230 W. Monroe Street, Suite 1840
Chicago, IL 60606

T 630.370.0017
TRCcompanies.com

June 20, 2023

Mark VanKerkhoff, AIA
Director
Kane County Development and Community Services Department
719 Batavia Avenue, Building A
4th Floor, Geneva, IL 60134
630-232-3451
vankerkhoffmark@co.kane.il.us

Re: Special Use Permit Application
"Highway 20" Proposed Ground-Mounted Community Solar Farm

Applicant: RPIL Solar 5, LLC c/o Renewable Properties, LLC
Owner: Robert G. & Evelyn G. Conro Trust
No. 1
43W708W U.S. Highway 20
Hampshire, IL 60140
Attn: Al Conro, (847) 880-1635, gconromilk@aol.com

Subject Property
Present Zoning: F (Farming District)
Present Use: Agricultural
Proposed Use: Community Solar Project, approx. 25 acres
PIN: 02-30-100-013, 75.7 acres
Address: 43W708 Rte 20, Hampshire, Kane County, IL 60140

Dear Mr. VanKerkhoff and Members of the Zoning Board of Appeals:

RPIL Solar 5, LLC , is requesting an approval for a Special Use Permit to allow for development of an approximately 4.99MW (AC) ground-mounted distributed generation community solar facility ("Project") on an existing farmland parcel of approximately 76 acres at 43W708 Rte 20. The Project intends to develop approximately 25 acres of the identified parcel.

On behalf of Renewable Properties (Developer) and RPIL Solar 5, LLC, owner and operator of the Highway 20 Solar Project, please find the following:

- Special Use Permit Application Packet:
  - Findings of Fact Sheet – Map Amendment and/or Special Use
  - List of record owners of all property within 250 feet of the subject property
  - Application for Zoning Map Amendment and/or Special Use
  - Plat of Survey and Site Plan
  - Legal description

- Completed Land Use Opinion application sent to the Kane DuPage SWCD
- Stormwater report
- Decommissioning Plan
- Sight Distance Study
- Natural Resources Survey – Including Illinois DNR EcoCAT report and USFWS IPaC review
- AIMA application

Findings of Fact Sheet --Map Amendment and/or Special Use

- The Kane County Zoning Board is required to make findings of fact when considering a rezoning. (map amendment)
- You should "make your case" by explaining specifically how your proposed rezoning relates to each of the following factors.
- Special Uses shall be considered at a public hearing before the Zoning Board of Appeals. In its report of findings of facts, recommendations shall be made to the County Board following the public hearing. The Zoning Board will not recommend a special use unless the following items are addressed:
- 25-5-4-9: Commercial Solar Energy Facilities, SPECIAL USE APPLICATION, H. The Special Use application shall contain or be accompanies by the following information: (see attached drawings and supporting documents).

Highway 20 / RPIL Solar 5, LLC	June 16, 2023
Name of Development/Applicant	Date

1. **How does your proposed use relate to the existing uses of property within the general area of the property in question?**
   Community solar fields can be reverted to an agricultural use once decommissioned. There are stacked ecological benefits to the agricultural properties in the general area, such as planting vegetation that can be food sources for pollinators. The deep-rooted native flowers and grasses that will be planted between and around panels after construction, would increase soil health, control soil erosion, improve water quality and retention and carbon sequestration. This also helps implement the resurgence of beneficial insects. All trees and wetlands at the proposed location would be preserved, and the identified screening will help the project blend in with the existing landscape.

2. **What are the zoning classifications of properties in the general area of the property in question?**
   Zoning classifications of properties in the general area are agricultural.

3. **How does the suitability of the property in question relate to the uses permitted under the existing zoning classification?**
   The property in question is relatively flat and contains no ecologically sensitive areas, and therefore is suitable for the proposed activity both now and in the future. Additionally, in accordance with 55 ILC S 5/5-12020, solar has been determined as a compatible use with agricultural and industrial districts.

4. **What is the trend of development, if any, in the general area of the property in question?** Development in the general area since 2010 has been limited to agricultural activities and housing subdivisions. The Project's low impact use will not conflict with or intensify current and/or expected land use trends. The Project will not contribute to increased population or generate emissions. It is quietly operated and will provide benefits to the natural environment through its native plantings and landscaping. Once the project is decommissioned, the property would be eligible for redevelopment, continuation of agricultural production, or as otherwise needed to suit the needs of the landowners and area.

5. **How does the projected use of the property, relate to the Kane County 2040 Land Use Plan?** The 2040 Plan Land Use ("Plan") designation of the property is "Resource Management." The purpose of Resource Management is to provide opportunities for the implementation of livable, sustainable and healthy development that respects the character and carrying capacity of the land. As the world continues to pursue greener energy alternatives, solar energy, and specifically solar farms, still remain one of the most effective ways to increase sustainable energy generation. Accordingly, we believe the use of this land and corresponding goals of the project through improving an individual's access to stabilized energy costs and renewable energy is consistent with the Plan's Livability Principles, as well as other goals identified within the 2040 Land Use Plan.

6. **Explain how the establishment, maintenance or operation of the special use will not be detrimental to or endanger the public health, safety, morals, comfort or general welfare.** The Project will comply with numerous state fire safety and electric codes. The State Fire Code directly addresses solar photovoltaic installations, requiring clear labeling, instructions, setbacks, and safety features for projects. No special firefighting equipment is required. Emergency services will have an 24/7 access at the access gate via a knox box.
   The power generated carries no emissions, and EMF levels at the perimeter of the solar array are generally no higher than natural environment.
   Photovoltaic panels, constructed with non-toxic materials, are designed to absorb the sun, not reflect it and the single axis tracking technology moves panels with the sun to maximize efficiency. Reflectivity is no higher than nearby open waters.

   The Community Solar concept allows customers to subscribe to a part of a larger, offsite shared solar photovoltaic system and receive benefits for this participation. The concept allows more people access to solar energy such as those who rent or lack the space to install solar on their property. Each month the utility applies credits to the subscriber's bill based on the share of electricity produced by the solar project. The program reduces what the consumer pays to the utility and allows more people to access solar energy. Benefits include:
   - Local access to locally sourced renewable electricity;
   - Investment to the local distribution grid;
   - Construction period jobs and economic investment; and,
   - Lower electric bills for subscribers

7. **Explain how the special use will not be injurious to the use, enjoyment and value of other property in the immediate vicinity.**
Proposed vegetative screening would block any views of the proposed development from adjacent non-participating residences. The screening will be located between the required fencing and property line of the participating parcel upon which the facility sits, see attached site plan drawings for further details on screening placement. The screening will consist of a continuous line of native evergreen foliage, native shrubs, and native trees plus existing wooded areas.

Any noise is minimal, primarily generated by the inverters and transformer, which amounts to a low hum audibly detectable only when standing within 50-feet of the device. The sound is not noticeable to neighboring properties. The facility is nonoperational at night and therefore will generate no noise at night.
RPIL Solar 5 LLC respectfully references literature previously submitted to this Board and within adjacent communities, as well as other studies conducted across the State of Illinois and nation which find that solar projects, especially of this size, are not injurious to property values.

8. **Explain how the special use will not impede the normal, orderly development and improvement of the surrounding property.**
As demonstrated in responses above, the Project will not burden municipal resources as the site will be unoccupied. Accordingly, the increased tax revenue generated from the Project can be reinvested to fully serve the community. It is respectfully submitted that few applicants or other taxpayers can make this same representation. Those resources can be better utilized to support the orderly development and improvement of the community.

Additionally, the deep-rooted native flowers and grasses that will be planted between and around panels after construction would control soil erosion and improve water quality in nearby lakes and soil health on surrounding farmland. These native grasses will mature out to a height of approximately 2.5 feet tall. Also included are clovers, oats, and annual rye grass. The seed mixes proposed are comprised of grasses that are native and/or indigenous to the area and/or considered favorable for wildlife habitat and sustainable growth.

A drain tile survey will be completed at a future date. Data on the existing drain tile system will be aggregated to create a comprehensive mapping of known and suspected drain tile systems. Landowner coordination and field investigations are ongoing during permitting efforts and the mapping will be updated upon receipt of additional information and prior to construction. RPIL Solar 5, LLC will implement the following drain tile avoidance measures prior to construction:

- Drain tile mains will be considered in the development of the final Project layout and avoided where practicable.

- The drain tile dataset will be shown on the final construction plans or on a separate exhibit, as required.
- Identified drain tile mains will be flagged in the field during construction to facilitate avoidance during construction activities.

Even under ideal circumstances, some drain tile damage during construction is unavoidable. The following techniques will be utilized to identify damaged drain tile during construction activities at Highway 20 Solar:

- For excavation associated with the installation of collection lines and foundation slabs, any broken tile system will likely be visible along the boundary of the excavated area.
- In the event drain tile is damaged during pile installation, the location will be assessed for the need for repair.
- It is possible that drain tile damage is not noted immediately upon the event, as damage may become evident over time. Evidence of damage may include unexpected flows of water out of the ground, ponding, or the formation of localized voids in dry conditions. Construction crews will regularly monitor and assess the site for any such conditions. Should conditions indicative of damaged tile be noted, the location will be assessed for the need for repair.

The following protocols will be implemented if broken drain tile is identified:

- Unless otherwise agreed to by the landowner, underground drain tile mains within the footprint of the facility that are damaged from construction will be repaired by a qualified contractor expeditiously as weather and soil conditions allow.
    - Lateral drain tile lines contained within the Project area may not be repaired, as they are subject to landowner agreements that may not necessitate repair. Excavation of laterals may harm the structural integrity of pile driven posts, and thus repair may not be feasible. These lines will be assessed for repair on a case-by-case basis.
    - Landowner agreements that do not necessitate the repair of drain tile shall be applicable only to drain tile lines contained fully on the landowner's property.
    - Drain tile mains that are known to extend outside of the participating landowner property on either the upstream or downstream side, will be repaired, regardless of landowner agreements.
    - If it cannot be determined if a drain tile line extends onto neighboring parcels based on field assessment and/or mapping dataset, the line will be treated as a main line and be subject to repair, regardless of landowner agreements.
- All repairs will be completed by a qualified contractor, and will consist of the following:
    - Any new drain tile lines will be of comparable quality to the original and will be installed to restore the underground drainage capacity found onsite prior to construction.
    - All subsurface drains subject to repair shall be repaired or replaced with materials of equal or higher quality and of equal or larger inside diameter as those which were damaged or removed.

    - To the greatest extent practicable, the subsurface drain repair shall maintain the original alignment, grading and water flow.
- The locations of all subsurface drains that are damaged and/or repaired will be documented.

9. **Will adequate utility, access roads, drainage and other necessary facilities be provided?Please explain:**
   Four new utility poles are proposed on the property (outside of the ROW) to provide utility AC disconnect, customer recloser, primary meter, and utility recloser. The facility will connect to an existing overhead utility line on US Highway 20. Access will be provided via a new driveway along the property frontage.

   The proposed development adds approximately 21,812 square feet of impervious area to the site. In accordance with the Kane County Stormwater Management Ordinance, Category I Best Management Practices (BMPs) are required to be incorporated into the project. The proposed BMPs will provide runoff volume reduction and water quality treatment for one inch of rainfall over the added impervious area. The volume of water reduction and treatment required is approximately 1,818 cubic feet. Permanent Vegetation is proposed to meet the Category I BMP requirements. A native seeding mix that is suitable for site conditions will be selected in accordance with the Practice Standards of the Illinois Urban Manual. Permanent Vegetation (Code 880) will establish a permanent cover to stabilize soils and enhance permeability while reducing runoff and erosion. See attached Stormwater report for more details regarding BMPs. In summary, the Project will be designed in a way which fully meets the needs of the site and will not burden the neighboring properties or community. It is expected that the Project will reduce overall runoff from the site compared to the current site conditions.

10. **Will adequate measures be provided for ingress and egress and so designed to minimize the traffic and congestion? Please explain:**
    There will be no substantial short-term or long-term traffic impacts given the size of this Project. Once built, the facility requires very little ongoing maintenance. Roughly six scheduled visits per year for preventative maintenance, vegetation management, and panel washing (as needed). The access drive will be located at the point of optimum sight distance along the property frontage for safety considerations. Please see the attached Site Distance Study conducted for more information which supports the driveway location is suitable for the safe operation of the Project.

11. **Will the special use conform to the regulations of the district in which it is located? Please explain:**
    Solar utility is listed as an allowed special use in the F District, and will conform to the regulations accordingly.

LIST OF RECORD OWNERS WITHIN 250 FEET

Owner	Owner Address	Site Address	Zoning
HOME STATE BANK/NATL ASSOC, TRUSTEE, TRUST: TR # 5040 FORTY-SEVEN TWENTY PARTNERS, D MILNE	PO BOX 95-8312 HOFFMAN ESTATES, IL, 60195-8312	43W442 RTE 20 PINGREE GROVE, IL 60140	INC
HOME STATE BANK NATIONAL ASSOC TRUSTEE FORTY-SEVEN TWENTY PARTNERS, D MILNE	PO BOX 95-8312 HOFFMAN ESTATES, IL, 60195-8312	43W368 RTE 20 PINGREE GROVE, IL 60140	INC
OSM PINGREE GROVE LLC TIM OPFER	970 S SHORE DR VILLAGE OF LAKEWOOD, IL, 60014-5531	PINGREE GROVE, IL 60140	INC
ITASCA BANK & TRUST CO, TRUST: 1983 % GLEN NISSEN	PO BOX 459 HAMPSHIRE, IL, 60140-0459	16N124 ILLINOIS ROUTE 47 HAMPSHIRE, IL 60140	F
CONRO, ROBERT G & EVELYN G TRUSTEES TRUST: 1	43W708 U S HIGHWAY 20 HAMPSHIRE, IL, 60140	NA	F
SCHRAMM, JOHN H & THOMAS C	46W414 PRIMROSE PATH HAMPSHIRE, IL, 60140-9426	NA	F
SCHRAMM, JOHN H & THOMAS C	46W414 PRIMROSE PATH HAMPSHIRE, IL, 60140-9426	43W916 US HIGHWAY 20 HAMPSHIRE, IL 60140	F
DOMINGUEZ, ROY LEE	114 PARKSIDE LN BENSENVILLE, IL, 60106-2019	NA	F
WILSON NURSERIES	1555 N US HIGHWAY 12 VOLO, IL, 60041-8793	43W910 RTE 72 - HAMPSHIRE, IL	F-2
CTLTC 008002363650	104 S WYNSTONE PARK DR NORTH BARRINGTON, IL, 60010-6967	NA	F
CONRO, ALAN L TRUSTEE TRUST: 1	43W706 RTE 20 HAMPSHIRE, IL, 60140	43W706 RTE 20 HAMPSHIRE, IL 60140	F
CONRO, ROBERT G & EVELYN G TRUSTEES TRUST: 1	43W708 U S HIGHWAY 20 HAMPSHIRE, IL, 60140	NA	F
SCHAMBACH, LESLIE R TR# 1& TIMBERLAND MULCH INC TIMBERLAND MULCH INC	984 GLENMORE LN ELGIN, IL, 60124	NA	INC
APPLEBERG, ROBERT & DONNA	33W745 SUNSET DR EAST DUNDEE , IL, 60118	43W461 RTE 20 PINGREE GROVE, IL 60140	INC

If any additional information is needed, I can be reached by phone at 630-370-0017 or by email at gdelrivero@trccompanies.com.

Sincerely,

Gio Del Rivero
Senior Biologist
Project Manager – Planning, Permitting, & Licensing

Cc:

Jeremy Price, Renewable Properties, LLC
Jim Auld, Renewable Properties, LLC
Stephanie Loucas, Renewable Properties, LLC

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Chicago, IL 60606

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Application for Zoning Map Amendment and/or Special Use

KANE COUNTY DEVELOPMENT DEPARTMENT
Zoning Division, Kane County Government Center
719 S. Batavia Avenue
Geneva, Illinois 60134
Office (630) 444-1236 Fax: (630) 232-3411

Received Date

APPLICATION FOR ZONING MAP AMENDMENT AND/OR SPECIAL USE

Instructions:

To request a map amendment (rezoning) for a property, complete this application and submit it with all required attachments to the Subdivision and Zoning Division.

When the application is complete, we will begin the review process.

The information you provide must be complete and accurate. If you have a question please call the subdivision and zoning division, and we will be happy to assist you.

