PSC REF#:393926

# Wisconsin Department of Natural Resources Engineering Plan

Springfield Solar Farm, LLC Dodge County, Wisconsin July 20, 2020



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### 1. Introduction

Springfield Solar Farm, LLC (Springfield Solar)<sup>1</sup>, an independent power producer, is proposing a 100-megawatt (MW) alternating-current (AC) photovoltaic (PV) solar project, on approximately 884 acres (includes both the primary and alternative array locations) in the Town of Lomira and Village of Lomira, Wisconsin in Dodge County (Project). The Project includes a 138-kilovolt (kV) transmission line less than 1/4 mile in length. The Point of Interconnection (POI) will be the existing American Transmission Company (ATC) Butternut 138-kV substation.

Consistent with Wisconsin Administrative Code section PSC 111.51(2), Springfield Solar has notified staff of the Wisconsin Department of Natural Resources (WDNR) and the Public Service Commission of Wisconsin (PSCW) of its intent to file for a Certificate of Public Convenience and Necessity (CPCN) for the Project, and has consulted with the staff of these agencies on the scope of the proposed Project, the alternatives that must be considered in the application, and additional information that the agencies require as part of the CPCN application.

In accordance with Wisconsin Statute section 196.491(3)(a)3.a, Springfield Solar is submitting this Engineering Plan (Plan). This Plan is being provided to the WDNR at least 60 days before Springfield Solar will file the corresponding CPCN application with the PSCW. Consistent with that same statute, Springfield Solar requests that within 30 days after receipt of this Plan, WDNR provide a listing of all permits or approvals, which, based on the information contained in this Plan, appear to be required to construct the generation facilities. In accordance with Wisconsin Statute section 30.025(1s), Springfield Solar will promptly apply for all federal and state permits and approvals identified.

All distances, widths, and descriptions below are estimates and are subject to change based upon final facility siting and layout, electrical infrastructure routing, and access road availability.

#### 1.1. Project Overview

The Project will be located on approximately 884 acres (includes both the primary and alternative array locations) in the Town of Lomira and the Village of Lomira, Dodge County, Wisconsin. The land required for the Project will be a combination of acres owned by Springfield Solar and underground collection easements. The Project is still actively marketing offtake options including Purchase Power Agreements and Development Transfer Arrangements.

<sup>&</sup>lt;sup>1</sup> Springfield Solar is a wholly owned indirect subsidiary of Geronimo Energy, LLC (Geronimo), a National Grid Company. Geronimo is a full-service renewable energy company headquartered in Minneapolis, Minnesota. Geronimo has developed over 2,400 megawatts of wind and solar projects that are either operational or currently under construction throughout the United States. Geronimo has a multi-gigawatt development pipeline of wind and solar projects in various stages of development throughout the United States. Geronimo provides custom solutions for utilities and corporations looking to harness renewable energy for business growth. With deep roots in agriculture, Geronimo prides itself on developing renewable energy projects that are farmer-friendly, community-driven, and beneficial for rural communities.

The Project would include the following key elements:

- 1. Solar array blocks consisting of PV modules mounted on a single-axis, horizontal tracker;
- 2. Mounting system supported by steel posts;
- 3. Planned mono-crystalline or thin-film solar modules totaling approximately 130 to 162.5 MW Direct Current (DC) for the site;
- 4. Electrical collector circuit system infrastructure consisting of DC cabling;
- 5. Power Conversion Units (PCUs);
- 6. Project substation located within the Project boundary on approximately five acres with a main step-up transformer, control enclosure, circuit breakers, disconnect switches, relay panels, surge arrestors, grounding system, metering, and communications equipment;
- 7. Approximately 12- to 20-foot wide gravel access roads that would connect the facility to the existing public roads and provide access to Project equipment;
- 8. 138-kV transmission line connecting the Project substation to the POI located in the existing ATC-owned 138-kV Butternut substation; and
- 9. Up to five meteorological stations mounted on a monopole structure with a pile-type foundation.

#### 1.2. Exhibits

In order to provide pertinent information about the Project, Springfield Solar is including with this submission maps that identify the following features:

- Project area and public lands
- Project topography
- Water resources: lakes, rivers, streams, and wetlands
- Land cover types
- Conceptual Project layout

## 2. Description of the Proposed Project

#### 2.1. General Facility Description

The Project is a  $100\text{-MW}_{AC}$  solar facility. The major components of the Project include the PV panels, tracking system, PCUs, collection system, Project substation, generation tie-line (gen-tie), and meteorological stations. The PV panels will convert sunlight to electric current as the tracking system follows the sun from east to west during the day. The electric current is converted from DC to AC by the PCUs. The PCUs also increase the voltage to a medium voltage level to efficiently move the energy to the Project substation. The Project substation will further increase the voltage to the interconnection voltage of 138 kV. Finally, the gen-tie will carry the electricity to the POI at the ATC Butternut 138-kV substation located adjacent to the Project.

