

# Great River Energy's Vegetation Management Program

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RELIABILITY  
AND SAFETY

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# Brief history of GRE's Veg Mgmt

- ▶ Prior to 2013
  - Data was maintained on spreadsheets
  - Transfer of data through email
  - No existing ties to other business systems
  - No geographic representation!
- ▶ Systematic review of vegetation management
  - Documented desired data and workflow to capture and maintain
  - Explored options – 3<sup>rd</sup> party solution vs. build internally
  - Ultimately decided to utilize Clearion Software along with GRE's Enterprise GIS

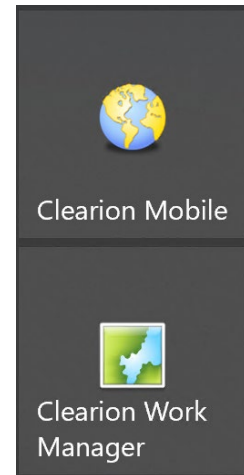
# Clearion Software

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- ▶ 32-bit software that utilizes ArcEngine.
  - Similar look and feel to ArcMap
- ▶ GRE Foresters
  - Clearion Mobile
    - Create vegetation work to be assigned to contractor
      - Tree work (removal, trimming, reclear)
      - Spray work
      - Restoration work
  - Clearion Work Management
    - Manage/create work territories, patrols and work orders
    - Create progress reports from work orders
    - Create VMACL – audit/checklist logs
- ▶ Data synched through replicas created on end user machines
- ▶ Additional GIS data stored locally on the device as file gdb
  - Transmission, parcel, landbase/environmental, etc.



CLEARION



# GRE Vegetation Program

- ▶ GIS data captured and maintained in vegetation program
  - Vegetation features
    - Tree Work (removal, trimming and reclear), Spray, Restoration polygons
    - Vegetation Template
      - GRE created GIS feature – allows for quick copy/paste into vegetation work features
      - Created from buffer of t-line span feature, intersected with parcel polygons
  - ROW access information
    - Access/barriers points and routes
    - Contact Points
    - Restriction and Danger landowner points
  - Contractor photo points
    - Can be set to specific contractor or for entire company and other contractors
  - Work Territory/Patrol/Work Order/Field Audit tabular information
    - Tables maintained/updated in Clearion program to help set and track work on annual cycles

# Updates to Veg Program

- ▶ Updates to the system have been since rollout:
  - Working to incorporate forester maintained excel tables into Clearion Work Manager
    - NERC Annual Plan – include planned/unplanned work done on NERC lines, along with production counts and percent complete
    - NERC Patrols – aerial and ground patrols
  - Vegetation historical data
    - All historical vegetation work from mid-90's and on
    - Based on transmission line name
    - Includes work performed, production counts, hours worked, total dollars spent, etc.
  - Modified NERC reporting out of Clearion WM
    - Addressed need to provide proper documentation of work done through vegetation activities: patrols, production, and field reviews
  - VMACLs – vegetation management audit checklist and logs
    - Way for foresters to capture daily work as well as vegetation work audits in the field

# ArcGIS Online – for contractors

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- ▶ Vegetation contractors log into GRE's ArcGIS Online site with GRE accounts
  - 2-tier authentication with Ping ID
  - Limited-access GRE domain users created for all outside entities to connect into GRE Enterprise GIS (both AGO and Enterprise Portal)
- ▶ Web maps and App in AGO for veg. contractor use
  - Encouraged all contractors to utilize ArcGIS Field Maps
  - Expected to fill out information regarding work status, dates, counts, etc.
  - Held accountable through invoice validation against entered GIS data, along with site visits
  - Additional documentation also available for contractors in AGO pertaining to vegetation management safety, operating guidelines, etc.



