

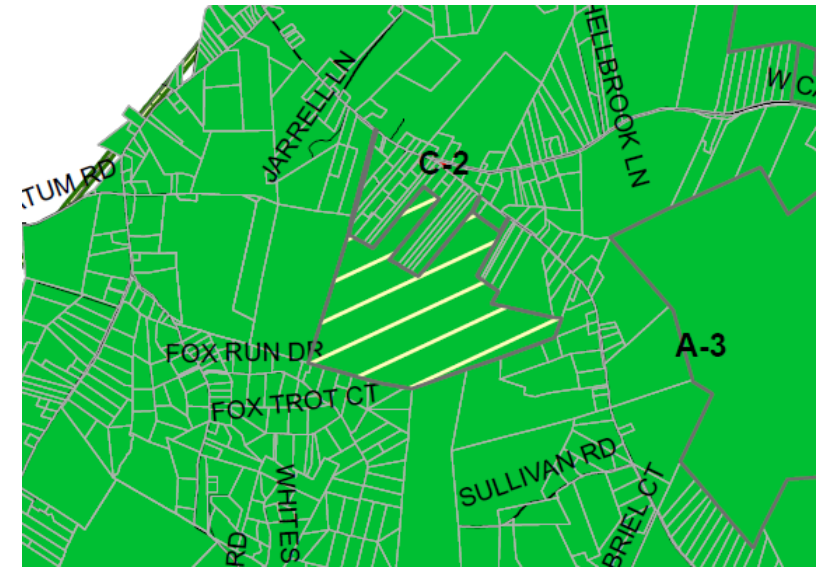
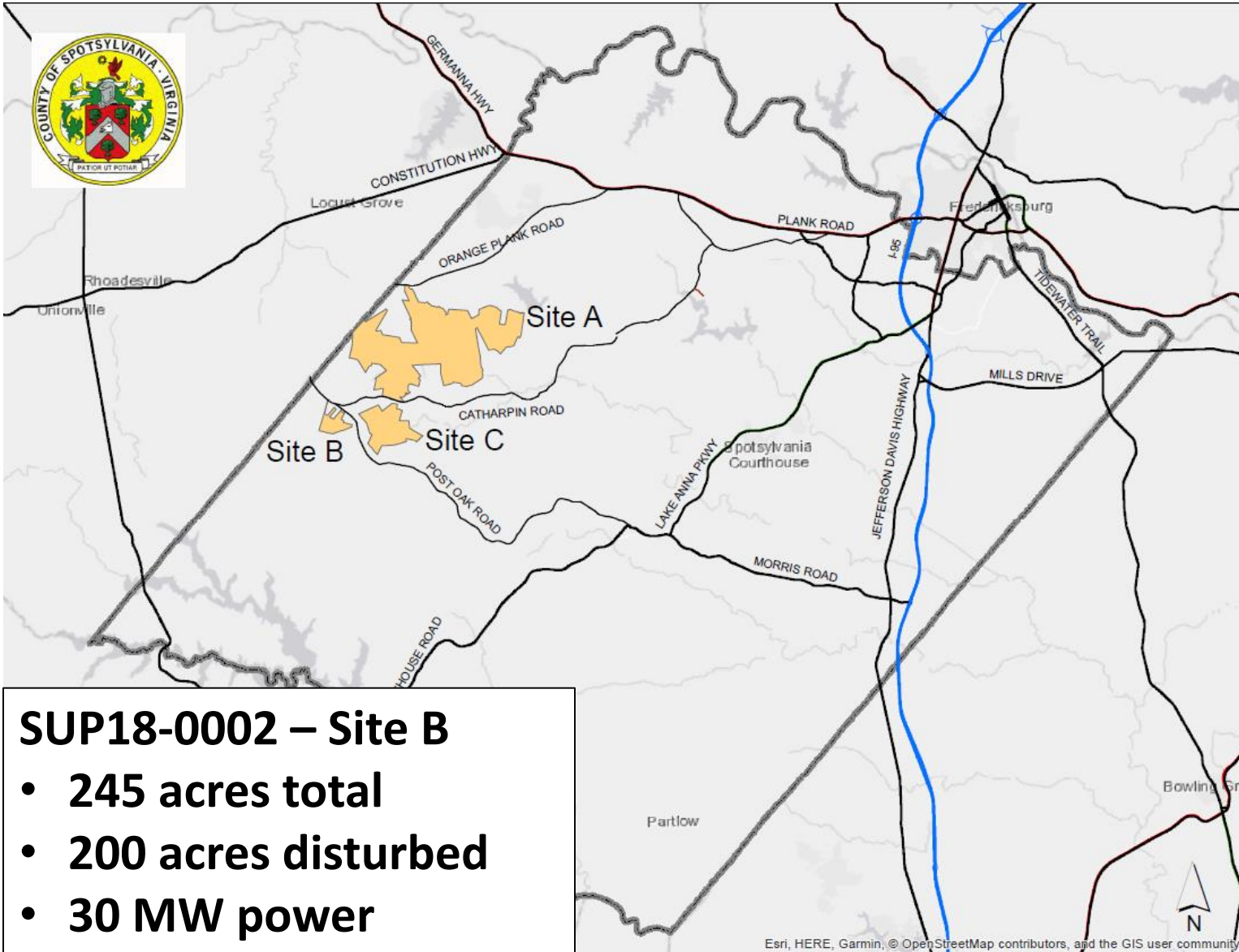


sPower Solar Energy Facility Special Use Application SUP18-0002

Spotsylvania County Board of Supervisors

February 26, 2019

Special Use Permit Application



Property is zoned A-3.
Property has a future land use designation of Rural Residential development per the Comprehensive Plan.

Recommendations

- Planning Commission public hearing 12/19/18. Discussion 1/2/19 and 1/16/19.
- Recommend approval with conditions, 4-3 vote.
- Staff recommends approval with conditions.

