

Measure What Matters

ARWMAS

FALL 2022

Luke Dixon - Intro

- Professional Land Surveyor.
- 18 Years of Experience Providing Survey Services.
- Founded Civil Tracker in 2018 to help non surveyors measure what matters.
- Transport Canada Advanced Drone Pilot
- Supervised 8,000+ flight 50+ pilots

Contact Info

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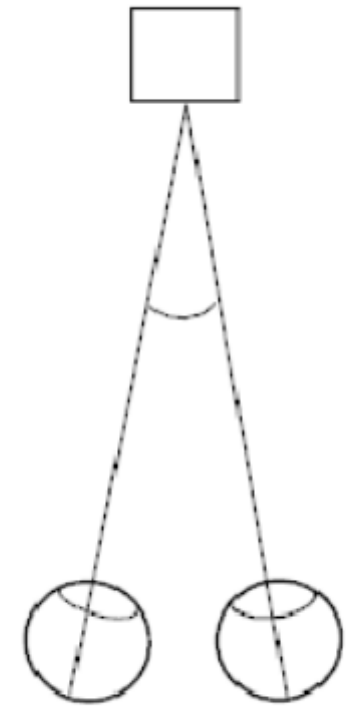
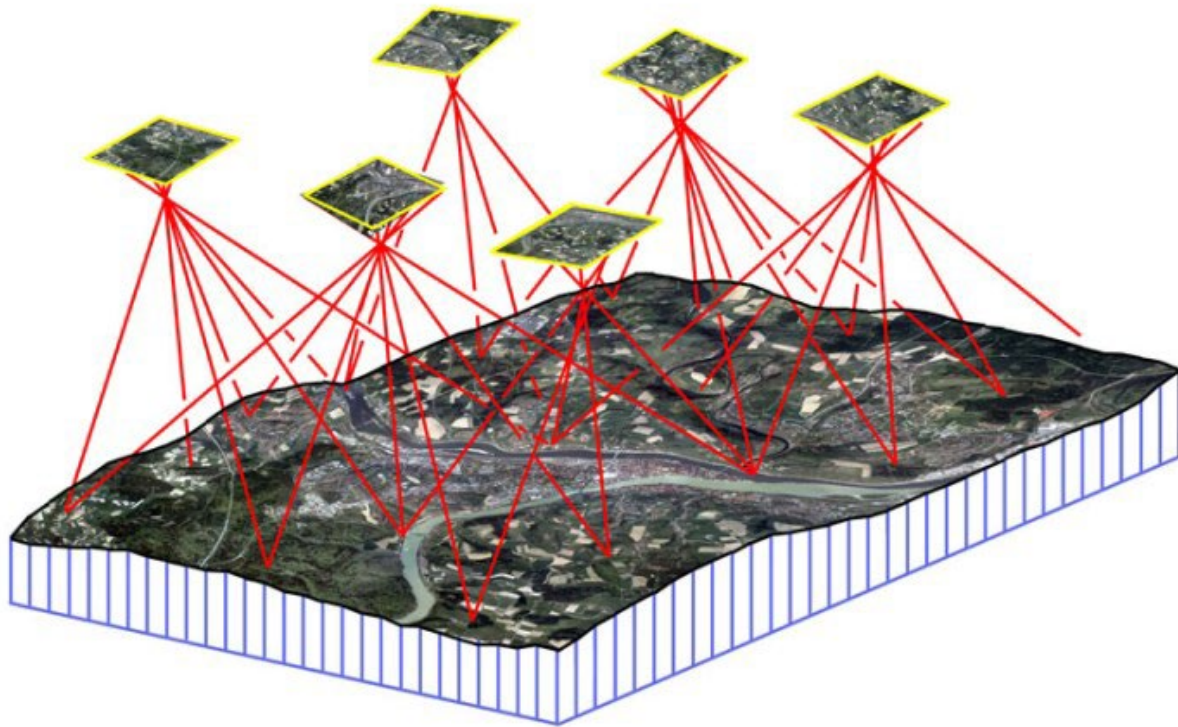
CIVIL TRACKER

global
raymac
surveying &
engineering

Why Drone Mapping?



