



# Unmanned Aircraft Systems (UAS) in Engineering and Planning

Presented by: Bailey Nelson and Matthew Stewart

April 7, 2022



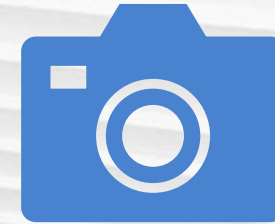
# Agenda



Introductions  
and MentiMeter



Airspace  
Authorizations



SEH Drone Services  
and Client Deliverables

# FALLS INTERNATIONAL AIRPORT RUNWAY RECONSTRUCTION

PHASE 01

PHASE 02

PHASE 03



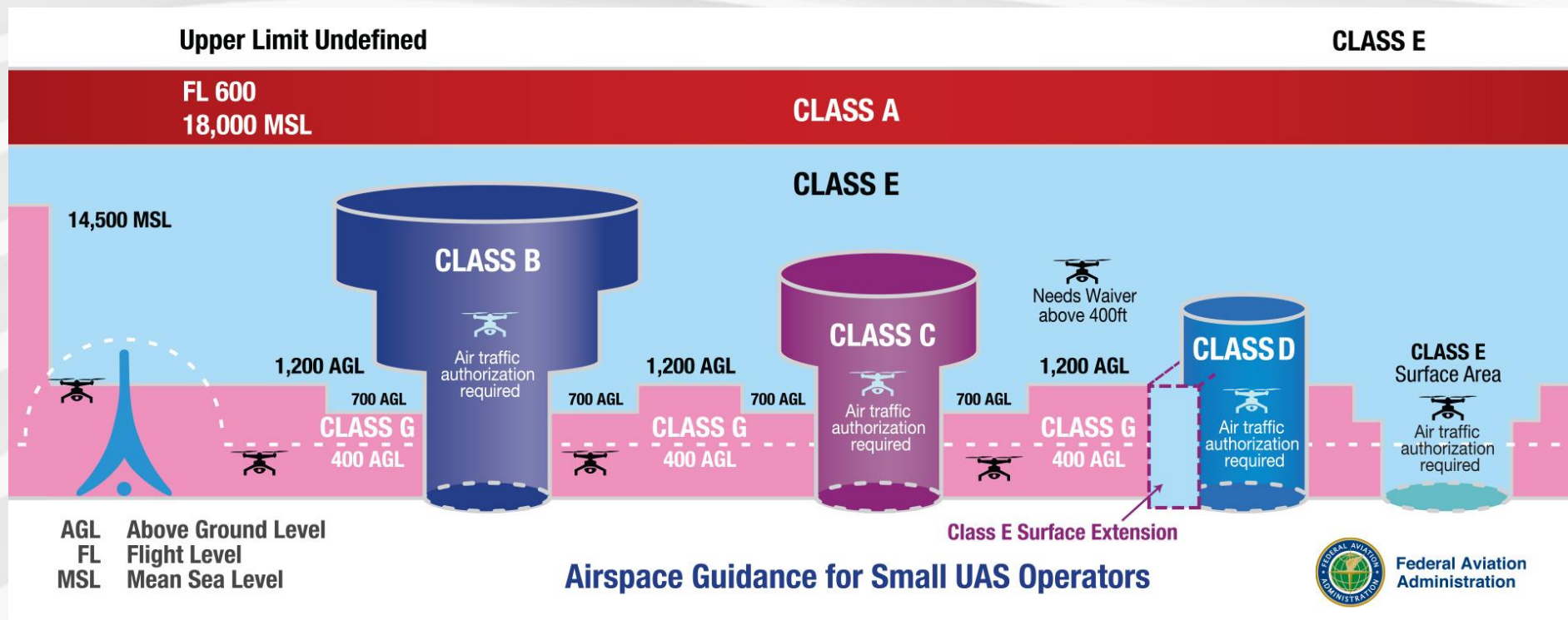


# Airspace Authorizations

How to Execute UAS Operations at Airports

# Airspace Authorization

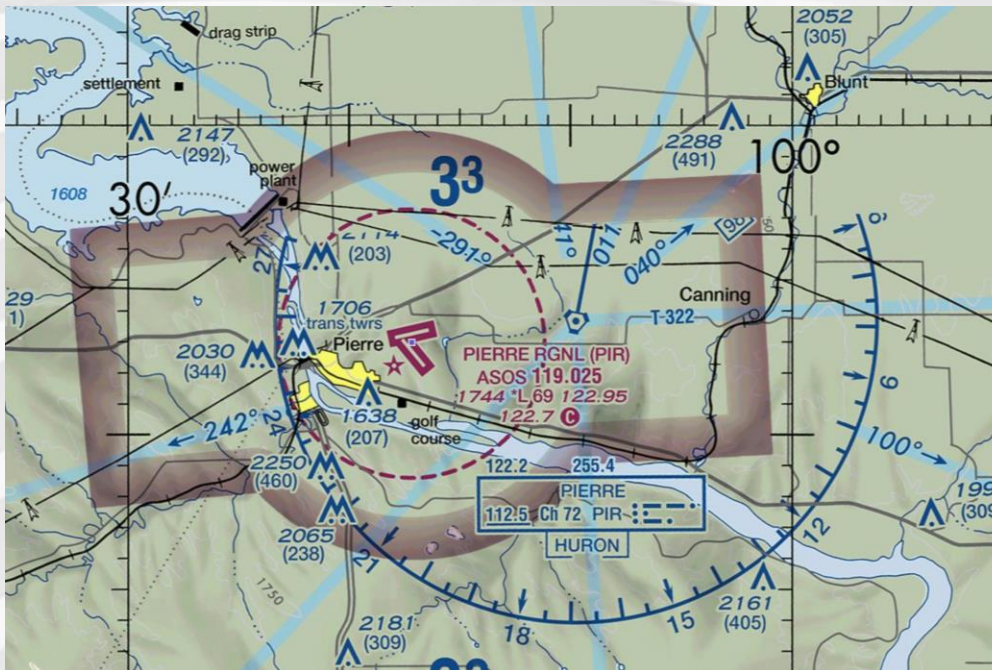
- UAS Operations in Controlled Airspace (Class B, C, D, or E) require an Airspace Authorization from the Federal Aviation Administration (FAA)