PV - Generally

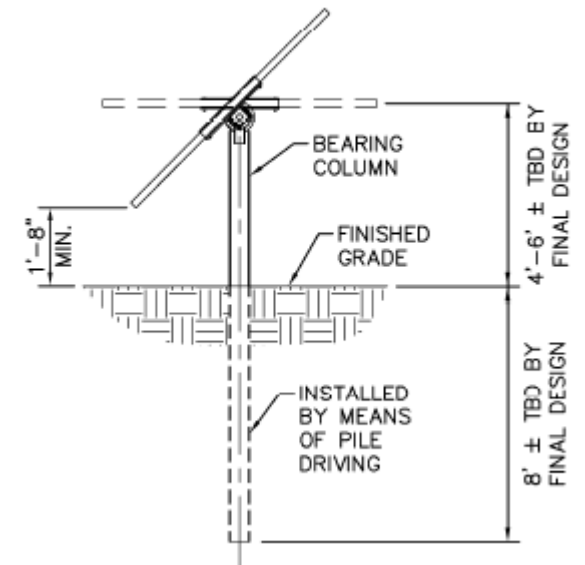
Photovoltaic panels are pre-assembled collections of integrated photovoltaic cells. They are produced from a number of manufacturers which use different materials.

The applicant has identified that they plan to use two panel manufacturers: Jinko panels and FirstSolar Series 6.

Panels are strung together into strings which are racked into rows.

Rows are equipped with hardware allowing them to automatically rotate in order to maximize sun exposure.

Rows are supported by steel pilings which are driven into the ground.



PV - Generally

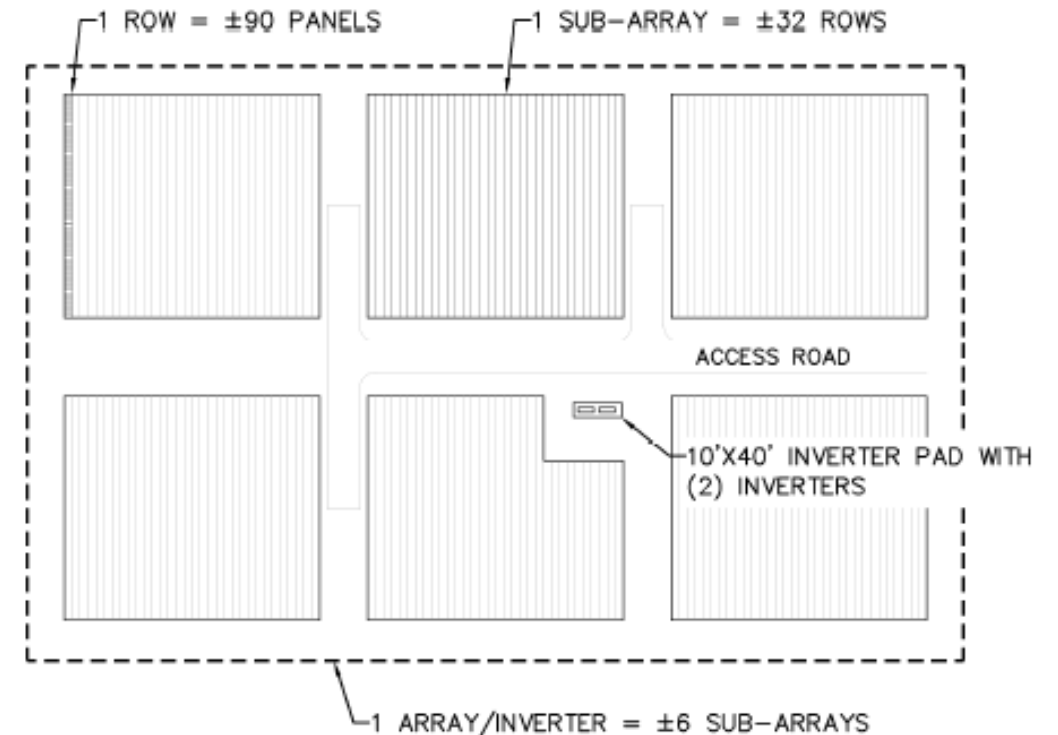
The applicant's GDP depicts a Array, which consists of 6 Sub-Arrays.

Each Sub-Array is a collection of 32+- rows.

Each Row is a collection of 90 PV panels.

These feed two inverters which collect the energy (in DC form) and convert it to AC power.

This electricity is then transferred via electric transmission line to Site C.