1. Property Information:	**Parcel Number (s):** 02-30-100-013
	Street Address (or common location if no address is assigned): 43W708W U.S. Highway 20 Hampshire, IL 60140

2. Applicant Information:	**Name** RPIL Solar 5, LLC c/o Renewable Properties, LLC	**Phone** (978) 382 - 1751
	Address 879 Sanchez Street	**Fax**
	San Fransisco, CA 94114	**Email** jprice@renewprop.com

3. Owner of record information:	**Name** Robert G. & Evelyn G. Conro Trust No. 1 Attn: Al Conro	**Phone** 847-880-1635
	Address 43W708W U.S. Highway 20	**Fax**
	Hampshire, IL 60140	**Email** gconromilk@aol.com

Zoning and Use Information:

2040 Plan Land Use Designation of the property: Resource Management

Current zoning of the property: F

Current use of the property: Agricultural

Proposed zoning of the property: _____

Proposed use of the property: Community Solar Farm

If the proposed Map Amendment is approved, what improvements or construction is planned? (An accurate site plan may be required)

See site plan

Attachment Checklist

- ☑ Plat of Survey prepared by an Illinois Registered Land Surveyor.
- ☑ Legal description
- ☑ Completed Land Use Opinion (Available in pdf form at www.kanedupageswed.org/luo.pdf), as required by state law, mailed to: The Kane Dupage Soil and Water Conservation District, 545 S. Randall Road, St. Charles, IL 60174.
- ☑ Endangered Species Consultation Agency Action Report (available in pdf form at http://dnr.illinois.gov/ecopublic/) to be filed with the Illinois Department of Natural Resources. (* This report may best be accessed with Internet Explorer on some computers, per the State)
- ☑ List of record owners of all property within 250 feet of the subject property
- ☐ Trust Disclosure (If applicable)
- ☑ Findings of Fact Sheet
- ☑ Application fee (make check payable to Kane County Development Department)

I (we) certify that this application and the documents submitted with it are true and correct to the best of my (our) knowledge and belief.

Alan L. Conro — 5-19-23

Record Owner — Date

SAR — June 15, 2023

Applicant or Authorized Agent — Date

230 W. Monroe Street, Suite 1840
Chicago, IL 60606

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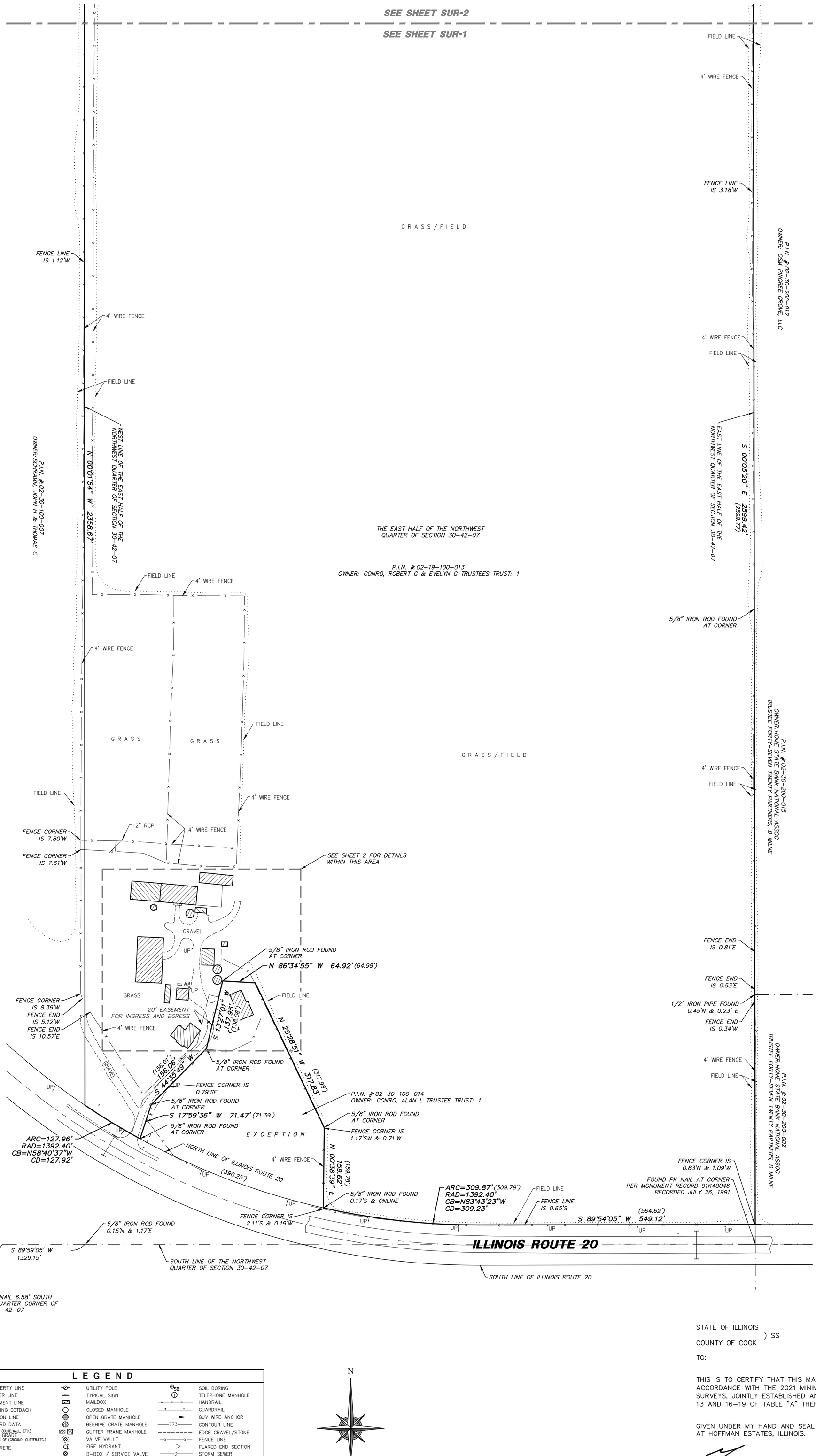
Plat of Survey and Site Plan

ALTA / NSPS
LAND TITLE SURVEY



THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 19 AND THE EAST HALF OF THE NORTHWEST QUARTER OF SECTION 30, ALL IN TOWNSHIP 42 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN, (EXCEPTING THAT PART CONVEYED TO THE CHICAGO AND PACIFIC RAIL ROAD COMPANY BY DEED DATED SEPTEMBER 20, 1875 AND RECORDED MAY 11, 1878 IN BOOK 157, PAGE 284 AS DOCUMENT 5035) AND EXCEPTING THAT PART OF THE NORTHWEST QUARTER OF SECTION 30, TOWNSHIP 42 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN, DESCRIBED AS FOLLOWS: COMMENCING AT AN IRON STAKE MARKING THE NORTHEAST CORNER OF SAID NORTHWEST QUARTER; THENCE AZIMUTH 179 DEGREES 50 MINUTES 42 SECONDS (ASSUMED) ALONG AN EXISTING FENCE LINE, 2599.77 FEET TO THE NORTHERLY RIGHT OF WAY LINE OF U.S. ROUTE 20; THENCE AZIMUTH 270 DEGREES 11 MINUTES 35 SECONDS ALONG SAID NORTHERLY RIGHT OF WAY LINE 564.62 FEET TO AN IRON STAKE MARKING A POINT OF CURVATURE, SAID POINT BEING 32.88 FEET WESTERLY OF A CONCRETE RIGHT OF WAY MONUMENT; THENCE WESTERLY ALONG SAID NORTHERLY RIGHT OF WAY LINE AND A CURVE TO THE RIGHT OF RADIUS OF 1392.4 FEET AN ARC DISTANCE OF 309.79 FEET TO AN IRON STAKE FOR THE POINT OF BEGINNING; THENCE CONTINUING ALONG SAID NORTHERLY RIGHT OF WAY LINE ON A CURVE TO THE RIGHT OF RADIUS 1392.4 FEET AN ARC DISTANCE OF 390.25 FEET TO AN IRON STAKE; THENCE AZIMUTH 18 DEGREES 26 MINUTES 15 SECONDS, 71.39 FEET TO AN IRON STAKE; THENCE AZIMUTH 44 DEGREES 58 MINUTES 38 SECONDS, 156.01 FEET TO AN IRON STAKE; THENCE AZIMUTH 13 DEGREES 31 MINUTES 12 SECONDS, 138.08 FEET TO AN IRON STAKE; THENCE AZIMUTH 93 DEGREES 41 MINUTES 17 SECONDS, 64.98 FEET TO AN IRON STAKE; THENCE AZIMUTH 154 DEGREES 44 MINUTES 40 SECONDS, 317.98 FEET TO AN IRON STAKE; THENCE AZIMUTH 180 DEGREES 52 MINUTES 10 SECONDS, 159.78 FEET TO THE POINT OF BEGINNING, IN RUTLAND TOWNSHIP, KANE COUNTY, ILLINOIS, AND AN EASEMENT FOR INGRESS AND EGRESS 20 FEET IN WIDTH FOR THE BENEFIT OF THE ABOVE DESCRIBED PARCEL 1, DESCRIBED AS FOLLOWS: BEGINNING AT AN IRON STAKE AT THE SOUTHWEST CORNER OF SAID PARCEL 1; THENCE AZIMUTH 18 DEGREES 26 MINUTES 15 SECONDS ALONG THE WESTERLY LINE OF PARCEL 1, 71.39 FEET TO AN IRON STAKE; THENCE AZIMUTH 44 DEGREES 58 MINUTES 38 SECONDS ALONG THE WESTERLY LINE OF PARCEL 1, 156.01 FEET TO AN IRON STAKE; THENCE AZIMUTH 13 DEGREES 31 MINUTES 12 SECONDS ALONG THE WESTERLY LINE OF PARCEL 1, 105.0 FEET; THENCE AZIMUTH 283 DEGREES 31 MINUTES 12 SECONDS, 20.0 FEET; THENCE AZIMUTH 193 DEGREES 31 MINUTES 12 SECONDS, 99.37 FEET; THENCE AZIMUTH 224 DEGREES 68 MINUTES 38 SECONDS, 155.10 FEET; THENCE AZIMUTH 198 DEGREES 26 MINUTES 15 SECONDS, 72.22 FEET TO THE NORTHERLY RIGHT OF WAY LINE OF U.S. ROUTE 20; THENCE SOUTHEASTERLY ALONG SAID RIGHT OF WAY LINE ON A CURVE OF RADIUS 1392.4 FEET; CONCAVE TO THE NORTHEAST 20.28 FEET TO THE POINT OF BEGINNING), IN RUTLAND TOWNSHIP, KANE COUNTY, ILLINOIS.

SURVEY NOTES:

1. SITE BENCHMARK #1 – SQUARE CUT IN WEST SIDE OF CONCRETE HEADWALL ON THE NORTH SIDE OF U.S. HIGHWAY 20, 118' WEST OF FENCE "T" AT THE SE CORNER OF PROPERTY AS SHOWN. ELEVATION=927.94' (NAVD88)

SITE BENCHMARK #2 – RAILROAD SPIKE IN UTILITY POLE ON THE NORTH SIDE OF U.S. HIGHWAY 20, 498' EAST OF THE GRAVEL ENTRANCE DRIVE & 760' WEST OF FENCE "T" AT THE SE CORNER OF PROPERTY AS SHOWN. ELEVATION=931.73' (NAVD88)

2. PERMANENT INDEX NUMBER (P.I.N. #): 02–30–100–013 AND PART OF 02–19–300–004

3. THE LOCATION OF UNDERGROUND UTILITIES WAS DETERMINED BY FIELD OBSERVATION AND VISIBLE MARKINGS ONLY.

4. PROPERTY AREA: 5,041,381.29 SQUARE FEET (115.73 ACRES)

5. FIELD WORK COMPLETED ON 3/20/2023.

6. ACCORDING TO OUR INTERPOLATION OF THE FLOOD INSURANCE RATE MAP THIS SITE IS LISTED AS BEING IN A ZONE "X", DESCRIBED AS "AREA OF MINIMAL FLOOD HAZARD" PER F.E.M.A. PANEL NO. 17089C0130J DATED 6/2/2015.

7. SURVEY PREPARED FOR: TRC COMPANIES, INC.

8. BUILDING TIES & DIMENSIONS SHOWN ARE MEASURED FROM THE OUTSIDE FACE OF THE BUILDING.

9. THERE ARE NO PARKING SPACES ON PROPERTY

10. ZONING REPORT NOT PROVIDED TO SURVEYOR

11. THE SURVEYOR OBSERVED NO EVIDENCE OF RECENT EARTH MOVING WORK, BUILDING CONSTRUCTION OF BUILDING ADDITIONS DURING THE PROCESS OF CONDUCTING OUR FIELDWORK.

12. THE SURVEYOR HAS NO KNOWLEDGE OF PROPOSED CHANGES IN STREET RIGHT OF WAY LINES OR RECENT STREET OR SIDEWALK CONSTRUCTION.

13. BASIS OF BEARINGS IS TRUE NORTH BASED ON ILLINOIS STATE PLANE COORDINATE SYSTEM, ILLINOIS EAST 1201 ZONE.

14. ANY DISCREPANCIES FOUND WITHIN THIS DOCUMENT NEED TO BE REPORTED TO THE SURVEYOR AS SOON AS POSSIBLE.

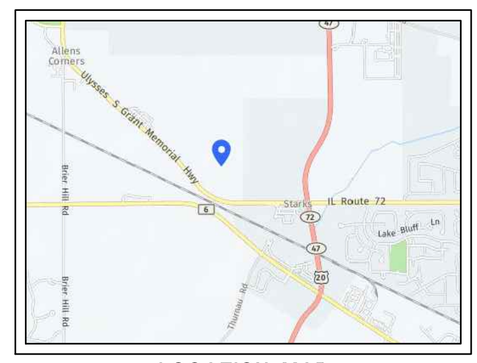
TITLE NOTES:

SURVEY WAS PREPARED WITH THE AID OF A TITLE COMMITMENT PREPARED BY FIDELITY NATIONAL TITLE, COMMITMENT NUMBER FCHI2200842LI, HAVING AN EFFECTIVE DATE OF JULY 11, 2022.

SCHEDULE B PART 2 EXCEPTIONS:

9. GRANT DATED SEPTEMBER 6, 1958 AND RECORDED MARCH 20, 1959 AS DOCUMENT 884897 MADE BY GEORGE A. CONRO AND MARY CONRO TO NORTHERN ILLINOIS GAS COMPANY, AN ILLINOIS CORPORATION, ITS SUCCESSORS AND ASSIGNS, OF THE RIGHT TO CONSTRUCT, MAINTAIN AND OPERATE A PIPE LINE ON, OVER AND THROUGH PREMISES IN QUESTION WITH RIGHT OF INGRESS AND EGRESS TO AND FROM THE SAME. AMENDMENT TO GRANT OF EASEMENT RECORDED JULY 26, 2017 AS DOCUMENT NO. 2017K038670. SHOWN ON SURVEY.

15. GRANT OF EASEMENT TO NICOR GAS, RECORDED APRIL 7, 2008 AS DOCUMENT NUMBER 2008K029317. FALLS WITHIN ROUTE 20 RIGHT OF WAY AND IS NOT SHOWN.



LOCATION MAP

LEGEND

PROPERTY LINE	UTILITY POLE	SB	SOIL BORING
CENTER LINE	TYPICAL SIGN	T	TELEPHONE MANHOLE
EASEMENT LINE	MAILBOX		HANDRAIL
BUILDING SETBACK	CLOSED MANHOLE		GUARDRAIL
SECTION LINE	OPEN GRATE MANHOLE		GUY WIRE ANCHOR
(XXX') RECORD DATA	BEEHIVE GRATE MANHOLE	773	CONTOUR LINE
XXX.XX TOP OF (CURB,WALL, ETC.) / XXX.XX BOTTOM OF (GROUND, GUTTER,ETC.) SPOT GRADE	GUTTER FRAME MANHOLE		EDGE GRAVEL/STONE
CONCRETE	VALVE VAULT	X X	FENCE LINE
	FIRE HYDRANT		FLARED END SECTION
	B-BOX / SERVICE VALVE		STORM SEWER
EVERGREEN/DECIDUOUS WITH SIZE IN INCHES	POST LIGHT\GROUND LIGHT		SANITARY SEWER
	AREA LIGHT\LIGHT POLE		COMBO SEWER
	STREET LIGHT	WS	WATER SERVICE LINE
SHRUB/SHRUB LINE	TRAFFIC SIGNAL	WM	WATER MAIN
MONITOR WELL	MAST ARM SIGNAL	OHL	OVERHEAD LINE
GAS VALVE	HANDHOLE (electric\traffic)	FO	FIBER OPTIC LINE
UTILITY MARKINGS (cable,elec,fiber) (tel,water,gas)	GAS METER	G	GAS LINE
	ELECTRIC METER	UGT	U.G. TELCO LINE
	PEDESTAL(telco,elec,cable)	UGE	U.G. ELECTRIC LINE

N

SCALE: 1" = 100'

00 50 100 200

BAR SCALE

STATE OF ILLINOIS
) SS
COUNTY OF COOK

TO:

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 2–4, 6(A), 6(B), 8, 13 AND 16–19 OF TABLE "A" THEREOF. THE FIELD WORK WAS COMPLETED ON 3/20/2023.

