Habitat Conservation Plan

Double Run Solar Project

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Prepared for

EDF renewables

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Acronyms and Abbreviations

AC	Alternating Current
CFA	Conservation Focus Areas
CFR	Code of Federal Regulations
Conservation Fund	Wildlife Foundation of Florida–Eastern Indigo Snake Conservation Fund
Covered Species	Eastern indigo snake
Double Run	Double Run Solar, LLC
ESA	Endangered Species Act
FR	Federal Register
GADNR	Georgia Department of Natural Resources
GPC	Georgia Power Company
HCP	Habitat Conservation Plan
IRP	Integrated Resource Plan
ITP	Incidental Take Permit
NRCS	Natural Resources Conservation Service
O&M	Operations and Maintenance
Project	Double Run Solar Project
USFWS	U.S. Fish and Wildlife Service

1.0 INTRODUCTION

Double Run Solar, LLC (Double Run or the Applicant) is developing a commercial photovoltaic (PV) solar energy project, the Double Run Solar Project (the "Project"), located in Turner County, Georgia. The Project will include the construction and operation of a 220-megawatt alternating current (AC) solar facility and associated infrastructure on approximately 2,037 acres. The Project is within the range of the eastern indigo snake (*Drymarchon couperi*), a species listed under the Endangered Species Act (ESA). Due to suitable habitat and connectivity of the Project area to known eastern indigo snake occurrences, the Project site is likely occupied by the species and proposed Project activities are likely to incidentally take the eastern indigo snake (the Covered Species). As a result, Double Run has prepared this Habitat Conservation Plan (HCP) to describe how the Project will avoid, minimize, and mitigate impacts to the federally listed species in support of an application for an Incidental Take Permit (ITP) under Section 10(a) of the ESA (Section 10(a)(1)(B)). This HCP was developed in coordination with the U.S. Fish and Wildlife Service (USFWS). The HCP is an agreement between Double Run and the USFWS authorizing the take of covered species during covered activities for the term of the ITP.

1.1 Purpose and Need

Georgia Power Company (GPC) produces or obtains electricity from a diverse portfolio of energy sources, including solar, hydroelectric, wind, biomass, fossil fuel, and nuclear. In July of 2022, GPC completed an Integrated Resource Plan (IRP), which identified the various resources that GPC intends to use to meet the energy needs of Georgia through 2041 (Docket No. 44160). To address a pressing need for capacity and GPC's obligation to ensure the reliability of the electric system on behalf of its customers, GPC filed a 2023 IRP Update in October 2023, which includes expansion of renewable energy resources (Docket No. 55378). Double Run hopes to enter into a Power Purchase Agreement with GPC under the current CARES 2023 Utility Scale Request for Proposal for Renewable Generation to purchase electric power generated by the proposed Double Run Solar Project. The purpose of the Project is to provide renewable energy to the local power grid, which will contribute to the development of a more diverse and sustainable power system, as described in the current IRP and Request for Proposal.

In doing so, Double Run will not intentionally harm threatened or endangered wildlife; however, since suitable habitat (sheltering, nesting, and breeding) is occupied by eastern indigo snakes within the planned disturbance area for the Project, there is the potential for eastern indigo snakes to be incidentally taken during Project activities. Double Run is seeking incidental take coverage by applying for an ITP under the Endangered Species Act. Double Run has prepared this HCP to demonstrate how they will meet the five issuing requirements for an ITP (50 Code of Federal Regulations [CFR] Part 17):

1. The taking will be incidental.
2. The Applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking.
3. The Applicant will ensure that adequate funding for the HCP will be provided.
4. The taking will not appreciably reduce the likelihood of the survival and recovery of the Covered Species in the wild.

5. Other measures, if any, required under subparagraph (A)(iv) of the ESA will be met.

1.2 Permit Description

1.2.1 Duration

Double Run is seeking an ITP with a duration of 10 years to allow for construction of the solar facility as well as operation and maintenance for a duration of time suitable to measure effects on the Covered Species (defined in Section 1.2.3).

1.2.2 Permit Area

The Permit Area includes all areas where Covered Activities (defined in Section 2.1) will occur, incidental take will be authorized, and the HCP will be implemented. The Permit Area encompasses 2,133 acres (2,037-acre solar facility and 96-acre relocation areas). The solar facility will be covered under the ITP for the duration of the 10-year permit, but Double Run will not retain site control of the 96-acre relocation areas once the project is operational. Once construction is complete and the solar facility is operational, the silt fence surrounding the relocation areas will be removed and tortoises will be allowed to repopulate the surrounding area. Activities related to this HCP occurring outside of the Permit Area include the commitment of funds to the Wildlife Foundation of Florida–Eastern Indigo Snake Conservation Fund (Conservation Fund). Funds deposited by Double Run will be applied outside of the Permit Area at the discretion of the USFWS and the Conservation Fund's management board. Therefore, the areas where the funds will be applied do not need to be included in the Permit Area. All incidental take and Covered Activities will occur within the Permit Area (Figure 1), which encompasses all Project infrastructure.

1.2.3 Covered Species

Covered species are those species for which Double Run is requesting incidental take authorization. The Permit Area provides habitat for a variety of species, including species listed under state and federal endangered species protection laws. Covered species were selected for the HCP based on review of all species of conservation concern known or suspected to occur in the Permit Area during the permit term (Appendix A). These species were then screened for coverage based on the three selection criteria described in Section 1.2.3.1, *Covered Species Evaluation*. The criteria were applied to each species of conservation concern with potential to occur in the Permit Area.

1.2.3.1 Covered Species Evaluation

Several species of conservation concern were evaluated for coverage using the following criteria. To be covered, species must meet all three criteria. See Appendix A for a full list of species considered for coverage and information regarding each of the evaluation criteria.

Status. The species falls into one of the following categories: 1) listed under the ESA as threatened or endangered, or proposed for listing; or 2) has a high likelihood of becoming listed under the ESA within the proposed 10-year permit term. The potential for listing during the proposed 10-year permit term is based on current listing status, listing petitions, consultation with species experts and USFWS staff, evaluation of species population trends and threats, and best professional judgment.

Range. The species is known to occur or is expected to occur within the Permit Area based on a review of species locality and range data, a review of literature, and input from species experts. Consideration

was also given for species not currently known in the Permit Area that could occur there later in the Permit Term, through range expansion or introduction to suitable habitat created at mitigation sites.

Impact. The species is likely to be impacted by Covered Activities at a level that take is reasonably certain to occur.

The only Covered Species included in this HCP is the eastern indigo snake, which is listed as threatened under the ESA as of the date of this HCP. Take of eastern indigo snakes is likely to occur during gopher tortoise (*Gopherus polyphemus*) relocation activities, vegetation clearing, construction of infrastructure, vegetation management, and vehicle traffic on access roads during construction and operations (see Section 2.1 for more details). As of the date of this HCP, there is no critical habitat designated for the eastern indigo snake; therefore, there is no federally designated critical habitat within the Permit Area (USFWS 2024a).

2.0 PROJECT DESCRIPTION

The Project is a proposed 220-megawatt AC ground-mounted photovoltaic solar facility in Turner County, Georgia, approximately 140 miles southeast of Atlanta, Georgia (Figure 1). Project construction is proposed to begin in March of 2026 and reach commercial operations no later than November of 2027. The Project would consist of solar photovoltaic panels on a single-axis tracker or single-axis terrain-following tracker, direct current (DC) and AC inverters, transformers, combiner boxes and/or DC disconnect switches, switchgear, internal site access roads, and other ancillary infrastructure occupying approximately 2,037 acres. The Project would tie into GPC's planned 230 kilovolt Red Pebble Substation via a 0.1-mile gen-tie. For clarity, the substation is being constructed by another entity and is not a covered activity in this HCP. The substation will be located within the Permit Area but outside of the solar array fence line and the Area of Impact (defined in Section 3.4.2).

The Project's life span is expected to be 30 to 40 years; at the end of the Project life, the Project will either be recommissioned or decommissioned. Decommissioning would involve the removal of all Project structures, facilities, and access roads; the site would be restored with native vegetation.

Prior to construction, gopher tortoise burrows (eastern indigo snake refugia) within the Permit Area (i.e., Permit Area; Section 1.2.2) will be scoped, excavated, and backfilled (see Sections 5.2 and 5.4). Temporary and permanent vegetation clearing will occur as needed for Project infrastructure. During Project operations, the access roads and drives will be used to inspect and service the facility as needed. Vegetation under and around the panels will be maintained via mowing and weed eating. More extensive repairs, such as panel replacement, may include additional ground disturbance as needed.

2.1 Covered Activities

"Covered Activities" are activities within the Permit Area that are likely to have direct or indirect effects on eastern indigo snakes. The Permit Area encompasses 2,133 acres (2,037 acres solar facility and 96 acres of gopher tortoise relocation areas).

2.1.1 Construction of Solar Project

Construction will involve the grading of permanent and temporary access roads, temporary laydown yards, inverter locations, and the substation pad. Concrete foundations will be poured for the

substation, switching station, and control room. Installation of the panel arrays will include I-beam foundations with a racking system on top of I-beam/tubular steel foundations. Access road, driveways, and parking areas will be surfaced with gravel. Perimeter fencing will be installed. Underground collection lines to transport electricity from the solar panels to the substation will be installed via trenching. Upon completion of construction, temporary features will be removed and revegetated with a native grass seed mix. The areas underneath the solar panels will also be revegetated after construction. If needed, topsoil will be consolidated and redistributed, thus preserving the seedbank.

2.1.2 Relocation of Gopher Tortoises

The gopher tortoise is considered threatened by GADNR and is considered a keystone species. Its burrows provide shelter for numerous commensal species, including eastern indigo snake. The gopher tortoise is generally associated with well drained soils and its preferred habitat includes longleaf pine (*Pinus palustrus*) forests and sandhills habitats. The tortoise can also occur in scrublands, pine flatwoods, dry prairie, coastal grasslands and dunes, mixed hardwood-pine communities, and even disturbed habitats. A 100 percent gopher tortoise burrow survey was previously completed throughout the Permit Area in 2021, where approximately 400 gopher tortoise burrows were observed. Within 90 days of the start of construction, an additional 100 percent tortoise survey will be completed to update burrows numbers and locations.

Because the tortoise is threatened in the state of Georgia, gopher tortoise burrows within the Permit Area (i.e., Permit Area; Section 1.2.2) will be scoped, excavated, and backfilled (see Sections 5.2 and 5.4) prior to construction in coordination with the GADNR. Any gopher tortoises discovered will be relocated to the previously identified gopher tortoise relocation areas (Figure 1). GADNR guidelines allow for tortoises to be relocated and temporarily penned when the low temperatures are forecasted to be above 50˚ Fahrenheit for three consecutive days (72 hours) after release, including the day of relocation. This three-day window of milder overnight temperatures is required to allow the relocated tortoises to settle into the recipient site and to reduce the chance of cold-related stress or mortality.

Since this activity will be occurring in gopher tortoise burrows and the burrows are upland refugia for eastern indigo snakes, there is a chance that surveyors may encounter eastern indigo snakes during this activity. In the case an eastern indigo snake is encountered during tortoise relocation activities, all activities will be stopped, and the snake will be allowed a clear path out of the Project area in accordance with the USWFS Standard Protection Measures.

2.1.3 Operation of Solar Project

During Project operations, the access roads and driveways will be used to inspect and service the facility as needed. Vegetation under and around the panels will be maintained via mowing and weed-eating. More extensive repairs, such as panel replacement, may include additional ground disturbance as needed.

3.0 ENVIRONMENTAL SETTING AND BIOLOGICAL RESOURCES

3.1 Land Use and Topography

The Permit Area is located within Turner County, Georgia, and approximately 2 miles northwest of the city of Rebecca, Georgia. Multiple county roads, highways, and residential roadways cross the Permit

Area, including North Railroad Street, Georgia State Route 159, Williford Road (County Road 74), and Williford Freeman Road (County Road 76). Additionally, a railroad runs along the northeastern Project boundary. Land use within the Permit Area consists of agriculture/old fields and managed loblolly pine (*Pinus taeda*) stands.

The Permit Area is located within the Tifton Uplands Level IV Ecoregion, which is described as rolling, hilly topography with a mosaic of agriculture, pasture, and some mixed pine/hardwood forests with well-drained, loamy soils (Griffith et al. 2001; Figure 2). Review of the U.S. Geological Survey topographic map identified elevations within the Permit Area to range from approximately 350 feet above mean sea level to approximately 400 feet above mean sea level (Figure 3). The Permit Area is drained by three streams: Double Run Creek, Kings Branch (a named tributary of Double Run Creek) and Wolf Creek (a named tributary of Deep Creek). Double Run Creek and Deep Creek flow southeast until they join the Alapaha River east of the project site. The 100-year floodplain lies along the northeast boundary of the site; a portion of the eastern relocation area is within the 100-year floodplain.

3.2 Soils

According to the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS), the dominant soil types within the Permit Area are Tifton Loamy Sands (2 to 5 percent and 5 to 8 percent slopes), Alapaha Loamy Sand (0 to 2 percent slopes, occasionally flooded), and Dothan Loamy Sand (2 to 5 percent slopes) (NRCS 2024). There are 12 additional soil types within the Permit Area, all of which have sand, loamy, sand, or sandy loam textures, which generally provide suitable habitat for the gopher tortoise.

3.3 Vegetation

Upland terrestrial habitat within the Permit Area consisted of ten habitat types: scrub, disturbed scrub, hardwood-pine savanna, a mature loblolly stand, young loblolly stands, mesic mixed pine-hardwood forest, old fields, pine flatwoods, recently timbered/early successional, and ruderal areas (Figure 4). These habitats types were mapped in the field. Gopher tortoise burrows were observed in each habitat type within the Permit Area; scrub and disturbed scrub were the most common habitats for burrows (274 burrows, or approximately 90 percent; Figure 5). Only two burrows were found in the old field habitat, which is primarily agricultural land, and only two were found in the built upon/ruderal type. These habitats are not considered to be primary habitat for the eastern indigo snake. A summary of habitat types, including those that are suitable for eastern indigo snake are shown in Table 1.