The GDP - Generally

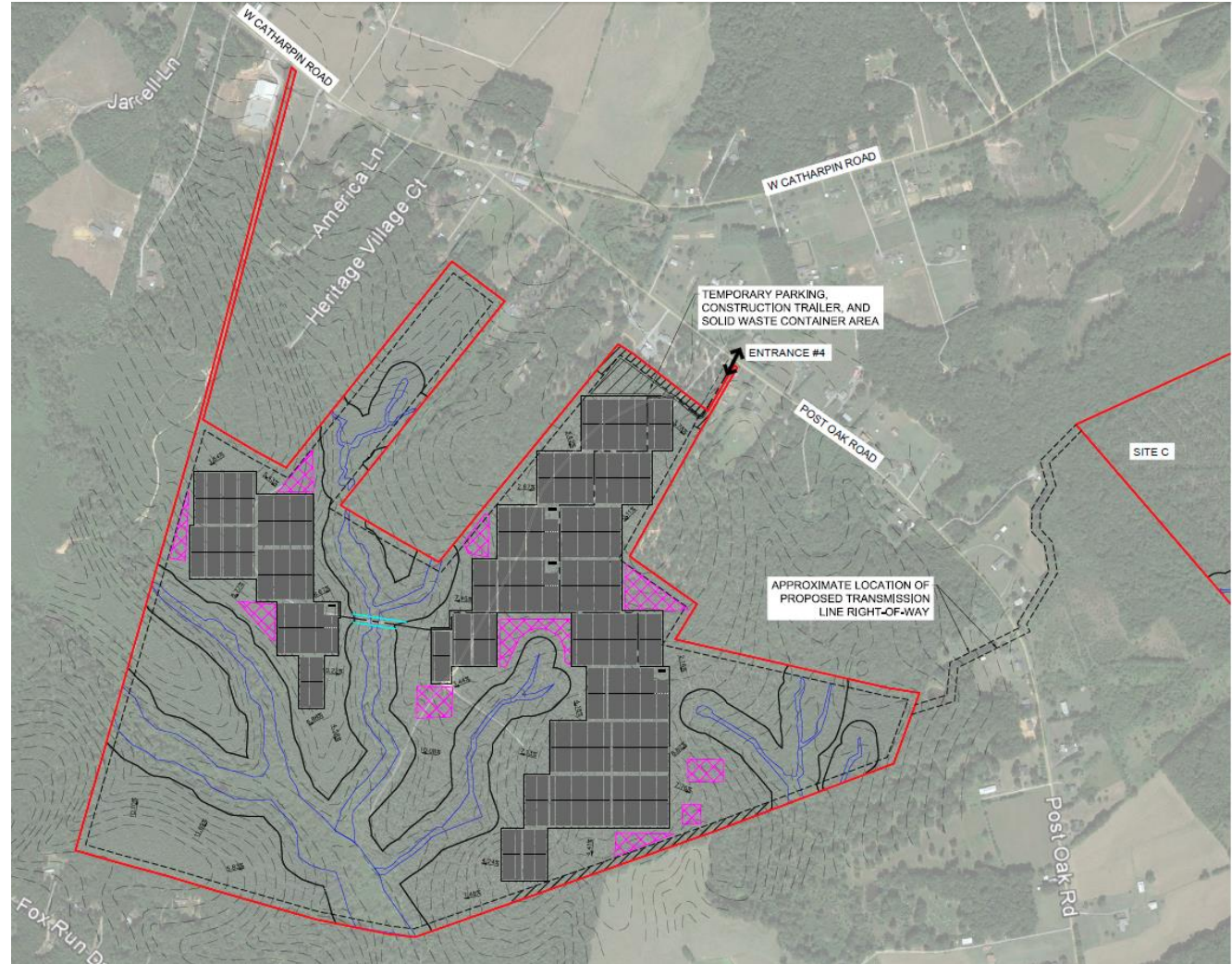
The GDP depicts the general plan of the proposal.

It is not a final design.

If the Special Use is approved, detailed site engineering is submitted to the County for Site Plan Review

The Site Plan Review process verifies compliance with County codes, laws, and any conditions of the SUP.

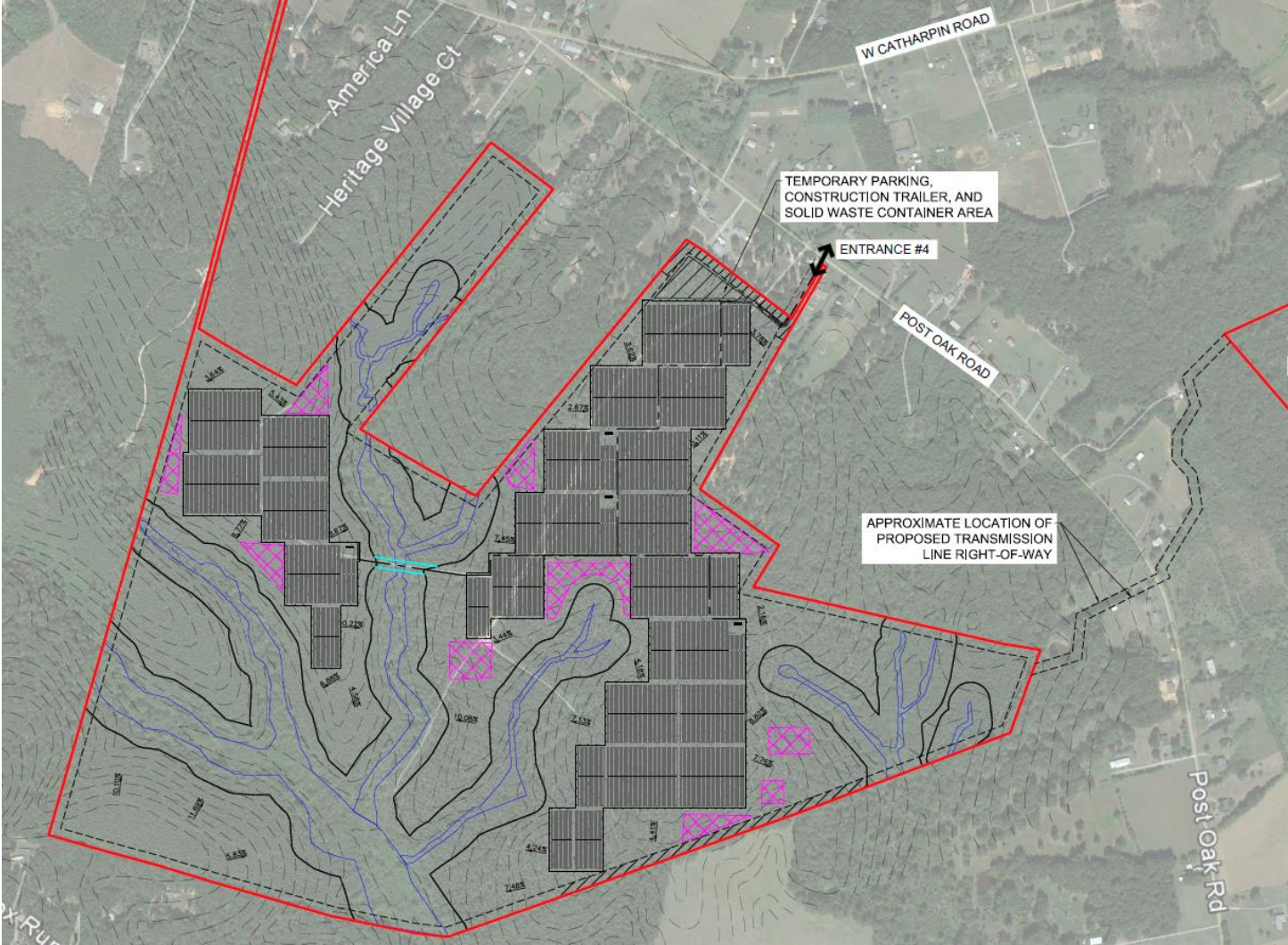
The Building Permit Review process would verify compliance with building and electrical codes.



