



Palisades Construction Permit Application: Site Environmental Characterization Update

April 23, 2025

Holtec's SMR-300 Technology

Safe, Secure, Reliable, Flexible, Economical

Clean Energy to Support the World's Energy Needs



Holtec International
Krishna P. Singh Technology Campus
One Holtec Boulevard
Camden, NJ 08104, USA

[Not Export Controlled]

Agenda

■ Team Introductions

✓ Holtec International

✓ Application Support Team

■ Project Overview

■ Site Environmental Characterization Updates

■ CPA Environmental Report Updates

Team Introductions

■ Holtec International

- ✓ Justin Hawkins – SMR Executive Director
- ✓ Clark Shurtleff – Licensing Manager, PSAR
- ✓ Steven Mitchell – Licensing Manager, ER
- ✓ Benjamin Reynolds – Environmental Director
- ✓ JP Ohanessian – Project Manager, CPA

■ ENERCON

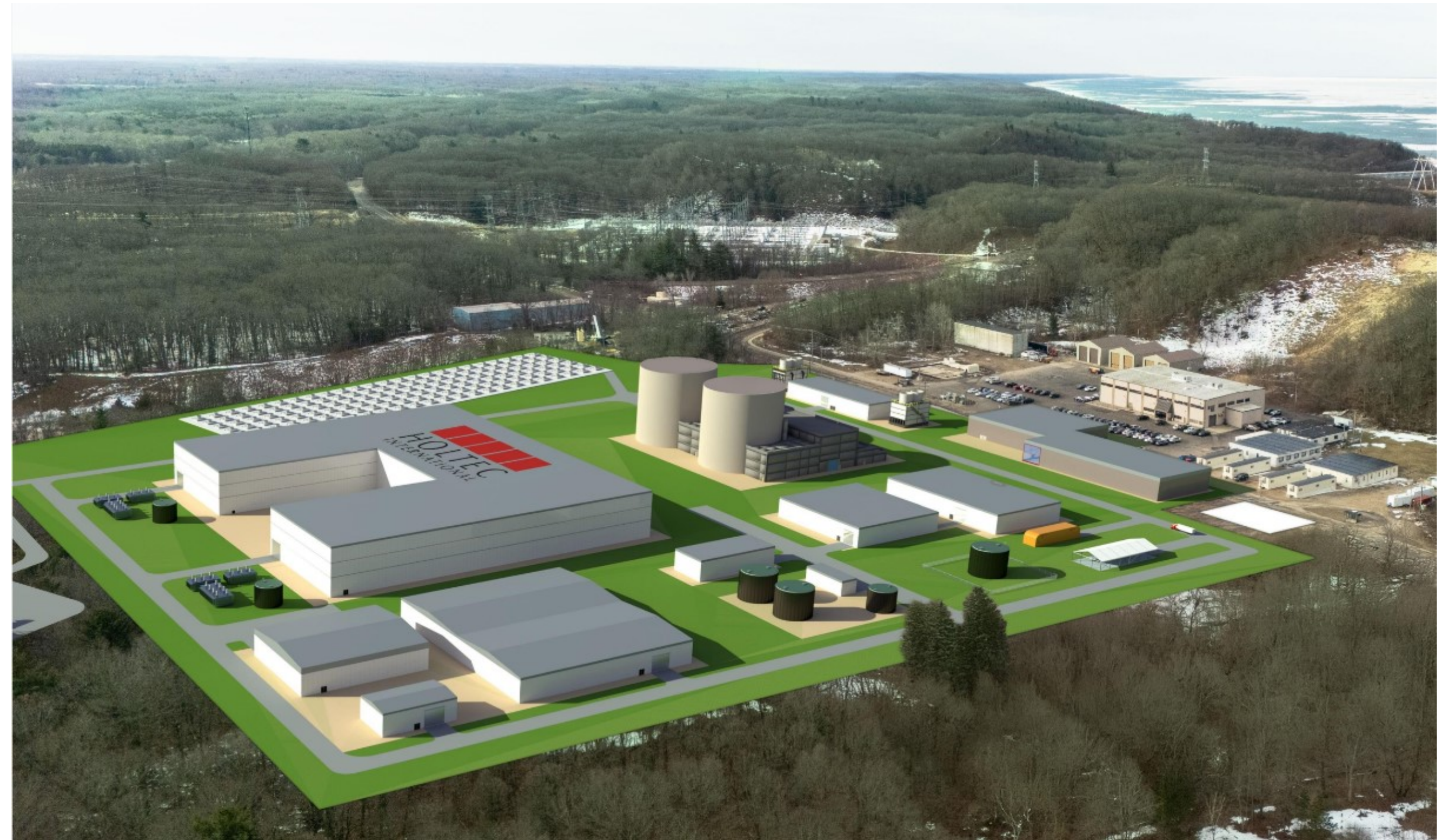
- ✓ Gloria Guerra – Project Manager
- ✓ Tim Basham – Environmental Technical Lead
- ✓ Dane Watson – Subcontractor Coordination Lead
- ✓ Rachel Turney-Work – Environmental Licensing Director
- ✓ Aaron Holloway, P.E. – Engineering Director



