

# It's Time for Takeoff

How Everyone Can Start Drone Surveying

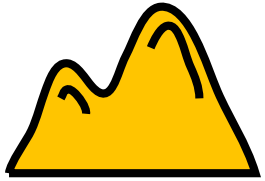
SWANA Northern Lights 2021 Conference

# Luke Dixon - Intro

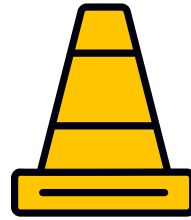
- Professional Land Surveyor.
- 17 Years of Experience Providing Survey Services.
- Founded Civil Tracker in 2018 to help everyone become a drone surveyor.
- Transport Canada Advanced Drone Pilot
- Supervised 3,000+ flight 30+ pilots



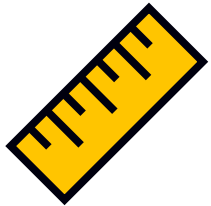
# Why Consider Drone Surveying?



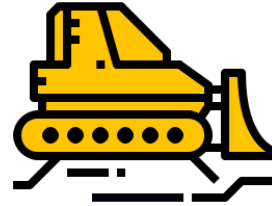
Calculate Volumes



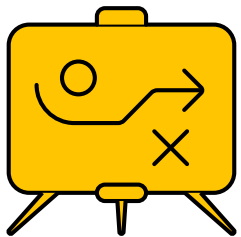
Improve Safety



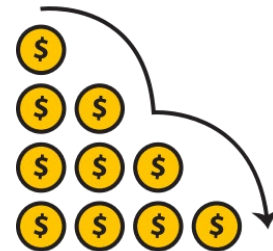
Measure



Optimize Compaction



Planning



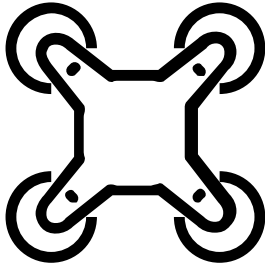
Cost Savings