The GDP - Generally

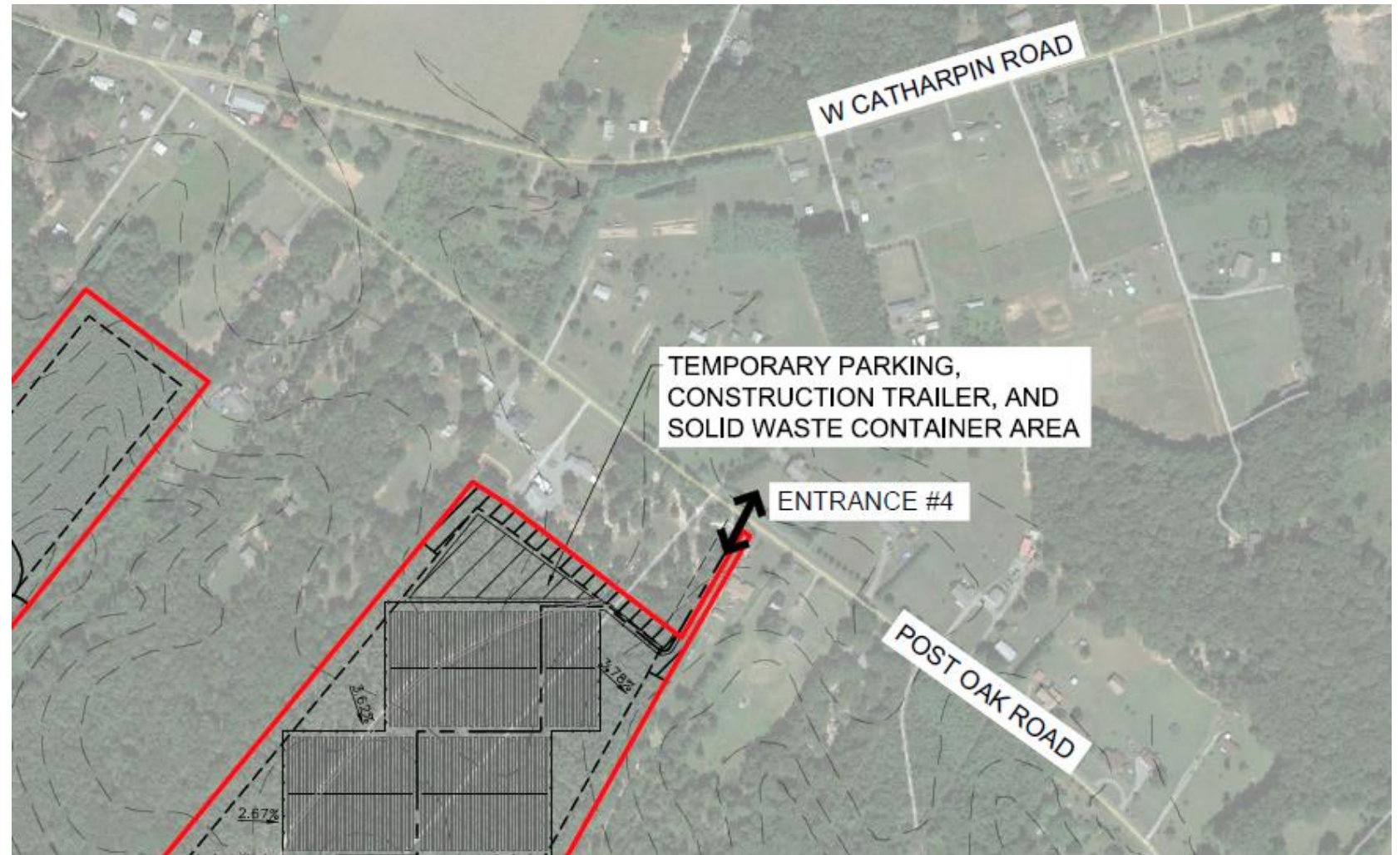
The GDP is also used to depict access points, setbacks, buffers, resource protection areas (RPA's), Stormwater collection features, and designates other significant points of interest.

LEGEND	
	PROPERTY LINE
	BUILDABLE AREA
	DELINEATED WETLANDS
	PROPOSED 10' - 16' ACCESS ROAD
	PROPOSED EASEMENT CROSSING
	PROPOSED WETLAND CROSSING
	MINIMUM 50' SETBACK ALLOWING NATURAL REGROWTH
	PROPOSED 50' BUFFER/SETBACK. REFERENCE BUFFER PLAN FOR DETAILS
	PROPOSED CHAIN LINK FENCE
	PROPOSED PROJECT ACCESS POINT
	POTENTIAL STORMWATER CATCHMENT POND
	FEMA 100-YEAR FLOODPLAIN
	SOLAR PANEL ARRAY AND INVERTER



Access

Site B is proposed to be accessed from one location labeled Entrance 4 on Post Oak Road approximately 1,950 feet SE of the intersection of Post Oak Rd and W. Catharpin Rd.



Access

The access is via a new easement through a private property.



