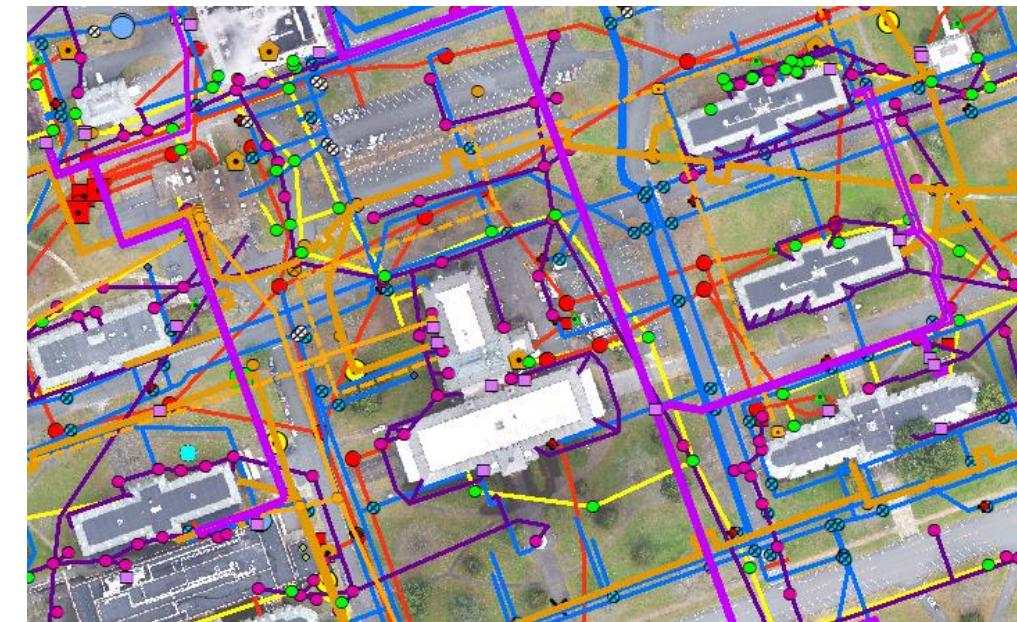
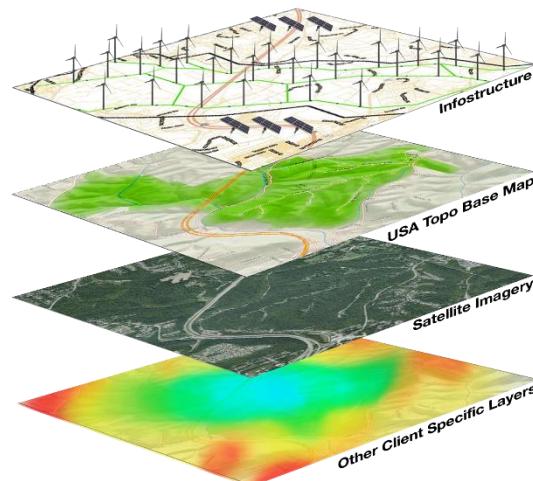