#### 2.1.1. Modules and Tracking System

Closer to the start of detailed design, the Project will conduct a competitive solicitation to procure the equipment that provides the best technical and financial solution. The current preliminary designs include 130 to 162.5 MW $_{DC}$  of PV panels installed. This would require approximately 240,000 to 320,000 high efficiency PV panels, depending on the wattage rating selected. The market for PV panels is dynamic and evolving so the PV panel supplier and technology to be used is not known at this time.

The PV panels will be attached to a single-axis tracking system that tracks the sun during the day. The tracking system will be mounted to steel piles driven into the ground. The tracking system keeps the panels more directly oriented to the sun which improves the amount of electricity that can be generated throughout the day.

#### 2.1.2. PCU and Collection System

The DC electricity from the PV panels is routed to the PCUs using DC collection wiring. This wiring runs underneath each row of PV panels and then comes together at DC combiner boxes. The DC cabling is then typically routed underground to connect to the PCU.

The PCUs will be approximately 3.5 to 4.5 MW each. The PCUs will be located throughout the PV array area. Each PCU will be mounted on steel piles or a concrete foundation and will include an inverter, medium voltage transformer, and controls/communication equipment. The quantity of PCUs will depend on the size of the final module selected.

The AC electricity cabling from the PCUs will be routed to the Project substation primarily in underground trenches from 30 to 48 inches deep with some use of an aboveground system. The AC collection system is expected to be 34.5 kV.

#### 2.1.3. Substation and Transmission Interconnection

The Project substation will be located within the Project boundary and have a footprint of approximately five acres. The AC collection system will enter the substation where the voltage will be increased to the interconnection voltage of 138 kV. Substation equipment will include a main step-up transformer, control enclosure, circuit breakers, disconnect switches, relay panels, surge arrestors, grounding system, metering, and communications equipment. The main step-up transformer will be mounted on a concrete foundation.

The Project gen-tie will be less than ¼ mile long and will connect the Project substation to the ATC switchyard located at the POI. The gen-tie will be a single-circuit 138 kV line located on monopole structures. The number and height of each structure will be determined during the detailed design phase of the Project. However, the number of poles is likely to be between 8 and 12, and the height of the poles is likely to be between 60 and 90 feet.

#### 2.1.4. Site Security and Fencing

Each PV array area will be fenced to provide security for plant equipment and public safety. Each fenced area will have gated access at the road entrances. The fence material used will comply with applicable codes and meet National Electric Code (NEC) and North American Electric Reliability Company (NERC) Critical Infrastructure Protection (CIP) requirements.

#### 2.1.5. Project Access Roads

Gravel roads will be constructed throughout the site to provide access to public roads and solar equipment. Roads within the Project boundary will be used for construction and O&M activities. These roads will be 12-20 feet wide and will be constructed at grade to maintain existing stormwater flow patterns on the surface.

#### 2.1.6. Stormwater Drainage and Erosion Control

The Project will apply for coverage under the WDNR Construction Site General Permit for stormwater discharges from construction activities and will prepare a Stormwater Pollution Prevention Plan (SWPPP). The current topography of the Project area is relatively flat. Thus, a minimum level of grading is expected. Current sheet flow drainage patterns will generally be maintained.

#### 2.1.7. Waste and Hazardous Materials Management

The primary waste generated during construction will be cardboard and wooden pallets. Waste will be disposed of at approved disposal or recycling facilities. The use of hazardous materials will be limited. Expected hazardous chemicals to be used during Project construction include diesel fuel, gasoline, oil, grease, spray paint, and galvanization paint.

#### 2.1.8. Meteorological Stations

As part of the plant monitoring system, a number of meteorological stations will be installed across the Project. The stations are expected to consist of a monopole structure up to 20 feet tall, topped with a cross-arm on which instruments to measure wind speed/direction, pressure, precipitation, temperature, and irradiance will be mounted. Depending on the technology chosen for the site, an additional pyranometer may be required on the rack closest to the meteorological station to measure the irradiance on the back of the modules, which would be connected to the main meteorological station with an underground cable.

## 3. Construction of the Proposed Project

#### 3.1. Overview

Construction of the Project is anticipated to begin as early as Q4 2021, with the Project reaching commercial operation before the end of 2022. The primary construction activities will consist of

site mobilization, site preparation and grading, installation of steel piles, tracker system, PV panels, and PCUs. The Project collector substation and gen-tie will be constructed in parallel with the PV array.

### 3.2. Temporary Construction Workspace, Laydown, and Mobilization Areas

The Project will include one or more temporary laydown and staging yards, each up to ten acres in area, for construction trailers, equipment storage, and employee parking. The laydown area(s) will be restored to pre-construction conditions once construction is completed.

#### 3.3. Clearing and Grading

Following site mobilization, the construction contractor will begin site preparation, clearing, and grading. The existing topography is relatively flat. As such, minimal levels of grading are expected. The majority of the Project site is agricultural and free of trees. Tree clearing will be avoided to the extent possible, however, some tree removal is anticipated to be required.