**Holtec International's
Palisades Nuclear Generating Station**

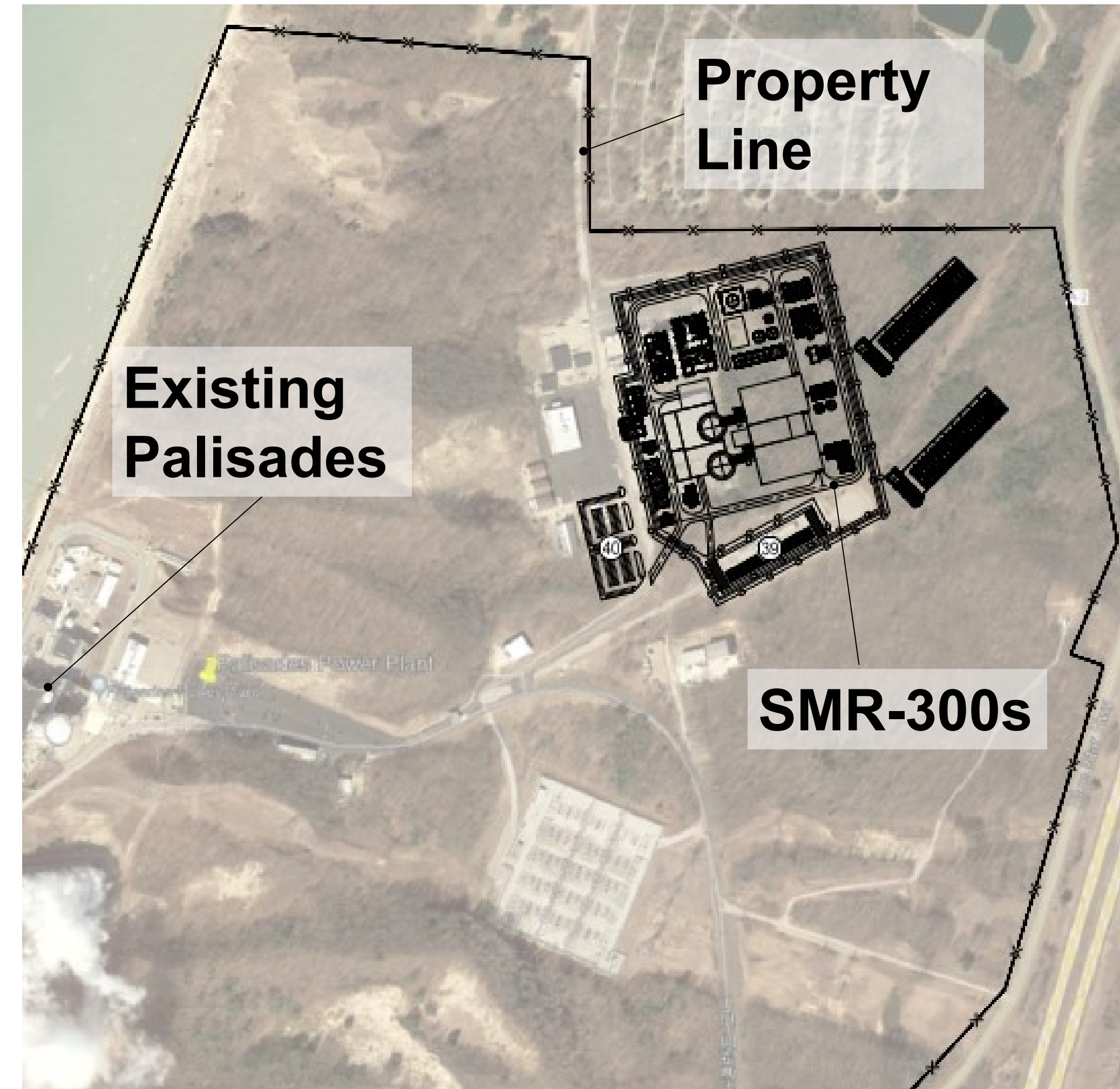
SMR-300 at Palisades

- Light-water PWR
- Power output: 1050 MWth
- Traditional PWR fuel system
- Traditional PWR power cycle
- Two SMR-300 units onsite



SMR-300 at Palisades

- Part 50 application process
 - ✓ Construction Permit Application (CPA)
 - ✓ Operating License Application (OLA)
- Limited Work Authorization (LWA) as part one of a two-part CPA
- Comprehensive Environmental Report (ER) submitted with LWA



Site Environmental Characterization Schedule



- Cultural Resource Field Surveys – Complete
- Offshore Bathymetry – Complete
- Critical Dune Delineation – Complete
- Terrestrial Ecological Resources – Complete at project site, In progress at offsite parcel*
- Wetlands Delineations – Complete
- Surface Hydrology Reconnaissance – Complete
- Groundwater Monitoring – Ongoing, Fall 2025
- Meteorology – Pending validation of site meteorology data
- Baseline Ambient Noise Surveys – Winter, 2024 complete, Pending Spring 2025
- Transient Population Survey – Complete**

*Holtec is undertaking characterization activities at a potential offsite parcel to support construction activities such as laydown and concrete batching

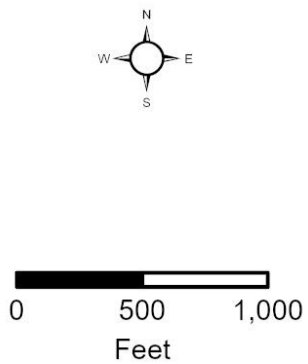
**Completion of site work, reports documenting analysis and conclusions ongoing

CPA Characterization Activities: Cultural Resources



Legend

- Critical Dune Areas Border
- ▨ Holtec SMR-300 Project Area
- - - Palisades Property Boundary
- ▭ Easements



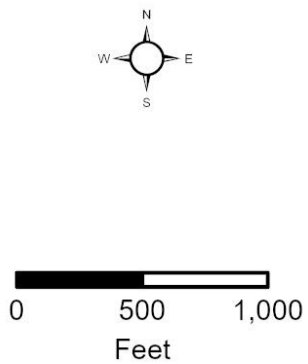
- Holtec, through ENERCON, partnered with SEARCH for cultural resources surveys
- An archaeological survey and work plan was developed for the 432-acre site
- SEARCH conducted an archaeological survey according to MSHPO recommended methodology in March 2024
 - ✓ Field method within the Critical Dune Area (CDA) - pedestrian survey
 - ✓ Field method outside of the CDA - surface inspections or walkovers along transects and areas with less than 20% slope and less than 25% ground surface visibility were subject to systematic shovel testing at 15.0 m (49.2 ft) intervals along transects