Table 1. Vegetation Types and Eastern Indigo Snake Habitat Field Mapped in the Permit Area.

Vegetation Type	Acres	Percentage	Suitable for Eastern Indigo Snake (Y/N)	Acres of Eastern Indigo Snake Habitat
Scrub	692.6	33	Y	692.6
Disturbed Scrub	186.7	9	Y	186.7
Hardwood-Pine Savanna	79.3	4	Y	79.3
Mature Loblolly Pine	6.9	<1	Y	6.9
Young Loblolly Pine	63.5	3	Y	63.5
Mesic Pine-Hardwood Forest	14.8	<1	Y	14.8

Old Field	806.6	38	N	0.0
Pine Flatwoods	2.6	<1	Y	2.6
Recently Timbered/Early Successional	6.3	<1	Y	6.3
Ruderal/Built Upon	25.7	1	N	0.0
Aquatic Habitat	247.5	12	Y	247.5 (summer habitat only)
Total	**2,132.5**			**1,300.2**

3.3.1 Scrub

Approximately 692.6 acres of scrub habitat occur throughout the Permit Area. The tree canopy layer included water oak (*Quercus nigra*), turkey oak (*Q. laevis*), and bluejack oak (*Q. incana*). The sapling/shrub layer included turkey oak, longleaf pine, and loblolly pine saplings, winged sumac (*Rhus copallinum*), and dwarf huckleberry (*Gaylussacia dumosa*). Vegetation in the herb layer included yucca (*Yucca filamentosa*), dog fennel (*Eupatorium capillifolium*), slender goldentop (*Euthamia caroliniana*), blackberry (*Rubus* spp.), broomsedge bluestem (*Andropogon virginicus*), splitbeard bluestem (*Andropogon ternarius*), wiregrass (*Aristida beyrichiana*), goldenrod (*Solidago* spp.), and asters *(Symphyotrichum* spp.). Dominant vegetation within the scrub habitat included turkey oak saplings, slender goldentop, broomsedge blue stem, and wiregrass.

3.3.2 Disturbed Scrub

Approximately 186.7 acres of disturbed scrub habitat occur throughout the Permit Area. Areas of disturbed scrub had a similar vegetative community as scrub habitat but appeared to have been more recently disturbed and were more densely vegetated with less sandy soil exposed. The disturbed scrub consisted predominantly of early successional herbs, such as dog fennel and slender goldentop, and had greater percent coverage of gallberry (*Ilex glabra*) and blackberry; wiregrass was a minor component or absent altogether, and there were no trees or overhead canopy. Observed herbs included wiregrass, slender goldentop, splitbeard bluestem, goldenrod, blackberry, broomsedge bluestem, little bluestem (*Schizachyrium scoparium*), yucca, dog fennel, eastern silver aster (*Symphyotrichum concolor*), Johnson grass (*Sorghum halepense*), beach false foxglove (*Agalinis fasciculata*), and Vasey grass (*Paspalum urvillei*).

3.3.3 Hardwood-Pine Savanna

Approximately 79.3 acres of hardwood-pine savanna occur in pockets throughout the Permit Area. Areas of hardwood-pine savanna were dominated by mature loblolly and water oak, groundsel tree (*Baccharis halimifolia*), and broomsedge bluestem. These areas typically consisted of dry, sandy soils. Additional mature trees included sweetgum (*Liquidambar styraciflua*) and southern red oak (*Q. falcata*). The sapling and shrub layers were comprised of groundsel tree, water oak, post oak (*Q. stellata*), sand live oak (*Q. geminata*), sweetgum, gallberry, and sweetbay magnolia (*Magnolia virginiana*). The herb layer of the hardwood-pine savanna habitat included dog fennel, bracken fern (*Pteridium aquilinum*), camphorweed (*Heterotheca subaxillaris*), deerberry (*Vaccinium stamineum*), slender goldentop, and broomsedge bluestem.

3.3.4 Mature Loblolly Pine

One 6.9-acre stand of mature loblolly pine is located within the southeastern portion of the Permit Area. Mature loblolly pine accounted for approximately 50 percent of the canopy cover. The sapling and shrub layers were dominated by loblolly saplings and also included willow oak (*Q. phellos*) and sweetgum saplings, wax myrtle (*Myrica cerifera*), and groundsel tree. Vegetation in the herb layer included broomsedge bluestem, slender goldentop, blackberry, splitbeard bluestem, thistle (*Cirsium* spp.), dog fennel, St. John's wort (*Hypericum* spp.), yucca, goldenrod, and camphorweed.

3.3.5 Young Loblolly Pine

Approximately 63.5 acres of young loblolly pine stands occur throughout the Permit Area. Dominant species include loblolly pine, groundsel tree, broomsedge bluestem, dog fennel, and slender goldentop. Additional herb species within the young loblolly pine stands include goldenrod, Vasey grass, swamp witchgrass (*Dichanthelium scabriusculum*), and wiregrass.

3.3.6 Mesic Pine-Hardwood Forest

Approximately 14.8 acres of mesic pine-hardwood forest occur in pockets throughout the Permit Area. Areas of mesic pine-hardwood forest were dominated by mature water oak and slash pine (*Pinus elliottii*), gallberry, and broomsedge bluestem. Additional mature trees included turkey oak, laurel oak (*Q. laurifolia*), and loblolly pine. The sapling and shrub layers were composed of southern red oak, water oak, laurel oak, willow oak, bluejack oak, *Gaylussacia* spp., and wax myrtle. Vegetation in the herb layer included wiregrass, bracken fern, slender goldentop, yucca, and dog fennel.

3.3.7 Old Field

Approximately 806.6 acres of old fields occurred throughout the Permit Area. These old fields were fallow or recently harvested agricultural fields with dry, sandy soils that were dominated by early successional, weedy vegetation and lacked mature trees, shrubs, and saplings. This habitat was typically dominated by dog fennel and slender goldentop. Additional herbaceous species observed in the old fields include goldenrod, panic grass (*Panicum* spp.), bushy bluestem (*Andropogon glomeratus*), camphorweed, broomsedge bluestem, groundsel tree, Vasey grass, and slender goldentop. Hog activity (rooting) was observed in many of the old fields.

3.3.8 Pine Flatwoods

An approximately 2.6-acre pine flatwood was observed within the central-western portion of the Permit Area. The vegetative community of the pine flatwood area included mature and sapling longleaf pines, wax myrtle, sweetbay magnolia, gallberry, ten-angled pipewort (*Eriocaulon decangulare*), yellow-eyed-grass (*Xyris* spp.), *Rhexia* spp., *Liatris* spp., southern waxy sedge (*Carex glaucescens*), hairy umbrella sedge (*Fuirena squarrosa*), and wand goldenrod (*Solidago virgata*).

3.3.9 Recently Timbered/Early Successional

Approximately 6.3 acres of recently timbered/early successional areas occur within the eastern and southern portions of the Permit Area. These areas appeared to have been timbered within the last 3-5 years and were dominated by loblolly pine resprouts and early successional weedy vegetation.

Additional saplings and shrubs observed included gallberry, sweetbay magnolia, groundsel tree, and laurel oak. Vegetation in the herb layer included blackberry, plumegrass (*Erianthus* spp.), dog fennel, broomsedge bluestem, muscadine vine (*Vitis rotundifolia*), yucca, bracken fern, Vasey grass, slender goldentop, swamp witchgrass, and sparse amounts of wiregrass. The dominant species were loblolly pine saplings, dog fennel, broomsedge bluestem, and slender goldentop.

3.3.10 Ruderal/Built Upon

Approximately 25.7 acres of recently timbered/early successional areas occur within the Permit Area. These areas typically consist of home sites, barns, and other agricultural buildings, or areas abutting roads with little to no vegetation.

3.3.11 Aquatic Habitat

Approximately 184.7 acres of forested wetland and 52.8 acres of emergent wetland were delineated within the Permit Area in June of 2019, January of 2021, and March of 2022. Areas of forested wetlands exhibit similar vegetative composition to early successional and young pine stand habitats, but with additional wetland-associated species. Six open water features (ponds; totaling approximately 10 acres) are present within the Permit Area. Vegetation typically observed along the margins of the ponds included black willow (*Salix nigra*) saplings, goldenrod, common rush (*Juncus effusus*), woolgrass, camphorweed, Vasey grass, blackberry, bushy bluestem, and St. Andrew's cross (*Hypericum hypericoides*).

3.4 Eastern Indigo Snake Habitat

The eastern indigo snake occupies a variety of terrestrial habitats throughout Florida and Georgia, with a preference for uplands; however, they will also inhabit wetlands and agricultural areas for foraging (USFWS 2019a; GADNR 2018). Eastern indigo snakes move seasonally between upland and lowland habitats, and will often use other animal burrows, stumps, roots, and debris piles as shelter. In the northern portion of their range (north Florida and Georgia), eastern indigo snakes rely on gopher tortoise burrows in xeric sandhill habitats for shelter during winter and winter breeding. Breeding occurs from October through February where eggs are often placed in the entrances and within side chambers of gopher tortoise burrows. Table 1 provides a summary of eastern indigo snake habitat within the Permit Area.

3.4.1 Eastern Indigo Snake Population in Southeast Georgia

Eastern indigo snake populations are divided into four representative regions: the Panhandle, North Florida, Peninsular Florida, and Southeast Georgia. The Southeast Georgia region originally included 41 southeastern and south-central counties; the current range is bounded by Interstate 16 to the north, Interstate 75 to the west, and Interstate 95 to the east (but extends to Camden County) (USFWS 2019a). Eastern indigo snake records for the State of Georgia from 2001-2012 included 379 records from 29 counties (Enge et al. 2013). Undeveloped sand ridges of coarse white sands lying along the northeastern sides of blackwater streams in the Atlantic Coastal Plain are prime eastern indigo snake habitat (Stevenson et al. 2008). In Georgia, eastern indigo snakes have been documented to have den site fidelity, returning to the same sandhills and sometimes the same burrows over multiple winters. Strongholds with numerous recent records include the Alapaha, Altamaha, and Ogeechee River basins.

Home range area and overlap is influenced by population size and available resources. Winter home ranges for wild populations of eastern indigo snake tend to be less than 25 acres and most similar in size for males and females, whereas home range size between spring and autumn can be up to 3,700 acres and is notably influenced by sex (USFWS 2019a). Hyslop et al. (2014) found that annual indigo snake home ranges (across all seasons) in eastern Georgia averaged between 340-378 hectares (840-934 acres), with female home ranges between 33-354 hectares (82-875 acres) and male home ranges between 140-1,528 hectares (346-3,776 acres). In the same study, Hyslop et al. (2014) estimated each individual's home range overlapped with at least six other home ranges. Recent studies have also shown that habitat patch connectivity is an important predictor for the ability of an area to support indigo snake populations. Estimated patch sizes for viable populations ranged from 4,000 to 14,000 hectares (10,000 to 35,000 acres) (USFWS 2019a). Patch size requirement estimates from central Florida have shown that areas less than 1,012 hectares (2,500 acres) are too small to support even two eastern indigo snakes (Bauder et al. 2018). Home range size estimates from Hyslop et al. 2014 for the Southeast Georgia representative region occurred at Fort Stewart, a military base with adjacent private lands and a high proportion of contiguous forested habitat. Indigo snakes in the same study had the largest reported home range size across all representative regions, which is likely due to the habitat connectivity associated with the Fort Stewart study site.

3.4.2 Eastern Indigo Snake Population within the Permit Area

No eastern indigo snakes were observed during field surveys conducted to map habitat types or detect gopher tortoise; however, pine flatwoods, recently timbered/early successional areas, and disturbed scrub and scrub areas with longleaf pines and loose, sandy soils occur throughout the site that could provide suitable habitat conditions. Multiple mammal burrows, gopher tortoise burrows, and debris piles that could provide shelter were also observed throughout the Permit Area. Results of the on-site protected species habitat assessment, conducted during November 2023, determined approximately 885.6 acres of the Permit Area consisted of recently timbered/early successional areas, disturbed scrub, and scrub areas with longleaf pines and loose, sandy soils that could provide suitable habitat for the species. A 100 percent gopher tortoise burrow survey was previously completed throughout the Permit Area in 2021, where approximately 400 gopher tortoise burrows were observed (Tetra Tech 2021). Some of these gopher tortoise burrows were observed again during the habitat assessment (Tetra Tech 2024). Although the gopher tortoise burrows may provide suitable shelter, the presence of burrows do not necessarily indicate suitable habitat for eastern indigo snake.

The Permit Area is approximately 5.75 miles northwest of the Alapaha Sandhills Conservation Focus Area (Figure 6), an area that, if protected and managed for eastern indigo snakes, could improve the status of the species (USFWS 2019a, 2019b; USFWS pers. comm., spatial data 2024). The Alapaha Sandhills include vast areas of xeric sand ridge habitats, some of which are intact and in good condition with large numbers of gopher tortoises, adjacent to the Alapaha River. In a recent study by Bauder et al. (2022), habitat suitability was mapped using simulated snake movement based on population units from the 2019 USFWS species status assessment. The results from this study mapped approximately 85 percent of the Permit Area in one of these "Bauder" conservation units for the eastern indigo snake (H. Chandler, pers. comm., spatial data 2024; Figure 6). The GADNR provided occurrence records for the eastern indigo snake (GADNR pers. comm., spatial data 2024). Nine sightings were recorded within Ben Hill, Irwin, Tift, Turner, and Wilcox counties; eight of the nine sightings are considered recent (2005 or

later). The nearest sighting was recorded in 2021, approximately 8.7 miles southeast of the Permit Area (Figure 6).