# Pierre Regional Airport

- Class E to the Surface
- Requires an Airspace Authorization



vfrmap.com



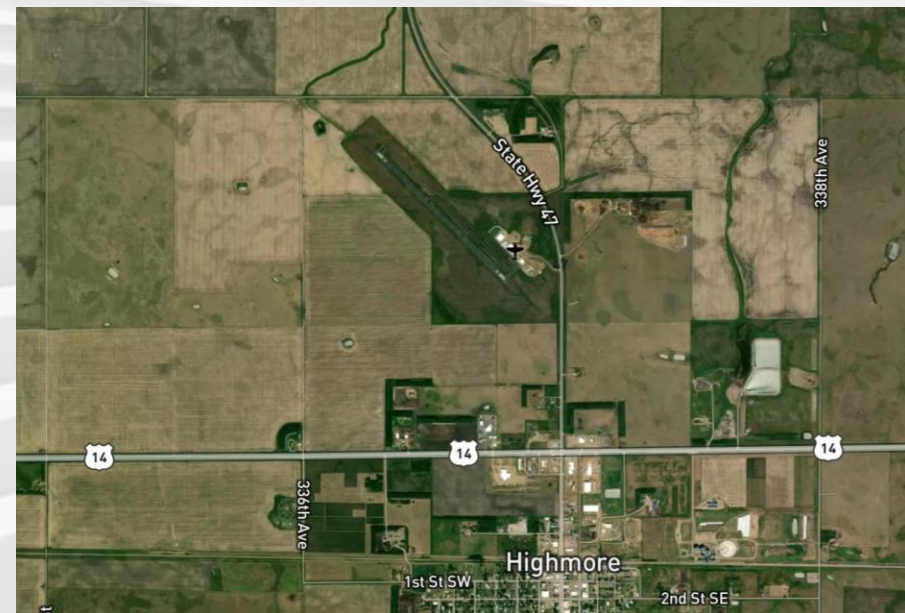
airmap.com

# Highmore Municipal Airport

- Class G (Class E at 700 feet above surface)
- Does not require an Airspace Authorization for operations up to 400 feet



vfrmap.com



airmap.com



# Request an Airspace Authorization



Federal Aviation Administration

FAADroneZone PART 107

HI, BAILEY | LOG OUT | CONTACT | GLOSSARY

HOME / PART 107 DASHBOARD / PART 107 WAIVERS & AUTHORIZATIONS / AIRSPACE AUTHORIZATION

1. Acknowledgment 2. Operation Parameters 3. Review Authorization 4. Confirmation

\* Indicates a required field or that a selection is required.

### Operation Parameters

START DATE\* Month [dropdown] [dropdown] [dropdown]      END DATE\* Month [dropdown] [dropdown] [dropdown]

*Dates cannot be in the past or exceed 24 months from today's date.*

TIMEFRAME\*       SUNRISE TO NOON       NOON TO 4 PM       4 PM TO SUNSET       NIGHT

FREQUENCY\*      Select Frequency [dropdown]      LOCAL TIME ZONE\*      Select Local Time Zone [dropdown]

PROPOSED LOCATION OF OPERATION\*      Provide the specific area within the class of airspace that you wish to operate.



Point 1. 48°04'25.6"N 96°11'54.6"W  
Point 2. 48°03'30.3"N 96°11'46.6"W  
Point 3. 48°04'27.0"N 96°10'36.9"W  
Point 4. 48°03'10.0"N 96°09'58.6"W