CPA Characterization Activities: Cultural Resources



Legend

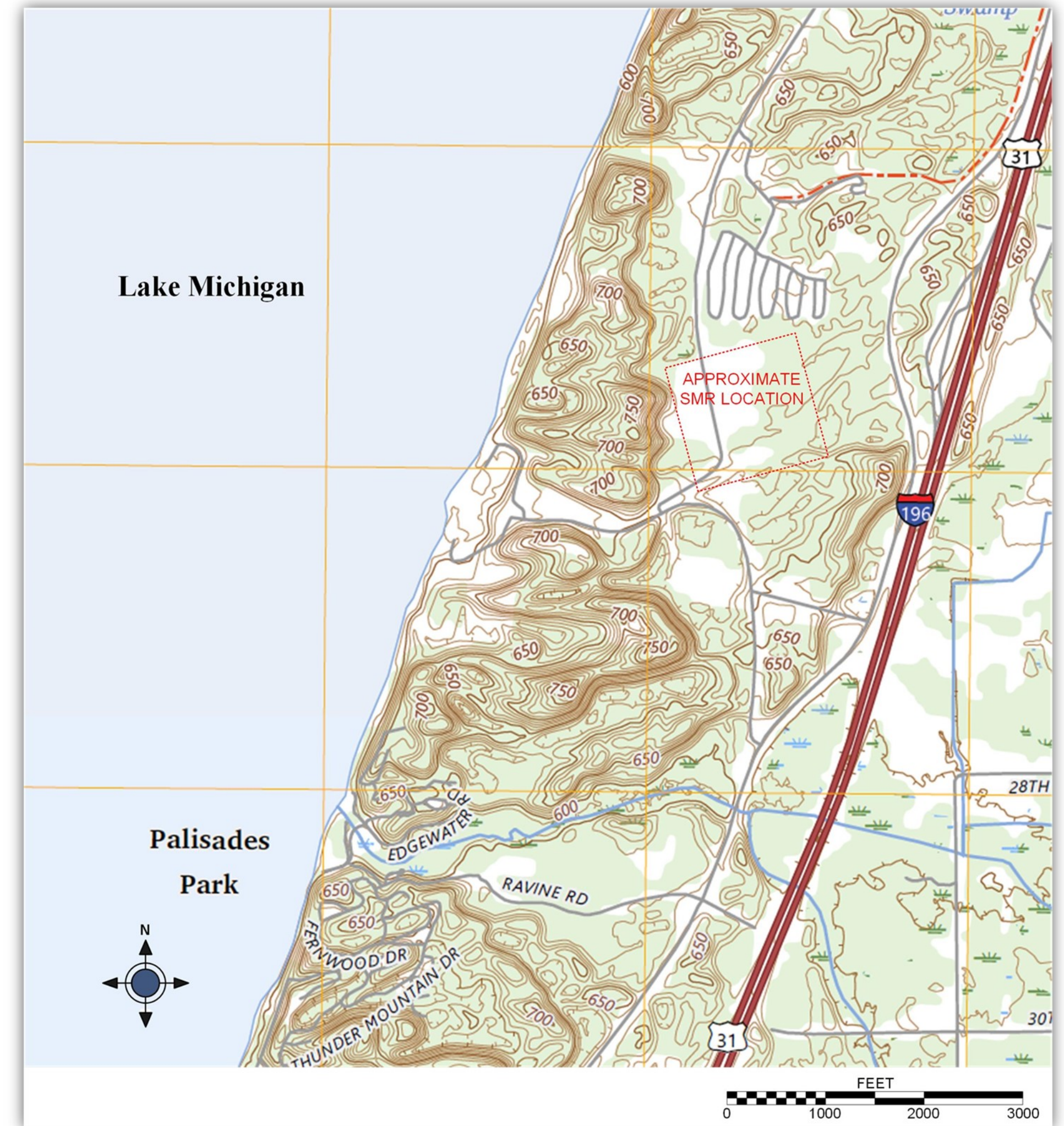
- Critical Dune Areas Border
- ▨ Holtec SMR-300 Project Area
- - - Palisades Property Boundary
- ▭ Easements



- SEARCH conducted an architectural history survey of the Palisades Nuclear Plant (PNP) and the Palisades site in accordance with MSHPO survey guidance in June 2024
- The resulting archaeological survey and architectural survey reports were provided to MSHPO for review and concurrence
 - ✓ 3 archaeological sites were identified and determined as not eligible for NRHP listing and MSHPO concurred on Sept 18, 2024
 - ✓ The PNP Containment Building was considered for National Register of Historic Places (NRHP) listing under Criterion C (Architecture and Engineering); however, MSHPO determined on Nov 6, 2024, that the building apart from PNP should not be considered for NRHP listing and the PNP as a whole does not meet the necessary criteria for NRHP listing

CPA Characterization Activities: Cultural Resources

- Bathymetry study to support intake and discharge design
 - ✓ MSHPO files reveal no submerged resources
 - ✓ NOAA records reveal no submerged resources
 - ✓ Fugro bathymetry study revealed no submerged resources and developed lakebed topography



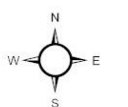
CPA Characterization Activities: Critical Dune Protection

- Barr Engineering Co. completed reconnaissance of the site and installed ground markings for EGLE critical dune delineations
- Barr prepared a guide on critical dune regulatory requirements and protections for project use from pre-construction through operations