Approximately 768.8 acres of xeric sandhill habitat (i.e., scrub-shrub grassland and pine forest with gopher tortoise burrows; Section 3.3) serves as winter (upland) habitat for the Covered Species will be disturbed (i.e., cleared, grubbed, and burrows backfilled) (Table 2). This area is referred to hereafter as the Area of Impact (Figure 7).

Table 2. Eastern Indigo Snake Habitat within Area of Impact

Vegetation Type	Total Acres in Permit Area	Acres of Eastern Indigo Snake Habitat within Permit Area	Acres of Eastern Indigo Snake Habitat within Area of Impact
Scrub	692.6	692.6	573.1
Disturbed Scrub	186.7	186.7	136.2
Hardwood-Pine Savanna	79.3	79.3	8.4
Mature Loblolly Pine	6.9	6.9	4.7
Young Loblolly Pine	63.5	63.5	38.5
Mesic Pine-Hardwood Forest	14.8	14.8	5.9
Old Field	806.6	0.0	0.0
Pine Flatwoods	2.6	2.6	2.0
Recently Timbered/Early Successional	6.3	6.3	0.0
Ruderal/Built Upon	25.7	0.0	0.0
Aquatic Habitat	247.5	247.5 (summer habitat only)	0.0
Total	**2,132.5**	**1,300.2**	**768.8**

4.0 TAKE ASSESSMENT

This section evaluates the potential biological impacts on the Covered Species as a result of the Covered Activities, including construction, operations, and maintenance. Double Run is requesting an ITP for the take of three eastern indigo snakes and two clutches of eggs over a period of 10 years. A duration of 10 years would include construction of the solar facility as well as ongoing operation and maintenance activities and provide a duration of time suitable for measuring effects from Project development on the Covered Species. An evaluation of potential effects assumes the implementation of the avoidance and minimization measures as described in Section 5.2.

4.1 Effect Mechanisms

This section describes how the Covered Activities could result in mortality or harm of eastern indigo snakes during the various Project phases.

4.1.1 Construction of the Solar Project

Incidental take of eastern indigo snakes or their eggs may occur during the excavation and backfilling of gopher tortoise burrows within the solar facility. Incidental take of eastern indigo snakes, either in the form of snake mortality or when snakes are disturbed by construction equipment or vehicles, may result from vegetation clearing and ground disturbance activities associated with infrastructure construction. Stress to the snake may be caused by habitat loss and/or modification/fragmentation, physical displacement, or noise pollution, as documented by Bogan et al. (2024).

4.1.2 Relocation of Gopher Tortoises

Incidental take in the form of harm of eastern indigo snakes or their eggs may occur during the habitat enhancement of the gopher tortoise relocation areas. Habitat enhancement will include clearing scrub and installing tortoise fencing in the two relocation areas.

4.1.3 Operation of the Solar Project

Incidental take of eastern indigo snakes may occur in the form of snake mortality or when snakes are disturbed by vehicle traffic or vegetation management during Project operations and maintenance. Because the indigo snake is long-lived and an upper-level predator, it may be susceptible to direct or indirect effects of pesticides, including bioaccumulation from prey (Bogan et al. 2024), however the use of pesticides during operations will be targeted for use around the substation and O&M building.

4.2 Take Estimate Rationale

Accurately tracking and estimating indigo snake populations has proven difficult due to low densities and the cryptic nature of the species, and as a result, robust population estimates for all regions are not available (USFWS 2019a). Due to the lack of established risk models or population densities for the species in the region, Double Run, in coordination with the USFWS, has agreed to use habitat as a surrogate when determining the number of eastern indigo snakes that may be taken either directly or indirectly by the Covered Activities and to develop the compensatory mitigation contribution amount to the Conservation Fund for the species (see Section 5.4).

The best available information on home range size in Georgia was used to calculate the number of indigo snakes that may be using suitable habitat within the Area of Impact. The Hyslop et al. (2014) study occurred in the Southeast Georgia representative region, which is where most current eastern indigo snake records occur. Populations within the Southeast Georgia representative region, specifically the Fort Stewart study site, are also considered highly resilient based on existing population factors (i.e., extent and connectivity) and habitat factors (i.e., fragmentation, road density, habitat type). To be conservative in the take estimate, the average reported by Hyslop et al. (2014) for indigo snake home range (i.e., 340 hectares [840 acres]) was used for estimating use in the Area of Impact. Given the Project location, Double Run (in consultation with USFWS; USFWS pers. comm., July 2024) expects densities to be on the low end (relative to snakes tracked in the Hyslop study) because the site is on the northern edge of the species' range, there are fewer records from this region, and although no species-specific surveys have been done, no evidence of the snake on the Project site has been observed to-date. An overlap of three home ranges was used to estimate density within the Area of Impact.

4.3 Take Estimate Calculation

Project construction is expected to clear approximately 768.8 acres of occupied habitat (Section 3.4.2, Table 2, Figure 7). Assuming indigo snakes in the Project region have home ranges of 340 hectares (840 acres) and each home range overlaps with three other home ranges, then there are an estimated 0.004 eastern indigo snakes per acre of suitable habitat. Therefore, if annual home range size and overlap is used to determine the density estimate, approximately three eastern indigo snakes have the potential to inhabit the Area of Impact. The moderate habitat quality at this site (assessed in Section 5.5) also likely supports a lower density of snakes.

Gopher tortoise burrows within the Area of Impact will be scoped, excavated, and backfilled prior to Project land-clearing activities as part of conservation measures to avoid take of eastern indigo snake (Section 5.2.2). This activity will take place within the Area of Impact within 90 days of the start of construction per GADNR gopher tortoise relocation guidelines. During this period of ground disturbance and heavy equipment activity, there is the highest potential for take to occur. The potential for take to occur during operations is lower, but since the area under the panels and between the panels and the fence will be revegetated and EIS will be able to pass through the site, there remains some potential for encounters. The type of take that could occur during operations would be limited to vehicle strikes or harm to snakes in or around equipment or materials.

Some studies have demonstrated individual home range is most influenced by sex (males with larger home ranges) followed by body size (Hyslop et al. 2014). Other studies have documented roughly a 2:1 male to female ratio of snakes within Florida and Georgia (Layne and Steiner 1996; Stevenson et al. 2009). However, because the Area of Impact could support more than one female during the breeding season and timing of gopher tortoise relocation could occur in spring when eastern indigo snake nests are present, we assume as many as 2 of the 3 snakes could be female. If two females occupy the Area of Impact and eastern indigo snakes lay one clutch of eggs per year, there is potential for burrow excavation during construction to impact two eastern indigo snake nests. Project operations are not anticipated to result in the take of nests. Due to the potential for breeding females to inhabit the Area of Impact, Double Run estimates the anticipated take for the duration of the ITP is three adults and two clutches of eggs.

4.4 Alternatives to Take

4.4.1 No-Action Alternative

Under this alternative, Double Run would either not develop the Project at all or would instead locate the Project elsewhere in Georgia, but outside of eastern indigo snake range. The Project location was chosen due to the combination of willing landowners and nearby transmission capacity. If the Project was not developed at all it would not meet the renewable energy goals for the State of Georgia. If the Project was located in a different location, while the impacts on eastern indigo snake may be avoided, it is unknown what other impacts may result, either to listed species or other natural resources. Therefore it is not possible to fully evaluate how an unknown, alternate Project location would compare to the selected location. This alternative was rejected in favor of the proposed alternative.

4.4.2 Agricultural Only Development Project Alternative

During initial planning, Double Run evaluated placing Project infrastructure completely within the agricultural fields (old field habitat type), which would eliminate essentially all impacts to gopher tortoise burrows, therefore reducing or removing the potential for take of the eastern indigo snake to occur. The total acreage available for development would have been approximately 807 acres. Modifying the project to a footprint that would avoid potential eastern indigo snake habitat within the Permit Area would effectively reduce it by 60 percent. This in turn would significantly reduce the amount of power that could be generated by the facility and the facility would no longer meet the contractual terms of the off-taker agreement. The outcome of this scenario would be the same as the no-action alternative.

4.5 Assessment of Effects

4.5.1 Effects of Anticipated Take

Potential effects the Project and HCP could have on Covered Species are evaluated below. The potential for take cannot be avoided if the Project remains at the proposed site because vegetation clearing, vehicle traffic, and the removal of gopher tortoise burrows during construction-related ground disturbing activities cannot be avoided. Effects may be beneficial or detrimental to the Covered Species and may be short-term or long-term. This assessment is based on the anticipated take described in Section 4.1 and incorporates the avoidance and minimization measures described in Section 5.2. Take of eastern indigo snakes in the Area of Impact is not anticipated to exceed three adult or juvenile snakes and up to two clutches of eggs over the 10-year duration of the ITP. Should it become apparent that take will exceed three individuals, an amendment will be sought (Section 6.3.2).

Take of adult or juvenile eastern indigo snakes has the potential to occur via incidental mortality from Project-related vehicles including construction equipment, cars/trucks used by employees, and/or tractors used for mowing vegetation during operations. The potential for take is expected to be more likely during construction (burrow excavation and vehicles) than during operations, as no additional burrow excavation is anticipated outside of the construction period, and there will be less vehicle traffic during operations.

Double Run will implement minimization and avoidance measures throughout the life of the ITP to reduce the potential for take of the Covered Species within the Permit Area. Avoidance and minimization measures will include educating Project staff on the identification of eastern indigo snakes and reporting protocols, as well as specific measures for each phase (i.e., design, construction, operation) of Project development (see Section 5.0); in addition, Double Run will implement the best management practices and training materials for the life of the Project. Double Run will also contribute funds to the Conservation Fund to mitigate unavoidable impacts to the Covered Species (see Section 5.4). Take of up to two clutches of eggs may occur; however, any egg clutches found during burrow excavation will be collected by a USFWS-approved individual and transported to a USFWS- approved conservation/rehabilitation organization as instructed by the USFWS (see Section 5.3), where the eggs can be incubated, and the hatchlings can be released into the wild.

Loss of breeding and wintering habitat will occur during construction and will consist of the excavation of gopher tortoise burrows and clearing of occupied habitat within the Area of Impact. The clearing of approximately 768.8 acres of occupied habitat for Project construction may have indirect effects on the eastern indigo snake. However, the loss of foraging habitat will be temporary because, after construction is complete, the areas under the solar panels will be replanted with a low growth, native grass and forb seed mix and snakes will be free to move through the Project's fences (see Section 5.2.1). Eastern indigo snakes will have access to habitat underneath the panels for foraging. The Project will create approximately 645 acres of new foraging habitat within the fences through the conversion of cropland to native grassland.

The potential effects of the Covered Activities to local populations of eastern indigo snakes are therefore anticipated to be small and short-term, as the conservation program has been designed to minimize the impacts to ensure that throughout construction and the first few years of operations, impacts do not further contribute to the species decline in the Southeast Georgia region.

4.5.2 Effects of No-Action Alternative

If the Project is not built, there would be no take of eastern indigo snakes. However, terminating the Project would be counter to the intent of constructing a renewable energy project; detrimental to Turner County because it would eliminate economic benefit brought by increased tax revenue; and detrimental to participating private landowners because it would eliminate economic benefit brought by landowner payments. In addition, terminating the Project would be counterproductive to the elements of the ESA that allow for economic development while still conserving listed species. The Project is not anticipated to result in jeopardy to listed species or the adverse modification of critical habitat and there are few, if any, other environmental constraints for the Project. If the Project is not built, there is potential for the continued conversion of xeric sandhill habitat (i.e., eastern indigo habitat) to cropland or other development types in the Permit Area and vicinity.

4.5.3 Effects of Agricultural Development Alternative

Developing the Project in the old field habitat was infeasible due to the limited acreage and a related reduction in power output. Though this alterative would reduce take of the Covered Species because only a few gopher tortoise burrows exist in old field habitat areas, the Project would not produce the amount of power needed to reach its goal, and the Project would then be considered non-viable economically. At that point the potential outcomes of the No-Action Alternative described in Section 4.3.2 apply.

5.0 CONSERVATION PROGRAM

The following sections outline the measures Double Run will undertake to avoid, minimize, and mitigate for impacts to the Covered Species to the extent possible.

5.1 Biological Goals and Objectives

Goal: Help sustain the eastern indigo snake populations that occur in Georgia, by contributing to the resiliency (population size and growth), redundancy (multiple populations), and representation (genetic and ecological diversity within and among populations) of the species.

Objective 1: Avoid and minimize impacts on eastern indigo snakes through Project design modifications, on-site training, and monitoring for the duration of the ITP.

Objective 2: Fully offset any impacts to eastern indigo snake that cannot be avoided through a contribution of $403,620.00 to a non-profit entity with a focus on implementing conservation projects that contribute to the recovery of the species prior to the start Covered Activities (See Section 5.6).

5.2 Measures to Avoid and Minimize Impacts of the Take

5.2.1 Design

The following conservation measures will be incorporated into the design of Project infrastructure:

- **DES-1:** The facility will be designed to the extent practicable in accordance with the Georgia Utility Scale Solar Siting Initiative (2024) Recommended Best Practices for the Responsible Siting and Design of Solar Development in Georgia, Version 2.0.
- **DES-2:** Double Run will avoid impacts to eastern indigo snake summer habitat by designing the Project to avoid impacts to wetland habitat.

- **DES-3:** Double Run will utilize perimeter fencing that allows for eastern indigo snake movement throughout the site.
- **DES-4:** Double Run will use a naturalized seed mix as much as practicable in accessible array areas and buffers not utilized for project infrastructure.