#### 3.4. Site Road Construction

Twelve- to twenty-foot (12-20') wide site roads will be constructed to provide access to public roadways and on-site equipment for construction and operation. The roads will be constructed primarily at grade to maintain the site drainage characteristics. Culverts may be installed in areas of confined/preferential flow to maintain surface water flow under the constructed access roads. Construction of the internal site roads will begin by removing the topsoil and organic material. The subgrade will be compacted and constructed per civil design requirements. A layer of road base will then be added and compacted.

#### 3.5. PV Solar Array and PCU Assembly and Construction

Construction of the PV array areas will begin by driving the steel piles in the ground. Shortly after the start of pile installation, the tracker system installation will begin followed by the PV panel installation. These three activities will occur simultaneously throughout the Project site. The DC cable will be connected once the PV panels are installed. Separately, the PCUs will be delivered and installed to their respective locations.

#### 3.6. Electrical Collection

The AC collection cable will primarily be installed underground using cable trenches. The sequence is as follows: (1) the trench is typically dug with a backhoe or trencher; (2) topsoil removed for trenching purposes will be segregated from the trench spoil; (3) the trench will be dug to a depth of approximately 30-48 inches with width dependent upon the number of feeder circuits per trench; (4) the cables will be direct buried and the bottom of each trench will be lined with clean fill to surround the collection lines and the remainder of the trench will be backfilled with native

soil and appropriately compacted; and (5) during backfilling, subsoil material will be replaced first, followed by topsoil. Some collection system cable may need to be installed above ground.

#### 3.7. Substation and Gen-Tie

Construction of the Project substation and gen-tie will occur concurrently with the PV array. Construction of the substation will take approximately 4-6 months and gen-tie construction will take 1-2 months.

For the substation, civil grading will be required to bring the pad to the engineered elevation. After the pad is complete, foundation work will commence. The foundations will consist of both poured piers and poured in place slabs. Grounding and underground conduit trenching will be constructed at the same time as the foundations. Once foundations, grounding, and conduits are completed the installation of steel structures will commence. Once steel is erected, specialty equipment will be set and wired.

#### 4. Site Stabilization and Protection

Best Management Practices (BMPs), such as temporary seeding and silt fences, will be implemented prior to commencement of civil work. Erosion control measures will be installed per the SWPPP and Erosion Control Plan. Temporary seeding and erosion control BMPs will be installed following initial grading and upon completion of array construction activities. Final seeding of all disturbed Project areas with native grass and herb species will be applied using hydro-seeding, seed drill or broadcasting.

During construction, dust will be controlled by applying water to exposed areas using water trucks.

## 5. Environmental Attributes of the Proposed Study Area

Approximately 901 acres of land being considered for the Project were investigated in June 2020 to identify existing natural resources (Project Study Area). The Project Area (884 acres) is a subset of the Project Study Area; a larger area was studied to determine Project viability than will actually be used to site Project facilities.

#### 5.1. Land Cover Types

Land cover within the Project Study Area was mapped in the field during the wetland and waterway surveys conducted in June 2020. Dominant land cover types associated with the Project Study Area include cropland, forested (upland and wetland) and developed/urban. Land cover was digitized within the Project Study Area using Geographic Information System (GIS) applications.

The following table summarizes the land cover types and approximate acreage within the Project Study Area.

Acres of Land Cover Categories in Project Study Area				
Land Category		Acres	Percent of Total	
Agriculture	Cropland	858.27	95.2%	
Non-Agricultural Upland	Forested	20.06	2.23%	
	Grassland	2.53	0.28%	
	Old Field/Fallow Field	0.0	0.00%	
Wetlands/ Waterbodies	Wetland	1.88	0.21%	
	Forested Wetland	2.65	0.29%	
	Open Water	0.0	0.00%	
Developed Land	Developed/Urban	11.84	1.31%	
	Residential	4.48	0.50%	
TOTAL		901.71	100.0%	

#### 5.2. Wetlands and Riparian Areas

Preliminary wetland determinations involved a desktop review of the Project Study Area that included the use of available resources such as U.S. Geological Survey (USGS) topographic maps, U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil survey, WDNR Wisconsin Wetland Inventory (WWII) mapping, WDNR 1:24,000 Hydrography data (24k Hydrolayer), USDA National Agricultural Imagery Program (NAIP), and other publicly available aerial imagery. Data was acquired and imported into a GIS application for review.

Figures based on the desktop wetland review were utilized by Springfield Solar consultants during wetland and waterway field surveys completed in June 2020. Field wetland determinations were based on the criteria and methods outlined in the U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual, Technical Report Y-87-1 (USACE Wetlands Delineation Manual) and subsequent guidance documents, and applicable Regional Supplements to the USACE Wetlands Delineation Manual.

A total of 72 data points were used to delineate the eight separate wetlands within the Project Study Area. The total aerial coverage of wetlands within the Project Study Area is 4.53 acres. Three wetland types were surveyed within the Project Study Area: farmed wetland, hardwood swamp and wet meadow.

Preliminary waterway determinations were made utilizing the WDNR 24k Hydrolayer and data imported into the GIS application. Desktop analysis revealed a total of three separate waterways located within the Project Study Area (one perennial and two intermittent). Field surveys for

waterbodies were conducted during the wetland investigations and documented waterways, waterbodies, culverts, and/or other connections to off-site wetland or aquatic features.