GIVEN UNDER MY HAND AND SEAL THIS 16th DAY OF JUNE, A.D. 2023
AT HOFFMAN ESTATES, ILLINOIS.

FRANJO I. MATICIC – PLS #035–003556 EXPIRES 11/30/2024
ILLINOIS PROFESSIONAL DESIGN FIRM LICENSE NO. 184.007570–0015

PROFESSIONAL LAND SURVEYOR
FRANJO I. MATICIC
035-003556
HOFFMAN ESTATES ILLINOIS
STATE OF ILLINOIS

AQUATIC \ CIVIL \ MECHANICAL \ ELECTRICAL \ PLUMBING \ TELECOMMUNICATION \ STRUCTURAL \ ACCESSIBILITY CONSULTING \ DESIGN & PROGRAM MANAGEMENT \ LAND SURVEY

SUR-1
SHEET 1 OF 7
ALTA/NSPS
LAND TITLE SURVEY

JOB: S2300044
DRAWN:REM
CHECK:FIM

ISSUE	DATE
CLIENT	06/16/23
CLIENT	03/22/23
TO	

HIGHWAY 20 SOLAR
43W708 ROUTE 20
HAMPSHIRE, ILLINOIS

WT Group
Engineering • Design • Consulting

WT GROUP
Engineering with Precision, Pace and Passion.
2675 Pratum Avenue | Hoffman Estates, IL 60192
T: 224.293.6333 | F: 224.293.6444
wtengineering.com
IL. License No: 184.007570-0015 Expires: 04.30.2025

PERMIT PLAN SET

HIGHWAY 20 SOLAR

43W708 RTE 20
HAMPSHIRE, IL 60140

DATE: JUNE 2023

PROJECT LOCATION

KANE COUNTY, ILLINOIS

PROJECT SCOPE

THE PROJECT ENTAILS THE INSTALLATION OF A SOLAR PHOTOVOLTAIC SYSTEM IN RUTLAND TOWNSHIP, KANE COUNTY, IL. THE INSTALLATION CONSISTS OF NEW GROUND MOUNTED STRUCTURES WITH MOUNTED PHOTOVOLTAICS.

THE PROJECT SCOPE OF WORK FOR THESE DRAWINGS PERTAINS ONLY TO THE LAND DEVELOPMENT PERMITTING REQUIREMENTS OF KANE COUNTY, ILLINOIS.

SITE INFORMATION

P.I.N.:
02-30-100-013
02-19-300-004

AREA: 115.73 ± ACRE GROSS

ZONING: F (FARMING DISTRICT)

PROJECT OWNER

RPIL SOLAR 5, LLC
879 SANCHEZ STREET
SAN FRANCISCO, CA 94114

ENGINEER

TRC ENVIRONMENTAL CORPORATION
230 WEST MONROE STREET
SUITE 1840
CHICAGO, IL 60606

BASIS OF BEARINGS

BASIS OF BEARINGS IS TRUE NORTH BASED ON ILLINOIS STATE PLANE COORDINATE SYSTEM, EAST 1201 ZONE, US FOOT.

BENCHMARK

SITE BENCHMARK #1 - SQUARE CUT IN WEST SIDE OF CONCRETE HEADWALL ON THE NORTH SIDE OF U.S. HIGHWAY 20, 118' WEST OF FENCE "T" AT THE SE CORNER OF PROPERTY AS SHOWN. ELEVATION = 927.94' (NAVD88)

SITE BENCHMARK #2 - RAILROAD SPIKE IN UTILITY POLE ON THE NORTH SIDE OF U.S. HIGHWAY 20, 498' EAST OF THE GRAVEL ENTRANCE DRIVE & 760' WEST OF FENCE "T" AT THE SE CORNER OF PROPERTY AS SHOWN. ELEVATION = 931.73' (NAVD88)

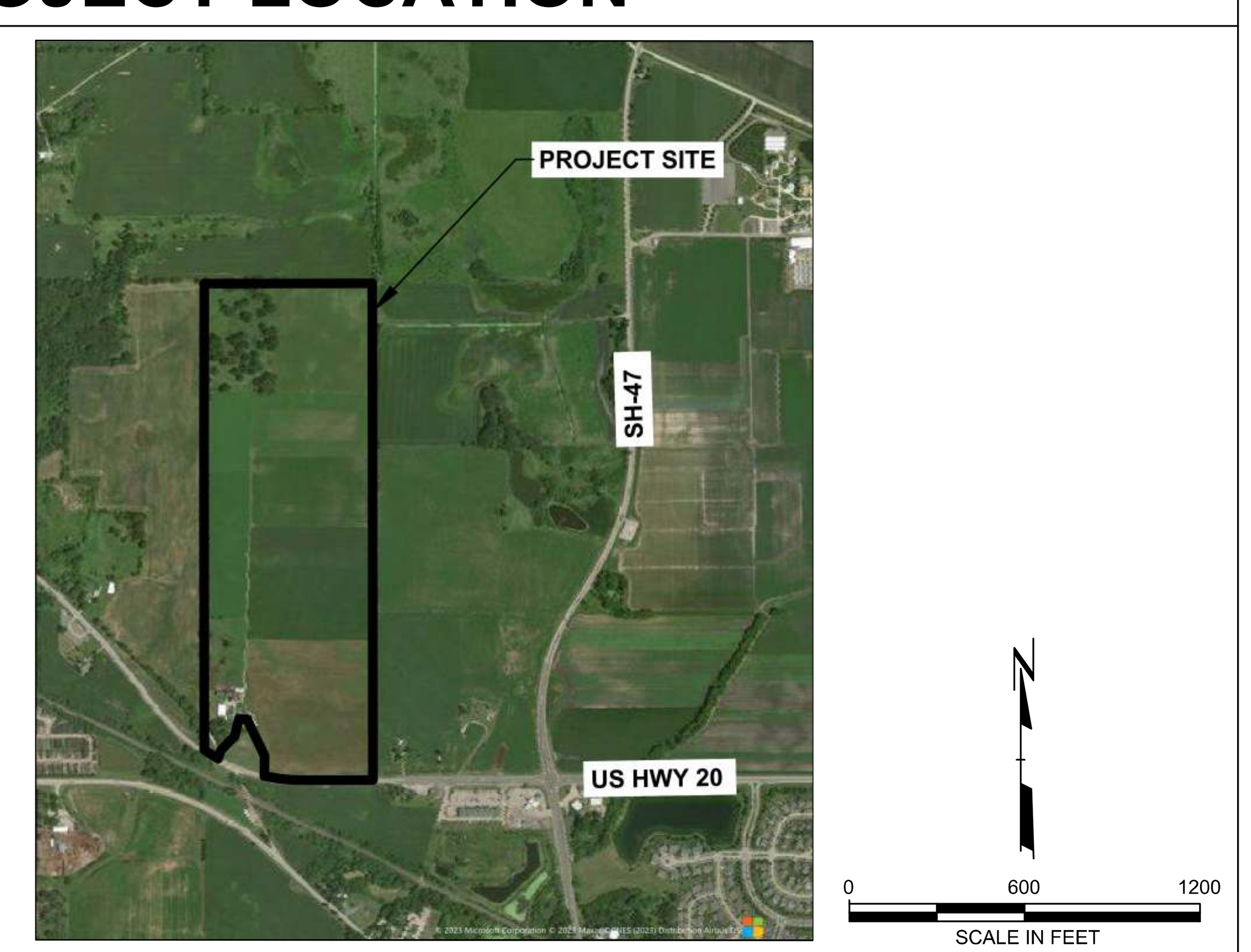
LEGAL DESCRIPTION

THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 19 AND THE EAST HALF OF THE NORTHWEST QUARTER OF SECTION 30, ALL IN TOWNSHIP 42 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN, (EXCEPTING THAT PART CONVEYED TO THE CHICAGO AND PACIFIC RAIL ROAD COMPANY BY DEED DATED SEPTEMBER 20, 1875 AND RECORDED MAY 11, 1878 IN BOOK 157, PAGE 284 AS DOCUMENT 5035) AND EXCEPTING THAT PART OF THE NORTHWEST QUARTER OF SECTION 30, TOWNSHIP 42 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN, DESCRIBED AS FOLLOWS: COMMENCING AT AN IRON STAKE MARKING THE NORTHEAST CORNER OF SAID NORTHWEST QUARTER; THENCE AZIMUTH 179 DEGREES 50 MINUTES 42 SECONDS (ASSUMED) ALONG AN EXISTING FENCE LINE, 2599.77 FEET TO THE NORTHERLY RIGHT OF WAY LINE OF U.S. ROUTE 20; THENCE AZIMUTH 270 DEGREES 11 MINUTES 35 SECONDS ALONG SAID NORTHERLY RIGHT OF WAY LINE 564.62 FEET TO AN IRON STAKE MARKING A POINT OF CURVATURE, SAID POINT BEING 32.88 FEET WESTERLY OF A CONCRETE RIGHT OF WAY MONUMENT; THENCE WESTERLY ALONG SAID NORTHERLY RIGHT OF WAY LINE AND A CURVE TO THE RIGHT OF RADIUS OF 1392.4 FEET AN ARC DISTANCE OF 309.79 FEET TO AN IRON STAKE FOR THE POINT OF BEGINNING; THENCE CONTINUING ALONG SAID NORTHERLY RIGHT OF WAY LINE ON A CURVE TO THE RIGHT OF RADIUS 1392.4 FEET AN ARC DISTANCE OF 390.25 FEET TO AN IRON STAKE; THENCE AZIMUTH 18 DEGREES 26 MINUTES 15 SECONDS, 71.39 FEET TO AN IRON STAKE; THENCE AZIMUTH 44 DEGREES 58 MINUTES 38 SECONDS, 156.01 FEET TO AN IRON STAKE; THENCE AZIMUTH 13 DEGREES 31 MINUTES 12 SECONDS, 138.08 FEET TO AN IRON STAKE; THENCE AZIMUTH 93 DEGREES 41 MINUTES 17 SECONDS, 64.98 FEET TO AN IRON STAKE; THENCE AZIMUTH 154 DEGREES 44 MINUTES 40 SECONDS, 317.98 FEET TO AN IRON STAKE; THENCE AZIMUTH 180 DEGREES 52 MINUTES 10 SECONDS, 159.78 FEET TO THE POINT OF BEGINNING, IN RUTLAND TOWNSHIP, KANE COUNTY, ILLINOIS, AND AN EASEMENT FOR INGRESS AND EGRESS 20 FEET IN WIDTH FOR THE BENEFIT OF THE ABOVE DESCRIBED PARCEL 1, DESCRIBED AS FOLLOWS: BEGINNING AT AN IRON STAKE AT THE SOUTHWEST CORNER OF SAID PARCEL 1; THENCE AZIMUTH 18 DEGREES 26 MINUTES 15 SECONDS ALONG THE WESTERLY LINE OF PARCEL 1, 71.39 FEET TO AN IRON STAKE; THENCE AZIMUTH 44 DEGREES 58 MINUTES 38 SECONDS ALONG THE WESTERLY LINE OF PARCEL 1, 156.01 FEET TO AN IRON STAKE; THENCE AZIMUTH 13 DEGREES 31 MINUTES 12 SECONDS ALONG THE WESTERLY LINE OF PARCEL 1, 105.0 FEET; THENCE AZIMUTH 283 DEGREES 31 MINUTES 12 SECONDS, 20.0 FEET; THENCE AZIMUTH 193 DEGREES 31 MINUTES 12 SECONDS, 99.37 FEET; THENCE AZIMUTH 224 DEGREES 68 MINUTES 38 SECONDS, 155.10 FEET; THENCE AZIMUTH 198 DEGREES 26 MINUTES 15 SECONDS, 72.22 FEET TO THE NORTHERLY RIGHT OF WAY LINE OF U.S. ROUTE 20; THENCE SOUTHEASTERLY ALONG SAID RIGHT OF WAY LINE ON A CURVE OF RADIUS 1392.4 FEET; CONCAVE TO THE NORTHEAST 20.28 FEET TO THE POINT OF BEGINNING), IN RUTLAND TOWNSHIP, KANE COUNTY, ILLINOIS.

SHEET INDEX

VICINITY MAP

PROJECT LOCATION



SYSTEM SPECIFICATIONS (SUBJECT TO CHANGE)

SYSTEM SPECIFICATIONS	
SYSTEM SIZE DC	7006 KW
SYSTEM SIZE AC	4,999 KW
DC/AC RATIO	1.401
MODULE MANUFACTURER	ASTRONERGY
MODULE MODEL	CHSM72M(DG)/F-BH
MODULE RATING	540 W
TOTAL MODULE QTY	12,974
MODULES PER STRING	26
TOTAL NO. OF STRINGS	499
INVERTER MODEL	SUNGROW SG125HV
INVERTER RATING	125 KW
INVERTER QTY	40
STEP-UP TRANSFORMER	(2) 12.47KV/600V, 2500KVA
RACKING	ATI HSAT
# OF 78 MODULE TRACKERS	125
# OF 52 MODULE TRACKERS	62
TILT ANGLE	52 DEGREES
INTER-ROW SPACING	11.2 FEET
PITCH	18.7 FEET
GCR	40%
SITE AREA INSIDE FENCE	25.93 ACRES

PRELIMINARY- NOT FOR CONSTRUCTION

SEAL:

LICENSED PROFESSIONAL ENGINEER
ANDREW B. GRAHAM
062.048682
STATE OF ILLINOIS
2023.06.15 10:46:53-05'00'

PROFESSIONAL ENGINEER:
ANDREW B. GRAHAM
062048682

EXPIRATION DATE:
11/30/23

TRC ENVIRONMENTAL CORP.
DESIGN FIRM LIC. # 18400496-0002

NO.	BY	DATE	REVISION	APP'D.
1	CC	6/14/2023	ISSUED FOR PERMIT	ABG

PROJECT:
RPIL SOLAR 5, LLC
HIGHWAY 20 SOLAR
KANE COUNTY, IL

TITLE:
TITLE SHEET

DRAWN BY:	N. SCHULTZ	PROJ. NO.:	500015.0000.0005
CHECKED BY:	A. GRAHAM		G000
APPROVED BY:	A. GRAHAM		
DATE:	JUNE 2023		

TRC
230 West Monroe St.
Suite 1840
Chicago, IL 60606
Phone: 312.578.0870

FILE NO.: 500015.0000.0005 01 G000 TITLE SHEET.dwg

NOTES

1. THIS PLAN WAS PRODUCED UTILIZING MULTIPLE RESOURCES:
   - AERIAL IMAGERY FROM ESRI.
   - TOPOGRAPHIC DATA WITHIN THE DEVELOPMENT AREA BASED ON GROUND SURVEY BY WT GROUP PERFORMED IN MARCH 2023. TOPOGRAPHIC DATA OUTSIDE OF THE DEVELOPMENT AREA IS BASED ON USGS 1 METER DEM.
   - PROPERTY LINES AND EASEMENTS FROM ALTA SURVEY PERFORMED ON MARCH 2023 BY WT GROUP (2675 PRATUM AVENUE | HOFFMAN ESTATES, IL 60192 - T: 224.293.6333).
   - WETLANDS DELINEATED BY SWCA ENVIRONMENTAL CONSULTANTS ON SEPTEMBER 2022.
2. THIS PARCEL (02-19-100-013) IS LISTED AS BEING IN ZONE "X", DESCRIBED AS "AREA OF MINIMAL FLOODING PER F.E.M.A. PANEL NO. 17089C0130J DATED 06/02/15.
3. THE LOCATIONS OF PROPOSED IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO: FENCING, SOLAR ARRAY RACKING, INVERTER/TRANSFORMER PADS, OVERHEAD POLES, AND LINES, ETC., SHOWN ARE APPROXIMATE AND ARE SUBJECT TO MODIFICATION DUE TO SITE CONDITIONS, ADDITIONAL PERMITTING REQUIREMENTS, EQUIPMENT SPECIFICATIONS, AND/OR OTHER CONSTRAINTS.
4. THE DEVELOPMENT WILL AVOID EASEMENTS, AND PROVIDE THE MINIMUM SETBACKS NOTED FROM EXTERNAL PROPERTY BOUNDARIES AND DESIGNATED NATURAL RESOURCES.
5. CONTRACTOR SHALL CALL 811 AT LEAST 72 HOURS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EXISTING UTILITIES LOCATED. ADDITIONALLY, CONTRACTOR SHALL CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES.