Access

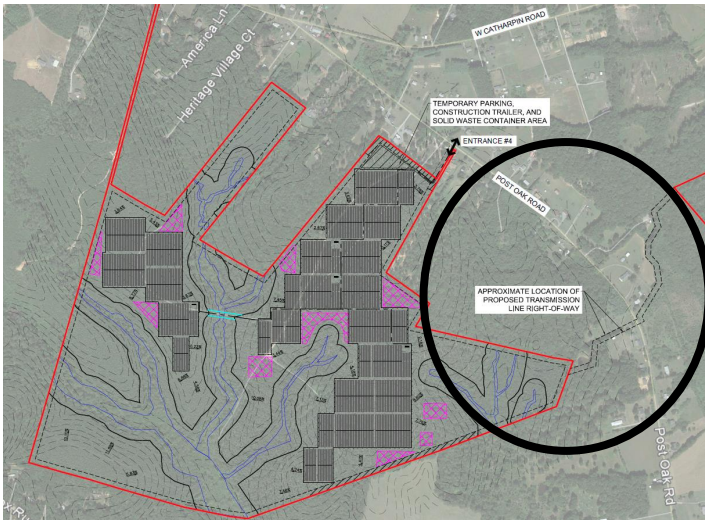
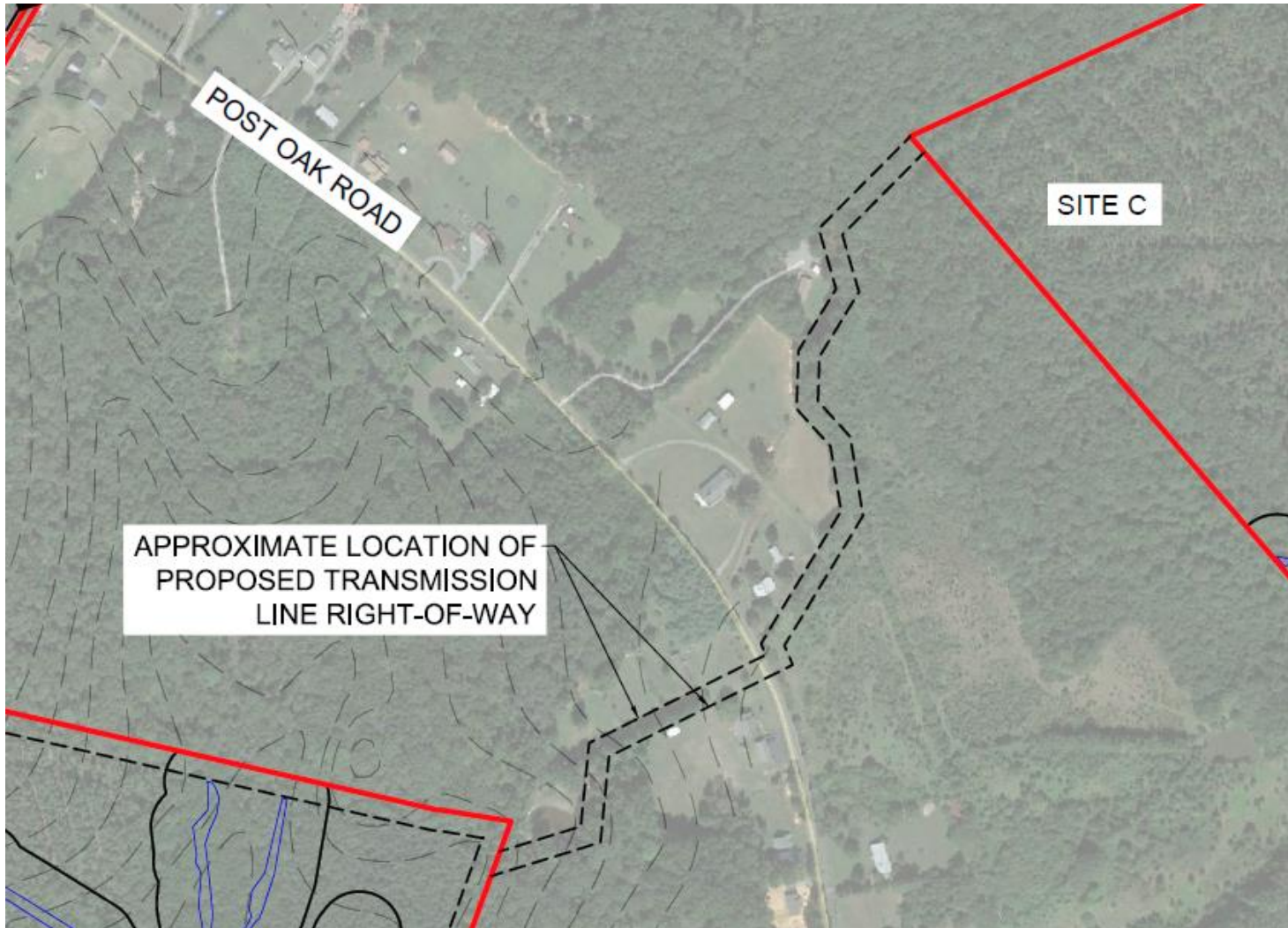
The current Construction Access and Access Evaluation also provides estimated new trips due to construction which County Traffic Engineering used to estimate level of service impacts on major road segments. Staff found generally that through the construction period levels of service would decrease on all major roads providing access to the site.

Following construction these should return to normal operating levels.

Estimated daily trips are 137 (133 from employees, without revising for staff's recommend shuttling condition of 20% of workforce).