faadronezone.faa.gov

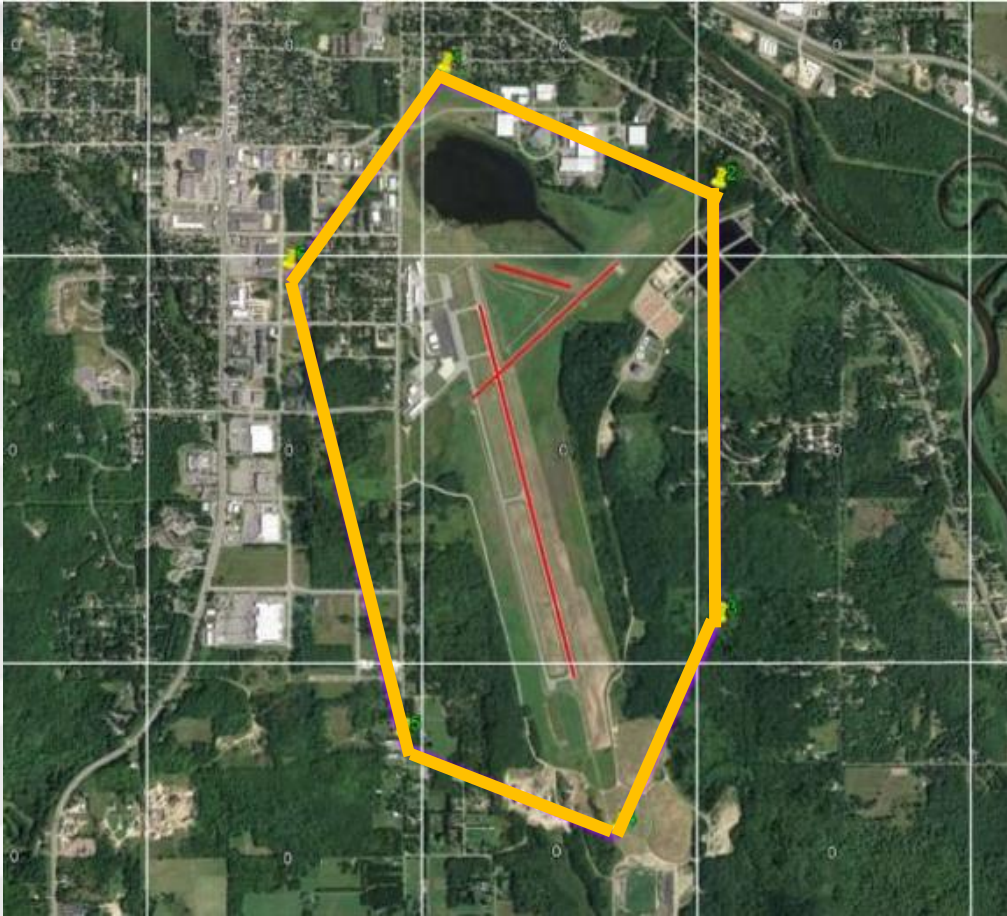


# General Guidelines

- Airport Sponsor, FAA, and ATC have different roles for the operation.
- "The FAA generally responds to waiver requests within 90 days"



# Flight Areas



- If the airport can be NOTAM'ed closed during the UAS operation, it will provide more flexibility

14 CFR 107.41 Airspace Authorization



# Flight Areas



- Operations while the airport is open results in smaller defined areas – no operations over movement areas.

14 CFR 107.41 Airspace Authorization





# SEH UAS Services for Engineering and Planning



## SEH Drones and Services

- High Resolution Photography
- Cinematography
- Visualizations
- Construction Documentation
- Mapping
  - Photogrammetry
  - LiDAR