5.2.2 Construction

The following conservation measures will be implemented prior to the onset of construction activities:

- **CON-1:** A full-site survey for gopher tortoise and eastern indigo snake will be conducted no more than 90 days prior to the start of construction. These results will be incorporated into a Scientific Collection Permit application which will describe the gopher tortoise relocation plan.
- **CON-2:** Gopher tortoise burrows will be excavated and backfilled prior to vegetation clearing and grubbing. All gopher tortoise burrows will be scoped with a burrow cam prior to excavation to ensure no eastern indigo snakes or clutches of eggs are present. In the event that an eastern indigo snake (live or dead) or a clutch of eggs is observed within the Permit Area during gopher tortoise burrow excavation, all ground disturbance activities will cease within 100 feet of the snake's (or clutch's) location until the USFWS and GADNR field offices have been contacted and further instructions are received (see Section 5.3). All staff will be instructed to avoid bothering or harassing the snake and allow it to leave the area on its own as it chooses. If the live snake vacates the area on its own, work may resume immediately. Any clutches of potential eastern indigo snake eggs will be collected by a USFWS-approved individual to be transported to an approved conservation/rehabilitation organization as instructed by the USFWS. Double Run, the USFWS, and/or the GADNR will communicate immediately upon the discovery and the agencies will develop a strategy to address indigo snakes that don't vacate on their own or clutches of eggs in a timely manner so construction may resume as soon as possible, preferably within 24 hours.
- **CON-3:** Double Run has secured approximately 100 acres of suitable habitat for temporary gopher tortoise relocation areas, aiming to achieve an estimated density of one gopher tortoise per acre; preparation of these relocation areas will include clearing scrub to enhance habitat quality and installing gopher tortoise fencing.
- **CON-4:** The USFWS 2024 Standard Protection Measures (Appendix B) for the eastern indigo snake will be implemented for the life of the Project, including construction personnel training, reporting procedures, and daily equipment inspections.
- **CON-5:** Double Run or its environmental consultant will conduct a meeting with all construction staff to discuss identification of the snake, its protected status, and procedures to follow if an eastern indigo snake is observed (see below). An educational brochure including color photographs of the snake will be given to all construction staff and additional copies will be provided to the construction superintendent to make available in the onsite construction office. The contact information for the USFWS, GADNR, and a Double Run or subcontractor subject matter expert will be provided on the reference posters and brochures.
- **CON-6:** Double Run or its contractors will post educational posters about eastern indigo snakes and their protected status in the Project office. The posters must be clearly visible to all construction staff and will remain at the Project office for the life of the Project.

- **CON-7:** Periodically during construction activities, Double Run or its designated agent shall visit the Project to observe the condition of the environmental information posters, brochures, and HCP and replace them as needed. Construction personnel should be reminded of the instructions (above) as to what is expected if any eastern indigo snakes are observed.
- **CON-8:** In the event that an eastern indigo snake (live or dead) is observed at the Project during construction, all ground disturbance activities will cease within 100 feet of the snake's location until the USFWS and GADNR field offices have been contacted and further instructions are received (see Section 5.3). A live snake in the path of vehicles or on frequently used access roads may be moved away from the road by USFWS staff or by a USFWS-approved individual after the snake has been reported the USFWS and GADNR and instructions have been received. Snakes will only be handled by individuals approved by the USFWS to do so. If the live snake vacates the area on its own, work may resume immediately. Double Run, the USFWS, and/or the GADNR will communicate immediately upon the discovery and the agencies will develop a strategy to address the indigo snake in a timely manner so construction may resume as soon as possible, preferably within 24 hours.
- **CON-9:** Double Run and its engineering, procurement, and construction contractors will clear the land in a methodical and prescribed fashion to allow wildlife to move out of the way of construction.
- **CON-10:** During vegetation clearing activities, an on-site observer trained in eastern indigo snake identification will inspect the equipment to be used for the presence of indigo snakes and review the area to be cleared for habitat suitability and the potential presence of indigo snakes.
- **CON-11:** To minimize the potential for direct mortality of eastern indigo snakes from construction vehicles, a visual survey will occur prior to clearing and grubbing to ensure no snakes are present. Speed limits will be restricted to 20 miles per hour or less, which will allow drivers to stop for eastern indigo snakes, if observed. Additionally, an on-site observer trained in eastern indigo snake identification will be present during other construction activities that could impact eastern indigo snakes, such as clearing debris and burning. Piles of debris should only be lit on fire on one side to allow wildlife to escape away from the fire on the other side.

5.2.3 Operations

The following conservation measures will be implemented for the duration of the ITP, and then continued for the life of the Project:

- **OPS-1:** An operations plan for the gopher tortoise and eastern indigo snake will be created for operations and maintenance (O&M) personnel. The plan will include the USFWS Standard Protection Measures for the eastern indigo snake to be implemented for the life of the Project.
- **OPS-2:** Double Run or its environmental consultant will conduct a meeting with all on-site staff and contractors conducting regular maintenance activities to discuss identification of the eastern indigo snake, its protected status, and what to do if a snake is observed within the Project. These trainings will continue throughout the duration of the ITP as needed when new employees are brought on staff. In addition, applicable penalties that may be imposed if state and/or federal regulations are violated will be discussed. An educational brochure including

color photographs of the snake will be given to all construction and operations staff and additional copies will be available for contractors and visitors to the Project site.

- **OPS-3:** On-site staff and contractors will be informed that in the event that an indigo snake (live or dead) is observed on the Project site, activities near the snake's location will cease until the USFWS and GADNR field offices have been notified and instructions are received (see Section 5.3). The contact information for the USFWS, GADNR, and a Double Run or subcontractor subject matter expert will be provided on the reference posters and brochures. If the live snake vacates the area on its own, work may resume immediately. Double Run, the USFWS, and/or the GADNR will communicate immediately upon the discovery and the agencies will develop a strategy to address the indigo snake in a timely manner so operations may resume as soon as possible, preferably within 24 hours.
- **OPS-4:** Double Run will maintain vegetation throughout the facility. Maintenance staff will be instructed in eastern indigo snake identification (see above) and will be alert for snakes while performing their duties, staff training will be made available, and additional training materials will be provided for the life of the Project.
- **OPS-5:** Double Run will maintain vegetation primarily through mechanical means and, to the extent practicable, will avoid using broad applications of herbicides/pesticides that could potentially harm eastern indigo snakes or their prey.
- **OPS-6:** Double Run and its contractors will implement erosion control measures that avoid wildlife entanglement as much as practicable.

5.3 Monitoring and Reporting

Double Run will undertake compliance monitoring during Covered Activities to identify take, should it occur, and determine if take at the Project has the potential to exceed or is exceeding take limits (see Section 5.5). During construction, a biologist approved by the USFWS and/or GADNR will be present on-site (or on-call) to monitor for snakes and to assist in the event a snake is observed. Eastern indigo snake sightings (dead or alive) will be reported to the USFWS and GADNR immediately during construction, but within 24 hours during operations. A biologist will also be present during burrow excavation to monitor for snakes or egg clutches. Whether or not eastern indigo snakes are observed during burrow excavation or construction activities, a monitoring report will be submitted to the appropriate USFWS Field Office within 60 days of the end of construction.

As described in Section 5.2, construction and operations staff will be trained in the identification of eastern indigo snakes and to report any sightings to the site manager. Observations made by on-site staff will be reported via a Wildlife Incident Reporting Form (Appendix C). The location of the snake will either be marked on a map, or the global positioning system location of the snake will be recorded. A photograph of the snake will be taken from a distance, if possible, without disturbing the snake. The sighting will be reported to the site manager immediately and a pre-identified subject matter expert to confirm the sighting is an eastern indigo snake. The site manager will coordinate with Double Run to contact the USFWS and GADNR and report the sighting immediately during construction and within 24 hours during operations. Whether or not eastern indigo snakes are observed, a yearly monitoring report will be submitted to the appropriate USFWS Field Office within 60 days of the end of the calendar year.

Double Run will implement the Standard Protection Measures for the Eastern Indigo Snake (USFWS 2024b, Appendix B) for the life of the Project. Posters will be designed based on recommendations in USFWS 2021.

Vegetation will be monitored within the fenceline and managed according to the needs of the Project. A summary of the vegetation and management will be included in the annual report and will include a section on the maintenance schedule, activities that occurred (mowing frequency, spraying requirements), and a statement on the overall percent coverage of vegetation.

5.4 Measures to Mitigate Impacts of Take

Double Run, in coordination with the USFWS, has agreed to use a land value cost of $2,100 per acre to determine the amount of monetary compensation needed to fully offset impacts of anticipated take. The conservation strategy proposed by Double Run is represented by a ratio of the number of acres lost, the proximity to Conservation Focus Areas (CFAs; USFWS 2019a), the proximity of documented records, and habitat quality (i.e., quality of nesting or breeding habitat, quality of vegetation) as a result of the Covered Activities for the Covered Species (See Table 3). As a mitigation option, ITP applicants can provide funds through a USFWS-approved conservation fund for the protection of the Covered Species, or they can pursue permanent protection of a USFWS-approved area of suitable habitat for the Covered Species. Even though Double Run is offsetting the impacted habitat, minimization measures also include planting native vegetation within the fence, which ultimately provides additional foraging habitats, which, coupled with mitigation, will ultimately benefit the local population.

5.5 Eastern Indigo Snake Mitigation Ratios

In coordination with USFWS, Double Run used a mitigation ratio rationale that incorporates the Project's location and habitat to determine compensatory mitigation for the Project. Table 3 describes the mitigation ratios used for this HCP. The CFAs and recently identified "Bauder" conservation units are critical for the recovery of the eastern indigo snake, and as a result are the basis for the separate mitigation categories. In addition, the mitigation ratio categories also include records for the eastern indigo snake in proximity to the Project (Figure 6), which are based on the total linear movement of eastern indigo snake in Georgia (USFWS 2019a). These categories incorporate the potential for eastern indigo snake to use habitat within the Project while taking into account the location of the habitat as it relates to eastern indigo snake populations.

The mitigation ratios incorporate nesting, breeding, and sheltering habitat for the eastern indigo snake (i.e., gopher tortoise burrows). The process does not include foraging habitat loss, but it does account for the increased probability of winter use, and breeding within gopher tortoise burrows.

Habitat quality is further defined as:

High Quality:

- Viable gopher tortoise population,
- Intact sandhill habitat with native vegetation,
- Low abundance of invasive species.

Moderate Quality:

- Viable gopher tortoise population (or numerous gopher tortoises and burrows present),

- May lack native vegetation and have invasive species,
- Altered vegetation.

Low Quality:

- Gopher tortoise present but few to sparse, possibly non-viable disjunct population,
- Highly degraded sandhill vegetation.

Table 3. Eastern Indigo Snake Mitigation Ratios

Project Location/Proximity to records and CFAs and Bauder Conservation Areas	High Habitat Quality (good quality nesting or breeding habitat)	Moderate Habitat Quality (fair quality nesting or breeding habitat)	Low Habitat Quality (highly degraded or poor nesting or breeding habitat)
Records within 5 miles of project and within CFA or Bauder Conservation Area	2	1	0.5
Records within 5 miles of project and outside CFA or Bauder Conservation Area	1	0.5	0.25
Records greater than 5 miles but less than 14 miles and within CFA or Bauder Conservation Area	0.5	0.25	0
Records greater than 5 miles but less than 14 miles and outside CFA or Bauder Conservation Area	0.25	0.125	0
	Depends on habitat connectivity and survey efforts		

The Double Run Solar Project is more than 5 miles away from eastern indigo snake records (the nearest record is 8.7 miles away) and is outside of a CFA; however, it is within one of the Bauder et al. (2022) conservation units. Habitat loss caused by the Covered Activities (768.8 acres) primarily consists of scrub and disturbed scrub (e.g., poorly managed vegetation, higher abundances of invasive species, and in many cases a lack of native wiregrass; Figure 5). Based on the table described above, the Project would fall into the Moderate Habitat Quality category. As a result, Double Run is proposing an average ratio of 0.25 to fully offset the total acreage. In addition, the Project will improve 645 acres of agricultural land within the fence by planting native vegetation, which results in an overall foraging benefit for the eastern indigo snake. Together, the acreage offsets plus creation of foraging habitat will fully offset the impacts of the taking and confer a benefit to the species. Cost per acre of eastern indigo snake habitat in Georgia has been valued at approximately $2,100 per acre (GADNR pers. comm.). To offset the impacts of the take of 768.8 acres of occupied winter habitat for the eastern indigo snake, Double Run will contribute $403,620.00 to the Conservation Fund. The Conservation Fund is managed by The Wildlife Foundation of Florida and works to conserve and restore suitable and potential eastern indigo snake habitat through land protection and restoration, research, inventory, and monitoring, and other activities as deemed necessary for the survival or recovery of the eastern indigo snake. Through coordination with USFWS, it has been agreed that $403,620.00 will be sufficient to provide offsets for the eastern indigo snake to compensate for the impacts of the incidental take requested by Double Run.

5.6 Adaptive Management

Adaptive management is a process by which management of resources can be improved based on learning from the monitoring of management outcomes. Typically, monitoring occurs on both

minimization measures and mitigation actions. However, in this instance Double Run is relying on the Conservation Fund to implement mitigation actions using funding provided by Double Run. Double Run will play no role in monitoring of conservation activities implemented by the Conservation Fund. As a result, the adaptive management program for the Double Run Solar HCP is centered around minimization measures and monitoring that will occurring during construction and operations of the Project.

