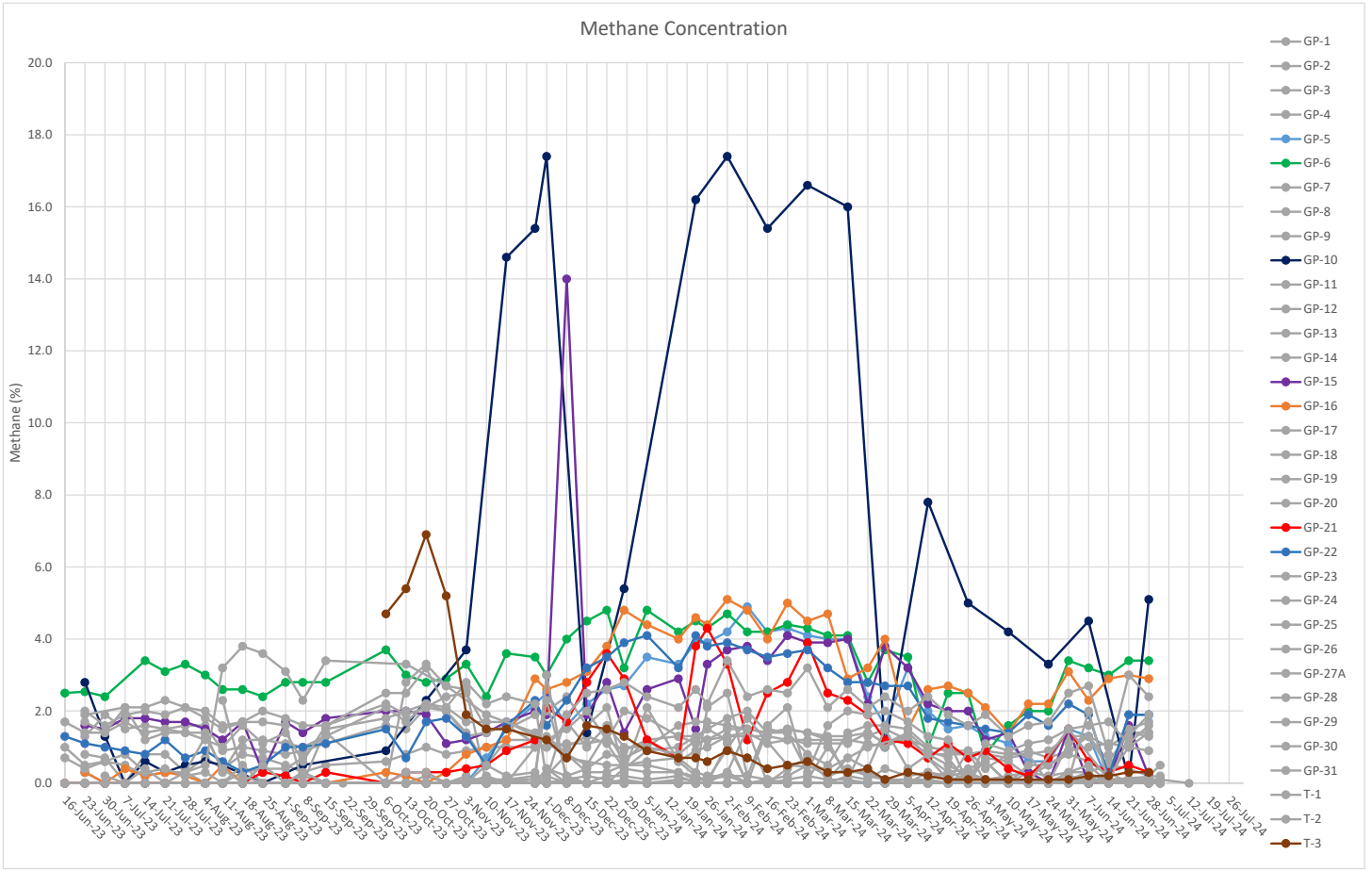


LEL for individual GP



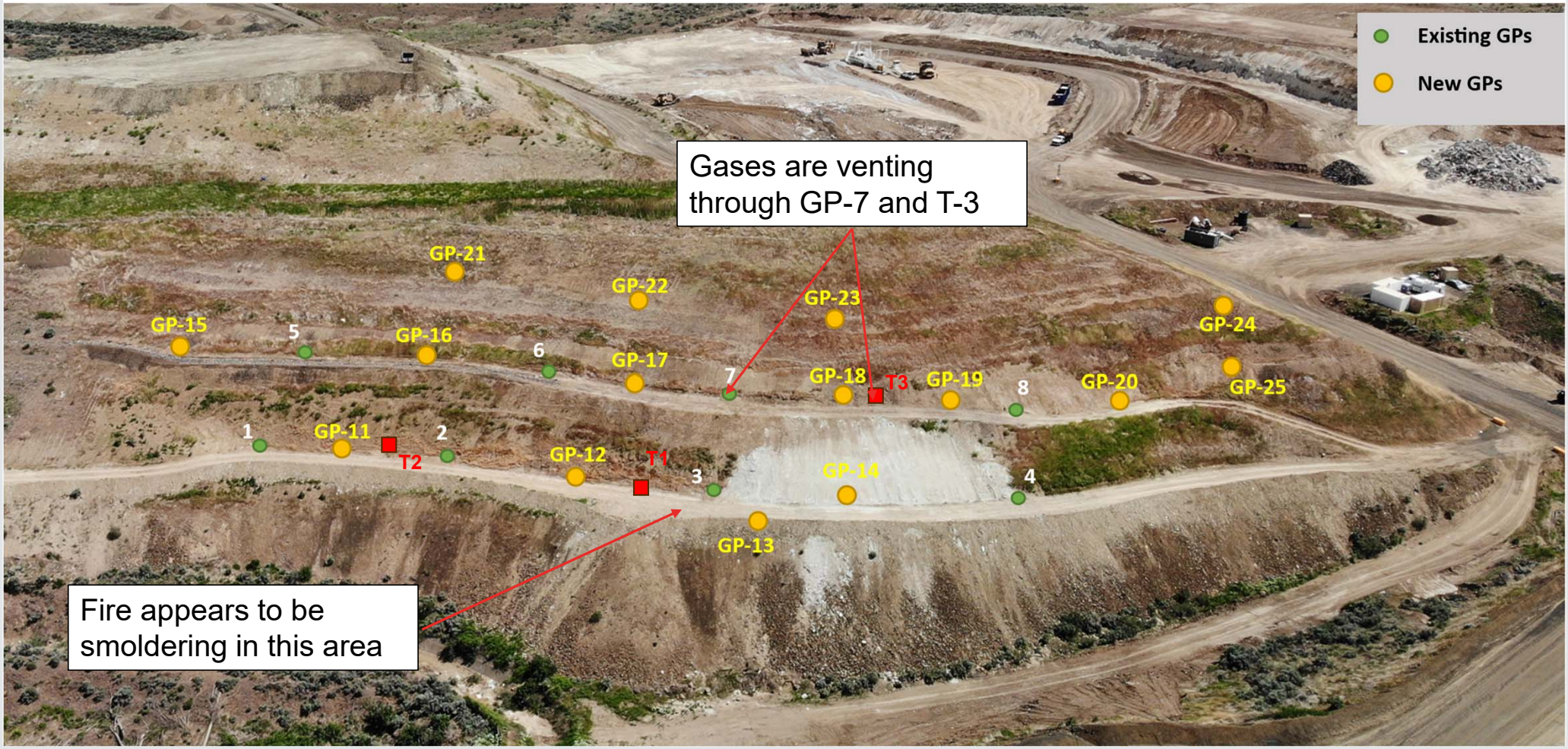
CH_4 (%)