# Cell Measurements

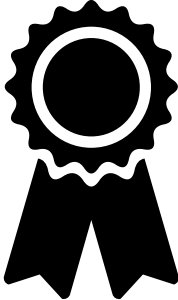


# 5 Steps to Start a Drone Program

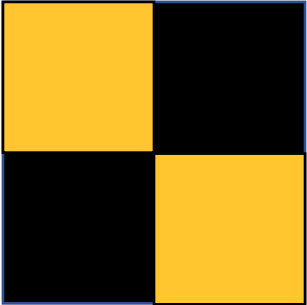
Drone



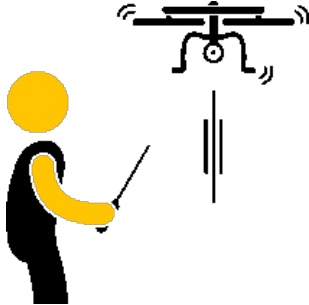
Regulatory



Site Setup



Fly



Map & Measure



# (1) Drone Hardware



Mavic Mini  
\$650



Phantom 4  
\$2,500



eBee  
\$50,000

## (2) Transport Canada Certification

Find your category of drone operation

### Basic

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

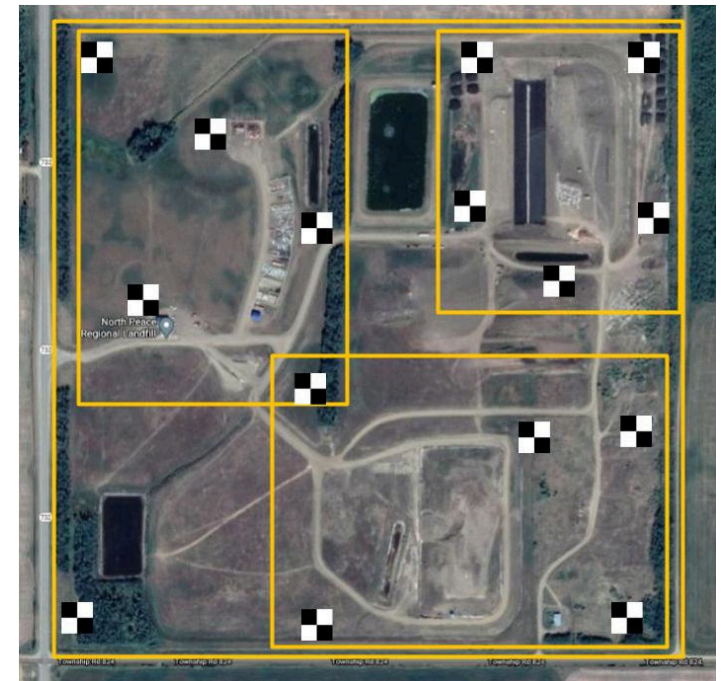
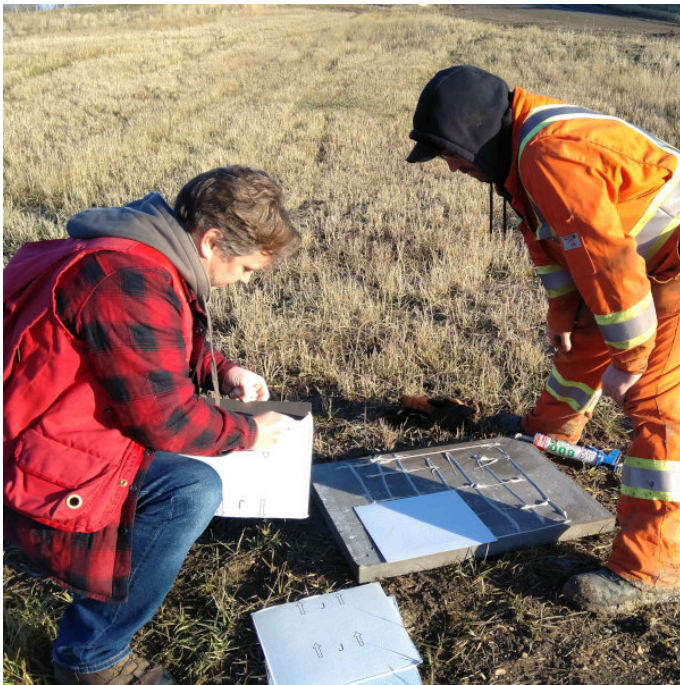
### Advanced

- Within controlled airspace
- Near People
- Over people with approved drone

**Skip this step with the 249g Mavic Mini**

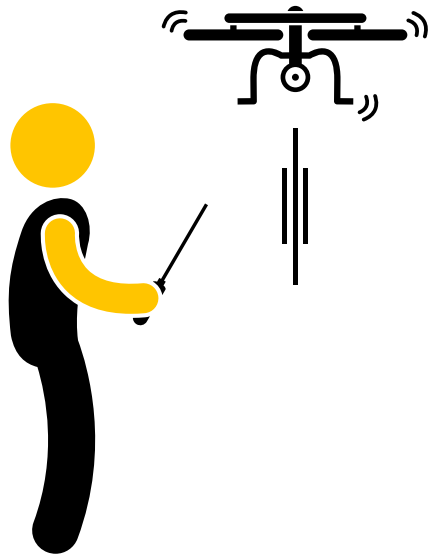
# (3) Site Set-up – Ground Control Points