Double Run is requesting an ITP for the take of up to three eastern indigo snakes and two clutches of eggs during the duration of the ITP (10 years). However, to continue to minimize the Project's take limit, Double Run proposes the following adaptive management responses:

1. During construction, if a dead eastern indigo snake is observed on construction roads, Double Run will coordinate with the USFWS to review the circumstances associated with the fatality and determine whether additional management actions may be needed. These actions may include but are not limited to additional training of staff, patrols of Project roads by an approved biologist on a daily or weekly basis, decreasing vehicle speed even further on Project roads, and/or creating exclusion areas with drift fencing.
2. If no eastern indigo snake fatalities are observed during construction and the first snake fatality is observed within the Permit Area during operations, Double Run will coordinate with the USFWS to review the circumstances associated with the fatality and determine whether additional management actions may be needed. These actions may include but are not limited to additional training of staff, patrols of Project roads prior to any on-site work, and/or a review of vegetation management practices. Noxious, invasive, and non-desirable vegetation will be controlled on an as-needed basis through mechanical and limited chemical application.
3. If an eastern indigo snake fatality is observed during construction AND a second snake fatality is observed during operations, Double Run will work with the USFWS to review the circumstances of both fatalities and review the assessment of take for the Project. Sweeping areas planned for maintenance activity to ensure no indigo snakes are present prior to the activity will further reduce the potential for mortality. A survey of the Permit Area for eastern indigo snake activity may be warranted.

6.0 HCP IMPLEMENTATION

6.1 Permit Holder Commitments

Double Run commits to be solely responsible for implementing this HCP and meeting the terms and conditions of the requested ITP. Double Run will allocate sufficient resources and personnel to ensure the HCP and ITP conditions are applied for the duration of the ITP. The Applicant commits to maintain coordination with the USFWS throughout the duration of the ITP, identify issues as they arise, and work with the USFWS on solutions that meet the intent of the HCP and ITP.

6.1.1 HCP Administration

The Applicant, in coordination with the USFWS, will designate a Double Run Subject Matter Expert as the HCP coordinator. This individual will be tasked with implementing all commitments within the HCP, such as maintaining communication with the USFWS, including submission of all reports.

6.1.2 Implementation Schedule

The HCP implementation schedule is outlined in Table 4. Other measures may be implemented using adaptive management as needed (see Section 5.6).

Table 4. Conservation Measures and Implementation Schedule

Conservation Measure	Implementation Schedule
Pre-construction gopher tortoise and eastern indigo snake presence/absence surveys	No more than 90 days prior to the start of construction
Offset mitigation fund allocation	Distributed to the fund via certified check prior to any activities that may result in take (e.g., gopher relocation or ground disturbance)
On-site biological monitors during construction	Duration of construction activities
On-site annual incident reporting	60 days following the end of the calendar year
Post-construction monitoring report	60 days after the close of construction

6.1.3 Cost and Funding

Section 10(a)(2)(B)(iii) identifies adequate funding for the implementation of the HCP for the duration of the ITP as a requirement for permit issuance. This includes implementation of the conservation program (Section 5.0), completion of all monitoring and reporting activities (Section 5.3), implementation of adaptive management (Section 5.6), if necessary, and being responsive to changed circumstances (Section 6.2.1). Double Run agrees to guarantee all funding obligations under the ITP and this HCP. Double Run will fund the HCP and its administration by including the conservation measures in the Project's construction budget or annual O&M budget, as applicable. Upon issuance of the ITP, Double Run will provide a letter from a designated corporate representative that certifies the HCP implementation costs have been included in the Project's construction and O&M budgets. Conservation funds will be provided in a means mutually agreeable to Double Run, the USFWS, and funding recipients.

The amount of financial assurance is based on the estimated HCP implementation costs for the entire permit term of the ITP. This includes anticipated inflation rates, and funding for activities of unknown quantity, such as adaptive management funding and changed circumstances (Table 5). The amount of the financial assurance may be reduced over time commensurate with remaining financial obligations in the HCP by mutual agreement of the parties, provided the terms and conditions of the HCP and ITP are being upheld. Double Run, and any successor in interest, should notify the USFWS if the funding resources identified in this HCP materially change, including a discussion of the nature of the change. An update on funding status will be provided at least annually.

Table 5. Habitat Conservation Plan Implementation Budget

Budget Item	First Year Cost	Average Annual Cost	Total Over ITP Term	Cost Basis and Assumptions
HCP administration	$15,000	$10,000	$105,000	Construction/O&M budget
Pre-construction tortoise burrow removal	$200,000	$0	$200,000	Construction budget
Construction and operations snake training and educational material for staff	$10,000	$1,000	$19,000	Construction/O&M budget
On-site biological monitor during construction	$75,000	-	$75,000	Construction budget
Annual reporting	$8,000	$8,000	$80,000	Construction/O&M budget

Adaptive management	$5,000	$5,000	$50,000	Construction/O&M budget
Conservation funds	$403,620	NA	$403,620	Payment prior to construction activities
Total	**$716,620**		**$932,620**	

6.2 Unforeseen Circumstances

The "No Surprises" assurances define and clarify unforeseen circumstances and changed circumstances (63 Federal Register [FR] 8859-8873). Unforeseen circumstances are changes in the circumstance under which the HCP and ITP were written that affect the HCP and its effective implementation that could not be reasonably anticipated by the Applicant or the USFWS, and that result in substantial and adverse changes to the status of covered species. Changed circumstances are those which can be reasonably anticipated by the Applicant and the USFWS and can be planned for and financially anticipated in the HCP (63 FR 8870).

If unforeseen circumstances arise, the USFWS will not require, without written consent of the permittee, the commitment of additional mitigation in the form of land, water, or funds, nor will they require additional restriction on the use of land, water, or funds from any permittee who is adequately implementing or has implemented the approved HCP (63 FR 8868). If additional avoidance, minimization, or mitigation measures are deemed necessary to address unforeseen circumstances, and the permittee is properly implementing the HCP, the USFWS may require limited modifications to the conservation measure set forth in the HCP. These restrictions only apply to "species adequately covered by the conservation plan" (63 FR 8867).

If the unforeseen circumstances result in a significant negative effect on the Covered Species or could affect the permittee's ability to effectively implement the HCP, Double Run will discuss the unforeseen circumstances with the USFWS. Unless agreed upon by Double Run, any additional mitigation measures must be limited to the obligations in the HCP and will not require the commitment of additional land, water, or funds by the permittee. The USFWS may request alterations or reallocation of existing commitments, as long as these changes do not require additional land, water, or funds and will not impose additional restrictions on the use of land, water, or other natural resources otherwise available for development or use under the original terms of the HCP.

6.3 Changed Circumstances

Changed circumstances are "changes in circumstances affecting a species or geographic area covered by a conservation plan or agreement that can reasonably be anticipated by plan or agreement developers and the USFWS and that can be planned for (e.g., the listing of new species, or a fire or other natural catastrophic event in areas prone to such events) (50 CFR §17.3). Double Run and the USFWS anticipate there are few reasonably foreseeable circumstances that would potentially affect Double Run's ability to implement the HCP or adhere to the terms and conditions of the ITP. However, the following have some potential to occur during the Permit Term.

New Species Listing or Species Uplisting. Should new species, including candidate species or species under review, become listed under the ESA during the Permit Term, Double Run will evaluate whether Covered Activities are likely to cause take and whether a new HCP and ITP or amendments to this HCP and ITP are warranted. The potential for Covered Activities to impact newly listed species will only apply to Covered Activities that have yet to occur. In other words, if the facility has been constructed

and is in the operations phase, only the potential of operations and maintenance activities will be evaluated, not construction activities, which have been completed.

Natural Disaster. Georgia is known to be affected by hurricanes and flooding. If a natural disaster occurs at the location of a mitigation project implemented by the Conservation Fund using Double Run mitigation funding from this HCP, no further action is required from Double Run. These funds will be provided in one lump sum prior to the initiation of construction. Once the funds have been transferred, the Conservation Fund will be responsible for allocating those funds to eastern indigo snake conservation.

6.4 Permit Transfer and Amendments

6.4.1 Transfer

If the Project comes under new ownership, transfer of the ITP to the new owner shall be governed by the regulations at 50 CFR Part 13 and will involve a joint submission of an assumption agreement or a memorandum of understanding by Double Run and the new party to the USFWS field office involved in administering the ITP. The submission will include (1) each party's role and responsibility in funding and administering the HCP and ITP, (2) any outstanding obligations and how they will be completed, and (3) any proposed changes to the HCP and ITP reasonably necessary to accommodate the change in roles and responsibilities. The USFWS may approve the transfer of the ITP in whole or in part to a new party. The new party must meet the certification requirements of 50 CFR 13.25, which includes demonstrating the capacity for implementing the HCP (or the portion for which they are assuming responsibility), the legal ability to implement the HCP, and providing funding assurances (USFWS and NOAA 2016). As currently proposed, Double Run will be the applicant and if a sale or transfer occurs, the ITP and associated HCP will remain intact with Double Run Solar, LLC.

6.4.2 Amendments

Either the permittee or the USFWS may request an amendment to the HCP, ITP, or any implementation-related documents, though both the Permit Holder and USFWS must agree to amend the permit. One party cannot act alone. USFWS will determine the level of review necessary to satisfy statutory and regulatory requirements (e.g., public notice, National Environmental Policy Act review, Section 7 analysis) consistent with its regulations and guidance.

Activities which require a permit amendment and publication in the FR include, but are not limited to (USFWS and NOAA 2016):

- Addition of new species, listed or unlisted.
- Increased level or different form of take for covered species.
- Changes to funding need that affect the ability of the permittee to implement the HCP.
- Changes to covered activities not previously addressed.
- Changes to covered lands.
- Significant changes to the conservation strategy (including mitigation measures).

Permit changes that do not substantively alter the take levels or Project activities may be made in coordination with the USFWS and without a formal amendment request (USFWS and NOAA 2016).

Such administrative changes may include:

- Correcting insignificant mapping errors.
- Slightly modifying avoidance or minimization measures.
- Modifying annual reporting protocols.
- Making changes to funding sources.
- Changing the names or addresses of responsible officials.

6.4.3 Relinquishment

Double Run may choose to relinquish the ITP prior to its expiration by providing 30 days advance written notice to the USFWS as provided by 50 CFR §13.24. The ITP will be canceled only upon the determination of the USFWS that all outstanding monitoring, minimization, and mitigation measures have been implemented.

6.5 Enforcement and Suspension/Revocation

The "No Surprises" assurances remain in effect as long as the permittee implements the ITP and HCP properly. If the USFWS becomes aware of a deficiency in implementation, they will provide written notice to the permittee within 60 days and will work with the permittee to resolve the non-compliance in accordance with USFWS regulations. Deficiencies may include improper implementation of mitigation; take in excess of that authorized which is not being addressed through adaptive management and coordination with the USFWS; or activities not covered by the ITP that cause the take of listed species. The permittee will have the opportunity to address issues of non-compliance prior to the involvement of the USFWS Office of Law Enforcement. All parties involved will make a good faith effort to resolve non-compliance issues quickly and fully.

The criteria for ITP suspension and revocation are found at 50 CFR 13.27. Suspension and revocation is a lengthy process, and decisions are made at the regional office level. The permittee may object or appeal the USFWS's actions during the process, and the USFWS is required to send certain communications related to the process of suspension and revocation to the permittee. The USFWS may seek civil or criminal penalties under the ESA for permit violations. Suspension and revocation should be the last step after every effort has been made to resolve the non-compliance issues (USFWS and NOAA 2016).

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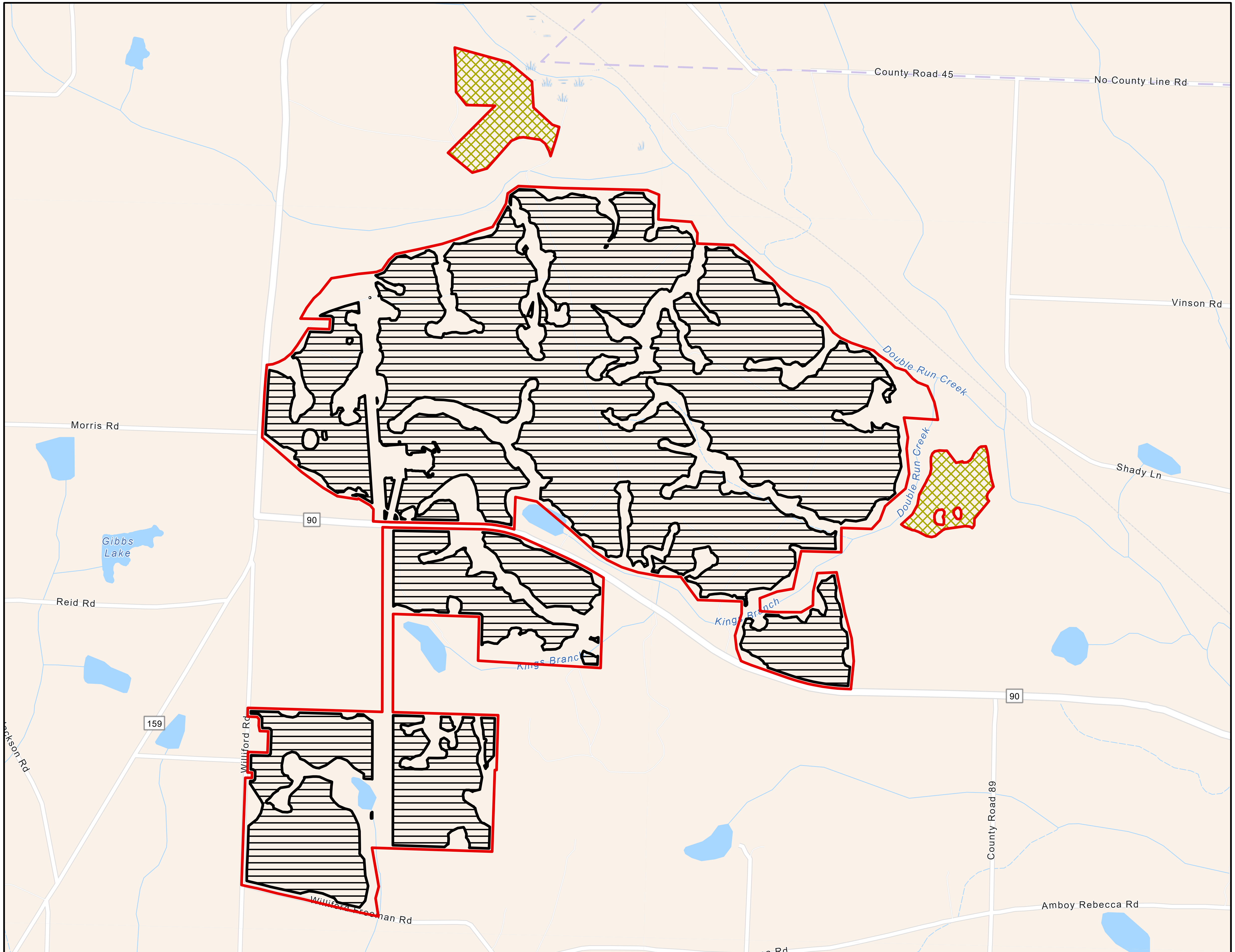
FIGURES