# High Resolution Photography





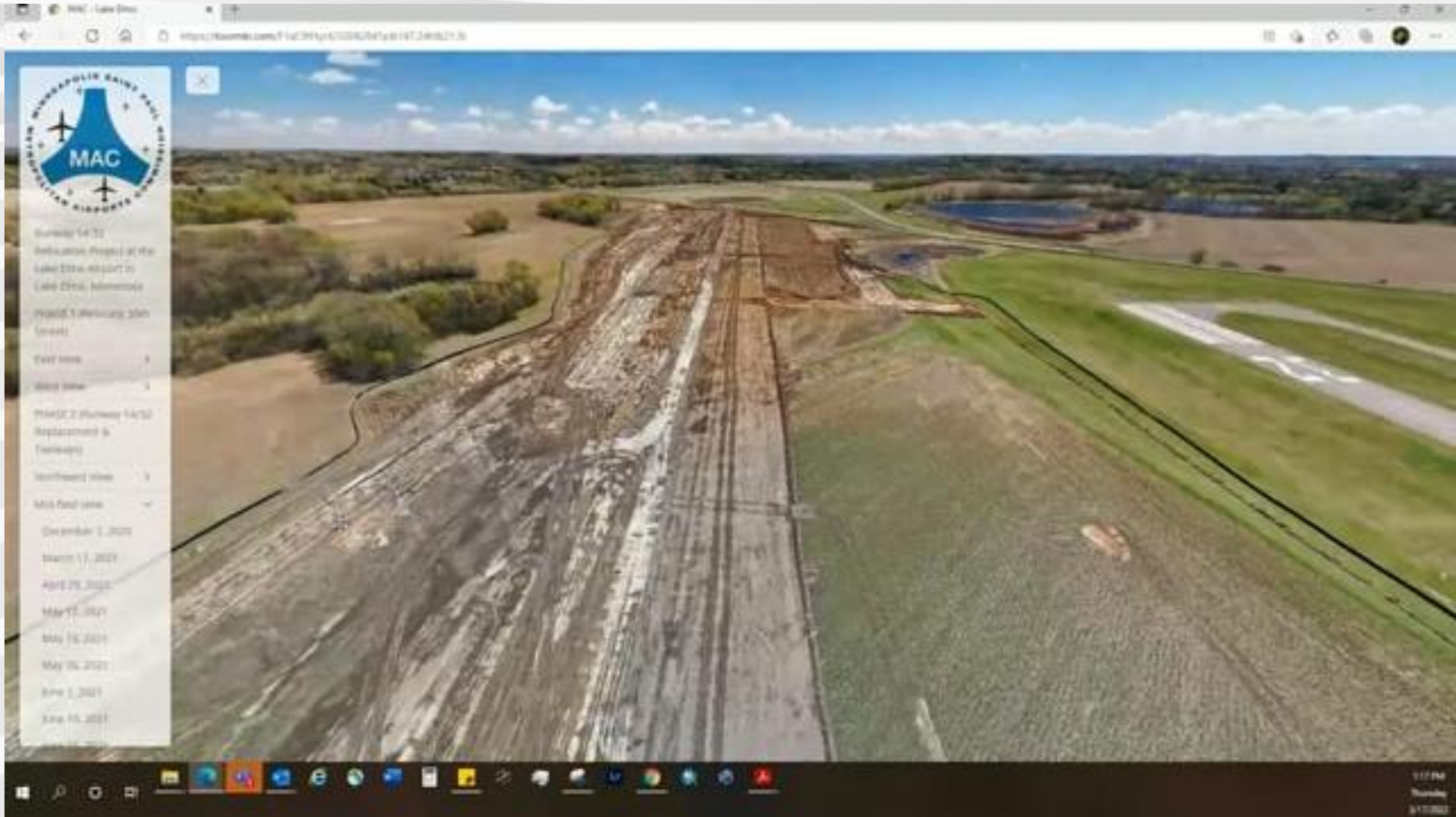
# Cinematography