Legend

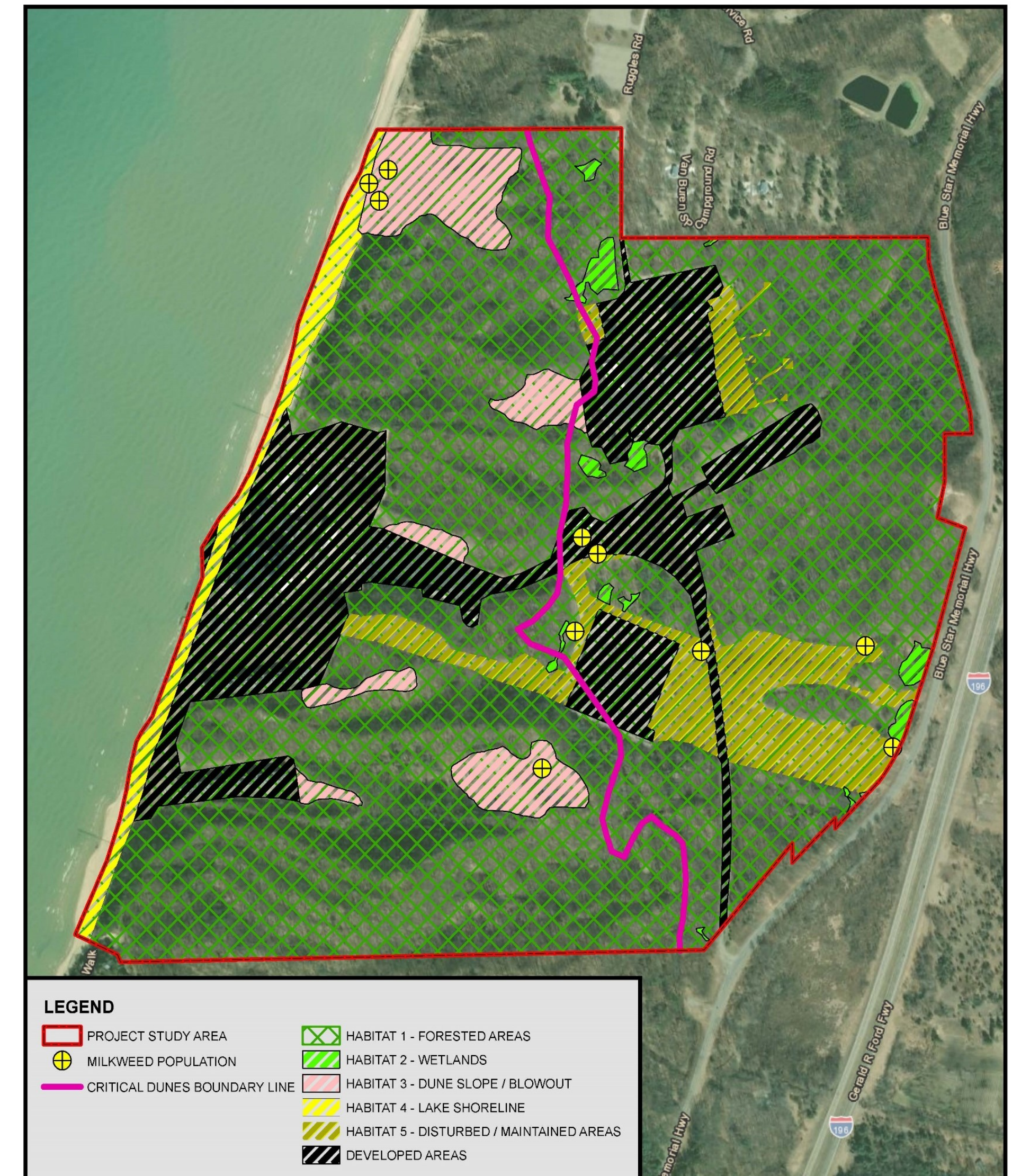
- Critical Dune Areas Border
- ▨ Holtec SMR-300 Project Area
- - - Palisades Property Boundary
- Easements



0 500 1,000
Feet

CPA Characterization Activities: Terrestrial Ecological Resources

- Site characterization activities included:
 - ✓ Seasonal surveys for presence/absence of federal and state listed species
 - ✓ Raptor Nest Survey
 - ✓ Avian Survey
 - ✓ Acoustic Bat Survey