A Prescription for Medical Campus Asset Management

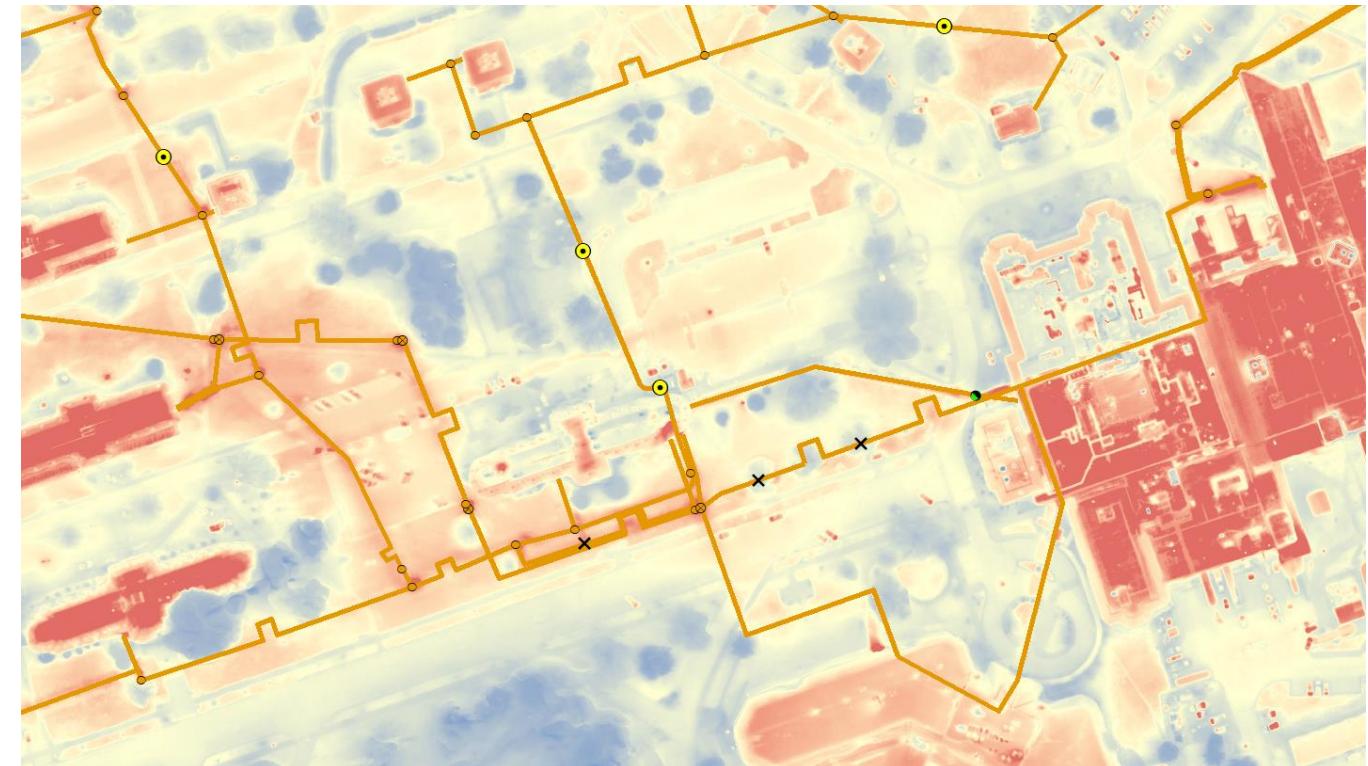


2021 ESRI Infrastructure Management &
GIS Conference



Today's Discussion.....

- **Campus Overview**
- **Original System Records**
- **Conversions to Features**
- **Setting Control**
- **GPS and Attachments**
- **UAV Enhancement**
- **Tracking and Delivery**