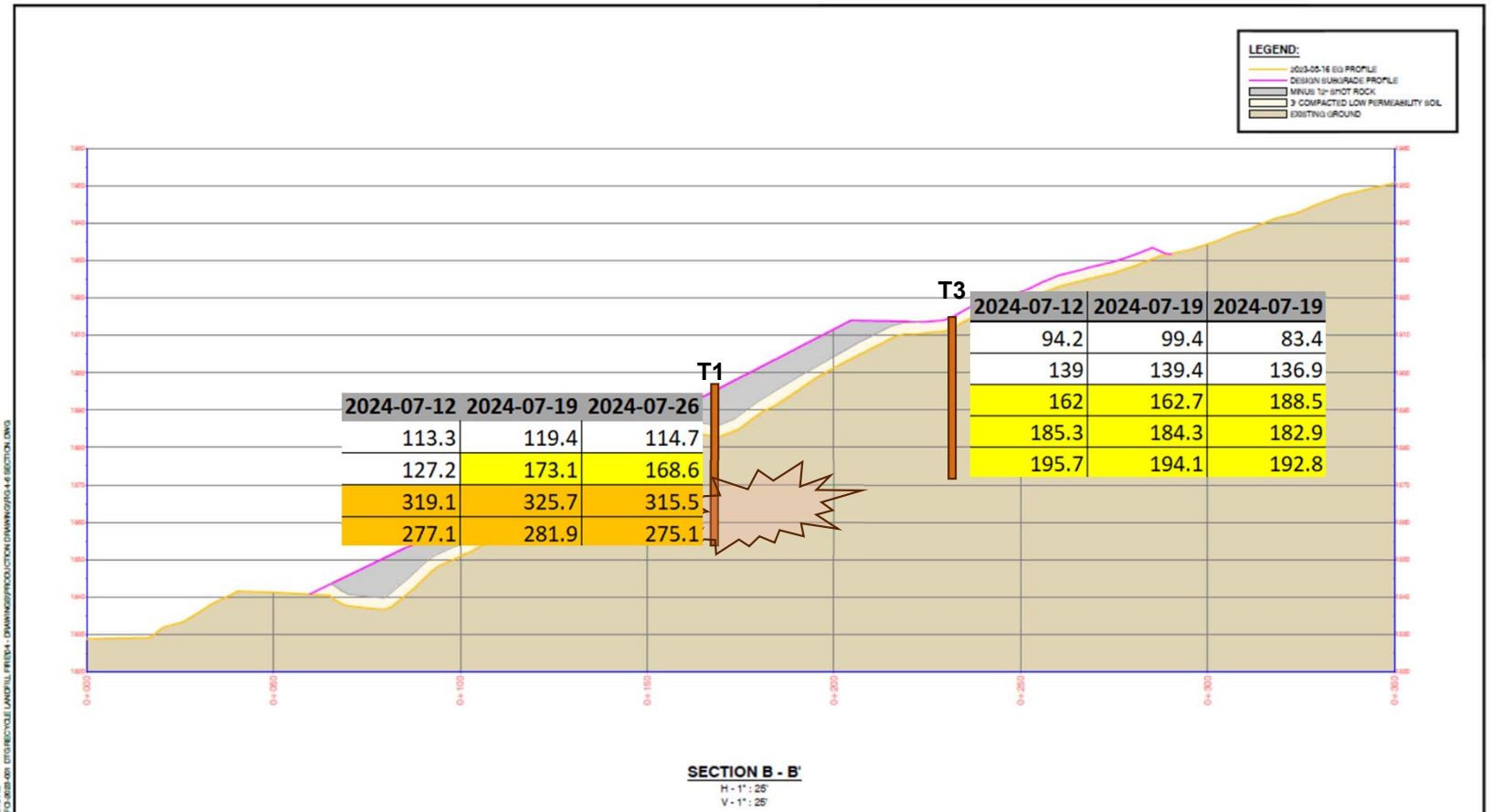
Draeger instrument has been sent for recalibration, so no methane data collected during that time.