# Visualizations

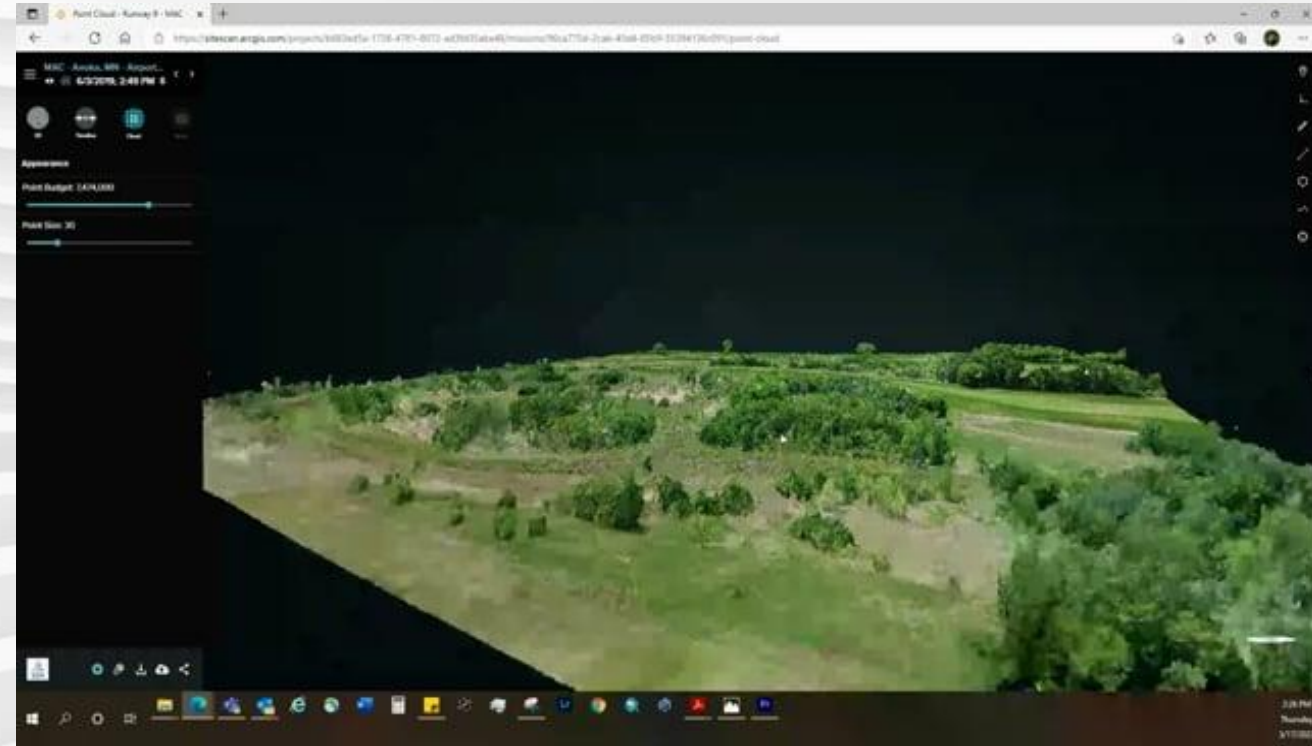
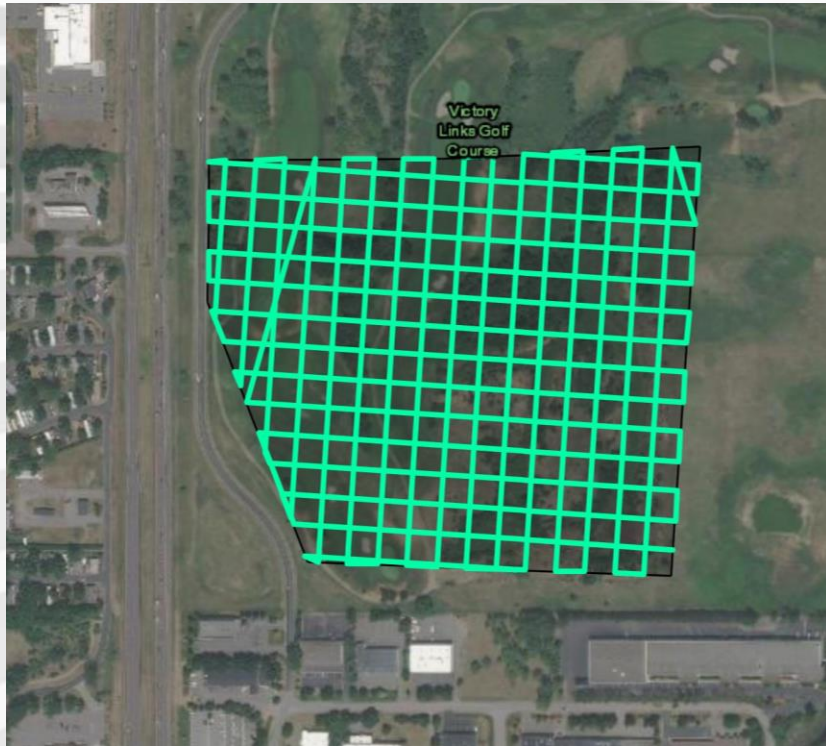