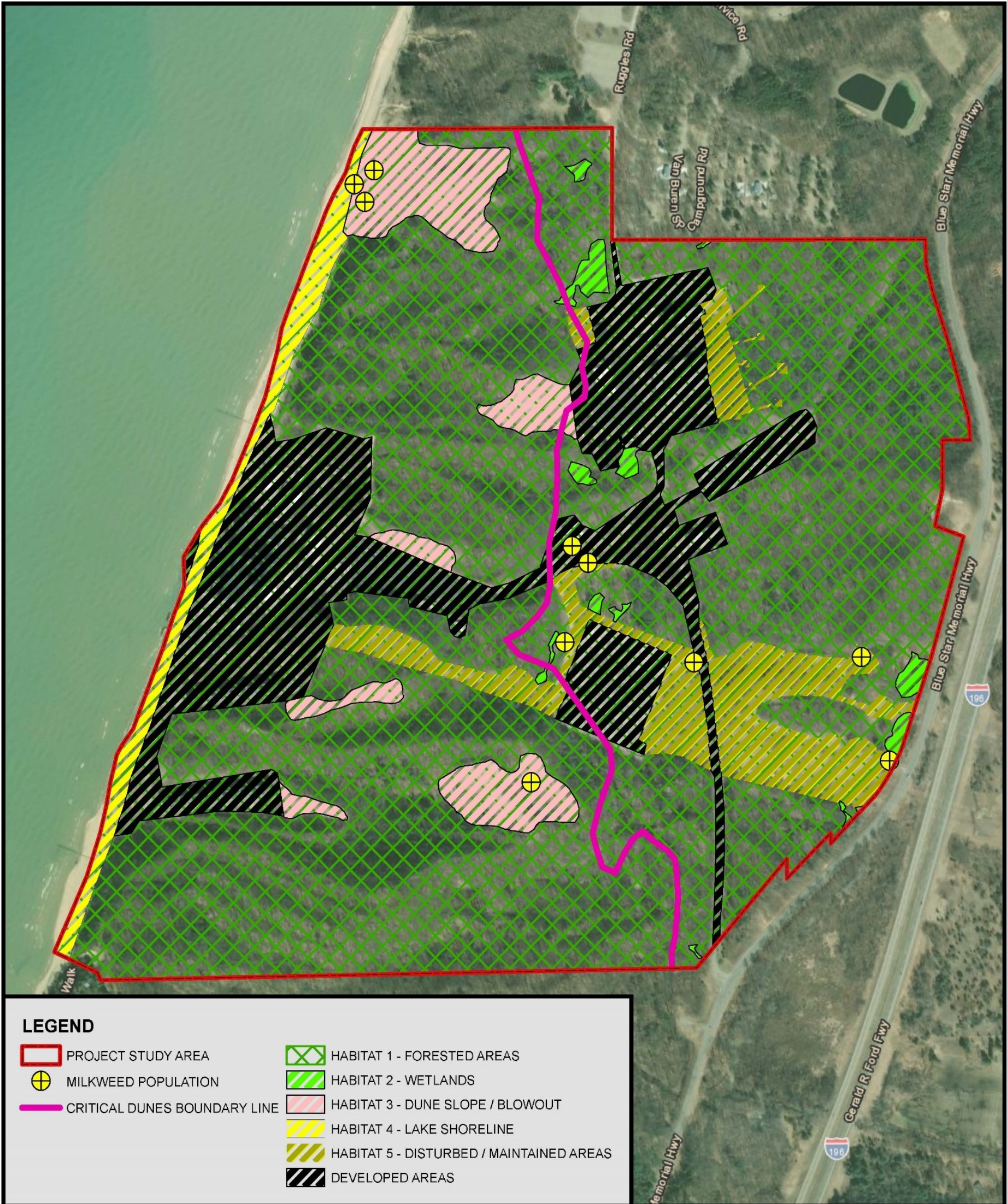
CPA Characterization Activities: Terrestrial Ecological Resources



Campaign Dates	Tasks Completed
March 18–21, 2024	Baseline terrestrial habitat characterization and incidental wildlife observations; Identification of bat potential roost trees; Identification of raptor nests
May 6–8, 2024	Protected species surveys for whooping crane and eastern massasauga rattlesnake; Dominant seasonal flora observations and incidental wildlife observations; Identification of raptor nests
June 18–22, 2024	Bat acoustic survey; Protected species surveys for piping plover, rufa red knot, Pitcher’s thistle, Mitchell’s satyr butterfly, eastern massasauga rattlesnake, and monarch butterfly; Dominant seasonal flora observations; Incidental wildlife observations; Identification of raptor nests
July 22–24, 2024	Protected species surveys for piping plover, rufa red knot, Pitcher’s thistle, Mitchell’s satyr butterfly, eastern massasauga rattlesnake, and monarch butterfly; Incidental wildlife observations; Identification of raptor nests
September 18–20, 2024	Avian point-count survey; Dominant seasonal flora observations; Incidental wildlife observations; Identification of raptor nests

CPA Characterization Activities: Terrestrial Ecological Resources

Habitat (acres)	Listed Species Potentially Present
Habitat 1 - Forested Areas (286.2)	Indiana bat, Northern long-eared bat, Tricolored bat
Habitat 2 – Wetlands (4.0)	Whooping crane, Eastern massasauga rattlesnake, Mitchell’s satyr butterfly
Habitat 3 – Dune Slope/Dune Blowout (22.9)	Pitcher’s thistle
Habitat 4 – Lake Shoreline (10.6)	Piping plover, Rufa red knot, Pitcher’s thistle
Habitat 5 – Disturbed/Maintained Areas	Monarch butterfly