A total of one waterway was field identified within the Project Study Area (Kiefer Creek, WBIC 863500). The two intermittent waterways were deemed "not present" based on field observations. A waterway navigability determination letter was sent to WDNR for concurrence on June 30, 2020. The WDNR concluded via email correspondence on July 14, 2020 that the northern most field verified not present waterway (WBIC 5028994) was not navigable and would not require Wisconsin Statutes Chapter 30 (Chapter 30) permitting for Project impacts. The second intermittent waterway (WBIC 5029109) was deemed not navigable and exempt from Chapter 30 permitting east of Center Dr. (called "Area 2A" in WDNR correspondence).

For the area west of Center Drive (called "Area 2B" in WDNR correspondence), WDNR could not determine a Point a Navigability, and therefore deemed Area 2B as navigable due to aerial identified bed and banks beginning within a wooded area roughly 600 feet west of Center Drive. Subsequent data was submitted to WDNR via email on July 14<sup>th</sup>, 2020. WDNR responded on July 20, 2020 indicating that Area 2B between the wooded area east to Center Drive was not navigable and therefore not subject to Chapter 30 permitting. NOTE: Area 2B is not within the Project Study Area, except for the roughly 600-foot section from Center Drive west to the wooded area.

#### 5.3. Federal and State Listed Species

The Project Study Area and associated one-mile (wetland and terrestrial species) and two-mile (aquatic species) buffers were evaluated for the presence of federal and state-listed species and their habitat. These species were evaluated to determine if the Project may adversely affect them or their habitat.

#### 5.3.1. Federally Listed Species

On June 25, 2020, Springfield Solar's consultant requested and received an Official Species List report for the Project (Consultation Code 03E17000-2020-SLI-1464) from the U.S. Fish and Wildlife Service (USFWS). Springfield Solar received a response (Report) from USFWS on July 10, 2020. The Report indicated that there are no Federally listed species documented within the Project Study Area. The Report noted that the Project is located within the geographical range or may contain suitable habitat for the following federally listed species:

- O Suitable habitat for the northern long-eared bat (NLEB, Myotis septentrionalis) may exist within the Project Study Area. No documented records of NLEB exist within the vicinity of the Project Study Area. USFWS recommended that tree removal occur between November 1 and April 1 or at minimum avoid removing trees outside of the pup season (June 1-July 31).
- O Whooping cranes (*Grus americana*) may use the agricultural fields within the Project Study Area during migration, although no suitable habitat is present within the Project Study Area. Due to loss of quality stopover habitat within the Project Study Area, negative impacts to this species are not anticipated.

o The rusty-patched bumblebee (RPBB, *Bombus affinis*) is in the geographical range of the Project Study Area. No negative impacts to this species are anticipated. The USFWS recommended that Springfield Solar provide suitable habitat for this species in the post-construction vegetation management plan.

#### 5.3.2. State-Listed Species

An Endangered Resource (ER) Review was completed by Springfield Solar's consultant on June 18, 2020. The review showed that no element occurrences (EO) or rare habitat features are present within the Project Study Area. An ER Review Verification Broad Incidental Take Permit/Authorization for No/Low Impact Activities (Form 1700-079) was sent to WDNR via email on June 18, 2020. An email correspondence from WDNR acknowledging the receipt of the ER Review Verification Form stated that the form had been reviewed and filed. No further actions regarding endangered resources are required for the Project.

#### 5.4. Special Management Areas

An evaluation of GIS databases was used to document special management areas within the Project Study Area and an associated two-mile buffer. This review indicated there were no special management areas within two miles of the Project Study Area.