Legend

- Permit Area
- Temporary Relocation Area
- Solar Array Fenceline

N

0 500 1,000 2,000 Feet

Figure 1
Permit Area
Double Run Solar Project
Turner County, Georgia

Prepared For: EDF renewables

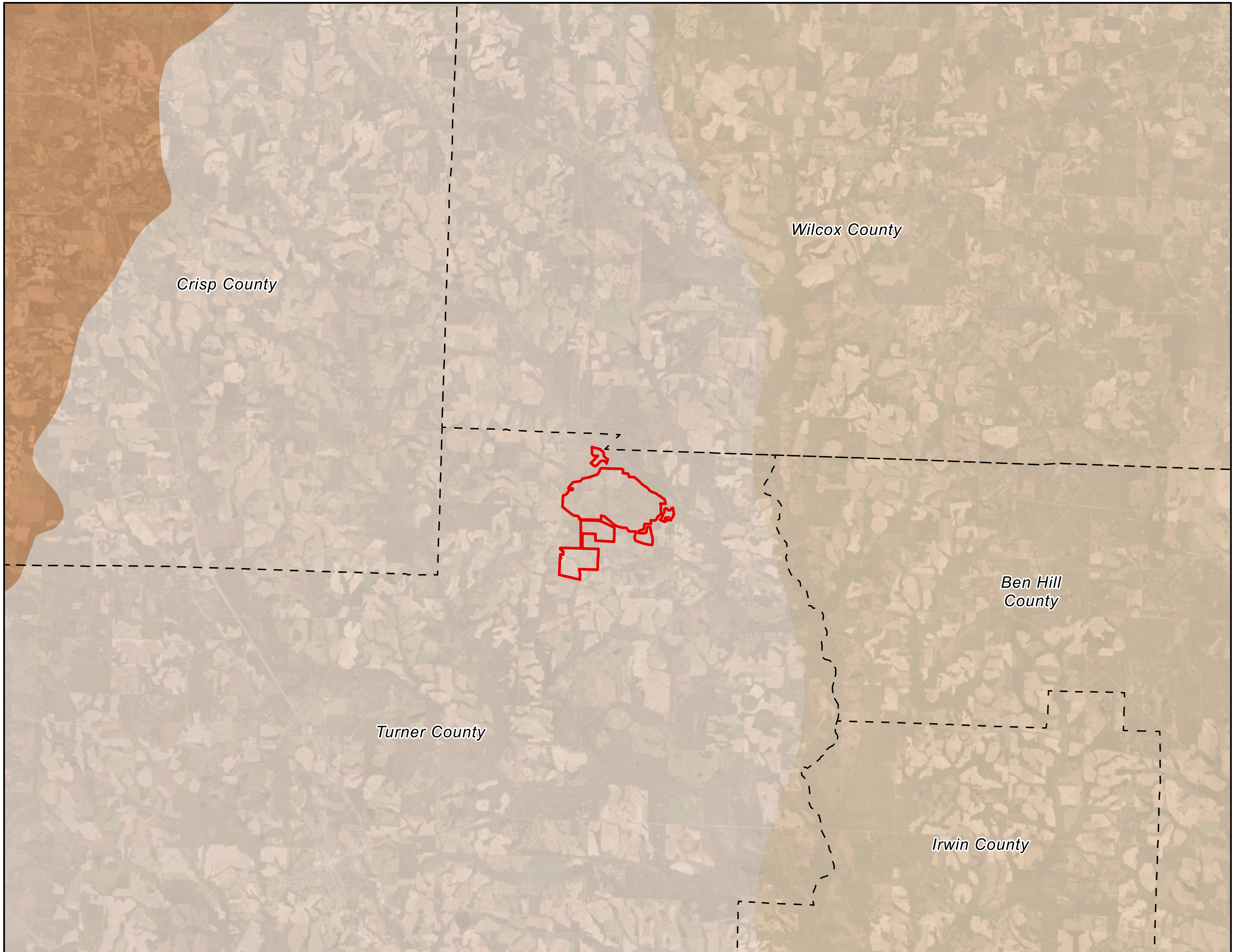
Prepared By: TETRA TECH

Date: 05/2024

Source: Esri, et. al. 2024

Coordinate System: North American Datum 1983
Universal Transverse Mercator, Zone 17 North

Not for Construction



Legend

- Permit Area
- County Boundary

EPA Level IV Ecoregion

- 65g Dougherty Plain
- 65h Tifton Upland
- 65l Atlantic Southern Loam Plains

N

0 1 2 4 Miles

Figure 2
EPA Level IV Ecoregion
Double Run Solar Project
Turner County, Georgia

Prepared For: EDF renewables

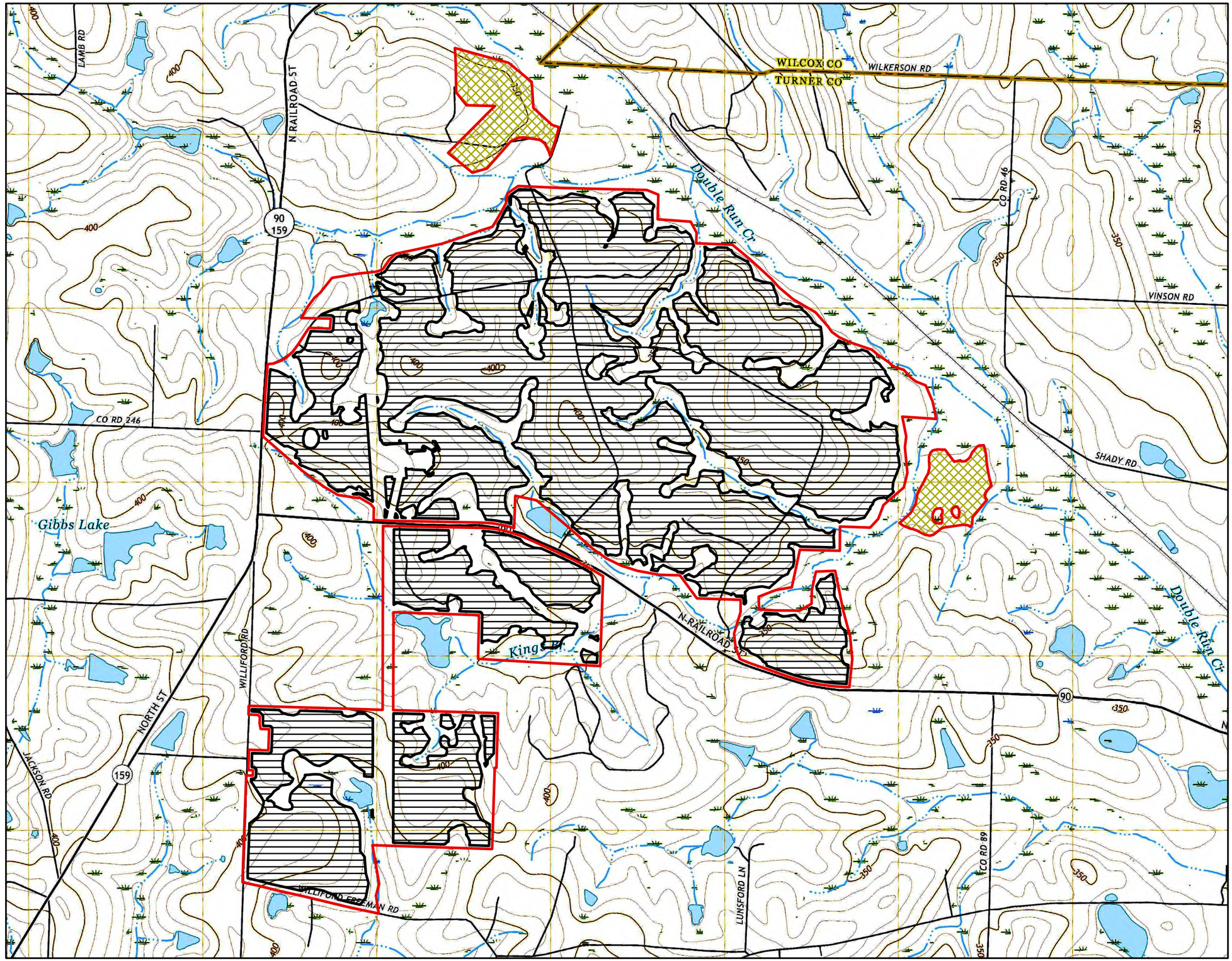
Prepared By: TETRA TECH

Date: 05/2024

Source: Esri, et. al. 2024; EPA 2012 (based on Griffith et al. 2001)

Coordinate System: North American Datum 1983 Universal Transverse Mercator, Zone 17 North

Not for Construction



Legend

- Permit Area
- Temporary Relocation Area
- Solar Array Fenceline

N

0 500 1,000 2,000 Feet

Figure 3
USGS Topographic Map
Double Run Solar Project
Turner County, Georgia

Prepared For: EDF renewables

Prepared By: TETRA TECH

Date: 05/2024

Source: Esri, et. al. 2024; USGS 2020
Amboy, GA Quadrangle 1:24,000

Coordinate System: North American Datum 1983
Universal Transverse Mercator, Zone 17 North

Legend

Permit Area

Habitat Type

- Built Upon/Ruderal
- Disturbed Scrub
- Forested Wetland
- Hardwood-Pine Savanna
- Mature Loblolly Stand
- Mesic Pine-Hardwood Forest
- Old Field
- Pine Flatwood
- Pond
- Recently Timbered/Early Successional
- Scrub
- Young Loblolly Stand

Delineated Wetland

- Palustrine Emergent
- Palustrine Forested
- Open Water

N

0 500 1,000 2,000 Feet

Figure 4
Habitat Types
Double Run Solar Project
Turner County, Georgia

Prepared For: EDF renewables

Prepared By: TETRA TECH

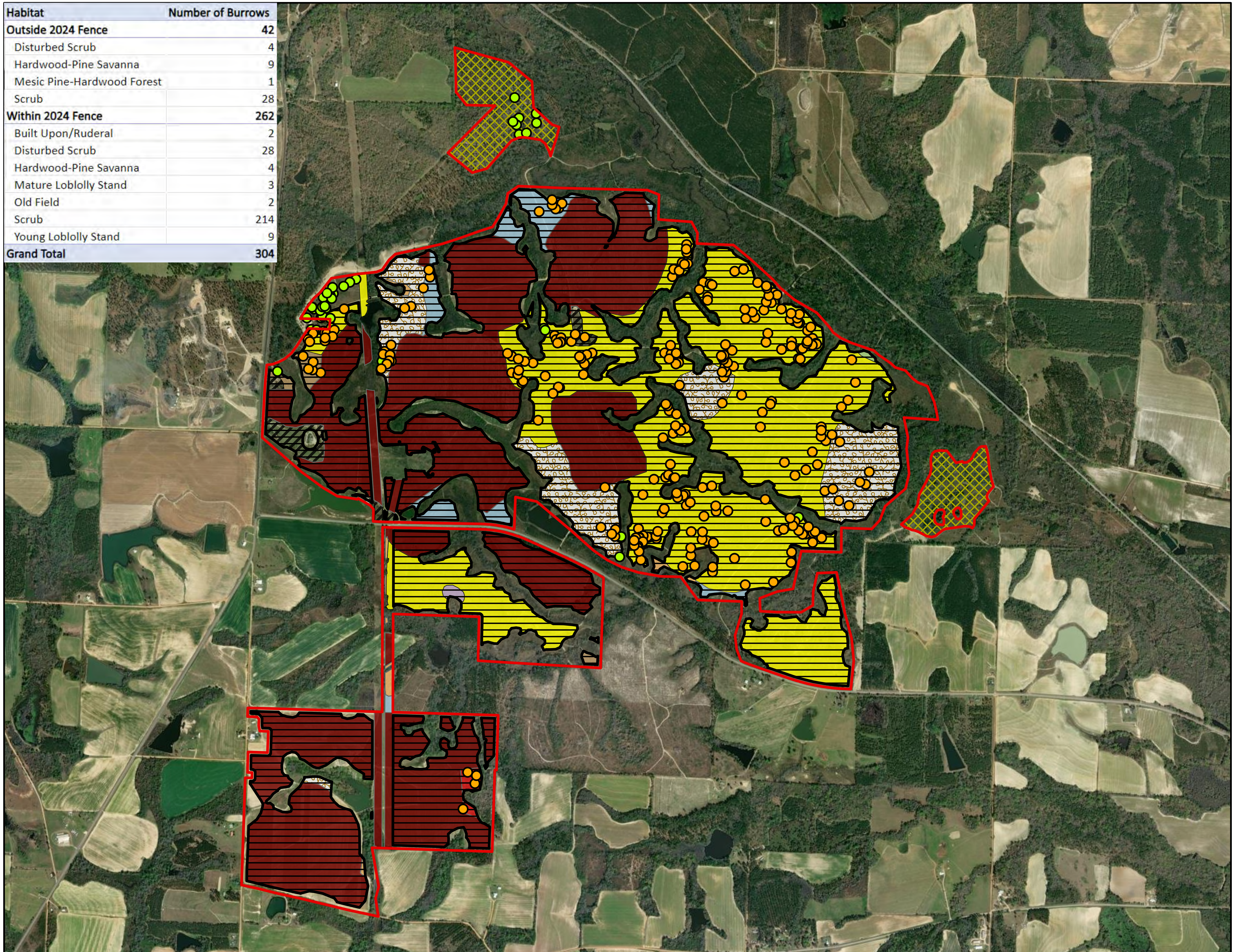
Date: 05/2024

Source: Esri, et. al. 2024

Coordinate System: North American Datum 1983 Universal Transverse Mercator, Zone 17 North