STANDARD SOIL EROSION AND SEDIMENT CONTROL NOTES

1. CONTROL MEASURES SHALL MEET THE MINIMUM STANDARDS AND SPECIFICATIONS OF THE *ILLINOIS URBAN MANUAL* (WWW.AISWCD.ORG/IUM) UNLESS STATED OTHERWISE.
2. SOIL DISTURBANCE SHALL BE CONDUCTED IN SUCH A MANNER AS TO MINIMIZE EROSION. AREAS OF THE DEVELOPMENT SITE THAT ARE NOT TO BE DISTURBED SHALL BE PROTECTED FROM CONSTRUCTION TRAFFIC OR OTHER DISTURBANCE UNTIL FINAL STABILIZATION IS ACHIEVED.
3. SOIL STABILIZATION MEASURES SHALL CONSIDER THE TIME OF YEAR, DEVELOPMENT SITE CONDITIONS AND THE USE OF TEMPORARY OR PERMANENT MEASURES.
4. STABILIZATION BY SEEDING SHALL INCLUDE TOPSOIL PLACEMENT AND FERTILIZATION, AS NECESSARY.
5. NATIVE SEED MIXTURES SHALL INCLUDE RAPID-GROWING ANNUAL GRASSES OR SMALL GRAINS TO PROVIDE INITIAL, TEMPORARY SOIL STABILIZATION.
6. OFFSITE PROPERTY SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION. VELOCITY DISSIPATION DEVICES SHALL BE PLACED AT CONCENTRATED DISCHARGE LOCATIONS AND ALONG THE LENGTH OF ANY OUTFALL CHANNEL, AS NECESSARY TO PREVENT EROSION.
7. SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE DISTURBANCE OF TRIBUTARY AREAS.
8. STABILIZATION OF DISTURBED AREAS SHALL BE INITIATED IMMEDIATELY WHENEVER ANY CLEARING, GRADING, EXCAVATING OR OTHER EARTH DISTURBING ACTIVITIES HAVE PERMANENTLY CEASED ON ANY PORTION OF THE DEVELOPMENT SITE, OR TEMPORARILY CEASED ON ANY PORTION OF THE DEVELOPMENT SITE AND WILL NOT RESUME FOR A PERIOD EXCEEDING 14 CALENDAR DAYS. STABILIZATION OF DISTURBED AREAS SHALL BE INITIATED WITHIN 1 WORKING DAY OF PERMANENT OR TEMPORARY CESSATION OF EARTH DISTURBING ACTIVITIES AND SHALL BE COMPLETED AS SOON AS POSSIBLE, BUT NOT LATER THAN 14 CALENDAR DAYS FROM THE INITIATION OF STABILIZATION WORK IN AN AREA. EXCEPTIONS TO THESE TIME FRAMES ARE SPECIFIED BELOW:
   a. WHERE THE INITIATION OF STABILIZATION MEASURES IS PRECLUDED BY SNOW COVER, STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE; AND
   b. IN AREAS WHERE CONSTRUCTION ACTIVITY HAS TEMPORARILY CEASED AND WILL RESUME AFTER 14 DAYS, A TEMPORARY STABILIZATION METHOD MAY BE USED.
9. DISTURBANCE OF STEEP SLOPES SHALL BE MINIMIZED. AREAS OR EMBANKMENTS HAVING SLOPES STEEPER THAN 3:1 SHALL BE STABILIZED WITH STAKED IN PLACE SOD, EROSION CONTROL BLANKET IN COMBINATION WITH SEEDING, OR AN EQUIVALENT CONTROL MEASURE.
10. PERIMETER CONTROL MEASURES SHALL BE PROVIDED DOWNSLOPE AND PERPENDICULAR TO THE FLOW OF RUNOFF FROM DISTURBED AREAS, WHERE THE TRIBUTARY AREA IS GREATER THAN 5,000 SQUARE FEET, AND WHERE RUNOFF WILL FLOW IN A SHEET FLOW MANNER. PERIMETER EROSION CONTROL SHALL ALSO BE PROVIDED AT THE BASE OF SOIL STOCKPILES.
11. THE STORMWATER MANAGEMENT SYSTEM SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION DOWNSLOPE FROM DISTURBED AREAS. INLET PROTECTION THAT REDUCES SEDIMENT LOADING, WHILE ALLOWING RUNOFF TO ENTER THE INLET SHALL BE REQUIRED FOR ALL STORM SEWERS. CHECK DAMS, OR AN EQUIVALENT CONTROL MEASURE, SHALL BE REQUIRED FOR ALL CHANNELS. FILTER FABRIC INLET PROTECTION AND STRAW BALE DITCH CHECKS ARE NOT ACCEPTABLE CONTROL MEASURES.
12. IF DEWATERING SERVICES ARE USED, DISCHARGES SHALL BE ROUTED THROUGH AN EFFECTIVE SEDIMENT CONTROL MEASURE (E.G., SEDIMENT TRAP OR AN EQUIVALENT CONTROL MEASURE). THE ENFORCEMENT OFFICER SHALL BE NOTIFIED PRIOR TO THE COMMENCEMENT OF DEWATERING ACTIVITIES.
13. ALL TEMPORARY SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER FINAL STABILIZATION OF THE DEVELOPMENT SITE IS ACHIEVED OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NECESSARY. TRAPPED SEDIMENT SHALL BE REMOVED AND DISTURBED AREAS SHALL BE PERMANENTLY STABILIZED.
14. STOCKPILED SOIL AND MATERIALS SHALL BE REMOVED FROM FLOOD HAZARD AREAS AT THE END OF EACH WORK DAY. SOIL AND MATERIALS STOCKPILED IN IWMC OR BUFFER AREAS SHALL BE PLACED ON TIMBER MATS, OR AN EQUIVALENT CONTROL MEASURE.
15. EFFECTIVE CONTROL MEASURES SHALL BE UTILIZED TO MINIMIZE THE DISCHARGE OF POLLUTANTS FROM THE DEVELOPMENT SITE. AT A MINIMUM, CONTROL MEASURES SHALL BE IMPLEMENTED IN ORDER TO:
   a. MINIMIZE THE DISCHARGE OF POLLUTANTS FROM EQUIPMENT AND VEHICLE WASHING, WHEEL WASH WATER, AND OTHER WASH WATER; AND
   b. MINIMIZE THE EXPOSURE OF BUILDING MATERIALS, BUILDING PRODUCTS, CONSTRUCTION WASTES, TRASH, LANDSCAPE MATERIALS, FERTILIZERS, PESTICIDES, HERBICIDES, DETERGENTS, VEHICLE FLUIDS, SANITARY WASTE, AND OTHER MATERIALS PRESENT ON THE DEVELOPMENT SITE TO PRECIPITATION AND TO STORMWATER.
16. ADEQUATE RECEPTACLES SHALL BE PROVIDED FOR THE DEPOSITING OF ALL CONSTRUCTION MATERIAL DEBRIS GENERATED DURING THE DEVELOPMENT PROCESS. THE APPLICANT SHALL NOT CAUSE OR PERMIT THE DUMPING, DEPOSITING, DROPPING, THROWING, DISCARDING OR LEAVING OF CONSTRUCTION MATERIAL DEBRIS UPON OR INTO ANY DEVELOPMENT SITE, CHANNEL, OR IWMC. THE DEVELOPMENT SITE SHALL BE MAINTAINED FREE OF CONSTRUCTION MATERIAL DEBRIS.
17. THE ENFORCEMENT OFFICER MAY REQUIRE ADDITIONAL OR ALTERNATE SOIL EROSION AND SEDIMENT CONTROL MEASURES, BASED ON DEVELOPMENT SITE SPECIFIC CONSIDERATIONS AND THE EFFECTIVENESS OF THE INSTALLED CONTROL MEASURES.

STANDARD DRAIN TILE NOTES

1. DRAIN TILES DISTURBED DURING REGULATED DEVELOPMENT SHALL BE RECONNECTED BY THOSE RESPONSIBLE FOR THEIR DISTURBANCE, UNLESS THE DEVELOPMENT PLANS SPECIFY ABANDONMENT OF THE DRAIN TILES.
2. ALL ABANDONED DRAIN TILES WITHIN DISTURBED AREAS SHALL BE REMOVED IN THEIR ENTIRETY.
3. DRAIN TILES WITHIN THE DISTURBED AREA OF A DEVELOPMENT SITE SHALL BE REPLACED, BYPASSED AROUND THE DEVELOPMENT SITE OR INTERCEPTED AND CONNECTED TO THE STORMWATER MANAGEMENT SYSTEM FOR THE DEVELOPMENT SITE. THE SIZE OF THE REPLACED OR BYPASSED DRAIN TILE SHALL BE EQUIVALENT TO THE EXISTING DRAIN TILE.

PLANTING NOTES :

1. SEED ALL DISTURBED AREAS INCLUDING LAYDOWN AREAS, USING THE SEED MIX SHOWN IN THE PRELIMINARY NATIVE SEED MIX TABLE, OR APPROVED EQUAL;
2. ALL STOCKPILE AREAS SHALL BE LOCATED WITHIN LIMIT OF WORK LINE AND STABILIZED TO PREVENT EROSION.
3. ALL DEBRIS GENERATED DURING SITE PREPARATION ACTIVITIES SHALL BE LEGALLY DISPOSED OF OFF-SITE.
4. PROVIDE CRIBBING AS NECESSARY TO PROTECT EXISTING UTILITY LINES DURING CONSTRUCTION.
5. PLANTING SEED SHALL BE SOWN IN SEASONAL CONDITIONS AS APPROPRIATE FOR GOOD SEED SURVIVAL, OR AT SUCH TIMES AS APPROVED BY THE OWNER.
6. PROTECT NEWLY TOPSOILED, GRADED AND/OR SEEDED AREAS FROM TRAFFIC AND EROSION. KEEP AREAS FREE OF TRASH AND DEBRIS RESULTING FROM LANDSCAPE CONTRACTOR OPERATIONS.
7. REPAIR AND RE-ESTABLISH GRADES IN SETTLED, ERODED AND RUTTED AREAS TO THE SPECIFIED GRADE AND TOLERANCES.
8. ALL PLANT MATERIAL SHALL CONFORM TO THE MINIMUM GUIDELINES ESTABLISHED BY THE AMERICAN STANDARD FOR NURSERY STOCK PUBLISHED BY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION.
9. ANY PROPOSED SUBSTITUTIONS OF PLANT MATERIAL SHALL BE MADE WITH MATERIAL EQUIVALENT TO THE DESIRED MATERIAL IN OVERALL FORM, HEIGHT, BRANCHING HABIT, FLOWER, LEAF, COLOR, FRUIT AND CULTURE. PROPOSED SUBSTITUTIONS WILL ONLY BE CONSIDERED IF SUBMITTED WITH ENUMERATED REASONS WHY SUBSTITUTIONS ARE PROPOSED.
10. CAUTION SHALL BE USED NOT TO EXTEND MULCH LAYER ABOVE SOIL LEVEL AT TRUNKS/STEMS OF INSTALLED PLANT MATERIAL.
11. ALL PLANT MATERIALS SHALL BE GUARANTEED FOR ONE YEAR FOLLOWING DATE OF FINAL ACCEPTANCE.
12. THE LANDSCAPE CONTRACTOR SHALL CLEAN UP AND REMOVE ANY DEBRIS FROM THE SITE CAUSED BY THE LANDSCAPE CONTRACTOR.

SEQUENCE OF MAJOR CONSTRUCTION ACTIVITIES:

1. INSTALL PERIMETER SE/SC MEASURES SUCH AS SILT FENCE AND A STABILIZED CONSTRUCTION ENTRANCE.
2. DISTURBED AREAS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS CEASED FOR MORE THAN 14 DAYS SHALL BE TEMPORARILY SEEDED AND WATERED. MAINTENANCE FOR SE/SC MEASURES MUST OCCUR EVERY TWO WEEKS AND AFTER EVERY 0.5-INCH OR GREATER RAINFALL EVENT.
3. INSTALL ASSOCIATED INLET AND OUTLET PROTECTION (IF APPLICABLE).
4. TEMPORARILY STABILIZE ALL AREAS INCLUDING LOTS THAT HAVE REACHED TEMPORARY GRADE.
5. INSTALL GRAVEL ACCESS, EQUIPMENT PADS, FENCE LINE, ARRAY SUPPORT PILES, AND OTHER MAJOR COMPONENTS.
6. REMOVE ALL TEMPORARY SE/SC MEASURES.

PRELIMINARY- NOT FOR CONSTRUCTION

SEAL:

LICENSED PROFESSIONAL ENGINEER — ANDREW B. GRAHAM — 062.046682 — STATE OF ILLINOIS

2023.06.15 10:47:04-05'00'

PROFESSIONAL ENGINEER:
ANDREW B. GRAHAM
062046682

EXPIRATION DATE:
11/30/23

TRC ENVIRONMENTAL CORP.
DESIGN FIRM LIC. # 184004960002

NO.	BY	DATE	REVISION	APP'D.
1	CC	6/14/2023	ISSUED FOR PERMIT	ABG

PROJECT:
RENEWABLE PROPERTIES, LLC
HIGHWAY 20 SOLAR
KANE COUNTY, IL

TITLE:
GENERAL NOTES

DRAWN BY:	N. SCHULTZ	PROJ. NO.:	500015.0000.0005
CHECKED BY:	A. GRAHAM		
APPROVED BY:	A. GRAHAM		**G010**
DATE:	JUNE 2023		

230 West Monroe St.
Suite 1840
Chicago, IL 60606
Phone: 312.578.0870

FILE NO.: 500015.0000.0005 02 G010 GENERAL NOTES.dwg

LEGEND

- PROPERTY LINE
- EASEMENT LINE
- BUILDING SETBACK
- WETLAND SETBACK
- FENCE LINE
- EXISTING OVERHEAD LINE
- FIELD LINE
- CONTOUR LINE
- EDGE GRAVEL/STONE
- UTILITY POLE
- EVERGREEN/DECIDUOUS WITH SIZE IN INCHES
- WETLANDS
- EXISTING BUILDING
- LOW AREA WITH STANDING WATER POTENTIAL (LIKELY LOCATION OF DRAIN TILES)
- FLOOD HAZARD

NOTES

1. TOPOGRAPHIC ALTA SURVEY PROVIDED BY WT GROUP ON MARCH 2023.
2. WETLANDS DELINEATED BY SWCA ENVIRONMENTAL CONSULTANTS ON SEPTEMBER 2022.
3. THIS SITE IS LISTED AS BEING IN ZONE "X", DESCRIBED AS "AREA OF MINIMAL FLOOD HAZARD."

0 150 300 450 600
SCALE IN FEET

SEAL:

LICENSED PROFESSIONAL ENGINEER ANDREW B. GRAHAM 062.048682 STATE OF ILLINOIS
2023.06.15 10:47:27-05'00'

PROFESSIONAL ENGINEER:
ANDREW B. GRAHAM
062048682

EXPIRATION DATE:
11/30/23

TRC ENVIRONMENTAL CORP.
DESIGN FIRM LIC. # 18400496-0002

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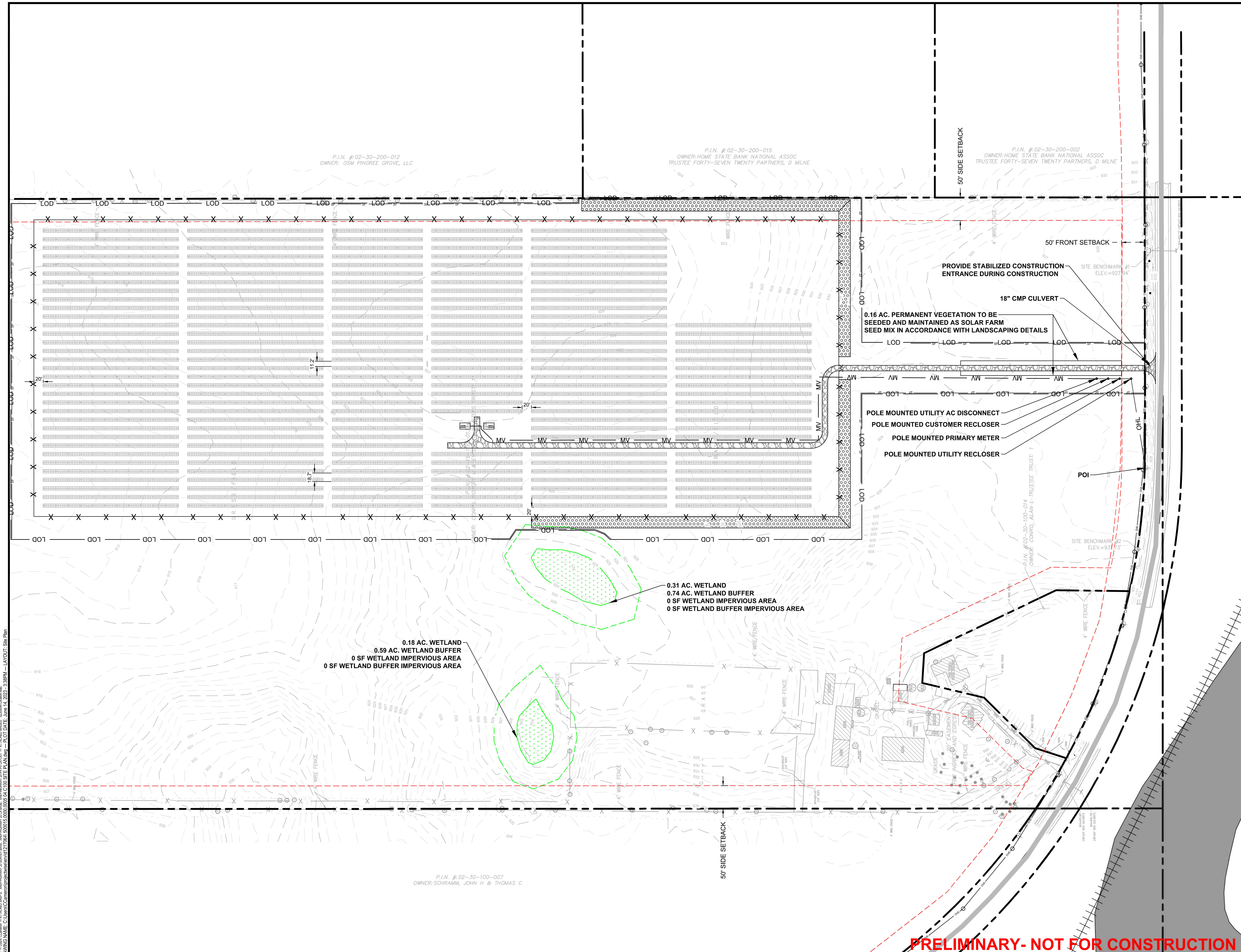
PROJECT:
RENEWABLE PROPERTIES, LLC
HIGHWAY 20 SOLAR
KANE COUNTY, IL