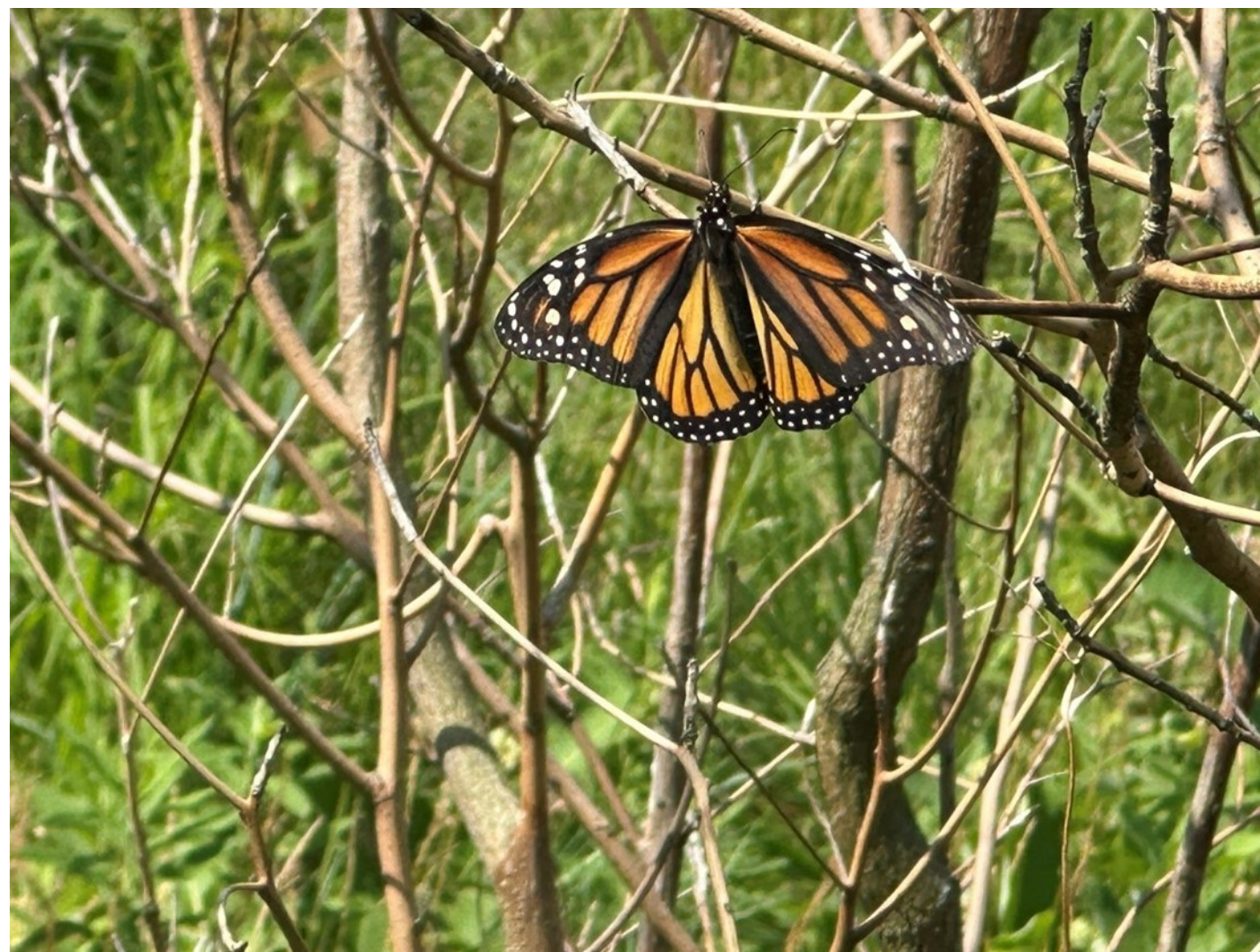


CPA Characterization Activities: Terrestrial Ecological Resources



■ Species observed during surveys for federal and state listed species were:

✓ Federally threatened Pitcher's thistle (*Cirsium pitcheri*)



✓ Proposed federally threatened Monarch butterfly (*Danaus Plexippus*)

CPA Characterization Activities: Terrestrial Ecological Resources

Raptor Nest Survey

- One raptor nest was observed occupied by a red-shouldered hawk (*Buteo lineatus*) during the May field survey near the southeastern project study area perimeter



CPA Characterization Activities: Terrestrial Ecological Resources

Avian Survey

- One Bald Eagle (*Haliaeetus leucocephalus*) was observed at Survey Point 21 over Lake Michigan outside of the project study area boundary
- One Bird of Conservation Concern species was observed onsite at Survey Points 3 and 8, Wood thrush (*Hylocichla mustelina*).



CPA Characterization Activities: Terrestrial Ecological Resources

■ Michigan Natural Features Inventory and USFWS’s IPaC tool indicated that habitat for the following bat species overlapped with the project site:

Indiana bat	<i>Myotis sodalis</i>	FE/SE
Northern Long-Eared Bat	<i>Myotis septentrionalis</i>	FE/SE
Tri-colored Bat	<i>Perimyotis subflavus</i>	Proposed FE/ST
Little Brown Bat	<i>Myotis lucifugus</i>	Under review for federal listing

Note: The triangles in the figure depict the locations of acoustic detector equipment. Each Area had a dedicated detector that was moved daily for the 6-day survey.



CPA Characterization Activities: Terrestrial Ecological Resources

- Protected and under review bat species are unlikely to be present
 - ✓ Bat acoustic survey - June 19-24, 2024
 - ✓ Followed the 2024 USFWS Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines
 - ✓ Automated identification results
 - ✓ Manual vetting by ENERCON's bat biologist