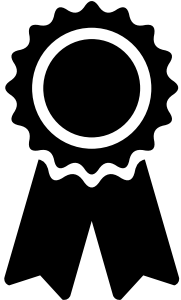
What is Drone Mapping & Photogrammetry?



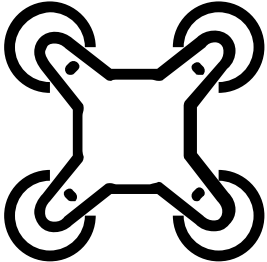
Convergence

6 Steps to Start Drone Mapping

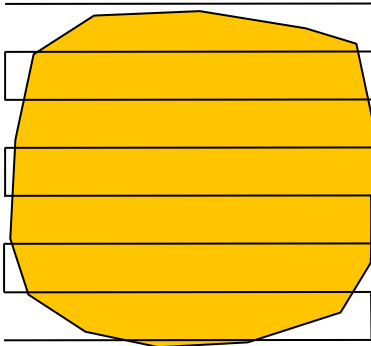
Regulatory



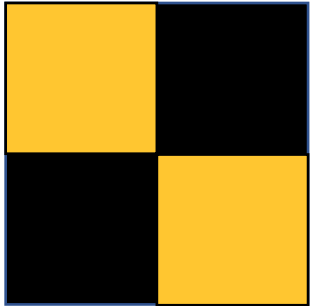
Drone



Plan



Site Setup



Fly



Map & Measure



Regulatory Requirements – Transport Canada

Micro Drone
<250g

Small Basic
250g – 25kg

Small Advanced
250g – 25kg

- Further than 5.6km from an airport
- 1.9km from a heliport
- 30m from bystanders

- Within controlled airspace (Calgary)
- Near People
- Over people with approved drone

No
Certification
Required

Small Basic
Certification

Advanced
Certification

Drone Hardware



Mavic Mini



Air2S



M3E RTK

Drone Hardware – What You'll Need

Drone
Controller
Batteries
Cables
Micro SD Card

Phone or Tablet Device

Download and Install DJI Fly
Download and Install Dronelink



Mission Planning Option 2 - Dronelink

High Accuracy

Altitude = 85m (2.5cm GSD)