The GDP - Generally

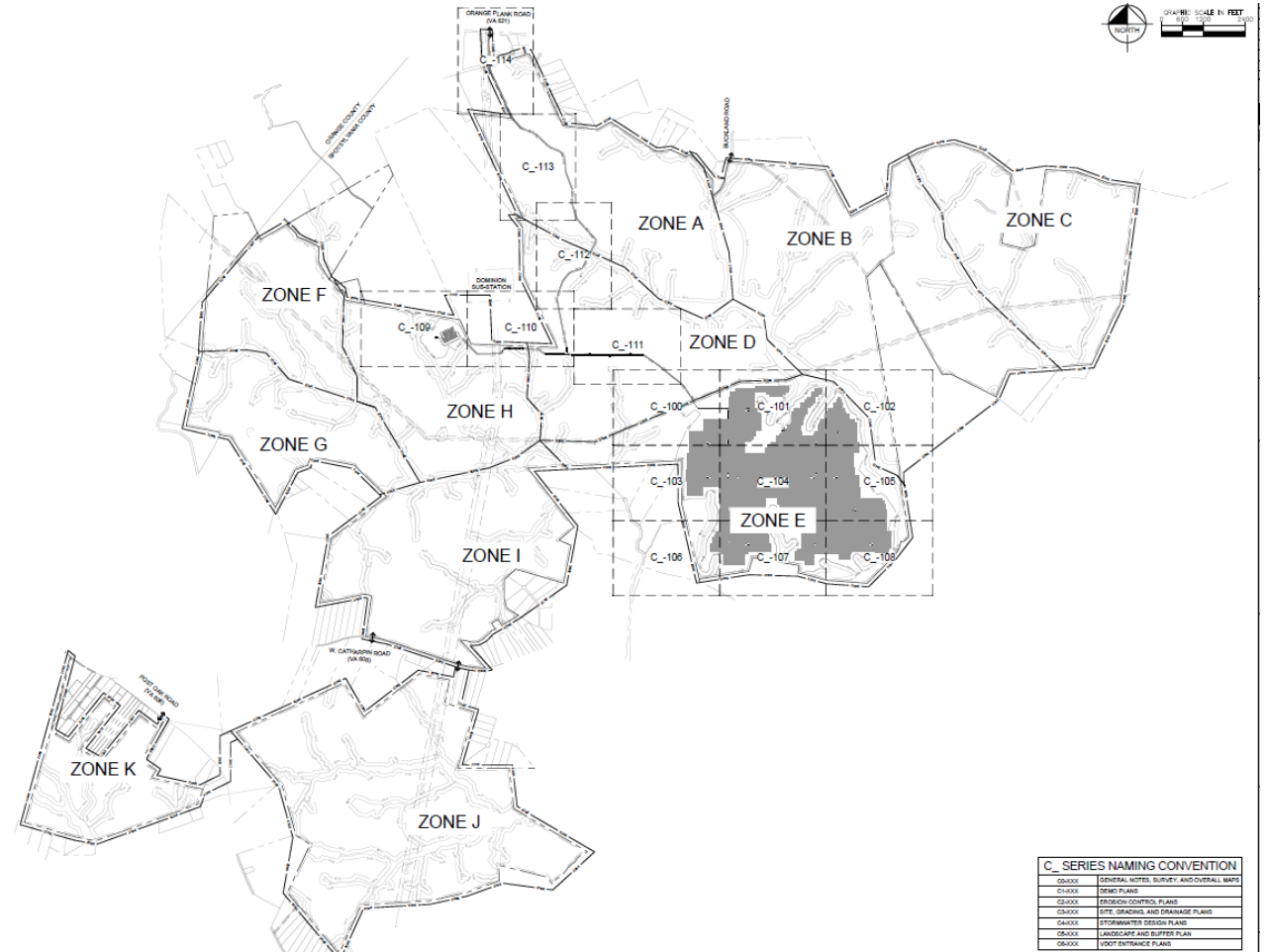
Site B is proposed to be linked to Site C through a new 100 +/- foot electrical transmission line.



Erosion and Sediment Control

Spotsylvania is a local VSMP authority, meaning that the County regulates Stormwater management in accordance with Virginia laws, rather than the Virginia Dept. of Environmental Quality.

A conceptual, but more detailed design of the applicant's first phase was provided to E&S staff for consideration, it identifies a Zone E in the SE corner of the overall site.



Erosion and Sediment Control

It presently includes details on resource protection areas, perimeter controls, silt fencing, sediment traps, ponds and basins, etc.

If this special use permit is approved, this plan will be further developed to a fully designed site plan for Phase 1 of the project.

The concept plan provides a template for how the rest of site will be constructed.

There are additionally a significant number of E&S conditions provided in the staff report which allow the County to confidently mitigate the substantial erosion and sediment control concerns resulting from a project of this magnitude.



Erosion and Sediment Control

- The proposed E&S and stormwater management plans are in technical compliance with code requirements
 - 3rd party engineer review
- Limit to 400 acres land disturbance in aggregate
 - Manageable area for mandated inspections given staffing levels
- Inspections during construction
 - County staff
 - 3 engineering firms under procurement contract
- Inspection costs to the County
 - Addressed with recent adoption of new fee schedule for erosion inspection fees large projects

Environmental Construction Concerns

Minimum Required by Code

- Perimeter control silt fence typical
- Basin construction 50% full then maintenance
- No required upslope barrier protections
- Basins are removed after stabilization
- No onsite personnel dedicated to ESC upkeep
- RLD required but person not typically on site
- Diversion single windrow designs atypical
- Broadcast seeding typical
- Soil testing and amendments not required
- Equipment not always for ESC maintenance
- No use of drone technology. Walk entire site

sPower Plan Zone Template

- Adding super silt fencing and filtering barriers
- SPower will clean at 25% capacity
- Upslope siltation socks - left or cut
- Basins to be converted to permanent facilities
- On site ready response force for ESC
- RLD on site
- Additional windrow barrier to direct to basins
- Drill seeding for quicker seed ESC germination
- Soil testing before drill seeding
- On site equipment for ESC controls/repairs
- Use of drone technology points to focus area

Protected Species

No protected species were identified as likely to be impacted through this proposal.

The Plentiful Creek Stream Conservation Unit does lie onsite and is deemed to contribute to high biological integrity. The same expanded E&S conditions proposed for Site A are proposed for this subject site to reduce potential risks to this stream.

Forestral fragmentation remains a concern; staff has recommended a condition to improve connectivity onsite.

Cultural

Archeological and Architectural Surveys were conducted with cooperation of the Virginia Department of Historic Resources (VDHR). The surveys examined above and below ground resources for potential inclusions in the Virginia Landmarks Register or the National Register of Historic Resources.