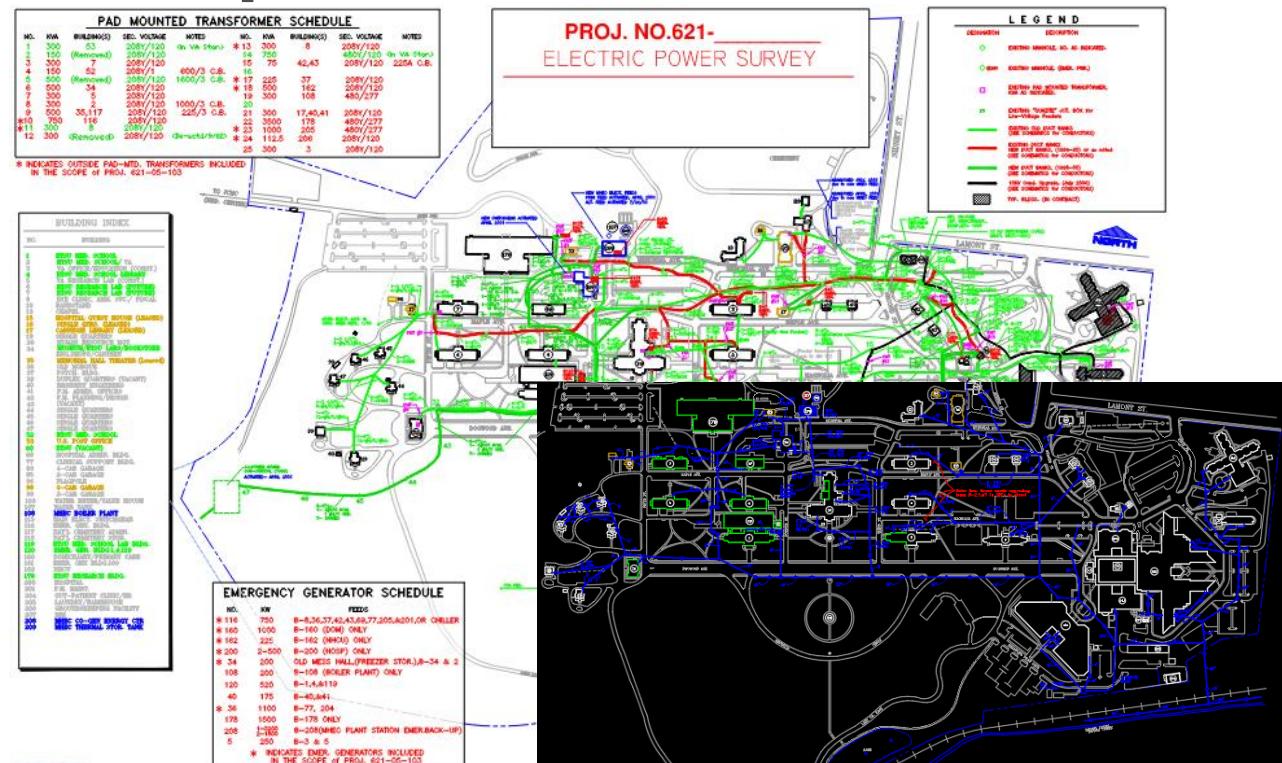


Campus Overview.....

- 250 Acre Medical Campus with Approximately 50 Buildings
- Eight Utility Systems Mapped
 - Chilled Water
 - Oxygen
 - Natural Gas
 - Sanitary Sewer
 - Storm Sewer
 - Electrical
 - Steam
 - Domestic Water

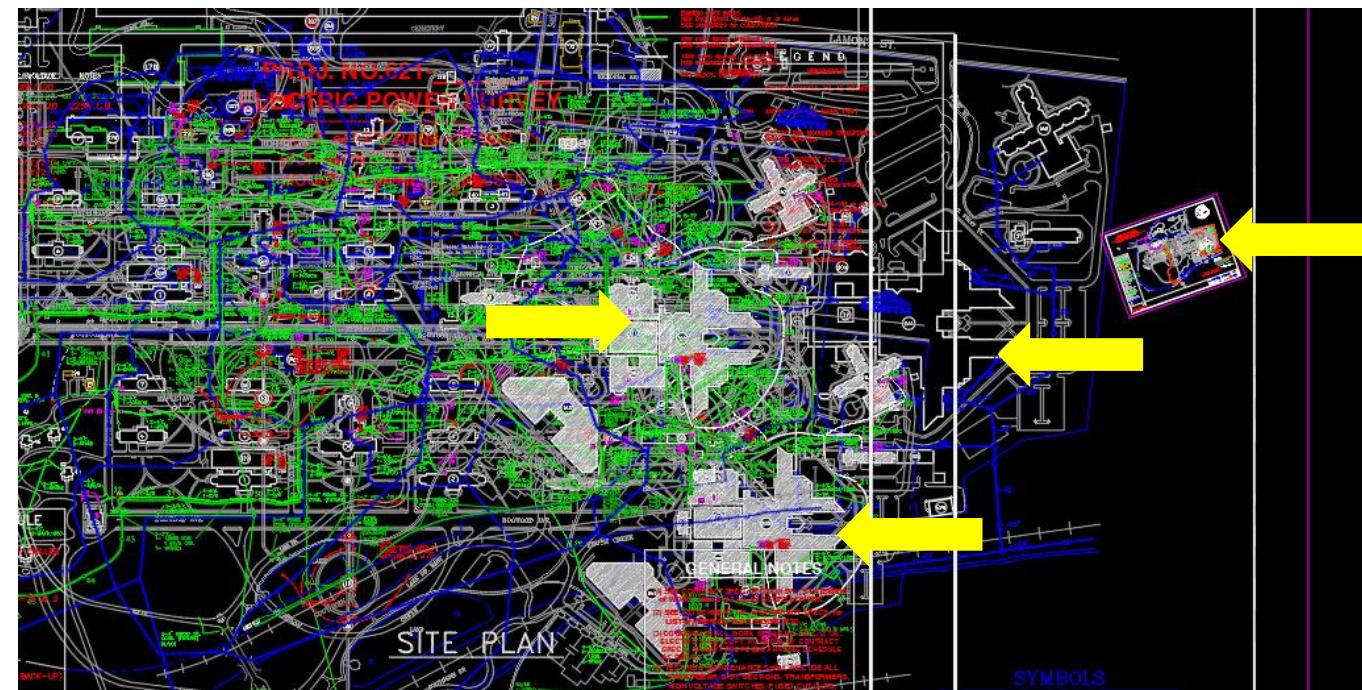
Original System Records.....