## 6. Required Permits

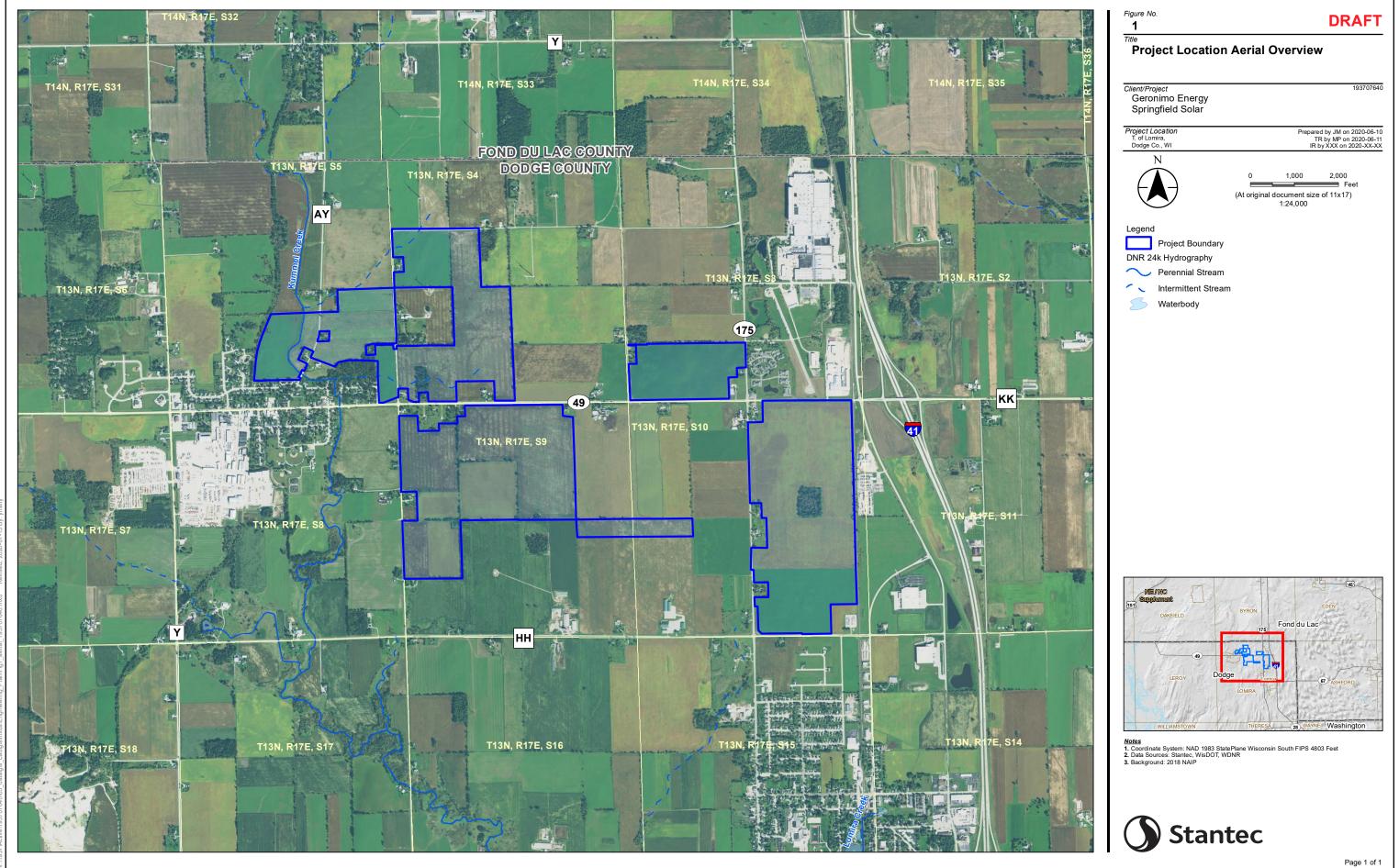
Permits and agency coordination at the Federal and State level will be completed prior to the construction of the Project. A summary of expected permits and coordination for the Project is summarized below:

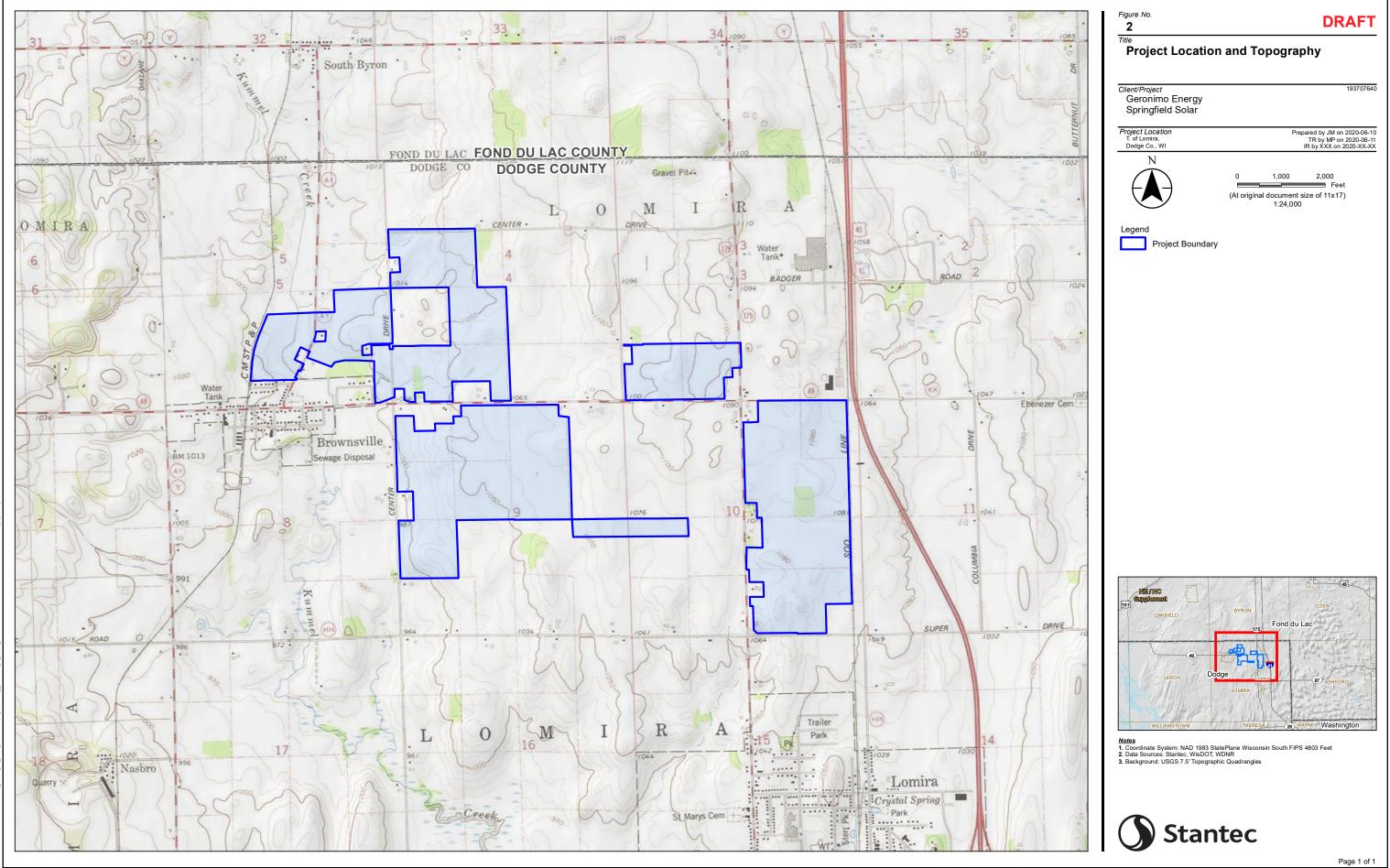
Expected Permits and Agency Coordination for the Springfield Solar Project				
Permit/Coordination	Agency	Comments		
CPCN	PSCW	Filed for new electric generating facilities of 100 MW or more.		
Federal ESA Coordination	USFWS	IPaC completed and letter sent to agency on 6/25/20.  USFWS response received 7/10/20.		
		If required, will be filed with WDNR Wetland Water Quality Certification Application.		
Section 404 Wetland Permit	USACE	Expecting to avoid resources and have no need for a permit or to minimize impacts to fall under a Nationwide Permit (NWP).		
		Surveys completed June 2020.		
Wetland Water Quality Certification – Section 401	WDNR	To be filed concurrently with PSCW CPCN Application (Joint Application process).		