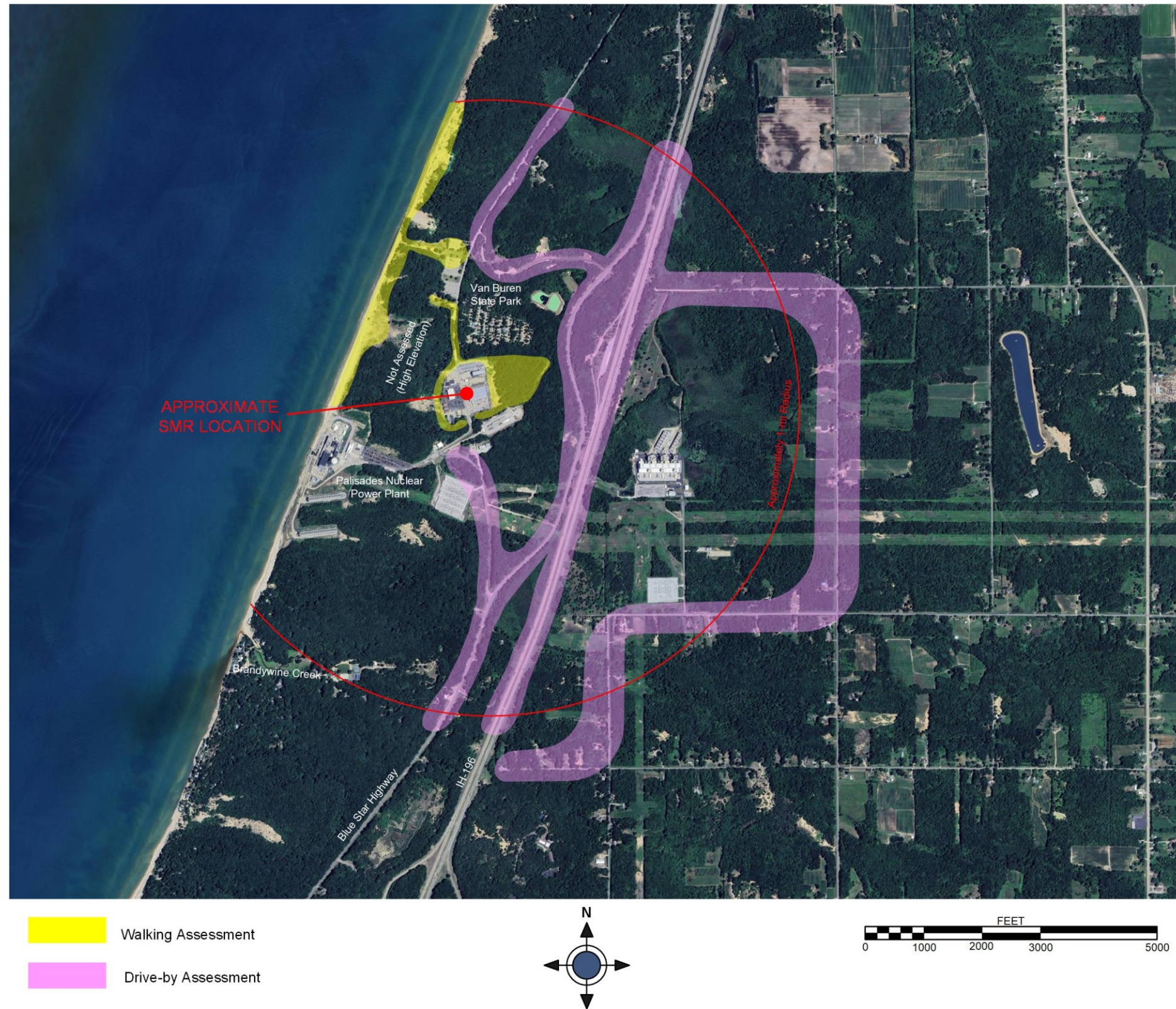


CPA Characterization Activities: Wetlands Survey



- Wetland delineation survey conducted in accordance with the US Army Corps of Engineers manual
- March 2024 – Preliminary wetland location observation
- May 2024 – Wetland habitat boundary delineation
- 12 wetlands were identified and delineated for a total of 4.05 acres, the largest is 1.20 acres

CPA Characterization Activities: Surface Hydrology



- Onsite walking and windshield surveillance of surface waterbodies
- Confirmed existing surface hydrology features and did not record any new seeps, springs, or other onsite surface hydrology

CPA Characterization Activities: Subsurface Investigation

- Borings performed and monitoring wells installed in Fall 2024
- Fugro – Geotechnical characterization lead
- ENERCON – Groundwater characterization and monitoring lead



Figure 3: Monitoring Wells Location Map

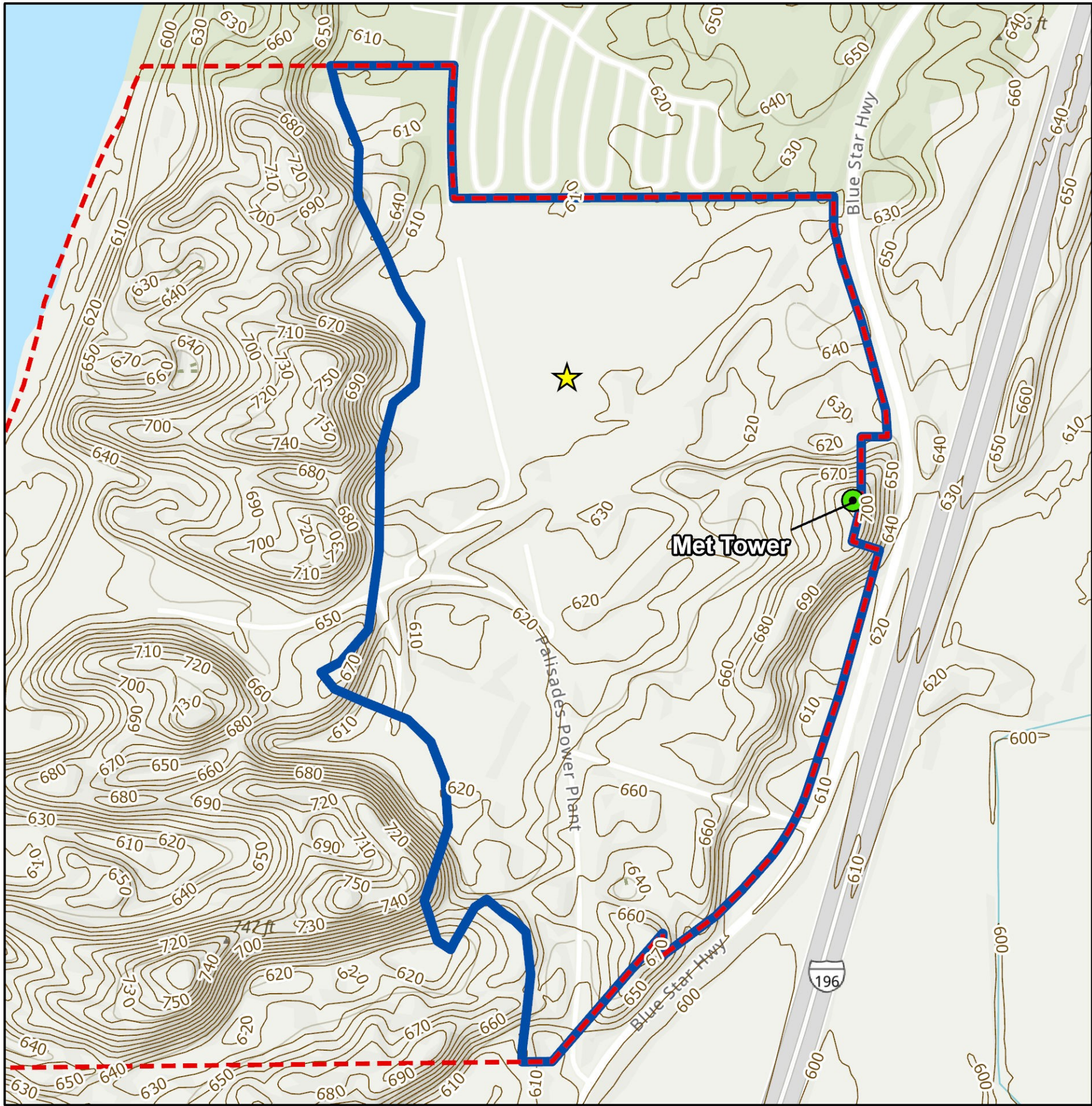
Note: This is based on layout shared on the screen during 8/13/2024 weekly call removing the RWB and deepening the RAB.