Utilities were Tracked using CAD and Paper Plots



CAD Files were not spatially referenced nor evenly scaled

Yellow arrow notates same building



Conversions to Features.....

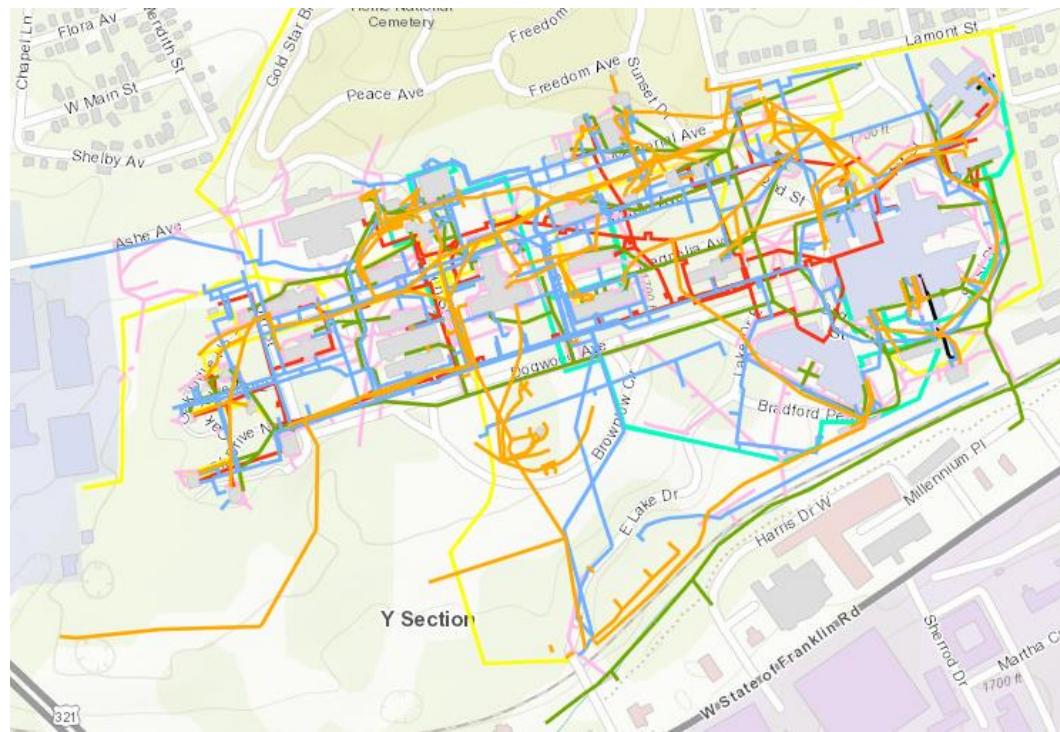
- CAD was brought into GIS and GeoReferenced
- Utilities were roughly placed based on CAD
- Geodatabase schema was developed to best fit clients needs
- Initial data was published out to ArcGIS Portal
- So we could move to the next step.....

To the Field.....