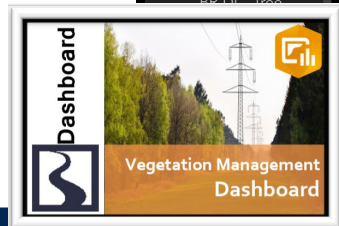
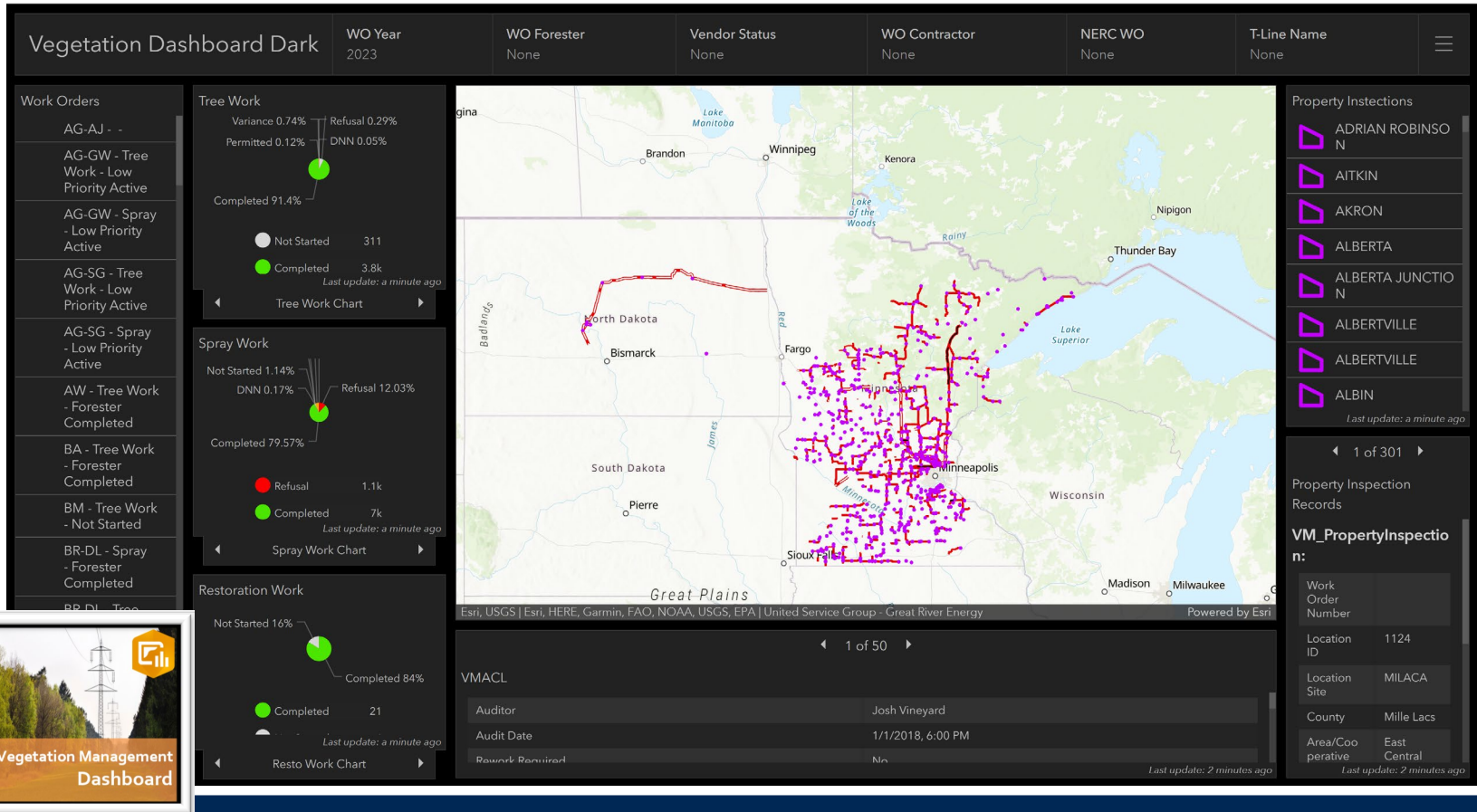
# GRE Enterprise Portal

- ▶ Web maps and Apps have been created for GRE's use in Enterprise Portal
  - Ability to quickly reference/update contractor work instead of launching Clearion application and synchronizing
  - Developed Negotiation Web App and data for GRE ROW Management Representative
    - Captures agreements and supporting documentation with LO's regarding vegetation encroachments in ROW
  - Recently created offline map package(s) for construction project
    - Allows t-line project data to be seen in field where there is poor connectivity
    - Currently view only – desire to allow disconnected editing through synch
  - Dashboards created as well – next slides