Secret Weapon to Survey Grade Accuracy with Affordable Drones

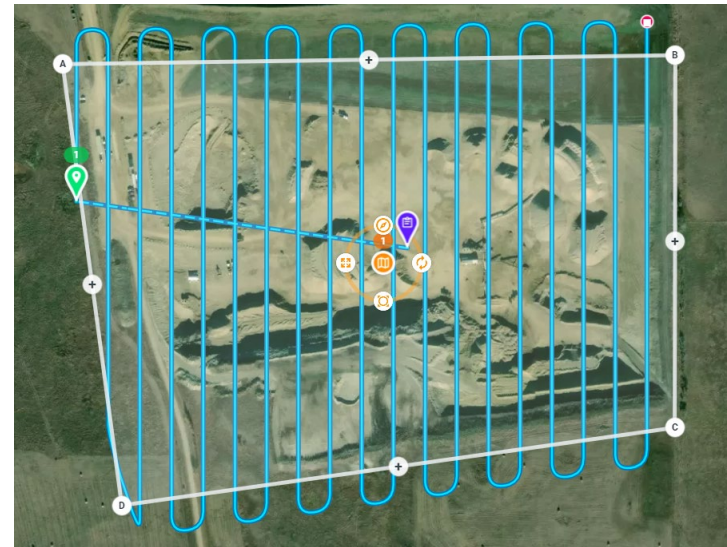


# (4) Start Flying – Use an Autopilot app

## Practice Flying



## Automated Grid



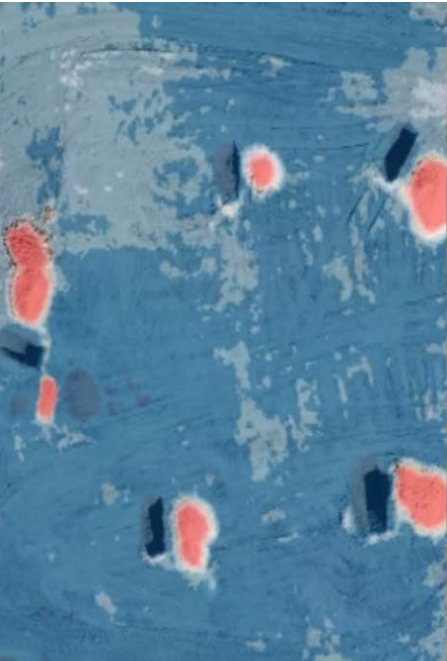
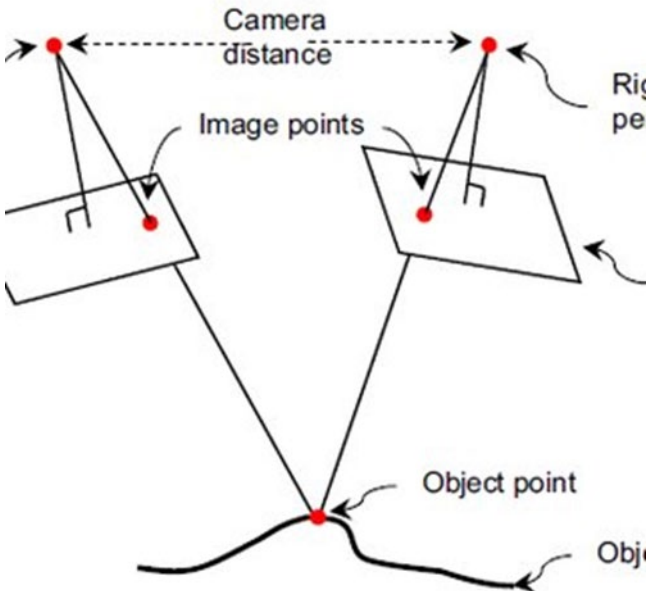
# Pictures to Survey Grade Terrain Models

Photogrammetry >>

Imagery

Cut-Fill

Terrain



# (5) Map, Measure & Report

**Measure**

**POINTS LINES POLYGONS**

**Name: Large**  
 Label:  
 Area: 578.1  
 Perimeter: 88.75  
 Progress Volume: -5826000.0  
 Stockpile volume: 753.1

**Name: Medium**  
 Label:  
 Area: 296.8  
 Perimeter: 64.09  
 Progress Volume: -3009960.0  
 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 <sup>3</sup> )
Airspace Remaining	58441

**Legend**

Airspace Remaining AR

**Plamondon Landfill**

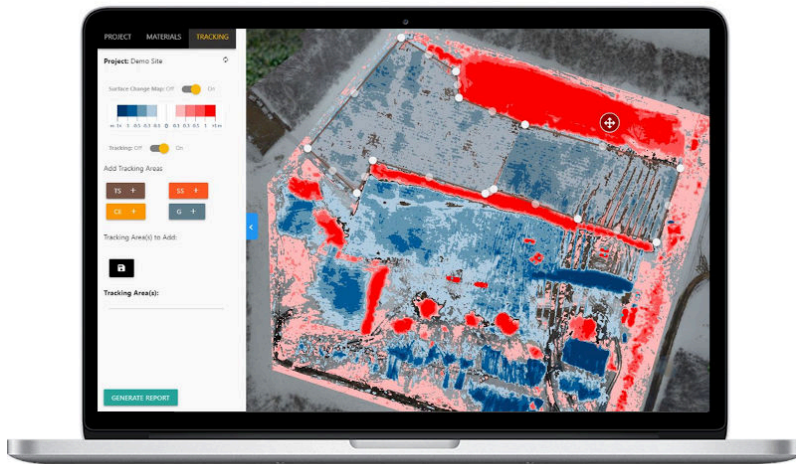
Report Showing  
 Current As-Built (20201104)  
 VS  
 Final Fill Plan

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

m -1 -0.5 -0.1 0 0.1 0.5 1 >1m

# Reading Links

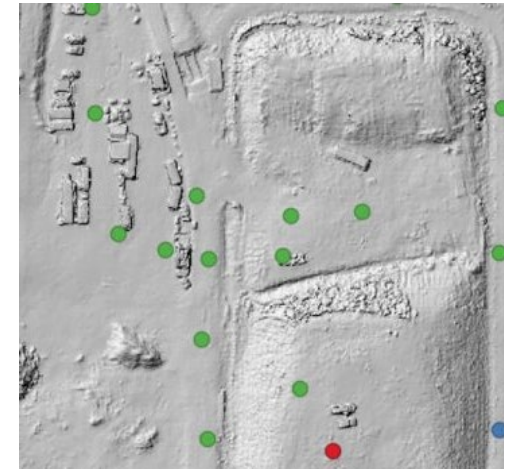
## Drone Tech



## Map with the Mavic Mini



## How Accurate?



Thank You! [luke@civiltracker.xyz](mailto:luke@civiltracker.xyz) 403.707.6833