Not for Construction

Habitat	Number of Burrows
Outside 2024 Fence	**42**
Disturbed Scrub	4
Hardwood-Pine Savanna	9
Mesic Pine-Hardwood Forest	1
Scrub	28
Within 2024 Fence	**262**
Built Upon/Ruderal	2
Disturbed Scrub	28
Hardwood-Pine Savanna	4
Mature Loblolly Stand	3
Old Field	2
Scrub	214
Young Loblolly Stand	9
Grand Total	**304**



Legend

- Permit Area
- Temporary Relocation Area
- Solar Array Fenceline

Gopher Tortoise Burrow

- Outside 2024 Fence (42)
- Within 2024 Fence (262)

Habitat Type

- Built Upon/Ruderal
- Disturbed Scrub
- Forested Wetland
- Hardwood-Pine Savanna
- Mature Loblolly Stand
- Mesic Pine-Hardwood Forest
- Old Field
- Pine Flatwood
- Scrub
- Young Loblolly Stand

N

Feet
0 500 1,000 2,000

Figure 5
Habitat Types and Gopher Tortoise Burrows within Areas of Disturbance
Double Run Solar Project
Turner County, Georgia

Prepared For: EDF renewables

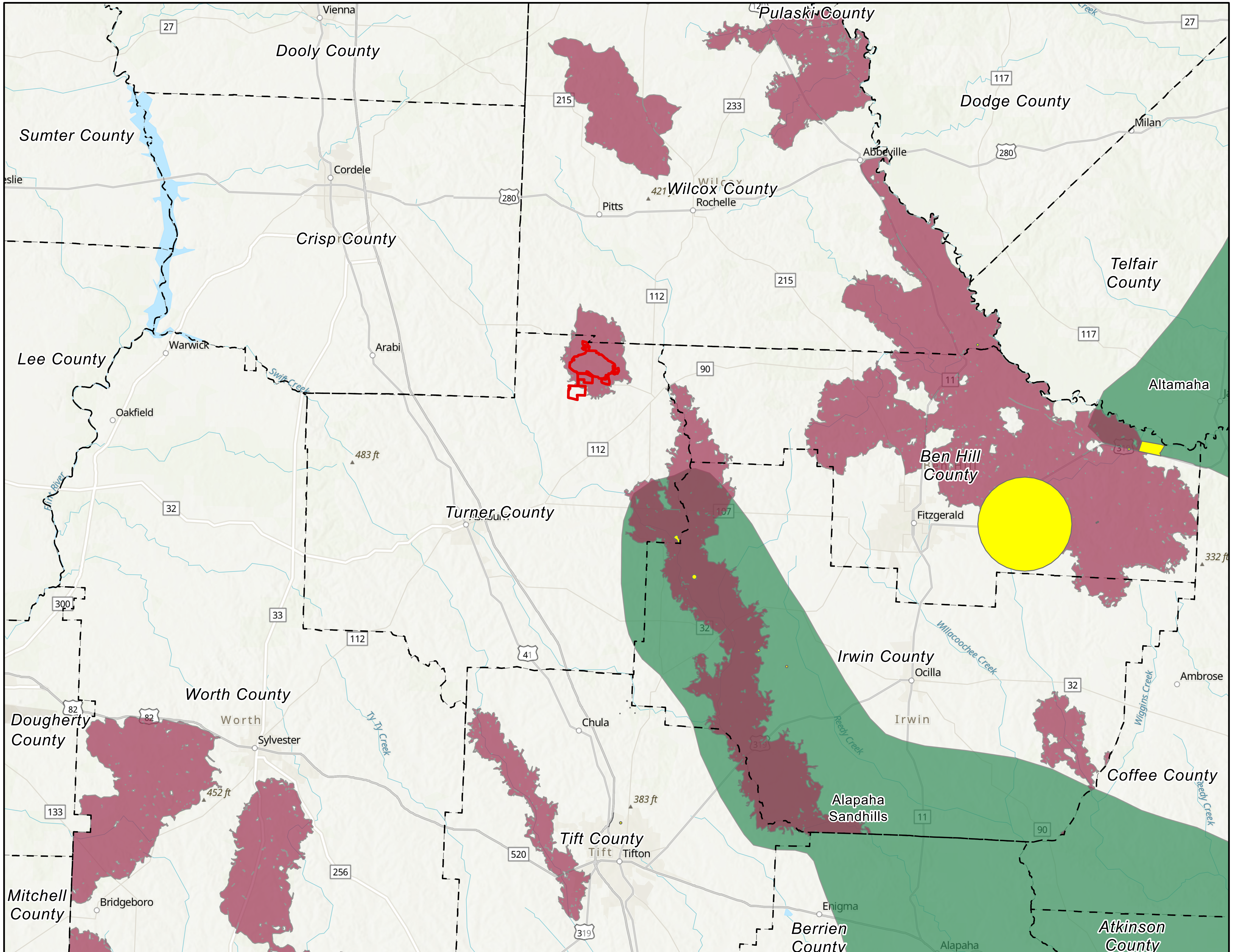
Prepared By: TETRA TECH

Date: **05/2024**

Source: Esri, et. al. 2024

Coordinate System: North American Datum 1983 Universal Transverse Mercator, Zone 17 North

Not for Construction



Legend

- Permit Area
- County Boundary
- USFWS Conservation Focus Area
- Houston/Bauder (2022) Conservation Unit
- DNR Occurrence Record

N

0 2.5 5 10 Miles

Figure 6
Eastern Indigo Snake Local Records
Double Run Solar Project
Turner County, Georgia

Prepared For: EDF renewables

Prepared By: TETRA TECH

Date: 05/2024

Source: Esri, et. al. 2024; USFWS 2019; Houston et al. 2022; GADNR 2024

Coordinate System: North American Datum 1983 Universal Transverse Mercator, Zone 17 North

Not for Construction

Legend

- Permit Area
- Temporary Relocation Area
- Solar Array Fenceline

Gopher Tortoise Burrow

- Outside 2024 Fence (42)
- Within 2024 Fence (262)

- Area of Impact

N

0 500 1,000 2,000 Feet

Figure 7
Eastern Indigo Snake Habitat
Double Run Solar Project
Turner County, Georgia

Prepared For: EDF renewables

Prepared By: TETRA TECH

Date: 07/2024

Source: Esri, et. al. 2024

Coordinate System: North American Datum 1983 Universal Transverse Mercator, Zone 17 North

APPENDIX A: SPECIES SELECTION TABLE

Table A-1. Species Considered for Permit Coverage[1]

Species	Status[a]		Criteria[b]				Notes
	State	Federal	Range in Plan Area	Federally Listed or Likely to be Listed	Potentially Impacted by Covered Activities	**Recommended Covered Status[c]**	
Mammals							
Tricolored Bat *Permyotis subflavus*	--	FPE	Y	Y	N	N	Tree clearing activities will be limited to winter season
Birds							
Brown-headed nuthatch *Sitta pusilla*	--	--	Y	N	N	N	USFWS Bird of Conservation Concern
Chimney swift *Chaetura pelagica*	--	--	N	N	N	N	USFWS Bird of Conservation Concern; No range within Plan Area
Prairie warbler *Dendroica discolor*	--	--	Y	N	N	N	USFWS Bird of Conservation Concern
Prothonotary warbler *Protonotaria citrea*	--	--	Y	N	N	N	USFWS Bird of Conservation Concern
Red-cockaded woodpecker *Picoides borealis*	SE	FE	N	Y	N	N	No pine stands within Plan Area meet the conditions needed for nesting (mature longleaf pine forests, generally older than 80 years, with open understories. Will also use mature loblolly, shortleaf, slash and pond pine forests depending on availability.
Southeastern American kestrel *Falco sparverius paulus*	--	--	Y	N	N	N	USFWS Bird of Conservation Concern
Whooping crane *Grus americana*	--	FE	N	Y	N	N	No range within Plan Area
Wood stork *Mycteria americana*	SE	FT	Y	Y	N	N	Impacts to wetlands and waterbodies will be avoided
Wood thrush *Hylocichla mustelina*	--	--	Y	N	N	N	USFWS Bird of Conservation Concern
Reptiles							
Eastern diamond-backed rattlesnake *Crotalus adamanteus*	--	--	Y	N	Y	N	State Wildlife Action Plan Species of Greatest Conservation Need
Eastern indigo snake *Drymarchon couperi*	ST	FT	Y	Y	Y	Y	Approximately 768.8 acres of occupied habitat occurs within the site, including pine flatwoods, recently timbered/early successional areas, and disturbed scrub and scrub areas with longleaf pines and loose, sandy soils, as well as gopher tortoise burrows.

Species	Status[a]		Criteria[b]				Notes
	State	Federal	Range in Plan Area	Federally Listed or Likely to be Listed	Potentially Impacted by Covered Activities	Recommended Covered Status[c]	
Florida pine snake *Pituophis melanoleucus mugitus*	--	--	Y	N	Y	N	State Wildlife Action Plan Species of Greatest Conservation Need
Gopher tortoise *Gopherus polyphemus*	ST	--	Y	N	Y	N	EDFR, in coordination with the GADNR, has secured approximately 100 acres of suitable habitat just outside of the solar facility to use as relocation areas, sufficient to reduce density to around an estimated one gopher tortoise per acre. Habitat improvement (i.e., clearing scrub) to enhance the relocation areas, installing tortoise-friendly fencing in portions of the project to allow passage through array areas, and utilizing tortoise-friendly seed mix in array areas are some of the impact minimization measures proposed. Gopher tortoise surveys (including scoping) will be conducted no more than 90 days prior to construction-related activities.
Suwannee alligator snapping turtle *Macrochelys suwanniensis*	--	FPT	N	Y	N	N	No range within Plan Area
Amphibians							
Eastern tiger salamander *Ambystoma tigrinum*	--	--	Y	N	N	N	State Wildlife Action Plan Species of Greatest Conservation Need
Fish							
Blackbanded sunfish *Enneacanthus chaetodon*	SE	--	Y	N	N	N	Impacts to wetlands and waterbodies will be avoided
Insects							
Monarch butterfly *Danaus plexippus*	--	FC	Y	Y	N	N	Agricultural/old fields, and recently timbered/early successional areas throughout the site could provide suitable foraging habitat. Habitat to support the species will be restored as practicable.
Plants							
Bearded beakrush *Rhynchospora crinipes*	--	--	N	N	N	N	State Wildlife Action Plan Species of Greatest Conservation Need; No range within Plan Area
Drummond yellow-eyed grass *Xyris drummondii*	--	--	Y	N	N	N	State Wildlife Action Plan Species of Greatest Conservation Need
Flameflower *Macranthera flammea*	ST	--	Y	N	N	N	Impacts to wetlands and waterbodies will be avoided
Georgia indigo bush *Amorpha georgiana*	SE	--	Y	N	N	N	Impacts to wetlands and waterbodies will be avoided
Georgia plume	ST	--	Y	N	Y	N	Marginal habitat in scrub/turkey oak

Species	Status[a]		Criteria[b]				Notes
	State	Federal	Range in Plan Area	Federally Listed or Likely to be Listed	Potentially Impacted by Covered Activities	**Recommended Covered Status[c]**	
Elliottia racemosa							
Harper's yellow-eyed grass *Xyris scabrifolia*	--	--	Y	N	N	N	State Wildlife Action Plan Species of Greatest Conservation Need
Many-bristled beakrush *Rhynchospora macra*	--	--	Y	N	N	N	State Wildlife Action Plan Species of Greatest Conservation Need
Parrot pitcherplant *Sarracenia psittacine*	ST	--	Y	N	N	N	Impacts to wetlands and waterbodies will be avoided
Pondberry *Lindera melissifolia*	SE	FE	N	Y	N	N	No range within Plan Area
Purple honeycomb head *Balduina atropurpurea*	--	--	Y	N	N	N	State Wildlife Action Plan Species of Greatest Conservation Need
Savanna cowbane *Oxypolis ternata*	--	--	Y	N	N	N	State Wildlife Action Plan Species of Greatest Conservation Need
Solitary beakrush *Rhynchospora solitaria*	SE	--	Y	N	N	N	Impacts to wetlands and waterbodies will be avoided
Spotted beakrush *Rhynchospora punctata*	--	--	Y	N	N	N	State Wildlife Action Plan Species of Greatest Conservation Need
Tawny cottongrass *Eriophorum virginicum*	--	--	Y	N	N	N	State Wildlife Action Plan Species of Greatest Conservation Need
Wire-leaf dropseed *Sporobolus teretifolius*	--	--	Y	N	N	N	State Wildlife Action Plan Species of Greatest Conservation Need
Yellow fringeless orchid *Platanthera integra*	--	--	Y	N	N	N	State Wildlife Action Plan Species of Greatest Conservation Need

Species	Status[a]		Criteria[b]				Notes
	State	Federal	Range in Plan Area	Federally Listed or Likely to be Listed	Potentially Impacted by Covered Activities	Recommended Covered Status[c]	

[a] **Status**

State Status

SE = state-listed as endangered

ST = state-listed as threatened

Federal Status

FT = federally listed as threatened

FC = federal candidate for listing

FPT = Proposed for federal listing as threatened

FPE = Proposed for federal listing as endangered

[b] **Criteria**

Range: The species is known to occur or is likely to occur within the HCP Plan Area, based on credible evidence, or the species is not currently known in the Plan Area but is expected in the Plan Area during the permit term (e.g., through range expansion or reintroduction to historic range).