TITLE:
EXISTING CONDITIONS

DRAWN BY:	N. SCHULTZ	PROJ. NO.:	500015.0000.0005
CHECKED BY:	A. GRAHAM		C050
APPROVED BY:	A. GRAHAM		
DATE:	JUNE 2023		

TRC
230 West Monroe St.
Suite 1840
Chicago, IL 60606
Phone: 312.578.0870

FILE NO.: 500015.0000.0005 03 C050 EXISTING CONDITIONS.dwg



LEGEND

- PROPERTY LINE
- EASEMENT LINE
- BUILDING SETBACK
- WETLAND SETBACK
- FENCE LINE
- LIMITS OF DISTURBANCE
- MV CABLE
- PROPOSED OVERHEAD LINE
- EXISTING OVERHEAD LINE
- SILT FENCE
- RAILROAD
- GRAVEL ACCESS ROAD
- WETLANDS
- FLOOD HAZARD
- ATI 78 MODULE TRACKER ROW
- ATI 52 MODULE TRACKER ROW
- POWER STATION - (1) MV TRANSFORMER, (1) DAS, (1) WEATHER STATION
- VEGETATIVE LANDSCAPE SCREENING

NOTES

1. ACCESS ROADS SHALL BE DESIGNED TO ACCOMMODATE CONSTRUCTION, OPERATIONS, MAINTENANCE, AND EMERGENCY TRAFFIC.
2. THERE IS NO EXPECTED TREE CLEARING.
3. VEHICLE GATE IS SHOWN. ADDITIONAL PEDESTRIAN ACCESS GATES MAY BE ADDED.
4. SITE GRADING MAY BE REQUIRED TO ACCOMMODATE TRACKER GROUND CLEARANCES, BUT THE SITE DRAINAGE PATTERNS WILL BE MAINTAINED.
5. THE LAND BENEATH THE PV TRACKERS WILL BE RE-VEGETATED AS INDICATED ON THE LANDSCAPE PLANS. THIS MEASURE WILL SERVE AS A BEST MANAGEMENT PRACTICE TO REDUCE RUNOFF VOLUMES AND MINIMIZE SEDIMENT LOSS.
6. NO LIGHTING IS PROPOSED.
7. THE CONCRETE WASHOUT AREA WILL BE TEMPORARY AND WILL NOT CONTRIBUTE TO THE IMPERVIOUS SURFACE AREA.
8. THE TOTAL DISTURBED AREA IS 32.78 ACRES AND IS ASSUMED TO BE THE TOTAL LAND AREA WITHIN THE LIMITS OF DISTURBANCE. THE TOTAL HYDROLOGICALLY DISTURBED AREA IS 0.51 ACRES (THE AREA OF IMPERVIOUS SURFACE).
9. PERMANENT VEGETATION TO BE SEEDED AND MAINTAINED AS SOLAR FARM SEED MIX WITHIN THE FENCED PV ARRAY AREA.

0 100 200 300 400
SCALE IN FEET

SEAL:

LICENSED PROFESSIONAL ENGINEER
ANDREW B. GRAHAM
062.048682
STATE OF ILLINOIS
2023.06.15 10:47:39-05'00'

PROFESSIONAL ENGINEER:
ANDREW B. GRAHAM
062048682

EXPIRATION DATE:
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TRC ENVIRONMENTAL CORP.
DESIGN FIRM LIC. # 18400496-0002

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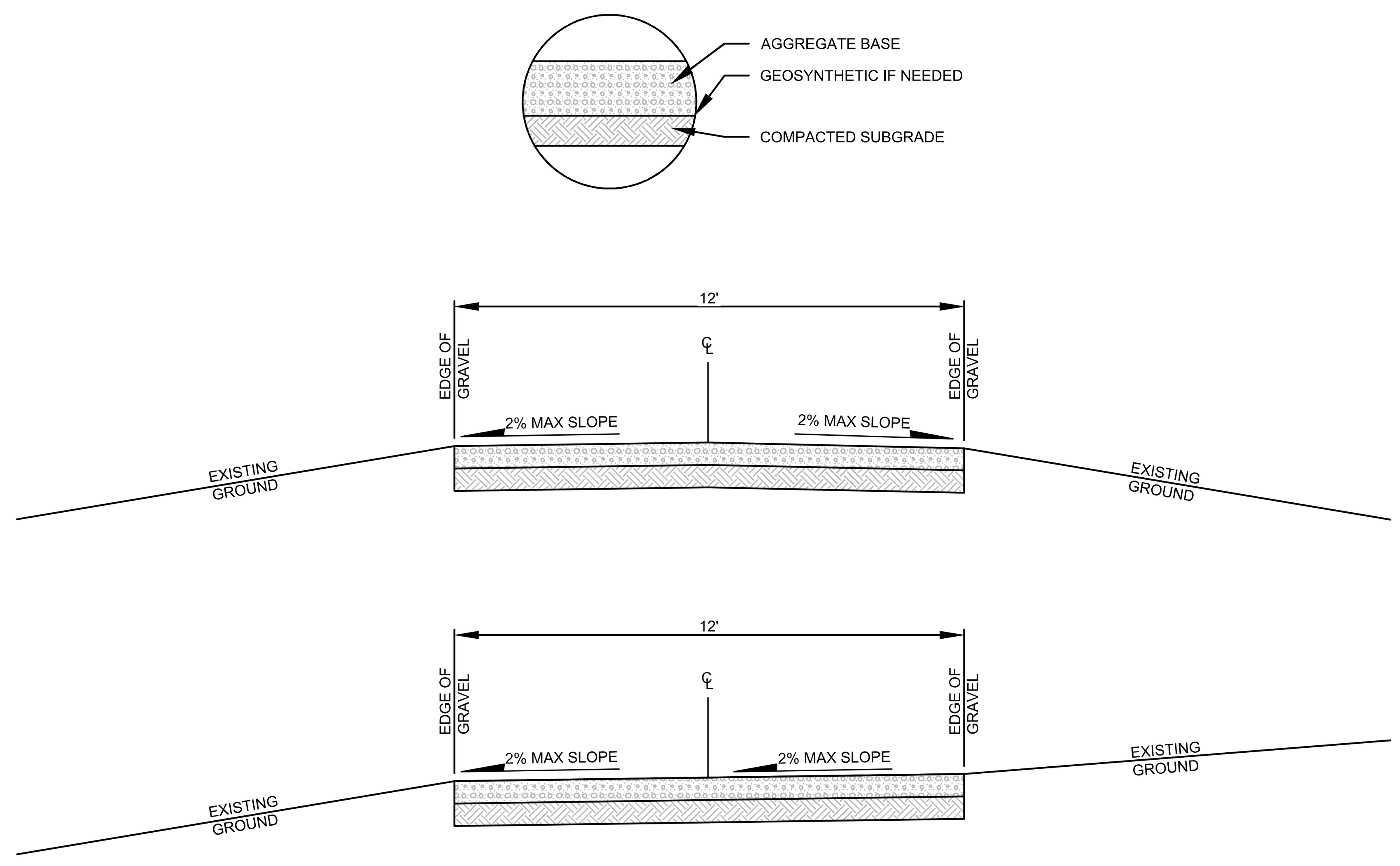
PROJECT:
RENEWABLE PROPERTIES, LLC
HIGHWAY 20 SOLAR
KANE COUNTY, IL

TITLE:
SITE PLAN

DRAWN BY:	N. SCHULTZ	PROJ. NO.:	500015.0000.0005
CHECKED BY:	A. GRAHAM		C100
APPROVED BY:	A. GRAHAM		
DATE:	JUNE 2023		

TRC
230 West Monroe St.
Suite 1840
Chicago, IL 60606
Phone: 312.578.0870

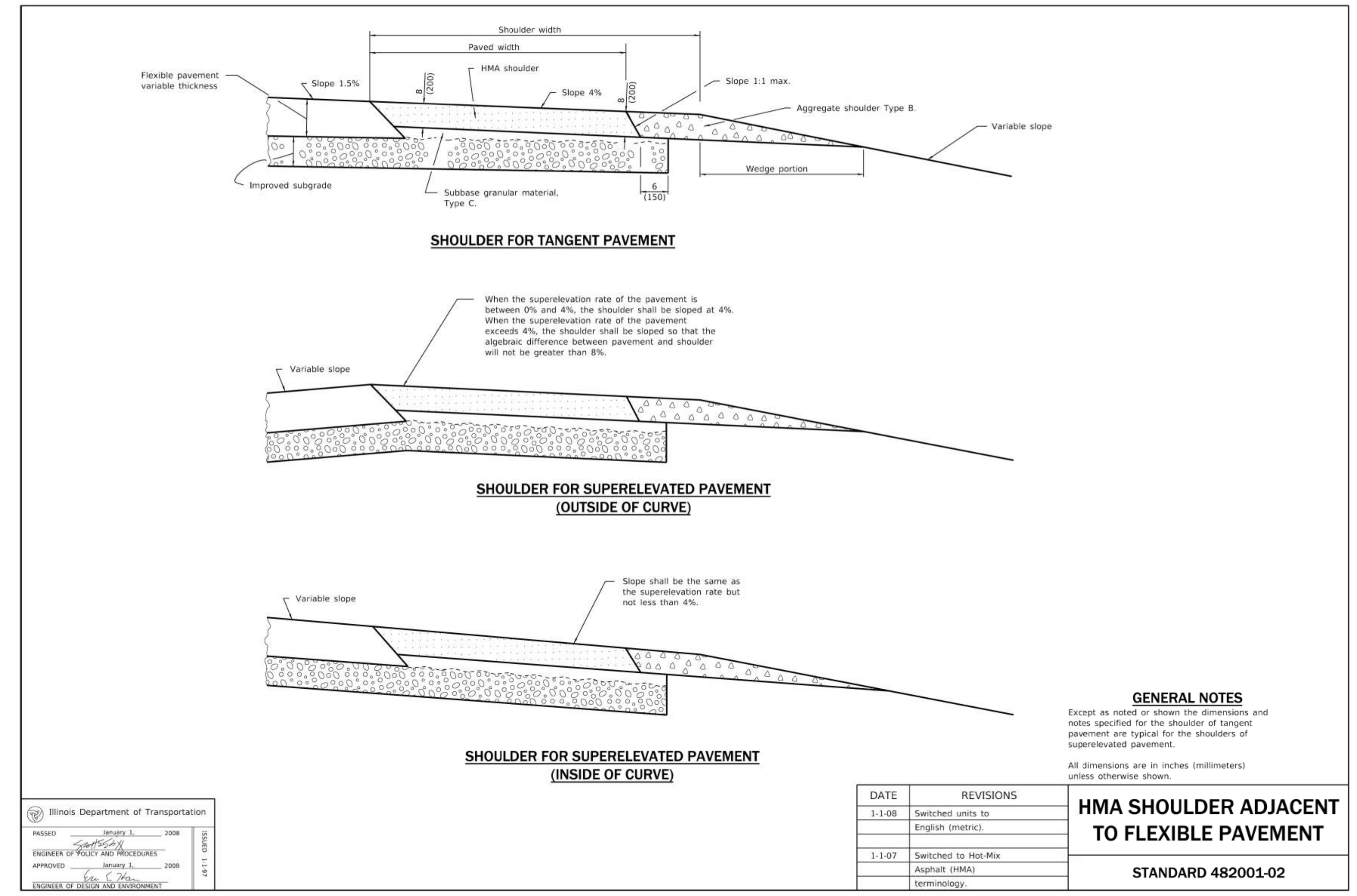
FILE NO.: 500015.0000.0005 04 C100 SITE PLAN.dwg



1 / C501

TYPICAL ACCESS DRIVE SECTION

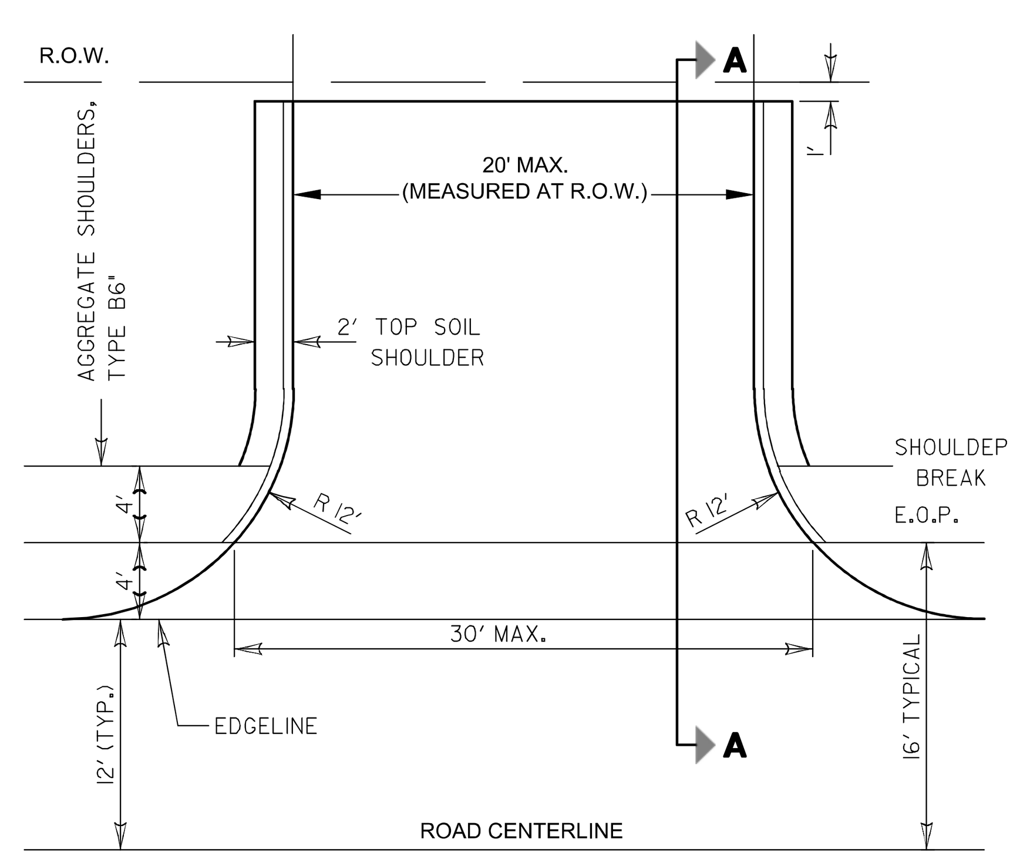
NOT TO SCALE



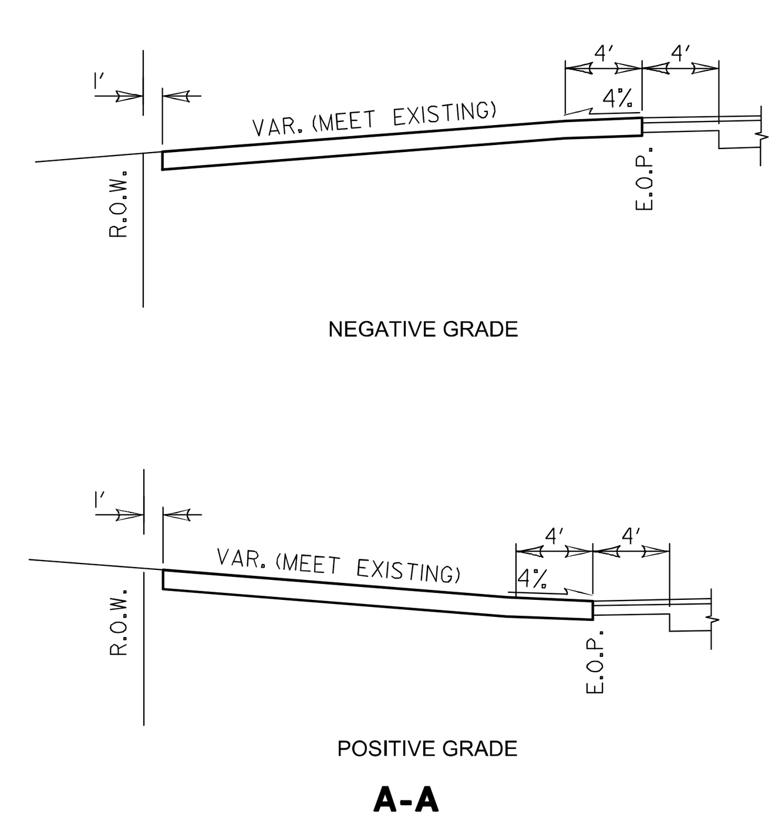
3 / C501

HMA SHOULDER ADJACENT TO FLEXABLE PAVEMENT

NOT TO SCALE



NOTE: ACCESS DRIVE GEOMETRY SUBJECT TO IDOT APPROVAL.