04.00242991 | Enercon USA - Holtec SMR
D:\fugro\242991-Enercon-USA-Holtec-SMR-PD-24299108_GIS\04_Outputs\Working\mxd\Planned_LayoutLapox_8/16/2024_eis\eyen

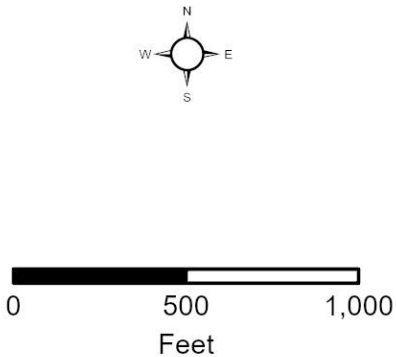
CPA Characterization Activities: Groundwater Characterization and Monitoring

- Monthly/quarterly began Dec 2024
 - ✓ Groundwater levels, seasonal fluctuations
 - ✓ Groundwater vertical and horizontal movement
 - ✓ Groundwater quality
 - PFAS, Alkalinity, BOD, pH, etc.
 - ✓ Aquifer testing for groundwater velocity and yield
 - Pump test, Slug test, and Step test
- Groundwater – surface water interface characterization utilizing subsurface investigation and previous Palisades studies to develop a conceptual site model

CPA Characterization Activities: Meteorology



- Legend**
- ★ Holtec SMR-300
 - Met Tower Location
 - USGS Elevation Contour
 - ▭ Holtec SMR-300 Project Area
 - - - Palisades Property Boundary



- The Palisades site has a meteorological tower that provides data for the existing plant
- Holtec intends to use data from this meteorological tower for SMR-300
 - ✓ Validation of data applicability is planned after SMR-300 plot plant and build location are finalized

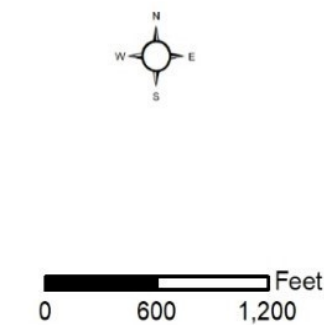
CPA Characterization Activities: Baseline Noise Survey

- Sound-level readings were taken at multiple locations within the Palisades property
- Ambient noise survey along the Palisades site boundary was conducted and an additional survey is planned
 - ✓ Results will inform the baseline noise condition



Legend

- Proposed Noise Study Location
- ▭ PNP Site Boundary



CPA Characterization Activities: Transient Population Study



- Field surveys and telephone interviews were used to collect transient population data which will be converted to peak daily visitor counts
- ENERCON conducted face-to-face interviews in Dec 2024 with area chambers of commerce, tourism departments, and local, city, and county agencies in the 10-mile radius
- ENERCON conducted phone interviews in Jan 2025 with identified transient population entities and events (e.g., parks, university stadiums, state fairs, etc.) in the 10- to 50-mile radius
 - ✓ Sites and events that would potentially draw transient populations were identified for a transient population database
- Transient populations for 10-mile and 50-mile radii by directional sector are under development

Review of SMR-300 Licensing Plan

- Submit phased CP application [10 CFR 2.101(a)(9)]
- Part 1: LWA application with comprehensive ER [10 CFR 50.10; 51.49]
 - ✓ ER addresses all impacts from construction and operation
- Part 2: CPA Part Two application

Integration of LWA into the CPA Environmental Report

To address LWA activities in the CPA ER:

- Section 1.3, Planned Activities and Schedules

- ✔ LWA scope and anticipated term

- Section 1.4, Status of Compliance

- ✔ Table of required authorizations will include LWA

- Section 3.3, Building Activities

- ✔ List and description of building activities

- Pre-construction
 - Proposed to be conducted under an LWA
 - Construction activities after receipt of CP

- Chapter 4, Environmental Impacts from Construction of the Proposed Project

- ✔ Consistent with 10 CFR 51.49(f) will separately evaluate the environmental impacts attributable to activities conducted under an LWA

- Chapter 7, Cumulative Impacts

- ✔ Separately evaluate cumulative impacts for the projected LWA timeframe

CPA Redress Plan

- Holtec's CPA Part 1 submittal will include a Redress Plan
 - ✓ Required by 10 CFR 50.10(d)(3)(iii) to accompany a request for LWA
 - ✓ Will identify the steps to be taken by Holtec to restore the SMR-300 site to “environmentally stable and aesthetically acceptable site” in the event a CP is not granted by NRC

Questions