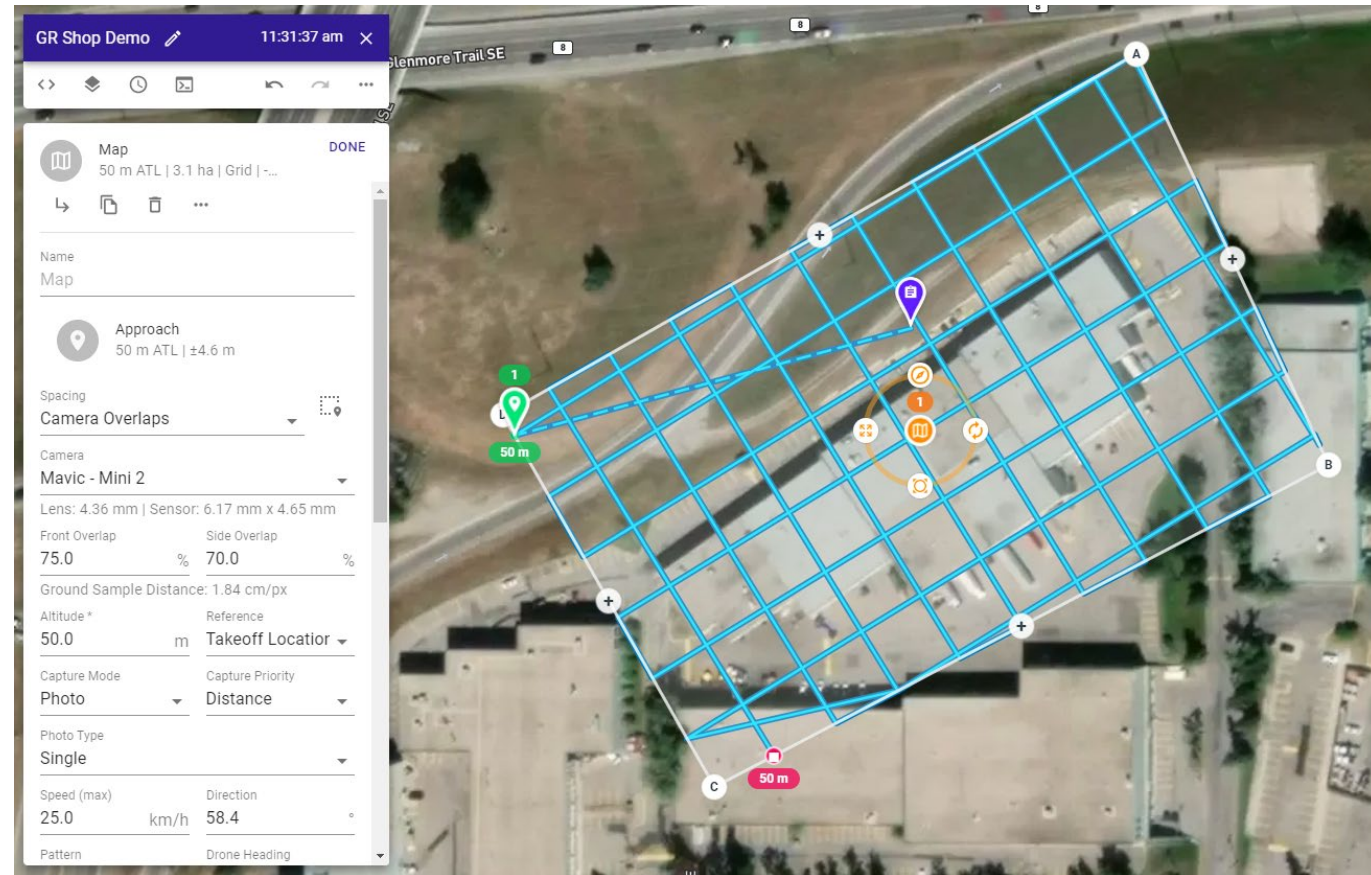
Pattern = Grid

Overlap = 75% / 65%

Speed = 30 kmh