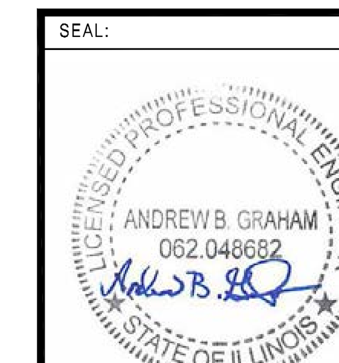
2 / C501

RURAL DRIVEWAY DETAIL

NOT TO SCALE

PRELIMINARY- NOT FOR CONSTRUCTION

SEAL:



2023.06.15 10:47:54-05'00'

PROFESSIONAL ENGINEER:
ANDREW B. GRAHAM
062048682

EXPIRATION DATE:
11/30/23

TRC ENVIRONMENTAL CORP.
DESIGN FIRM LIC. # 18400496-0002

NO.	BY	DATE	REVISION	APP'D.
1	CC	6/14/2023	ISSUED FOR PERMIT	ABG

PROJECT:
RENEWABLE PROPERTIES, LLC
HIGHWAY 20 SOLAR
KANE COUNTY, IL

TITLE:
ACCESS ROAD DETAILS

DRAWN BY:	N. SCHULTZ	PROJ. NO.:	500015.0000.0005
CHECKED BY:	A. GRAHAM		C501
APPROVED BY:	A. GRAHAM		
DATE:	JUNE 2023		

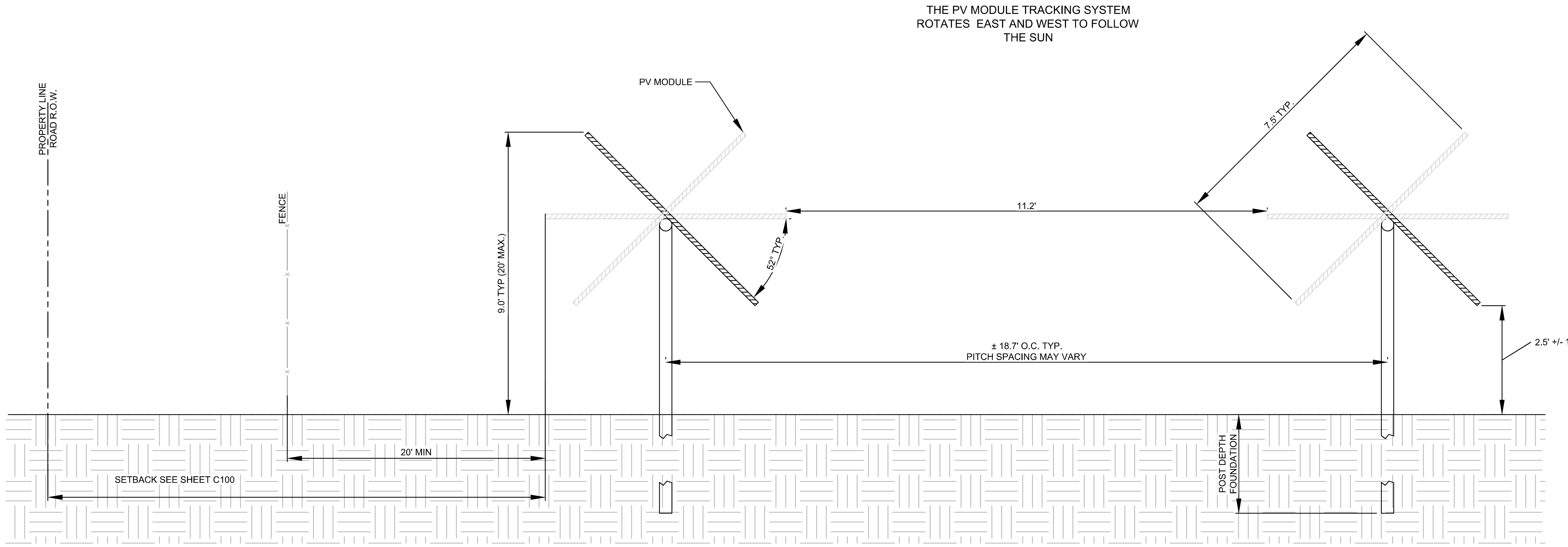
TRC

230 West Monroe St.
Suite 1840
Chicago, IL 60606
Phone: 312.578.0870

FILE NO.: 500015.0000.0005 05 C501 ACCESS ROAD DETAILS.dwg

DRAWING NAME: C:\Users\CCameron\...\500015.0000.0005 05 C501 ACCESS ROAD DETAILS.dwg — PLOT DATE: June 14, 2023 - 3:38PM — LAYOUT: D11

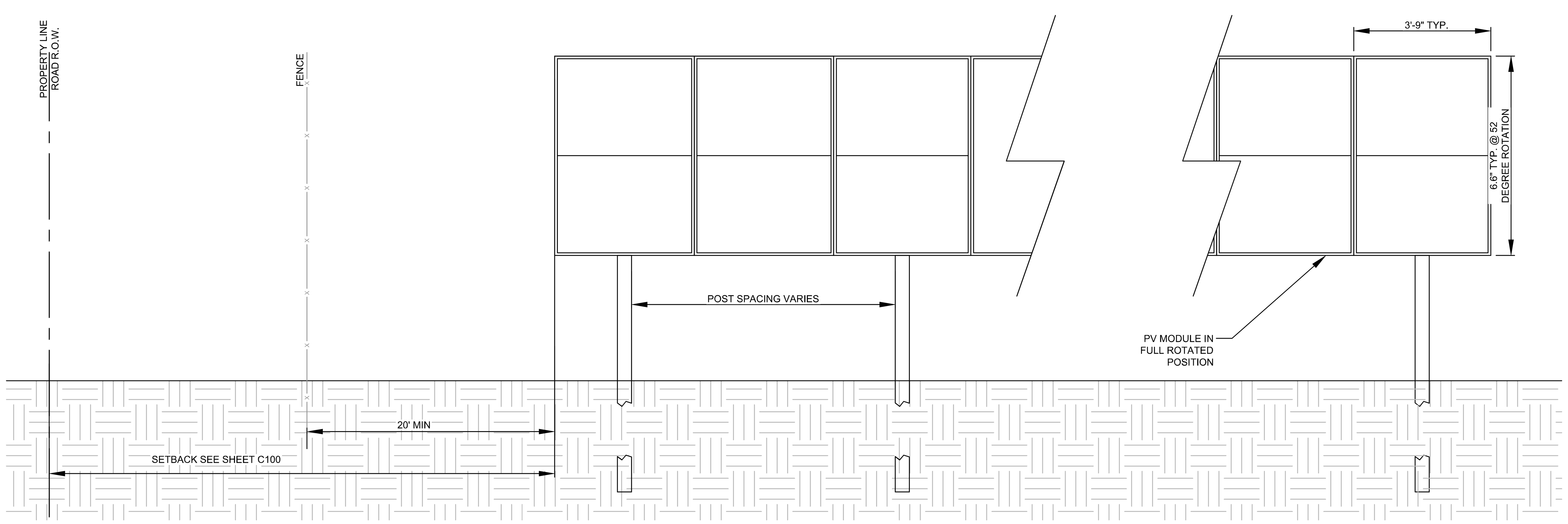
Version: 2017-10-21



SECTION VIEW

1 C502 **TYPICAL RACK SECTION**

NOT TO SCALE



ELEVATION VIEW

2 C502 **TYPICAL RACK ELEVATIONS**

NOT TO SCALE

PRELIMINARY- NOT FOR CONSTRUCTION

SEAL:

LICENSED PROFESSIONAL ENGINEER ANDREW B. GRAHAM 062.048682 STATE OF ILLINOIS

2023.06.15 10:48:06-05'00'

PROFESSIONAL ENGINEER:
ANDREW B. GRAHAM
062048682

EXPIRATION DATE:
11/30/23

TRC ENVIRONMENTAL CORP.
DESIGN FIRM LIC. # 18400496-0002

NO.	BY	DATE	REVISION	APP'D.
1	CC	6/14/2023	ISSUED FOR PERMIT	ABG

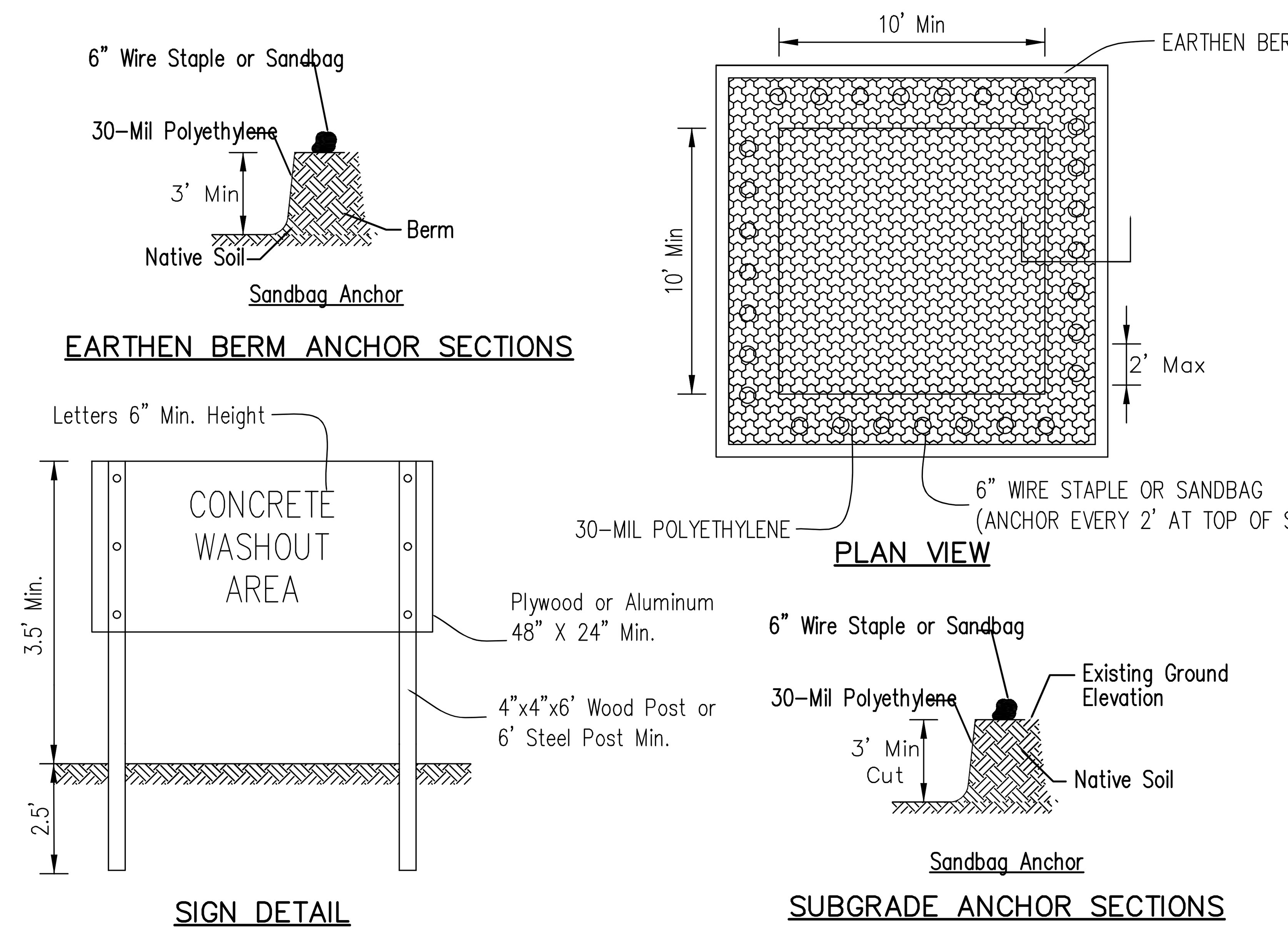
PROJECT:
RENEWABLE PROPERTIES, LLC
HIGHWAY 20 SOLAR
KANE COUNTY, IL

TITLE:
PV TRACKERS

DRAWN BY:	N. SCHULTZ	PROJ. NO.:	500015.0000.0005
CHECKED BY:	A. GRAHAM		C502
APPROVED BY:	A. GRAHAM		
DATE:	JUNE 2023		

TRC
230 West Monroe St.
Suite 1840
Chicago, IL 60606
Phone: 312.578.0870

FILE NO.: 500015.0000.0005 06 C502 PV TRACKERS.dwg



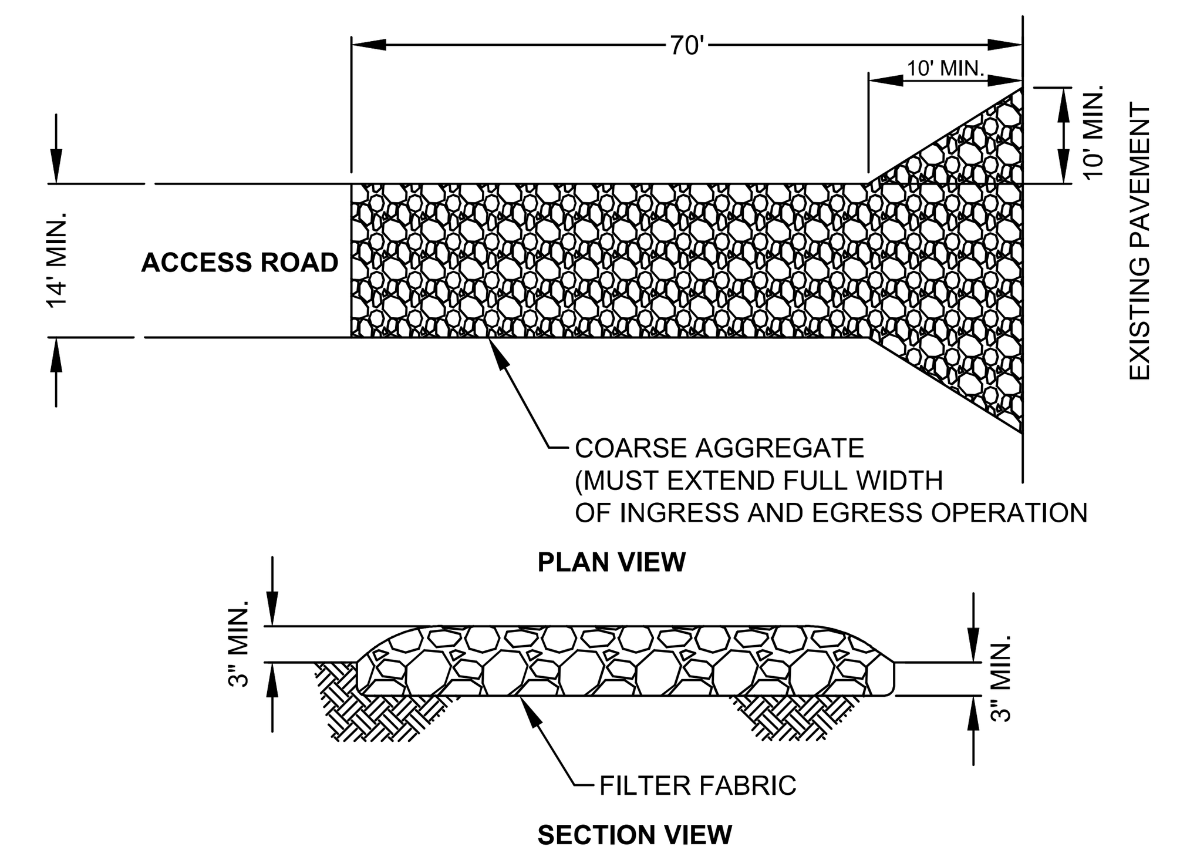
NOTES:

1. Maintaining temporary concrete washout facilities shall include removing and disposing of hardend concrete and/or slurry and returning the facilities to a functional condition.
2. Facility shall be cleaned or reconstructed in a new area once washout becomes two-thirds full.