Utility Wetland and Structure/Bridge General Permit	WDNR	Concurrent with above - all filed under the WDNR's Water Resources Application for Project Permits (WRAPP).
Wisconsin Pollutant Discharge Elimination System (WPDES) Construction Site Storm Water Runoff General Permit No. WI- S067831	WDNR	Final application filed following receipt of CPCN order from PSCW and final design is completed.
State Endangered Resource (ER) Review	WDNR	ER Review sent to agency on 6/18/20. WDNR response received 6/18/20.
Archaeological and Cultural Resource Coordination	PSCW/Wisconsin State Historical Society (WHS)	Database review completed 6/22/2020.  Field surveys to be completed July 2020.
Land Use Permit	Dodge County	Not determined if needed as of 7/20/20.
Zoning/ Conditional Use Permit	Dodge County	Not determined if needed as of 7/20/20.
Erosion Control Permit	Dodge County	Not determined if needed as of 7/20/20.
Building Permit	Dodge County	Not determined if needed as of 7/20/20.

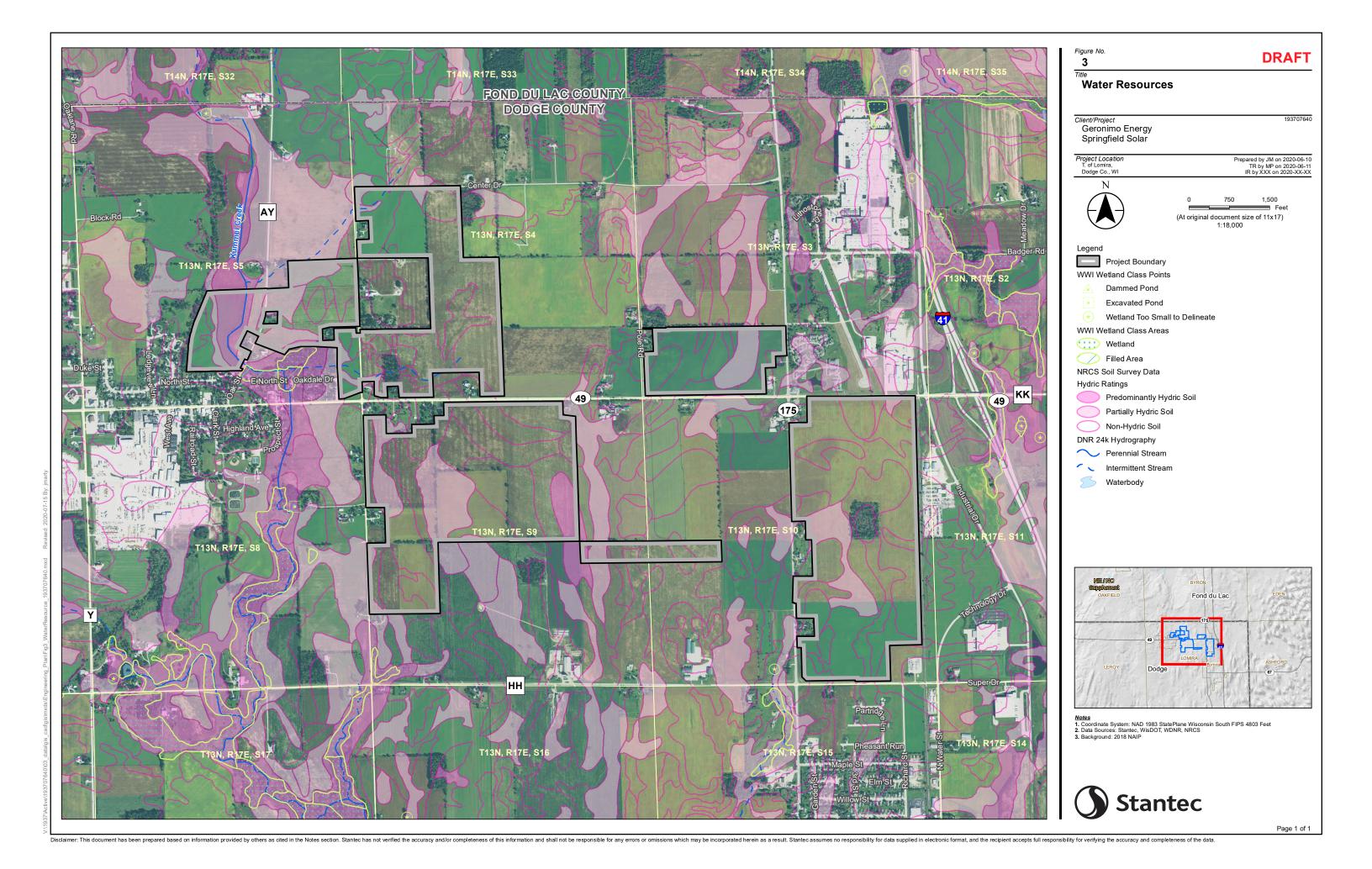
## 7. Proposed Project Schedule

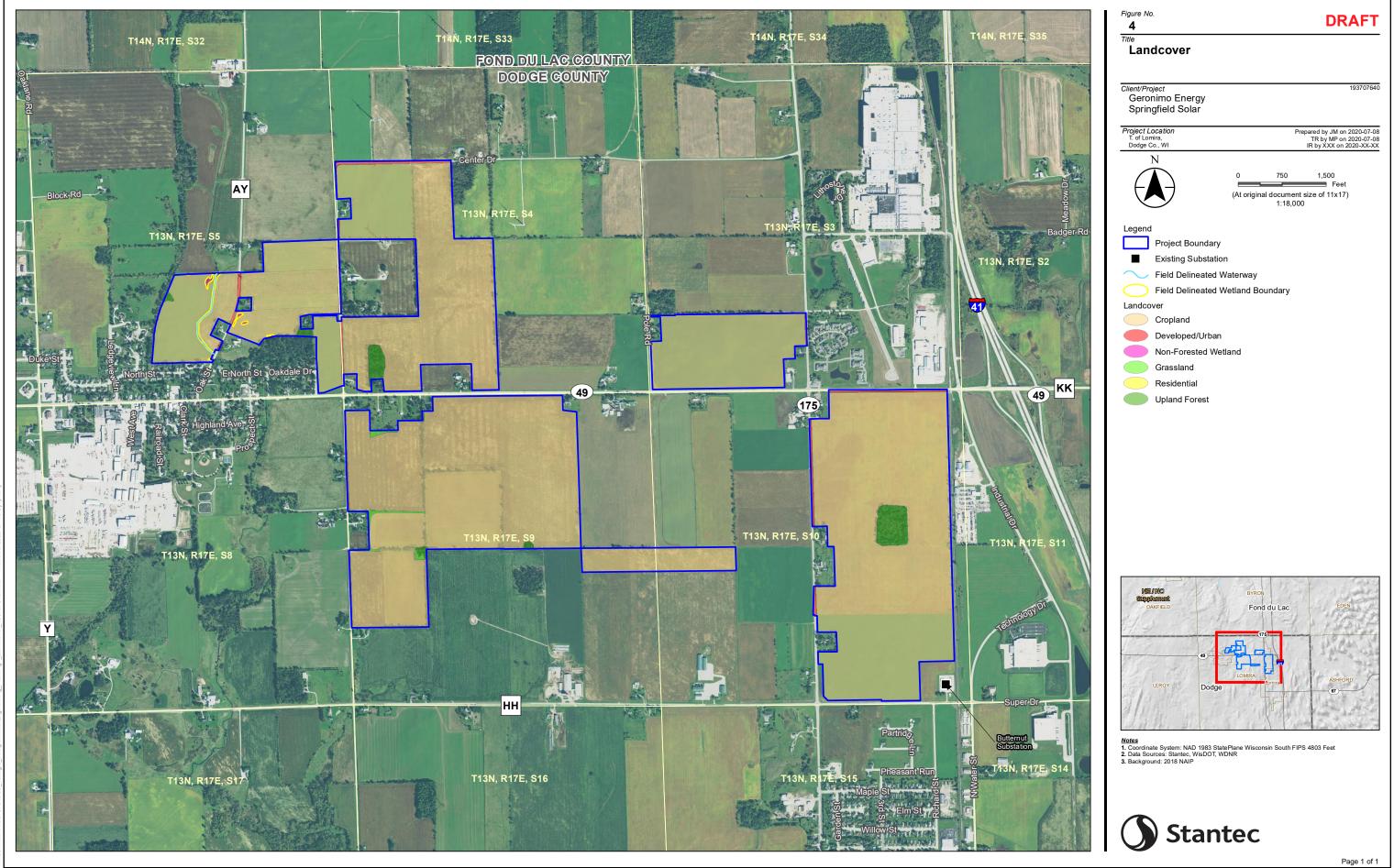
Springfield Solar expects to file its CPCN application on or about September 18, 2020. Springfield Solar then anticipates receiving the required regulatory approvals by late 2021. Construction is anticipated to begin as early as Q4 2021 and be completed by the end of 2022.