# GRE Enterprise Portal

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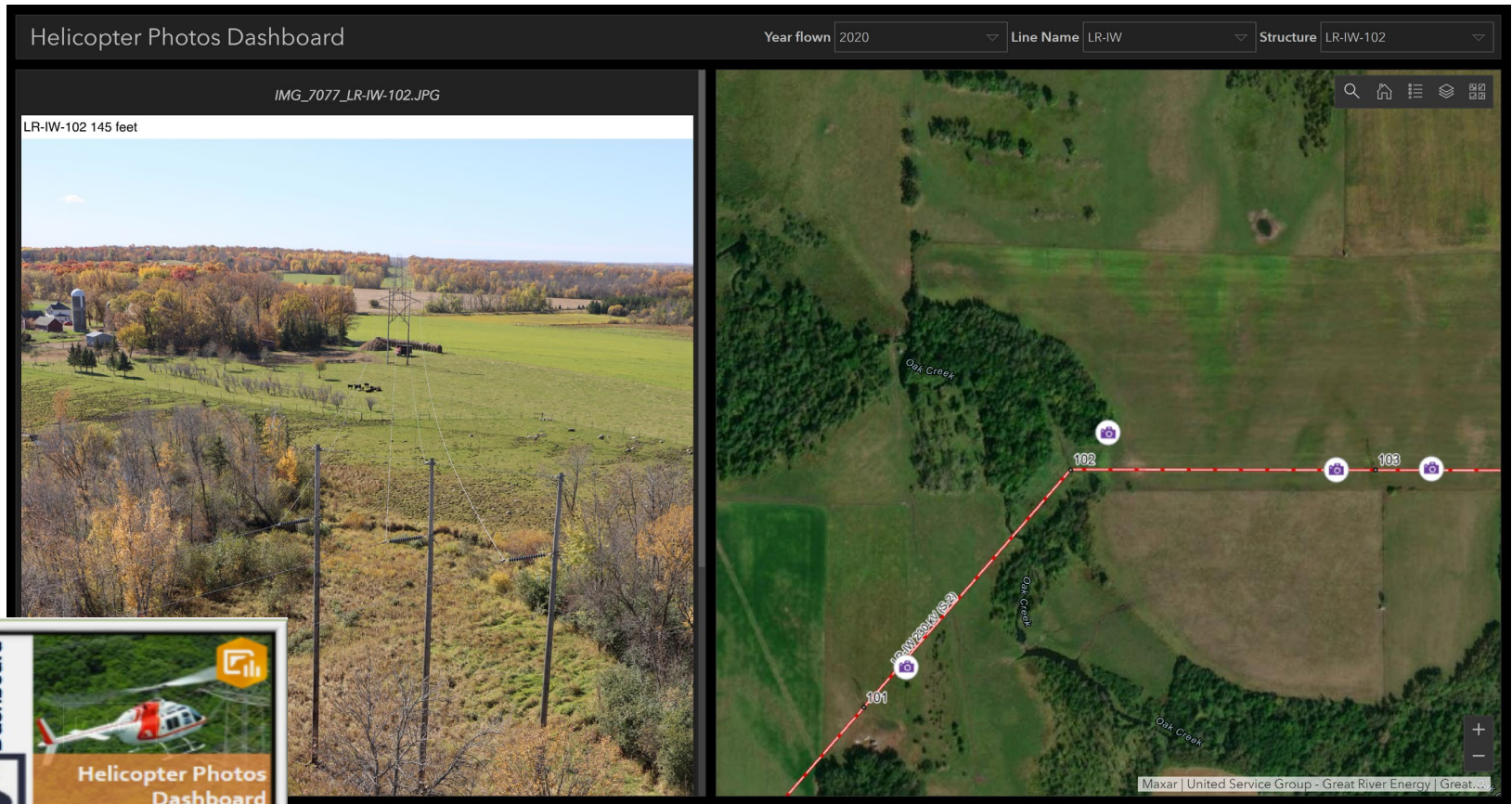
## Vegetation dashboard - high level review of vegetation work





# GRE Enterprise Veg Content

- ▶ Helicopter dashboard - view structure photos from helicopter



# GRE Veg Mgmt - Time to Upgrade

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- ▶ With 32-bit deprecation for ArcGIS Enterprise, GRE needs to upgrade our GIS vegetation management solution
- ▶ Reviewed how our existing system is working and if it meets GRE's needs
- ▶ Demo from Clearion software
  - Got pricing on upgrade and new software licensing
  - Able to utilize much of the existing web services utilized for contractor use in AGO
    - Hoping for minimal schema updates!
  - In talk with Clearion to perform much of the conversion to new system in house versus having them do it

# GRE Veg Mgmt - Time to Upgrade

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- ▶ Upgrading to the new Clearion Software releases
  - 64-bit – Web service based application
- ▶ Clearion Work Manager → Clearion Web
- ▶ Clearion Mobile → Clearion X



# Thank you!

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- ▶ Questions?
  
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