1 / C503

CONSTRUCTION WASHOUT DETAIL

NOT TO SCALE



NOTES:

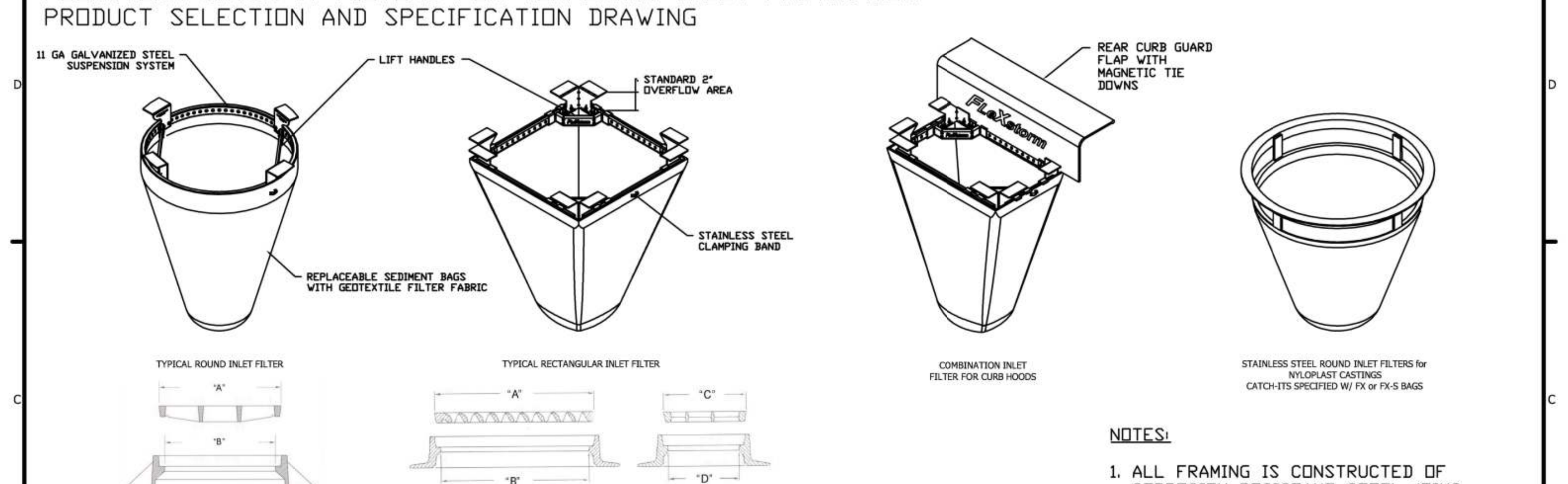
1. FILTER FABRIC SHALL MEET THE REQUIREMENTS OF MATERIAL SPECIFICATION 592 GEOTEXTILE, TABLE 1 OR 2, CLASS I, II OR IV AND SHALL BE PLACED OVER THE CLEARED AREA PRIOR TO THE PLACING OF ROCK.
2. ROCK OR RECLAIMED CONCRETE SHALL MEET ONE OF THE FOLLOWING IDOT COARSE AGGREGATE GRADATION, CA-1, CA-2, CA-3 OR CA-4 AND BE PLACED ACCORDING TO CONSTRUCTION SPECIFICATION 25 ROCKFILL USING PLACEMENT METHOD 1 AND CLASS 3 COMPACTION.
3. ANY DRAINAGE FACILITIES REQUIRED BECAUSE OF WASHING SHALL BE CONSTRUCTED ACCORDING TO MANUFACTURERS SPECIFICATIONS.
4. PROVIDE POSITIVE DRAINAGE TO SEDIMENT TRAPPING DEVICE.

4 / C503

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE

FLEXSTORM CATCH-IT FILTERS FOR TEMPORARY INLET PROTECTION
PRODUCT SELECTION AND SPECIFICATION DRAWING



1. INDENTIFY YOUR FRAME STYLE AND SIZE

STYLE	FRAME STYLE AND SIZE	Frame P/N:
ROUND	Small Round (up to 20.0" dia grates (A) dim)	62SRD
	Med Round (20.1" - 26.0" dia grates (A) up to 25" dia openings (B))	62MRD
	Large Round (26.1" - 32.0" dia grates (A) up to 30" openings (B))	62LRD
	XL Round (32.1" dia - 39" dia grates (A) up to 37" dia openings (B))	62XLRD
RECT/ SQUARE	Small Rect / Square (up to 16" (B) x 16" (D) openings or 64" perimeter)	62SSQ
	Med Rect / Square (up to 24" (B) x 24" (D) openings or 96" perimeter)	62MSQ
	Large Rect / Square (up to 36" (B) x 24" (D) openings or 120" perimeter)	62LSQ
	XL Rect / Square (side by side 2 pc set to fit up to 48" (B) x 36" (D) openings)	62XLSQ
COMBO INLETS	Small Rect / Square (ref Rect sizing; shipped with Magnetic Curb Flaps)	62SCB
	Med Rect / Square (ref Rect sizing; shipped with Magnetic Curb Flaps)	62MCB
	Large Rect / Square (ref Rect sizing; shipped with Magnetic Curb Flaps)	62LCB
	XL Rect / Square (ref Rect sizing; shipped with Magnetic Curb Flaps)	62XLCB
NYLOPLAST	12" diameter Nyloplast castings (Stainless Steel Framing standard)	6212NY
	15" diameter Nyloplast castings (Stainless Steel Framing standard)	6215NY
	18"diameter Nyloplast castings (Stainless Steel Framing standard)	6218NY
	24" diameter Nyloplast castings (Stainless Steel Framing standard)	6224NY
	30" diameter Nyloplast castings (Stainless Steel Framing standard)	6230NY

SPECIFICATIONS FOR STANDARD BAGS BY NOMINAL SIZE

Nominal Bag Size	Solids Storage (CuFt)	Filtered Flow Rate at 50% Max (CFS)	
		FX (Woven)	IL (NonWoven)
Small	1.6	1.2	0.9
Medium	2.1	1.7	1.3
Large	3.8	2.7	1.9
XL	4.2	3.6	2.6

2. SELECT YOUR BAG PART NUMBER

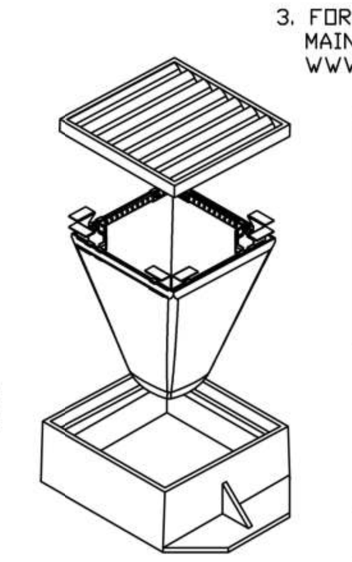
FLEXSTORM FILTER BAGS	(22" depth) STD Bag P/N	(12" depth) Short Bag P/N	Clean Water Flow Rate (GPM/SqFt)	Min A.O.S. (US Sieve)
FX: Standard Woven Bag	FX	FX-S	200	40
IL: IDOT Non-Woven Bag	IL	IL-S	145	70

3. CREATE YOUR FLEXSTORM INLET FILTER PART NUMBER

Frame P/N from Step 1. Filter Bag P/N from Step 2.

INSTALLATION:

1. REMOVE GRATE
2. DROP FLEXSTORM INLET FILTER ONTO LOAD BEARING LIP OF CASTING OR CONCRETE STRUCTURE
3. REPLACE GRATE



NOTES:

1. ALL FRAMING IS CONSTRUCTED OF CORROSION RESISTANT STEEL (ZINC PLATED OR GALVANIZED) FOR 7 YEAR MINIMUM SERVICE LIFE.
2. UPON ORDERING CONFIRMATION OF THE DOT CALLOUT, PRECAST OR CASTING MAKE AND MODEL, OR DETAILED DIMENSIONAL FORMS MUST BE PROVIDED TO CONFIGURE AND ASSEMBLE YOUR CUSTOMIZED FLEXSTORM INLET FILTER. PART NUMBER ALONE IS NOT SUFFICIENT.
3. FOR WRITTEN SPECIFICATIONS AND MAINTENANCE GUIDELINES VISIT WWW.INLETFILTERS.COM

FLEXSTORM INLET FILTERS
CATCH IT

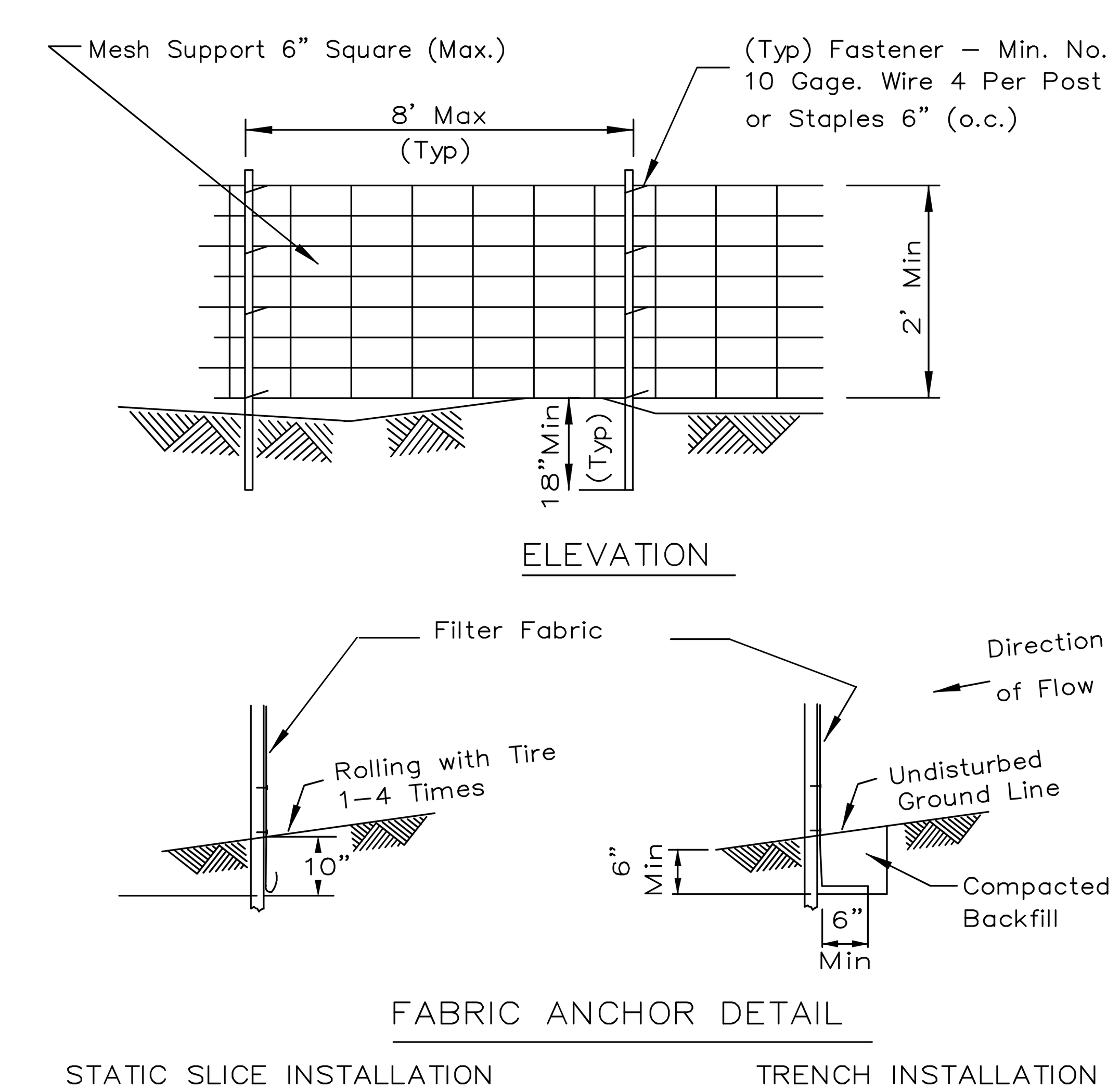
ALL PRODUCTS MANUFACTURED BY INLET & PIPE PROTECTION, INC
A DIVISION OF ADS, INC.
WWW.INLETFILTERS.COM
(866) 287-8655 PH
(630) 355-3477 FX
INFO@INLETFILTERS.COM

SIZE C | DWG NO FLEXSTORM_CATCH_IT | REV A | SCALE | SHEET 1 OF 1

2 / C503

FLEXSTORM INLET DETAIL

NOT TO SCALE



NOTES:

1. Silt Fence shall be installed prior to any grading work in the area to be protected. They shall be maintained throughout the construction period and removed in conjunction with the final grading and site stabilization. Silt fence shall be placed on the flattest area available.
2. Filter fabric shall meet the requirements of material specification 592 Geotextile Table 1 or 2, Class with equivalent opening size of at least 30 for nonwoven and 40 for woven.
3. Fence posts shall be either standard steel post or wood post with a minimum cross-sectional area of 3.0 sq. in.

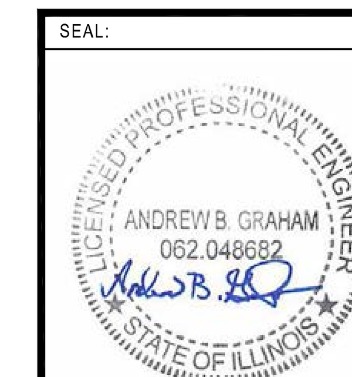
3 / C503

SILT FENCE DETAIL

NOT TO SCALE

PRELIMINARY- NOT FOR CONSTRUCTION

SEAL:



2023.06.15 10:48:18-05'00'

PROFESSIONAL ENGINEER:
ANDREW B. GRAHAM
062048682

EXPIRATION DATE:
11/30/23

TRC ENVIRONMENTAL CORP.
DESIGN FIRM LIC. # 18400496-0002

NO.	BY	DATE	REVISION	APP'D.
1	CC	6/14/2023	ISSUED FOR PERMIT	ABG

PROJECT:
RENEWABLE PROPERTIES, LLC
HIGHWAY 20 SOLAR
KANE COUNTY, IL

TITLE:
EROSION CONTROL DETAILS

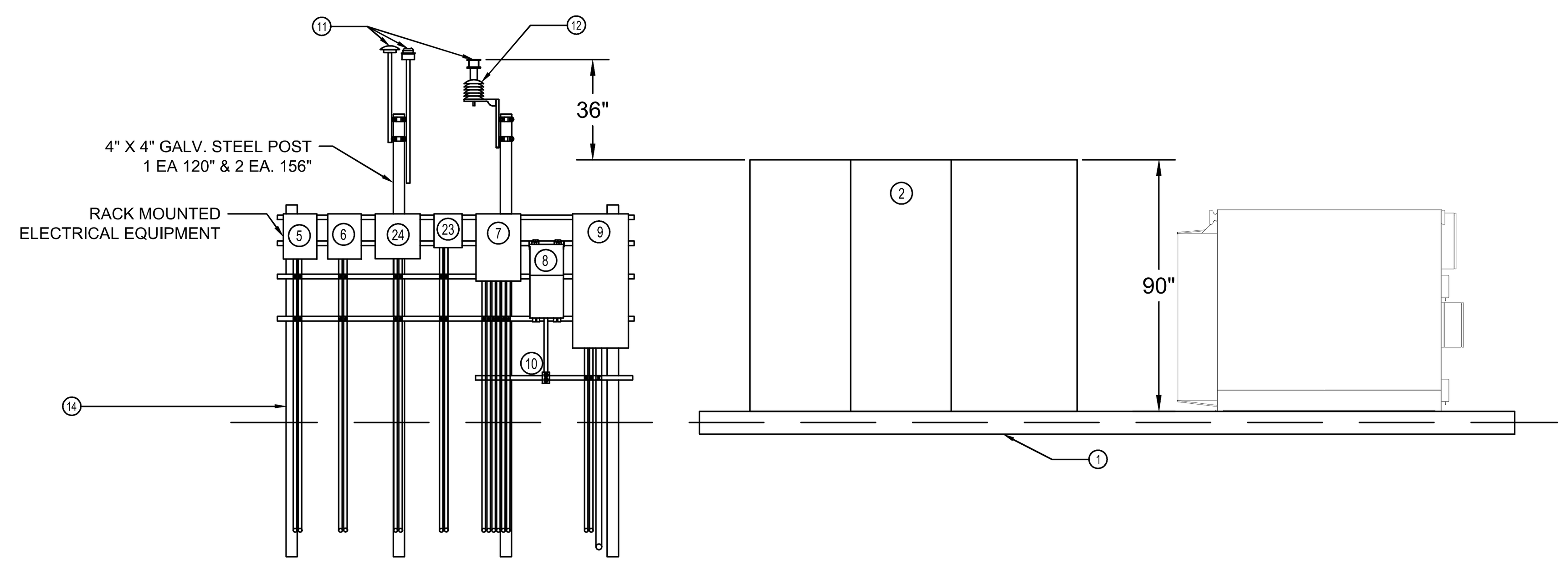
DRAWN BY:	N. SCHULTZ	PROJ. NO.:	500015.0000.0005
CHECKED BY:	A. GRAHAM		C503
APPROVED BY:	A. GRAHAM		
DATE:	JUNE 2023		