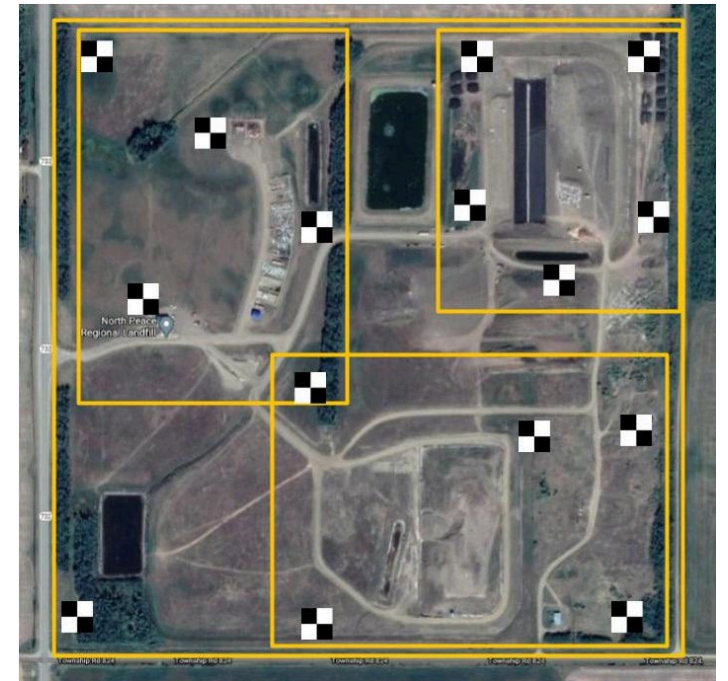
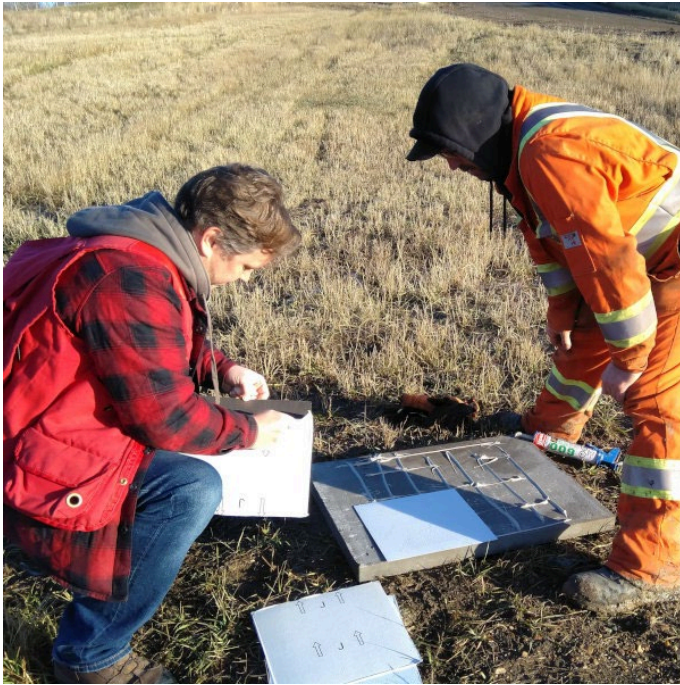
Capture Angle = -75°