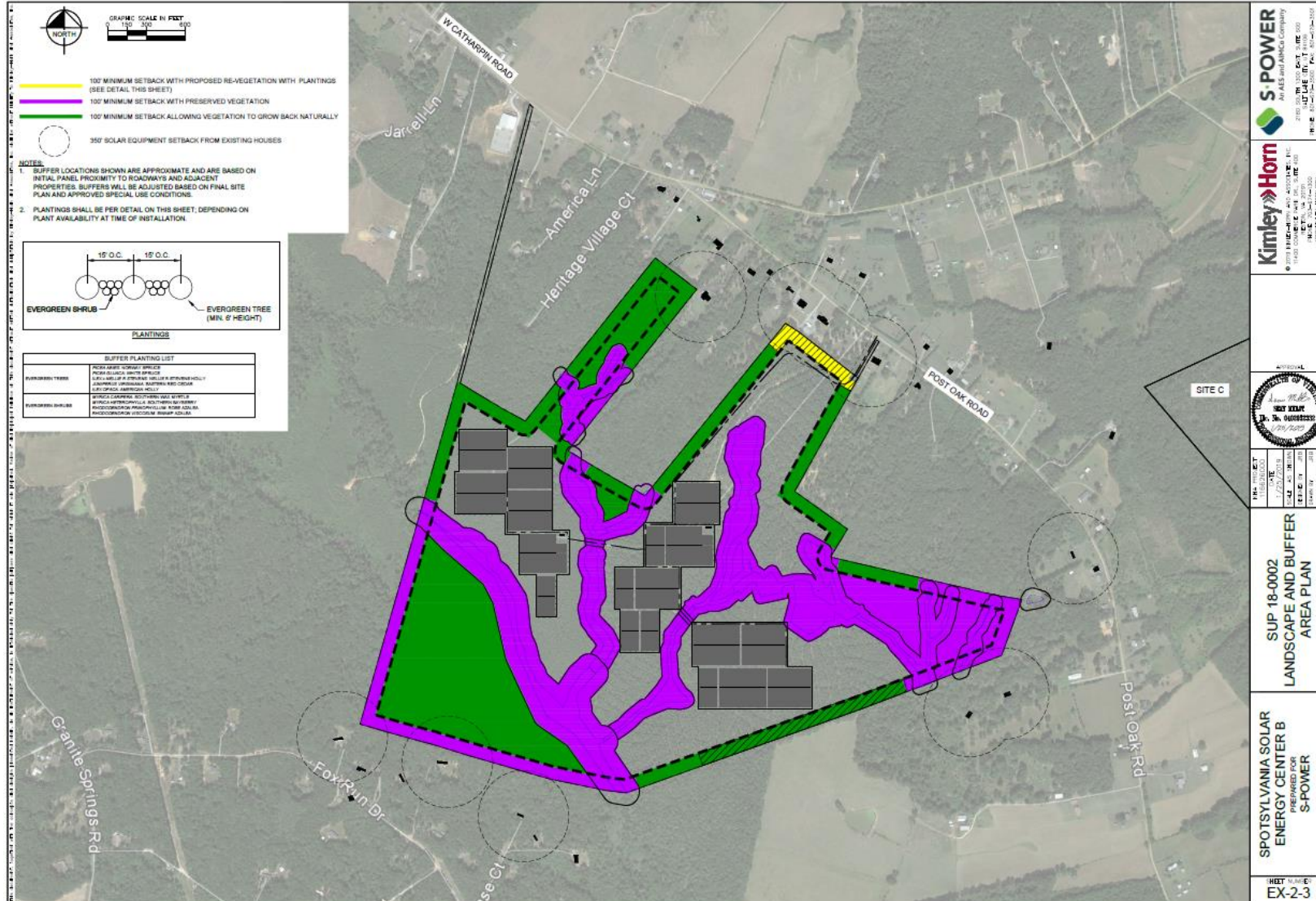
Although a number of archeological resources were identified there were no above or below ground findings warranting additional study. No impacts are expected to cultural resources on Site B.

Heat Island Effect

The County requested input from Dewberry consulting regarding any potential heat island effect. They found that there is no heat island effect, though a temporary temperature increase is possible that dissipates with distance from the solar panels.

- Enhanced setbacks of 350' from residential properties (Planning Commission conditions include 350' setback from all property boundaries).
- Buffers and berms should include shade trees and shrubs to create dense screens to absorb radiative heat and should be maintained.
- Vegetative coverage must be maximized with grasses to assist in evapotranspiration and soil heat absorption.

sPower's New Buffering Proposal



Setbacks - Conditions

Prescribed setbacks are 50 feet except that:

- Fencing, berms, landscaping, roads, bridges, utility poles are exempt.
- No trees shall be removed from any of 50 setback or 50 buffer except for exotic species removal, hand-clearing of dead or dying trees, or any clearing for ingress/egress or infrastructure connections.
- Inverters and generators shall be setback 400 feet.
- Staff - Adjacent to a residential property triggers a 350 foot setback of solar arrays and supporting structures from the shared property boundary.
- Planning Commission – Consistent 350 foot setback from property boundary.

Buffering - Conditions

Buffer:

Residential structures within 300 feet which are not separated by an existing 40 preserved buffer will be screened with a bermed buffer.

- The berm shall be 8 feet in height, shall have a minimum 6 foot planting area atop the berm
- The berm shall not exceed a slope of 1 foot of vertical rise to 2 feet of vertical run
- Plantings shall be atop and outside of the berm.
- The berm shall be outside of any fencing.
- The berms shall be installed coincident with each phases construction and before any pile driving within 1,000 feet of the berm.

Buffering - Conditions

- Shall be designed by certified landscape designer or landscape architect to minimize visibility, maximize survivability, and minimize losses from deer or other wildlife consumption.
- Shall consist of a minimum of:
 - One (1) evergreen tree with a minimum height of six (6) feet every ten (10) feet
 - One (1) large deciduous tree with a minimum trunk caliper of two (2) inches measured six (6) inches from the ground every fifteen (15) feet
 - One (1) understory deciduous tree with a minimum trunk caliper of two (2) inches measured six (6) inches from the ground every fifteen (15) feet
 - One (1) evergreen shrub with a minimum height of four (4) feet every ten (10) feet.