Status: The species is either:

- Listed under the federal ESA as threatened or endangered, or proposed for listing;
- Listed by the State of Georgia as threatened or endangered or a candidate for such listing, or
- Expected to be listed under the ESA within the permit term. Potential for listing during the permit term is based on current listing status, agency listing priorities, consultation with experts and wildlife agency staff, evaluation of species population trends and threats, and best professional judgment.

Impact: The species or its habitat would be adversely affected by covered activities or projects that may result in take of the species.

Data: Sufficient data exist on the species' life history, habitat requirements, and occurrence in the study area to adequately evaluate impacts on the species and to develop conservation measures to mitigate these impacts to levels specified by regulatory standards.

Species proposed for coverage in the HCP were limited to those species for which impacts from covered activities were likely, in order to provide take authorization for the highest priority species.

[c] **Recommended Covered Status**

Y initially recommended as covered species in the HCP

N not recommended for coverage in the HCP

[1] This species list was generated by consulting the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) Trust Resource List; the Georgia Department of Natural Resources (GADNR) Biodiversity Portal, State Wildlife Action Plan (SWAP) Species of Greatest Conservation Need (SGCN) within Turner County; the GADNR Biodiversity Portal, SWAP SGCN within Amboy, GA, NE; Amboy, GA, NW; and Amboy, GA, SE Quarter Quads; field habitat surveys; and consultations with the USFWS and GADNR.

APPENDIX B: STANDARD PROTECTION MEASURES FOR THE EASTERN INDIGO SNAKE

STANDARD PROTECTION MEASURES FOR THE EASTERN INDIGO SNAKE

U.S. Fish and Wildlife Service

May 2024

The Standard Protection Measures for the Eastern Indigo Snake (Plan) below has been developed by the U.S. Fish and Wildlife Service (USFWS) in Florida and Georgia for use by project proponents and their construction personnel help minimize adverse impacts to eastern indigo snakes. However, implementation of this Plan does not replace any state of federal consultation or regulatory requirements. At least 30 days prior to any land disturbance activities, the project proponent shall notify the appropriate USFWS Field Office (see Field Office contact information) via e-mail that the Plan will be implemented as described below.

As long as the signatory of the e-mail certifies compliance with the below Plan (including use of the approved poster and pamphlet (USFWS Eastern Indigo Snake Conservation webpage), no further written confirmation or approval from the USFWS is needed regarding use of this Plan as a component of the project.

If the project proponent decides to use an eastern indigo snake protection/education plan other than the approved Plan below, written confirmation or approval from the USFWS that the plan is adequate must be obtained. The project proponent shall submit their unique plan for review and approval. The USFWS will respond via e-mail, typically within 30 days of receiving the plan, either concurring that the plan is adequate or requesting additional information. A concurrence e-mail from the appropriate USFWS Field Office will fulfill approval requirements.

STANDARD PROTECTION MEASURES

BEFORE AND DURING CONSTRUCTION ACTIVITIES:

- All Project personnel shall be notified about the potential presence and appearance of the federally protected eastern indigo snake (*Drymarchon couperi*).
- All personnel shall be advised that there are civil and criminal penalties for harassing, harming, pursuing, hunting, shooting, wounding, killing, capturing, or collecting the species, in knowing violation of the Endangered Species Act of 1973.
- The project proponent or designated agent will post educational posters in the construction office and throughout the construction site. The posters must be clearly visible to all construction staff and shall be posted in a conspicuous location in the

Project field office until such time that Project construction has been completed and time charges have stopped.

- Prior to the onset of construction activities, the project proponent or designated agent will conduct a meeting with all construction staff (annually for multi-year projects) to discuss identification of the snake, its protected status, what to do if a snake is observed within the project area, and applicable penalties that may be imposed if state and/or federal regulations are violated. An educational pamphlet including color photographs of the snake will be given to each staff member in attendance and additional copies will be provided to the construction superintendent to make available in the onsite construction office. Photos of eastern indigo snakes may be accessed on USFWS, Florida Fish and Wildlife Conservation Commission and/or Georgia Department of Natural Resources websites.
- Each day, prior to the commencement of maintenance or construction activities, the Contractor shall perform a thorough inspection for the species of all worksite equipment.
- If an eastern indigo snake (alive, dead or skin shed) is observed on the project site during construction activities, all such activities are to cease until the established procedures are implemented according to the Plan, which includes notification of the appropriate USFWS Office. The contact information for the USFWS is provided below and on the referenced posters and pamphlets.
- During initial site clearing activities, an onsite observer is recommended to determine whether habitat conditions suggest a reasonable probability of an eastern indigo snake sighting (example: discovery of snake sheds, tracks, lots of refugia and cavities present in the area of clearing activities, and presence of gopher tortoises and burrows).
- Periodically during construction activities, the project area should be visited to observe the condition of the posters and Plan materials and replace them as needed. Construction personnel should be reminded of the instructions (above) as to what is expected if any eastern indigo snakes are seen.
- For erosion control use biodegradable, 100% natural fiber, net-free rolled erosion control blankets to avoid wildlife entanglement.

POST CONSTRUCTION ACTIVITIES:

Whether or not eastern indigo snakes are observed during construction activities, a monitoring report should be submitted to the appropriate USFWS Field Office within 60 days of project completion (See USFWS Field Office Contact Information).

USFWS FIELD OFFICE CONTACT INFORMATION

Georgia Field Office: Phone: (706) 613-9493, email: gaes_assistance@fws.gov
Florida Field Office: Phone: (352) 448-9151, email: fw4flesregs@fws.gov

POSTER & PAMPHLET INFORMATION

Posters with the following information shall be placed at strategic locations on the construction site and along any proposed access roads (final posters for Plan compliance are available on our website in English and Spanish and should be printed on 11 x 17in or larger paper and laminated (USFWS Eastern Indigo Snake Conservation webpage). Pamphlets are also available on our webpage and should be printed on 8.5 x 11in paper and folded, and available and distributed to staff working on the site.

POSTER CONTENT (ENGLISH):

ATTENTION

Federally-Threatened Eastern Indigo Snakes may be present on this site!

Killing, harming, or harassing eastern indigo snakes is strictly prohibited and punishable under State and Federal Law.

IF YOU SEE A LIVE EASTERN INDIGO SNAKE ON THE SITE:

• Stop land disturbing activities and allow the snake time to move away from the site without interference. Do NOT attempt to touch or handle the snake.

• Take photographs of the snake, if possible, for identification and documentation purposes.

• Immediately notify supervisor/agent, and a U.S. Fish and Wildlife Service (USFWS) Ecological Services Field Office, with the location information and condition of the snake.

• If the snake is located near clearing or construction activities that will cause harm to the snake, the activities must pause until a representative of the USFWS returns the call (within one day) with further guidance.

IF YOU SEE A DEAD EASTERN INDIGO SNAKE ON THE SITE:

• Stop land disturbing activities and immediately notify supervisor/applicant, and a USFWS Ecological Services Field Office, with the location information and condition of the snake.

• Take photographs of the snake, if possible, for identification and documentation purposes.

• Thoroughly soak the dead snake in water and then freeze the specimen. The appropriate wildlife agency will retrieve the dead snake.

DESCRIPTION: The eastern indigo snake is one of the largest non-venomous snakes in North America, reaching up to 8 ft long. Named for the glossy, blue-black scales above and slate blue below, they often have orange to reddish color (cream color in some cases)

in the throat area. They are not typically aggressive.

SIMILAR SPECIES: The black racer resembles the eastern indigo snake. However, black racers have a white or cream chin, and thinner bodies.

LIFE HISTORY: Eastern indigo snakes live in a variety of terrestrial habitat types. Although they prefer uplands, they also use wetlands and agricultural areas. They will shelter inside gopher tortoise burrows, other animal burrows, stumps, roots, and debris piles. Females may lay from 4 to 12 white eggs as early as April through June, with young hatching in late July through October.

PROTECTED STATUS: The eastern indigo snake is protected by the USFWS, Florida Fish and Wildlife Conservation Commission, and Georgia Department of Natural Resources. Any attempt to kill, harm, harass, pursue, hunt, shoot, wound, trap, capture, collect, or engage eastern indigo snakes is prohibited by the U.S. Endangered Species Act. Penalties include a maximum fine of $25,000 for civil violations and up to $50,000 and/or imprisonment for criminal offenses. Only authorized individuals with a permit (or an Incidental Take Statement associated with a USFWS Biological Opinion) may handle an eastern indigo snake.

Please contact your nearest USFWS Ecological Services Field Office if a live or dead eastern indigo snake is encountered:

Florida Office: (352) 448-9151

Georgia Office: (706) 613-9493

POSTER CONTENT (SPANISH):

ATENCIÓN

¡Especie amenazada, la culebra Índigo del Este, puede ocupar el área!

Matar, herir o hostigar culebras Índigo del Este es estrictamente prohibido bajo la Ley Federal.

SI VES UNA CULEBRA ÍNDIGO DEL ESTE O UNA CULEBRA NEGRA VIVA EN EL ÁREA:

• Pare excavación y permite el movimiento de la culebra fuera del área sin interferir. NO atentes tocar o recoger la culebra.

• Fotografié la culebra si es posible para identificación y documentación.

• Notifique supervisor/agente, y la Oficina de Campo de Servicios Ecológicos del Servicio Federal de Pesca y Vida Silvestre (USFWS) apropiada con información acerca del sitio y condición de la culebra.

• Si la culebra está cerca de un área de construcción que le pueda causar daño, las actividades deben parar hasta un representante del USFWS regrese la llamada (dentro de un día) con más orientación.

SI VES UNA CULEBRA ÍNDIGO DEL ESTE MUERTA EN EL ÁREA:

• Pare excavación. Notifique supervisor/aplicante, y la Oficina de Campo de Servicios Ecológicos apropiada con información acerca del sitio y condición de la culebra.

• Fotografié la culebra si es posible para identificación y documentación.

• Emerge completamente la culebra en agua y congele la especie hasta que personal apropiado de la agencia de vida silvestre la recoja.

DESCRIPCIÓN. La culebra Índigo del Este es una de las serpientes sin veneno más grande en Norte América, alcanzando hasta 8 pies de largo. Su nombre proviene del color azul-negro brilloso de sus escamas, pero pueden tener un color anaranjado-rojizo (color crema en algunos casos) en su mandíbula inferior. No tienden a ser agresivas.

SERPIENTES PARECIDAS. La corredora negra, que es de color negro sólido, es la única otra serpiente que se asemeja a la Índigo del Este. La corredora negra se diferencia por una mandíbula inferior color blanca o crema y un cuerpo más delgado.

HÁBITATS Y ECOLOGÍA. La culebra Índigo del Este vive en una variedad de hábitats, incluyendo tierras secas, humedales, y áreas de agricultura. Ellas buscan refugio en agujeros o huecos de tierra, en especial madrigueras de tortugas de tierra. Las hembras ponen 4 hasta 12 huevos blancos entre abril y junio, y la cría emergen entre julio y octubre.

PROTECCIÓN LEGAL. La culebra Índigo del Este es clasificada como especie amenazada por el USFWS, la Comisión de Conservación de Pesca y Vida Silvestre de Florida y el Departamento de Recursos Naturales de Georgia. Intento de matar, hostigar, herir, lastimar, perseguir, cazar, disparar, capturar, colectar o conducta parecida hacia las culebras Índigo del Este es prohibido por la Ley Federal de Especies en Peligro de Extinción. Penalidades incluyen un máximo de $25,000 por violaciones civiles y $50,000 y/o encarcelamiento por actos criminales. Solos individuales autorizados con un permiso o Determinación de toma incidental (Incidental Take Statement) asociado con una Opinión Biológico del USFWS pueden recoger una Índigo del Este.

Por favor de contactar tu Oficina de Campo de Servicios Ecológicos más cercana si encuentras una culebra Índigo del Este viva o muerta:

Oficina de Florida: (352) 448-9151

Oficina de Georgia: (706) 613-9493

APPENDIX C: WILDLIFE INCIDENT REPORTING FORM

Wildlife Incident Reporting Form

DISCOVERY DATA

Date Animal Discovered/ Sighted: _____ Number of Animals Observed: _____

Animal Status (circle): Injury Dead Live Sighting Clutch of Eggs

Notified Operations Supervisor (Name): _____

Date: _____ Time: _____

LOCATION OF FIND

Location Remarks:

_____

_____

_____

(Include street name if applicable, closest structure ID, distance from structure, and general direction. Include any other details such as: found on the road, at base of solar panel, etc.). **Record location on a paper map or get a GPS location if possible.**

WILDLIFE IDENTIFICATION

Identifying marks:

_____

_____

_____

(Include color, patters on body, observed behavior, general size, general habitat)**. Contact a biologist to confirm eastern indigo snake identification.**

Number of Photos Attached: _____ (Print digital photos and attach to Wildlife Incident Reporting Form.)

Form Completed by: Name: _____

Signature: _____

Date: _____

Species identification confirmed by: Name: _____

Date:_____