2ac per minute



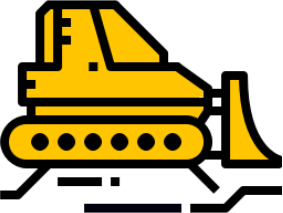
Site Setup

Secret Weapon to Survey Grade Accuracy with Affordable Drones



How to Create Permanent Ground Control Points

Calculate Airspace Utilization Factor (AUF)



Progress Table			
Material	Cut (m ³)	Fill (m ³)	Net (m ³)
C&D	10	63	53
MSW	31	719	688

Project Total Table			
Material	Cut (m ³)	Fill (m ³)	Net (m ³)
C&D	10	63	53
MSW	31	719	688

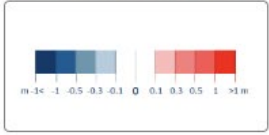
Polygon Table		
ID	Area (m ²)	Volume (m ³)
C - 473	398	53
M - 198	1564	688

Legend		
OG	O	□
C&D	C	□
MSW	M	□

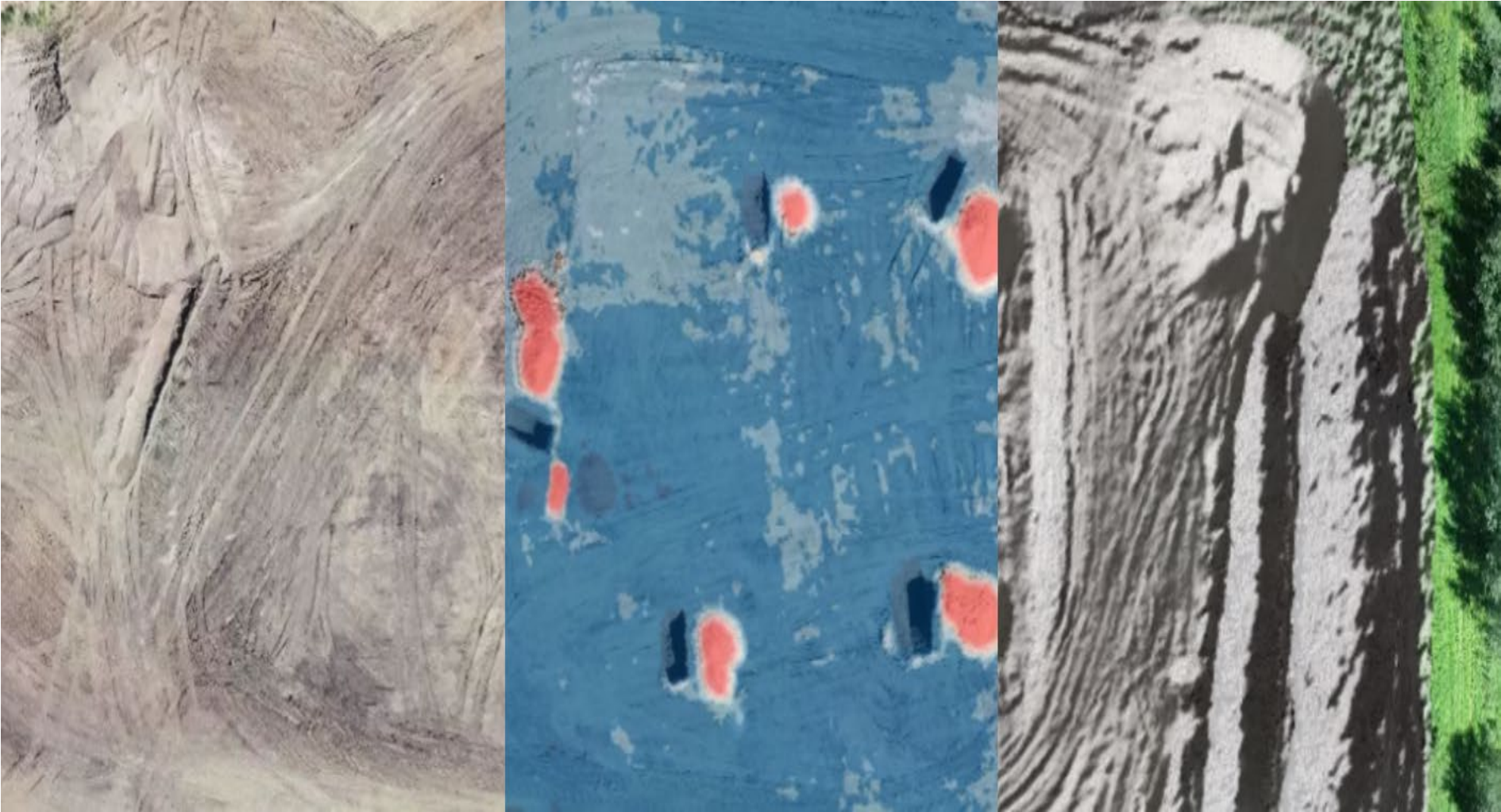
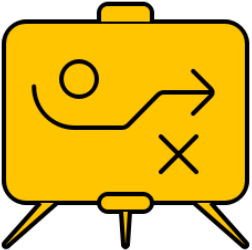
NPRL-Rev2
 Progress Report Showing
 Current As-Built (20211029)
 VS
 Previous As-Built (20210910)