Buffering - Conditions

Residential structures within 300 feet which are separated by an existing 40 preserved buffer AND any adjacent residential structures within 600 AND any VDOT maintained right-of-way shall be screened with a supplemental buffer which shall consist of a minimum of:

- one (1) evergreen tree with a minimum height of six (6) feet every fifteen (15) feet
- one (1) large deciduous tree with a minimum trunk caliper of two (2) inches measured six (6) inches from the ground every ten (10) feet.

These buffers shall also be designed by a certified landscape designer or landscape architect to minimize visibility, maximize survivability, and minimize losses from deer or other wildlife consumption.

Existing landscaping and regrowth is expected to provide a significant contribution to screening.

Buffers and Setbacks

- The applicant has indicated that the 350' setback will impede their ability to develop the project as proposed.
 - Submitted an increased buffer plan that provides a 100' vegetated buffer.
- Policy Question: Appropriate Buffers and Setbacks?
 - 350' setback of panels and inverters to property boundary
 - 100' buffer proposed by applicant

Noise

The construction of the proposed facility will generate construction noise from onsite vehicles and activities. Construction noise will reach its highest point when the support pilings are being driven into the ground near residential homes. This activity should last approximately 4 days and then lessen substantially as the pile driving is completed in proximity to the homes. The applicant's submitted noise map should be substantially improved by the new conditions related to setbacks and buffering.

Construction activities are exempt from County noise ordinances, but staff has proposed conditions to mitigate noise on neighboring residents. Exclusive of additional setbacks or buffers, other conditions include:

- All clearing, grading, and construction of the Property shall be limited to the hours of 7:00 a.m. to 7:00 p.m. Monday through Friday and 8:00 a.m. to 6:00 p.m. Saturday and Sunday (Planning Commission conditions prohibit work on Sunday);
- Pile driving within 500 feet of any residence shall cease at 5:00 p.m. daily and shall be prohibited on Sundays.

Noise

- Advance notice shall be mailed by first class mail to properties within 1,000 feet of a pile driving location no less than seven (7) days prior to the start of such activities and shall include the estimated start date, estimated end date, and the liaison's contact information. The notice and a list of recipient addresses shall also be mailed to the Zoning Administrator.
- The following noise-reducing practices shall be followed to reduce construction noise:
 - Trucks and engine-powered equipment shall include mufflers and engine shrouds no less effective than those originally installed by the manufacturer;
 - Trucks and engine-powered equipment shall be maintained in proper tune according to manufacturers' specifications;
 - Truck engine exhaust braking shall be limited to emergencies; and
 - The use of noise-producing signals, including horns, whistles, alarms, and bells shall be for safety warning purposes only.

Fire, Rescue, and Emergency Mgmt.

Solar energy facilities are known to be relatively safe land uses with respect to electric shock, fire, toxicity and EMF fields. The proposed facility will also be monitored via Supervisor Control and Data Acquisition (SCADA) systems.

Additionally, the applicant's supplied Emergency Operations Plan – Construction and Emergency Operations Plan – Operations are proposed to be conditioned.

These documents were created with the collaboration of County FREM and Planning staff and provide information on varying topics including but not limited to:

- **Employee roles, training, and communication procedures**
- **Unique concerns from PV systems**
- **Fire prevention and response**
- **Storms and natural disasters**
- **Spills**
- **Hazardous materials**

Fire, Rescue, and Emergency Mgmt.

Staff conditions allow trench burning with limitations, including 3,000' distance to residential properties. The Planning Commission conditions prohibit burning.

Additional burning conditions exist within the Emergency Management Plan – Construction:

- A permit shall be acquired from Spotsylvania County.
- All combustible materials shall be removed within 35 feet of trench burning.
- A water truck shall be on standby.
- Trench burners shall be equipped with fire extinguishers.

Fire, Rescue, and Emergency Mgmt.

- Burning shall take into consideration sensitive receptors and prevailing wind direction at lower speeds (<25 mph).
- Burning shall cease 2 hours prior to end of work day.
- A Fire Watch Person will be designated to monitor all trench burning activities.
- The Fire Watch Person shall remain within the immediate area of the trench burning at all times and shall not be assigned any other duties.
- If the burn area is still producing smoke, it is technically still burning and must be attended.

Cadmium Telluride PV Panels

The County requested input from Dewberry consulting regarding the safety of PV panels containing Cadmium Telluride. They responded:

“Cadmium Telluride (CdTe) is a compound that contains cadmium and tellurium. It is a black crystalline powder that is odorless, not water soluble and non-flammable. It has a melting point of above 1000 °C and the boiling point is above 1100 °C. Cadmium by itself is a highly toxic material, however, based on research cadmium telluride is much less toxic than pure cadmium. CdTe can be toxic if it is ingested, inhaled or comes in direct contact with skin.”

“If they are handled properly during all phases of construction and disposal, they will not emit any toxicity into the environment.”

The Planning Commission’s conditions prohibit the use of CdTe panels. Staff’s conditions do not prohibit the use of CdTe panels.

Decommissioning

Both staff and Planning Commission recommended conditions include detailed list of requirements for decommission and the engineer's estimate on which the bond is based.

- Does not allow for a credit for recycling costs
- Policy Question: Considering 2-year updates, is a credit appropriate?

Project Fiscal Impact

- Rollback tax is approximately \$40,500 (one time payment)
- Real Property taxes for the land only – currently \$5,877
- Code of Virginia provides tax exemptions
 - For the sPower project (500 MW) the M&T exemption is 80%
 - The County collects taxes at the real estate tax rate on 20% of the assessed value of the facility as assessed by the State Corporation Commission (SCC)
- sPower provided a Fiscal and Economic Impact Analysis
 - Based on value of \$552.5M (at build out) & at current tax rate:
 - Year 1 = ~\$715K
 - Year 10 = ~\$604K
 - Year 20 = ~\$262K
 - Year 24 on = ~\$79K

Plan and Code Analysis

- Comprehensive Plan
- Special Use Standards of Review

Conditions

Condition Categories:

- General
- Construction
- Erosion and Sediment Control
- Fire, Rescue, and Emergency Management
- Landscaping, Maintenance, Setbacks, and Buffers
- Biological
- Cultural
- Water

Questions?