# Construction Documentation



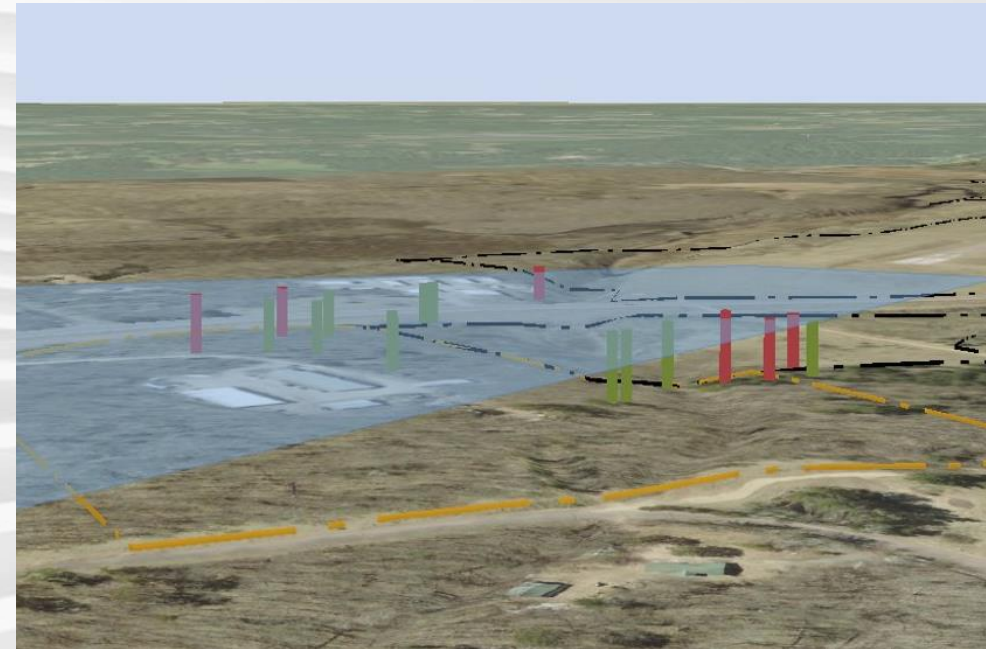


# Photogrammetry



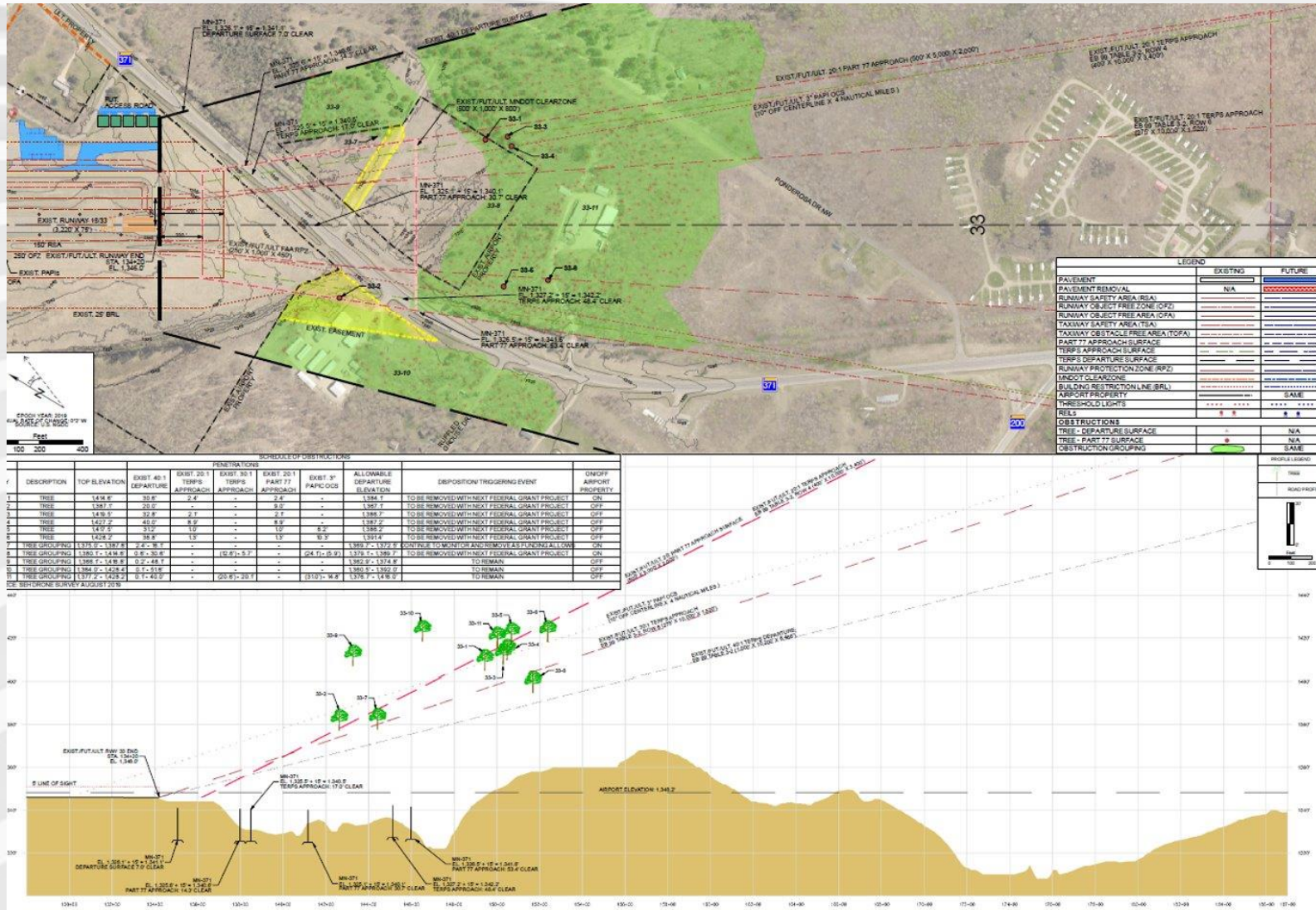
# Obstruction Analysis

- Drone data turned into visualization



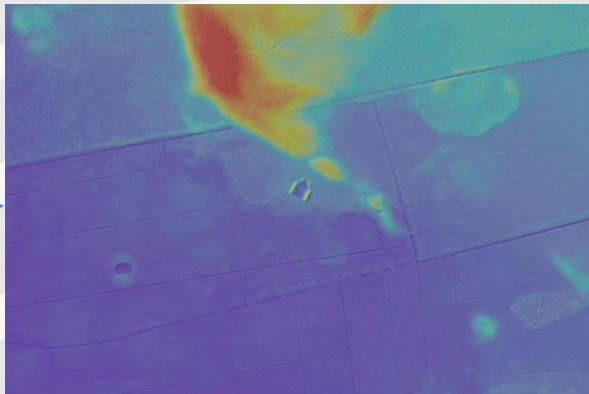
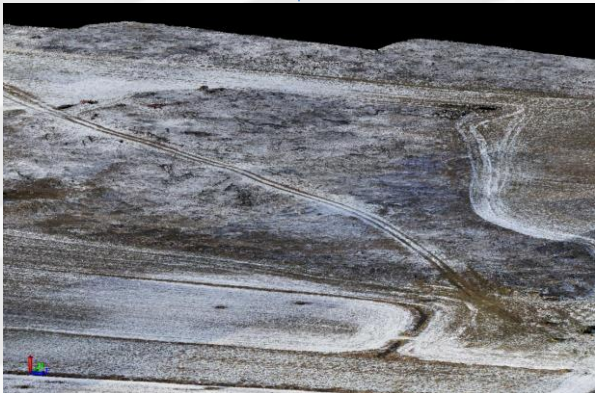
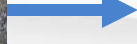


# Obstruction Analysis – Airport Layout Plans





# LiDAR



Point Cloud to Digital Elevation Model (DEM) in a wooded area

Thank you for listening!  
**Questions?**



**Bailey Nelson**

Chief Drone Pilot and Coordinator

[bnelson@sehinc.com](mailto:bnelson@sehinc.com)  
651.490.2116



**Matthew Stewart**

Airport Planner

[mstewart@sehinc.com](mailto:mstewart@sehinc.com)  
603.380.3996