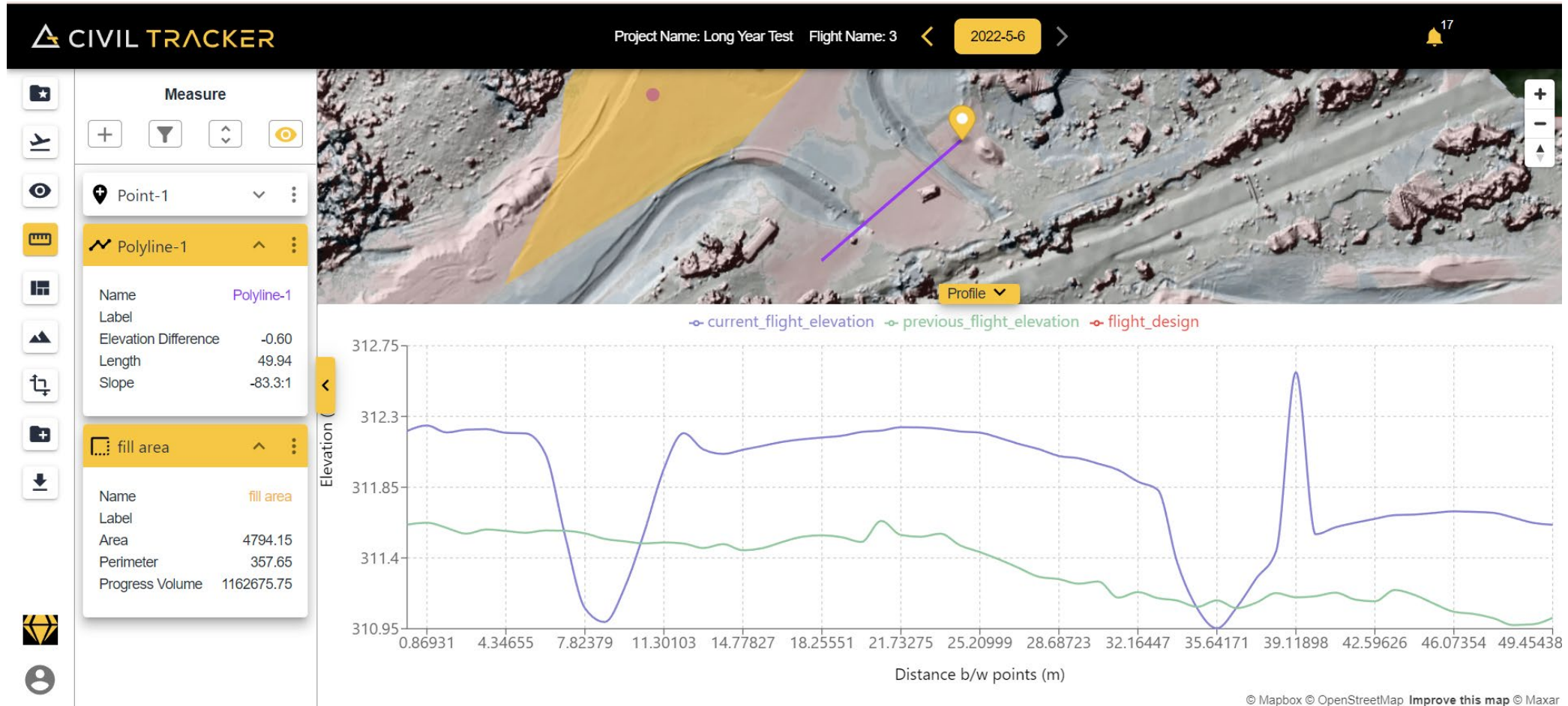
GCP Residuals RMSE: _____
 Ground Sample Distances: _____
 Report Generated: 28th October 2022
 User: Support Staff | support@civiltracker.xyz



Plan Future Development



Measure Everything



Ensure Compliance



Good information can help with everything from ensuring proper drainage to tracking where specific waste ends up. Drone data helps landfill managers prove their sites are operating in compliance and provides early detection of many problems.

Map, Measure & Report

PROJECT TRACKING DML Earthworks Overbuiden

Set

Measure

POINTS LINES POLYGOONS

Name: **Large**
 Label:
 Area: 578.5
 Perimeter: 88.75
 Progress Volume: -5826000.0
 Stockpile volume: 753.1

Name: **Medium**
 Label:
 Area: 236.8
 Perimeter: 64.09
 Progress Volume: -3009860.0
 Stockpile volume: 328.7

Name: **Small Pile**
 Label:
 Area: 146.5
 Perimeter: 44.14
 Progress Volume: -1405000.0
 Stockpile volume: 140.0

Smart Tracking

Design

Report

Need Help?

As-Built vs Design Volume Table

Material	Net (m ³)
Airspace Remaining	58441

Legend

Airspace Remaining AR

Plamondon Landfill

Report Showing
 Current As-Built (20201104)
 VS
 Final Fill Plan

GCP Residuals RMSE: 0.020m
 Ground Sample Distance: 0.027m
 Report Generated: 14th November 2020
 User: Luke Dixon | luke@civitracker.xyz

CIVIL TRACKER

mapbox

Mapbox © OpenStreetMap © Maxar

i Quick Start

Thank-you!

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