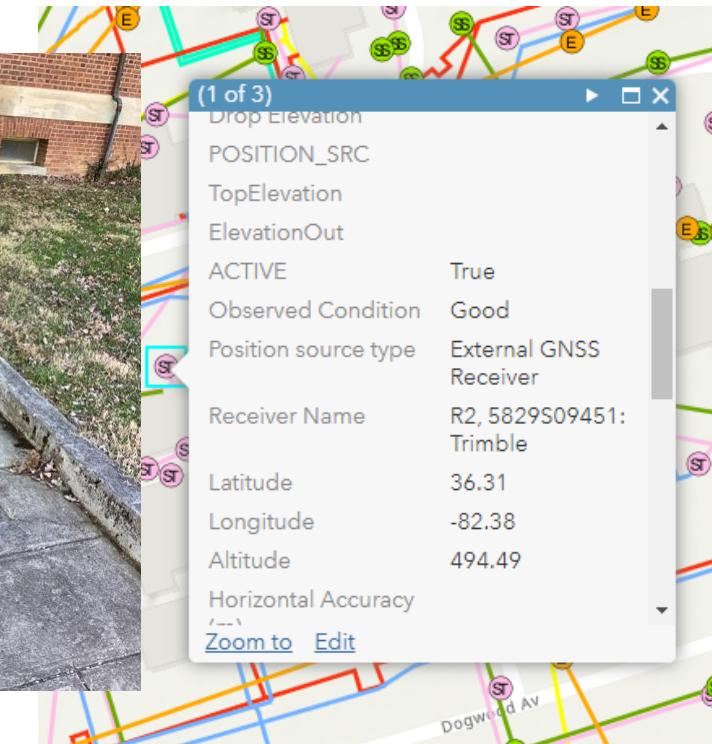


Initial Features Published to Portal.....

CAD Converted Features Published to Portal for Reference in the Field



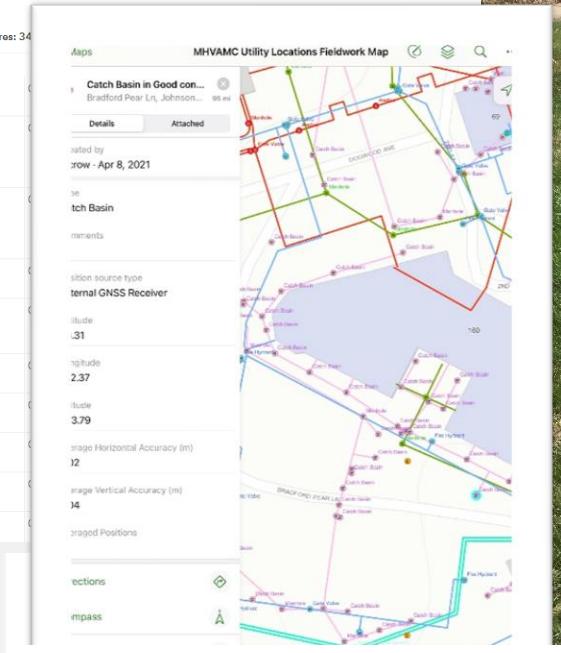
Visible Utilities Confirmed and Located with GNSS



GPS and Attachments.....

High Accuracy... How do you know?

Water Structures (Features: 347, Selected: 0)										Water Structures (Features: 347, Selected: 0)								
SITE_ID	Water ID	Type	Install Date	Manufacturer	Model	Material	Comments	Degree	Water St	POSITION_SRC	TopElevation	ACTIVE	Observed Cond...	Position source t...	Receiver Name	Latitude	Longitude	Altit.
WATER-		Gate Valve					Main valve from city water line			RTK		True	Good	External GNSS Receiver	R2,5829509451: Trimble	36.3090529	-82.38246344	498.1
WATER-		Other					Water Structures (Features: 347, Selected: 0)											
WATER-		Other					RTK			RTK		True	Good	External GNSS Receiver	R2,5829509451: Trimble	36.30993975	-82.37783822	493.6
WATER-		Control Valve					RTK			RTK		True	Good	External GNSS Receiver	R2,5829509451: Trimble	36.30992846	-82.37783787	493.6
WATER-		Control Valve					RTK			RTK		True	Good	External GNSS Receiver	R2,5829509451: Trimble	36.30992307	-82.37796383	493.6
WATER-		Fire Hydrant					RTK			RTK		True	Good	External GNSS Receiver	R2,5829509451: Trimble	36.30995195	-82.37761429	495.5
WATER-		Control Valve					RTK			RTK		True	Fair	External GNSS Receiver	R2,5829509451: Trimble	36.31009041	-82.37732373	500.0
WATER-		Control Valve					RTK			RTK		True	Good	External GNSS Receiver	R2,5829509451: Trimble	36.31006961	-82.37732918	496.8288367
WATER-		Control Valve					RTK			RTK		True	Good	External GNSS Receiver	R2,5829509451: Trimble	36.31012297	-82.37730982	502.38905009
WATER-		Control Valve					RTK			RTK		True	Good	External GNSS Receiver	R2,5829509451: Trimble	36.31006197	-82.37729853	486.53339211
WATER-		Control Valve					RTK			RTK		True	Good	External GNSS Receiver	R2,5829509451: Trimble	36.31007771	-82.37732036	492.21952699