LANDFILLFIRE.com
JS-03
Existing GPs
New GPs
GP-21
GP-22
GP-23
GP-24
GP-15
5
GP-16
6
GP-17
T3
GP-18
GP-19
3
GP-20
GP-25
1
GP-11
2
T2
GP-12
T1
3
GP-14
4
GP-13

Fire Path


Existing GPs
New GPs
Gases are venting through GP-7 and T-3
Fire appears to be smoldering in this area
GP-21
GP-22
GP-23
GP-15
GP-16
GP-17
GP-18
GP-19
GP-20
GP-24
GP-25
GP-11
GP-12
GP-14
GP-13
T1
T2
T3
1
2
3
4
5
6
7
8



2024-07-12	2024-07-19	2024-07-26
113.3	119.4	114.7
127.2	173.1	168.6
319.1	325.7	315.5
277.1	281.9	275.1

2024-07-12	2024-07-19	2024-07-19
94.2	99.4	83.4
139	139.4	136.9
162	162.7	188.5
185.3	184.3	182.9
195.7	194.1	192.8

SECTION B - B'

H - 1" : 25'

V - 1" : 25'

PDF GENERATED BY: Angie Tsang | 5/16/2023 03:15 PM

X:\LANDFILL\PRECONTROL\PROJECTS\JFO\2023\JFO-2023-001 DTG\RECYCLE LANDFILL FILE\04 - DRAWINGS\PRODUCTION DRAWINGS\PG14-6 SECTION.DWG

SPERLING HANSEN ASSOCIATES

Landfill Services Group
- Landfill Siting
- Design & Operations Plans
- Landfill Closure
- Environmental Monitoring

#9 - 1225 Keith Road East
North Vancouver, B.C. V7J 1J3
Phone: (604) 986-7720

SEAL

No.	DATE (yy/mm/dd)	REVISIONS	DRAWN	CHKD	APP'D

REUSE OF DOCUMENTS

This drawing is of a confidential nature and shall not be reproduced in any manner nor used for any purpose whatsoever except by written permission of Sperling Hansen Associates.

This drawing is not approved for construction unless it bears a signed and dated engineer's stamp, affixed on or after the date of the last revision.

CLIENT:

DESIGN BY:	T.SPERLING	SHA PROJECT #	2023-001
DRAWN BY:	A.TSANG	DATE CREATED:	5/16/2023
CHECKED BY:	T.SPERLING	HORIZONTAL SCALE:	1" = 25'
APPROVED BY:	–	VERTICAL SCALE:	1" = 25'

ADJUST SCALE 50% FOR 34"x22" SHEET

DTG RECYCLE LANDFILL FILE

SECTION B-B'

DRAWING NO.	REV	SHEET
2023-001-005	–	005

Data Interpretation

Draeger instrument was in for recalibration this month, so some data has several weeks missing.

Suppression efforts are working. CO levels and temperatures have decreased dramatically since cover fill was placed.

In LFCI experience, CO has been best indicator of suppression at other landfill sites. CO levels in T-3 have remained high, GP-7, GP-8, and GP-20 have increased since last month

High O2 continues to fluctuate - this is likely due to large atmospheric pressure swings and pervious waste mass allowing entry of ambient air.

Temperature has dropped significantly all around, GP-3 has continued to fall.

Overall, it appears that the waste is smoldering underneath GP-3 and T-1 (elevated temperature) and a ‘chimney’ effect is occurring, causing higher CO and VOC’s in T-3 and GP-7.