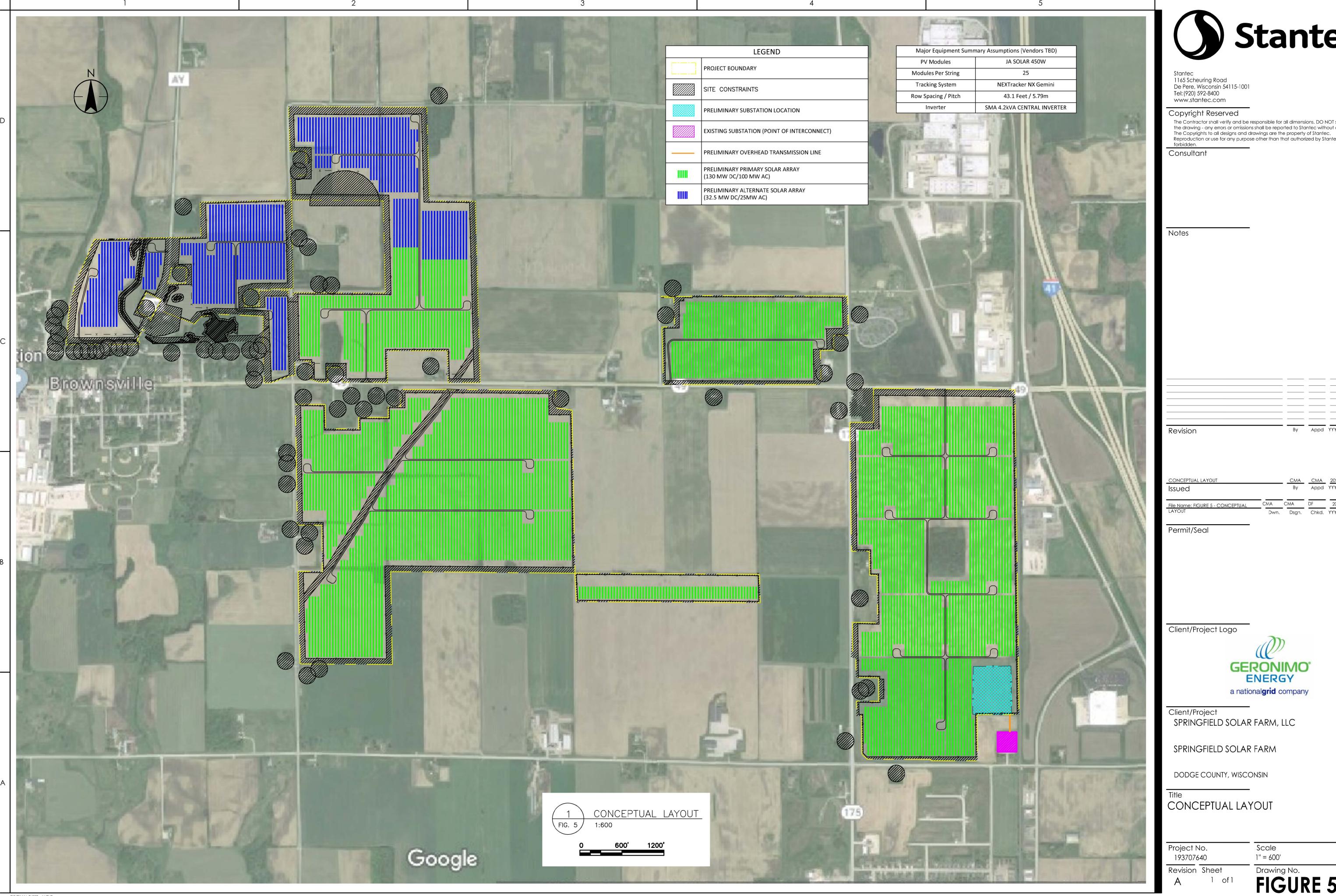


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Scale 1" = 600'

Drawing No.
FIGURE 5

ORGINAL SHEET - ANSI D