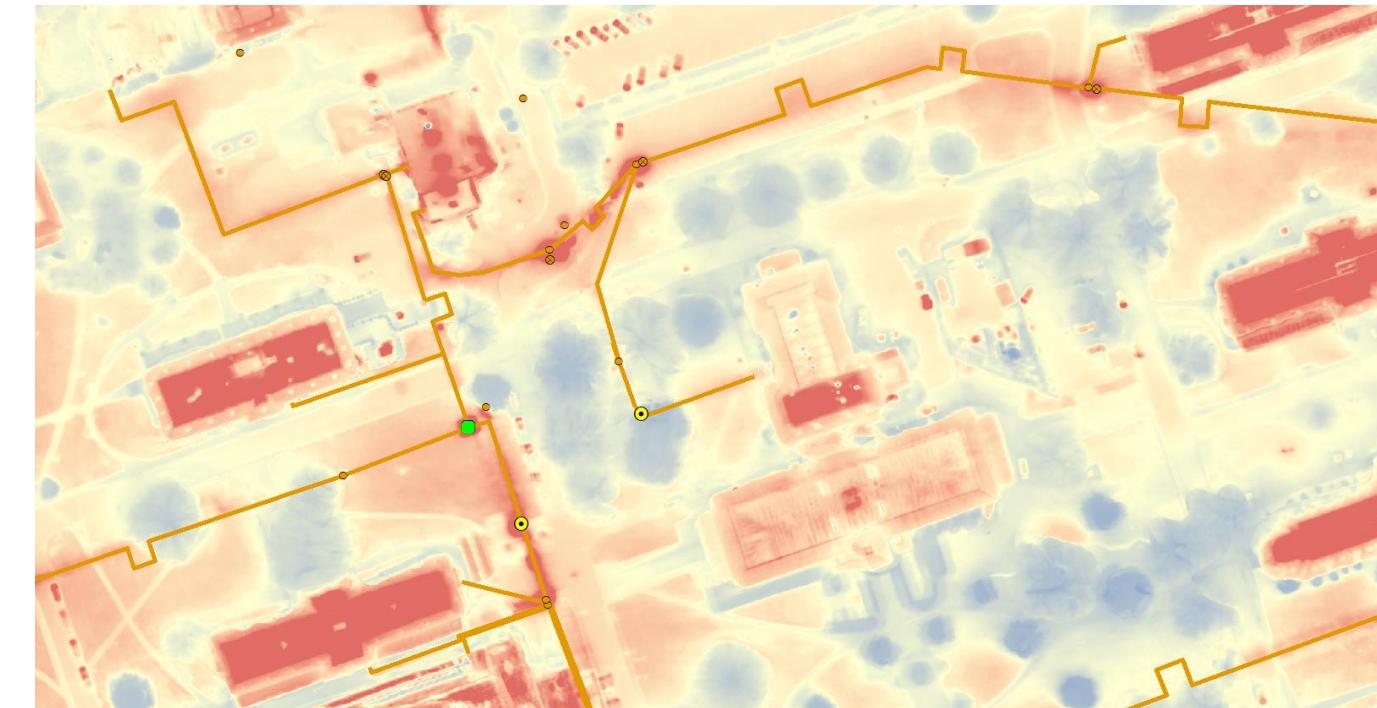


MOBILE DEVICE INTERFACE



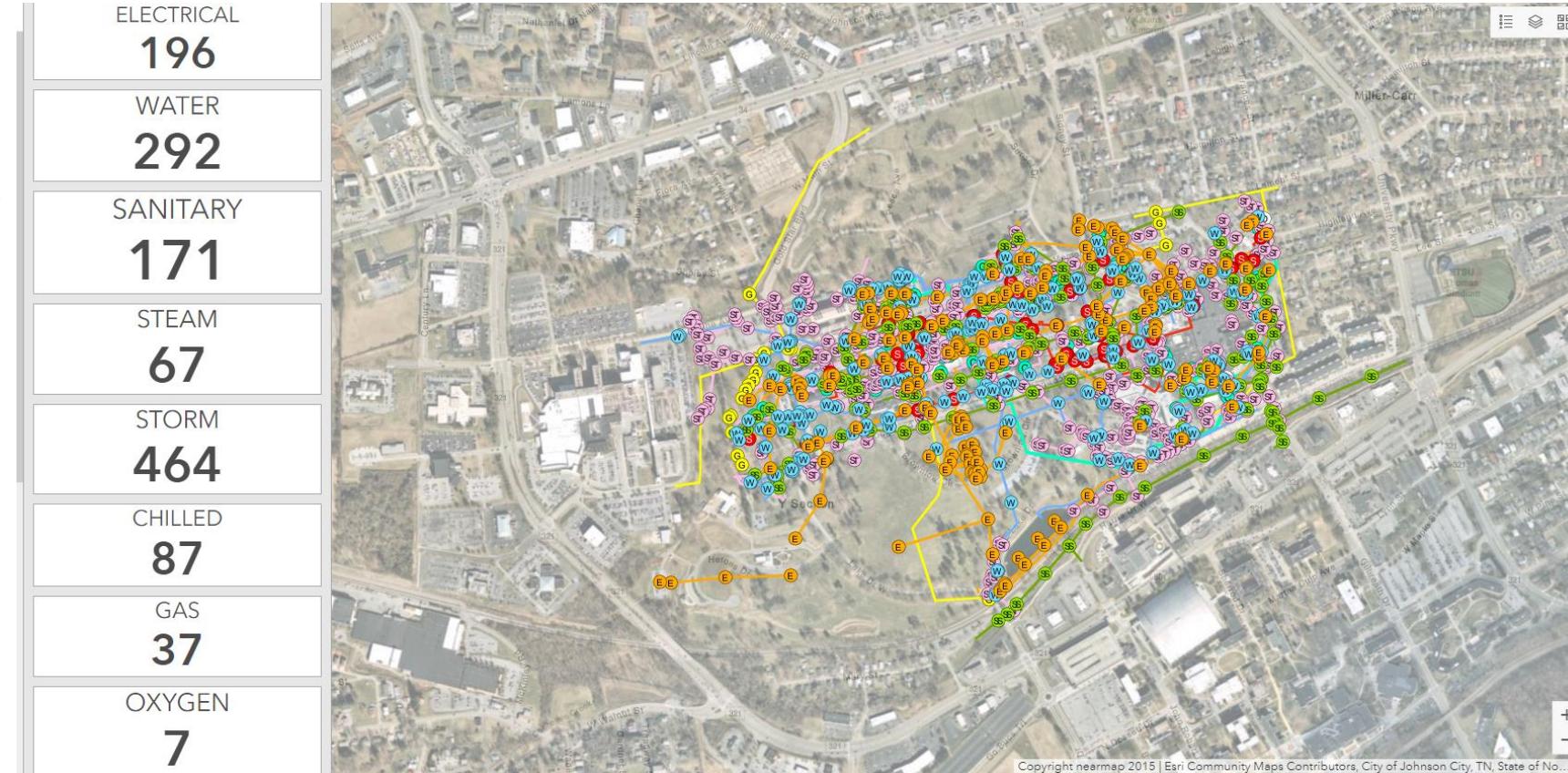
UAV Enhancement.....

**UAV Thermal and High-Resolution
Imagery was incorporated**



Tracking and Delivery.....

Internal and Client facing Portal Dashboard setup



Field efforts were tracked using the dashboard; allowed for instant collaboration with field staff & client

Project Summary.....



1,404 point features and 212,741 linear feet of buried utilities



Facility staff participation key to quality outcome



CAD used as a starting point



High accuracy R2 GNSS paired with Collector



Dashboards enhanced collaboration between LJA and Facility Managers



Low level UAV with thermal scan and high-resolution aerial imagery



Imagery and thermal scan assisted in developing connectivity of the systems

Contact Information.....

Jeff McCann

Senior Designer

Southeast Region

LJA Engineering | We seek solutions

265 Brookview Centre Way, Suite 504

Knoxville, TN 37919

P: 865.328.3138

C: 317.508.8478

E: jmccann@lja.com