TRC
230 West Monroe St.
Suite 1840
Chicago, IL 60606
Phone: 312.578.0870

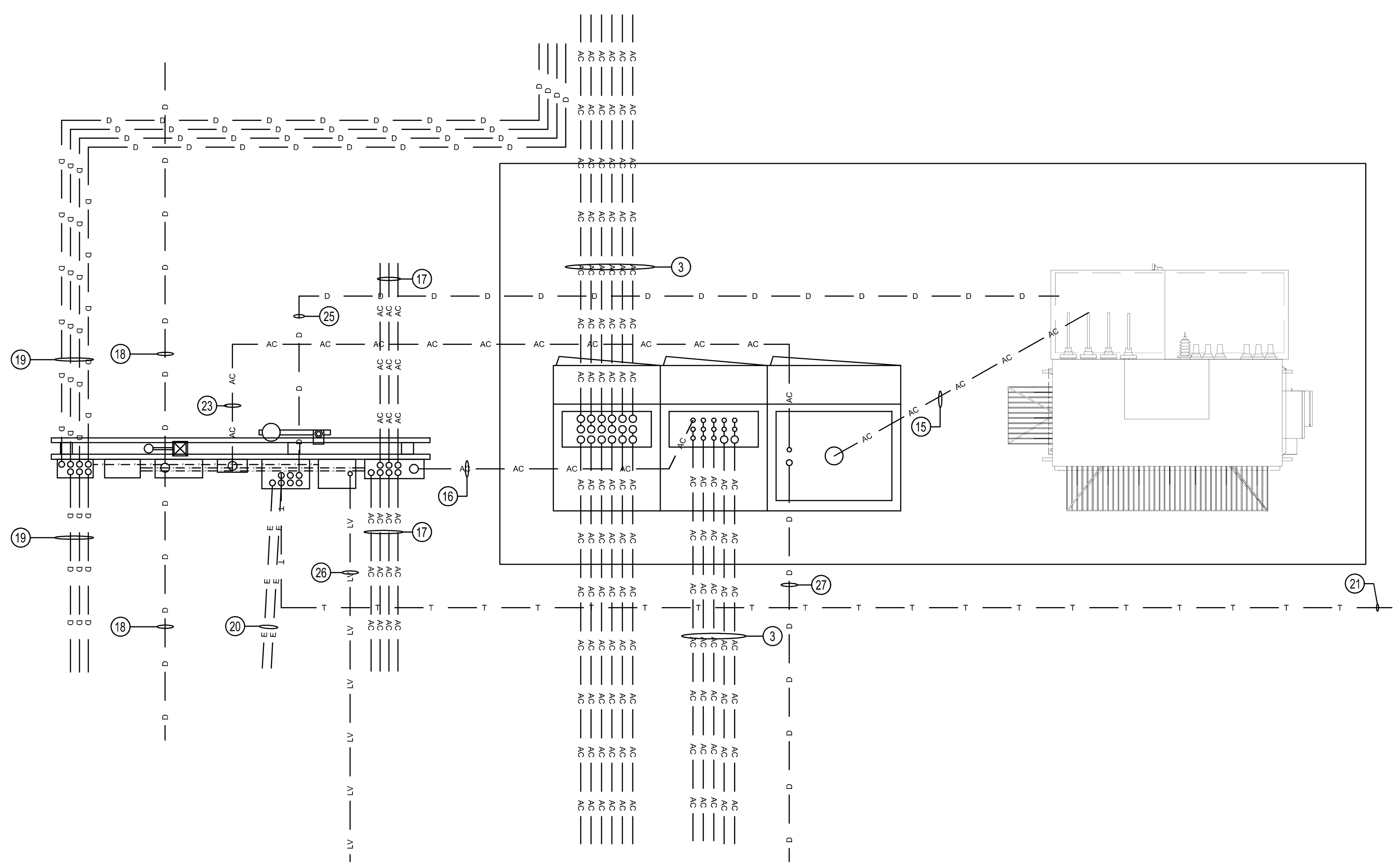
FILE NO.: 500015.0000.0005 07 C503 EROSION CONTROL DETAILS.dwg

DRAWING NAME: C:\Users\CCameron\projectwise\...\500015.0000.0005 07 C503 EROSION CONTROL DETAILS.dwg — PLOT DATE: June 14, 2023 - 5:04PM — LAYOUT: EROSION CONTROL DETAILS

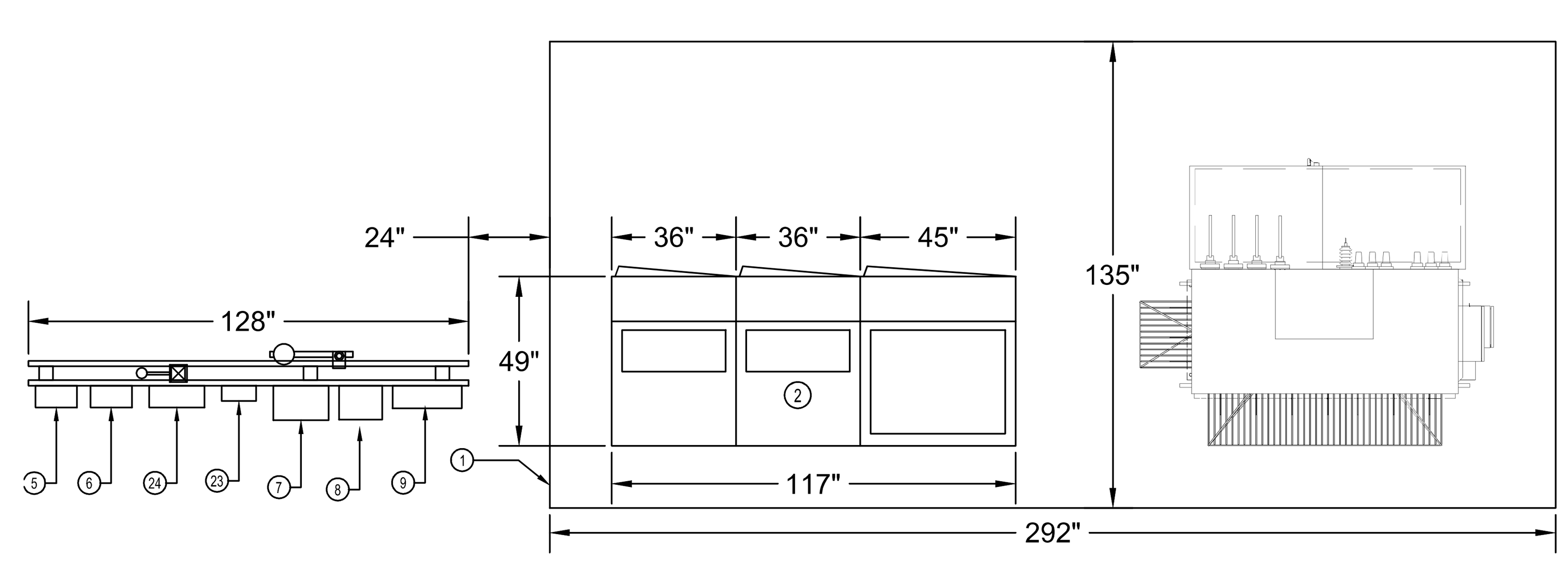
Version: 2017-10-21



1 C504 **EQUIPMENT PAD ELEVATION**
NOT TO SCALE



2 C504 **EQUIPMENT PAD- U.G. CONDUIT LAYOUT**
NOT TO SCALE



3 C504 **EQUIPMENT PAD- PLAN VIEW**
NOT TO SCALE

LEGEND

———	ABOVE GROUND
— — —	UNDER GROUND
— D —	U.G. DATA
— LV —	U.G. 120V
— MV —	U.G. MV
— AC —	U.G. 480V
— DC —	U.G. DC
— E —	U.G. SIGNAL
— T —	U.G. TELCO

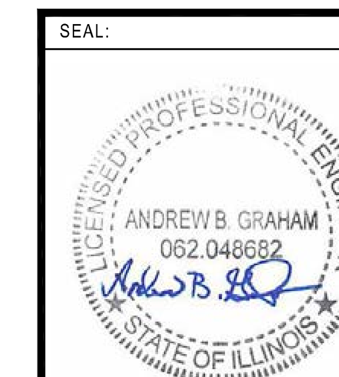
DIAGRAM NOTES

1. CONCRETE EQUIPMENT PAD. SEE STRUCTURAL SHEET FOR CONSTRUCTION REQUIREMENTS
2. 4000A/480V "AC SWBD"
3. U.G. 480 VAC FEEDERS - INVERTERS
4. GALVANIZED STEEL SUPPORT RACK WITH STRUT MOUNTED ELECTRIC EQUIPMENT
5. ATI 4X CONTROLLER
6. ATI SITE DATA CONTROLLER
7. DAS BOX
8. MINI POWER CENTER 120/240V PNL-P2
9. 277/480V SITE LOAD PANEL P1
10. WP GFI CONVENIENCE OUTLET
11. ATI WIND, GPS & GHI SENSOR MOUNTED TO EQUIPMENT RACK
12. WEATHER STATION MOUNTED ON EQUIPMENT RACK. SEE SHEET E312 DETAIL 1.
13. 1-5/8" X 1-5/8" GALV STRUT (TYP.)
14. 4" X 4" GALVANIZED STEEL POST (TYP.)
15. U.G. 480 VAC FEEDERS TO 4000A "AC SWBD"
16. U.G. 480 VAC FEEDER PANEL P1
17. U.G. 480 VAC FEEDER TRACKER MOTOR
18. U.G. DATA: INVERTERS
19. U.G. ATI TRACKER CONTROLLER CABLE
20. U.G. ELECTRONIC SIGNAL CABLE FOR IRR AND PNL TEMP SENSORS: 2 X 1" PVC CONDUITS, INSTALL PER EQUIPMENT SUPPLIER'S SHOP DRAWINGS.
21. U.G. DATA CABLE TO INTERNET SERVICE PROVIDER WHEN REQUIRED BY MONITORING SYSTEMS SUPPLIER. FIELD VERIFY POINT OF CONNECTION.
22. U.G. CURRENT AND VOLTAGE SIGNALS TO REMOTE METER WHEN REQUIRED BY MONITORING SYSTEMS PROVIDER. FIELD VERIFY POINT OF CONNECTION.
23. REMOTE METER ENCLOSURE (ALSO ENERGY)
24. WEATHER STATION ENCLOSURE (ALSO ENERGY)
25. DATA LINE TO TRANSFORMER
26. U.G. 120V AC FEEDER TO NCEMC COMM. CABINET
27. U.G. FIBER LINE TO NCEMC COMM. CABINET

NOTES

1. THE EQUIPMENT SELECTION AND LAYOUT WAS PROVIDED BY RENEWABLE PROPERTIES LLC AND IS PROVIDED HERE FOR REFERENCE PURPOSES.

SEAL:



2023.06.15 10:48:29-05'00'

PROFESSIONAL ENGINEER:
ANDREW B. GRAHAM
062048682

EXPIRATION DATE:
11/30/23

TRC ENVIRONMENTAL CORP.
DESIGN FIRM LIC. # 18400496-0002

NO.	BY	DATE	REVISION	APP'D.
1	CC	6/14/2023	ISSUED FOR PERMIT	ABG

PROJECT:
RENEWABLE PROPERTIES, LLC
HIGHWAY 20 SOLAR
KANE COUNTY, IL

TITLE:
EQUIPMENT PAD DETAILS

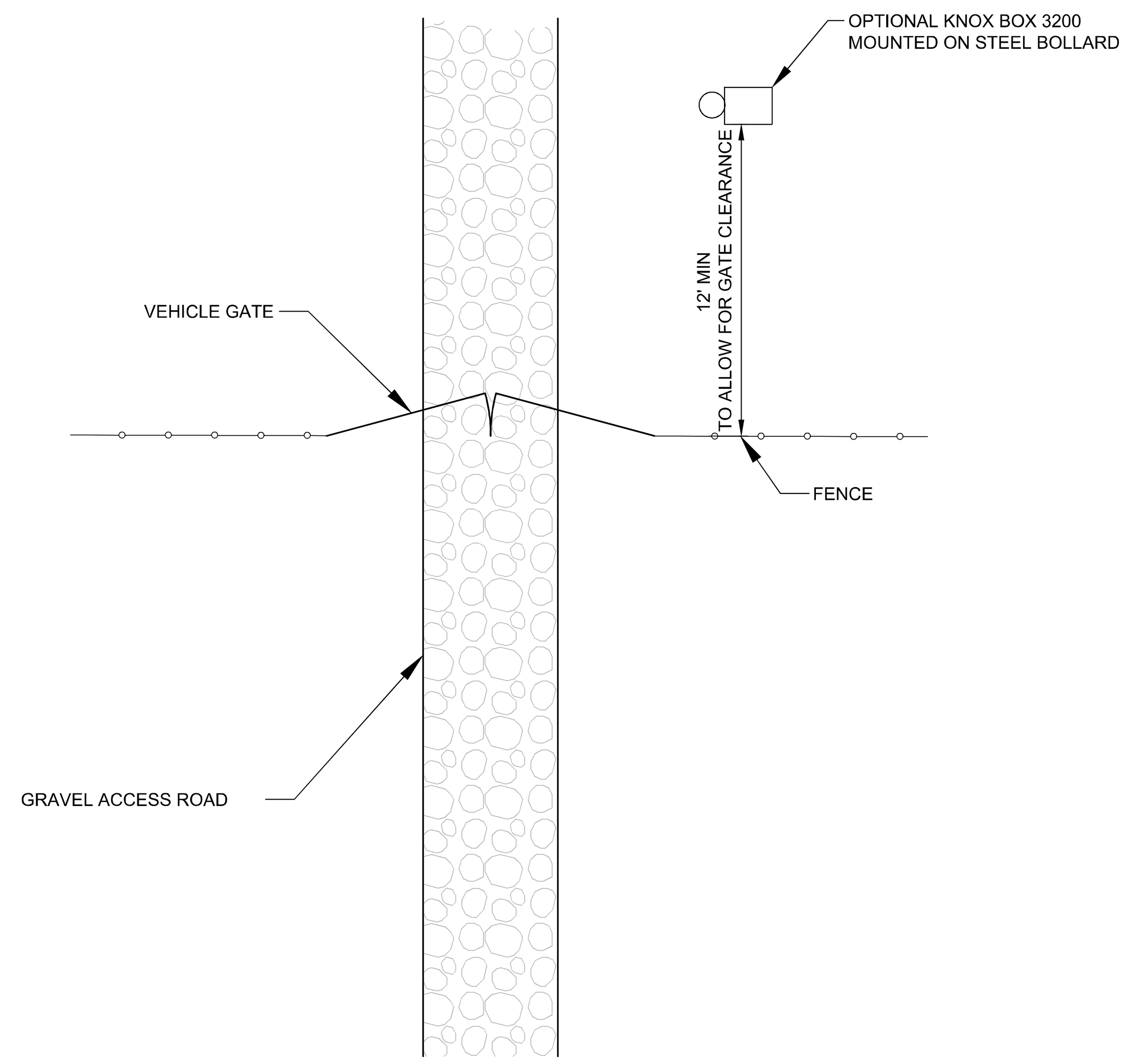
DRAWN BY:	N. SCHULTZ	PROJ. NO.:	500015.0000.0005
CHECKED BY:	A. GRAHAM		C504
APPROVED BY:	A. GRAHAM		
DATE:	JUNE 2023		

TRC
230 West Monroe St.
Suite 1840
Chicago, IL 60606
Phone: 312.578.0870

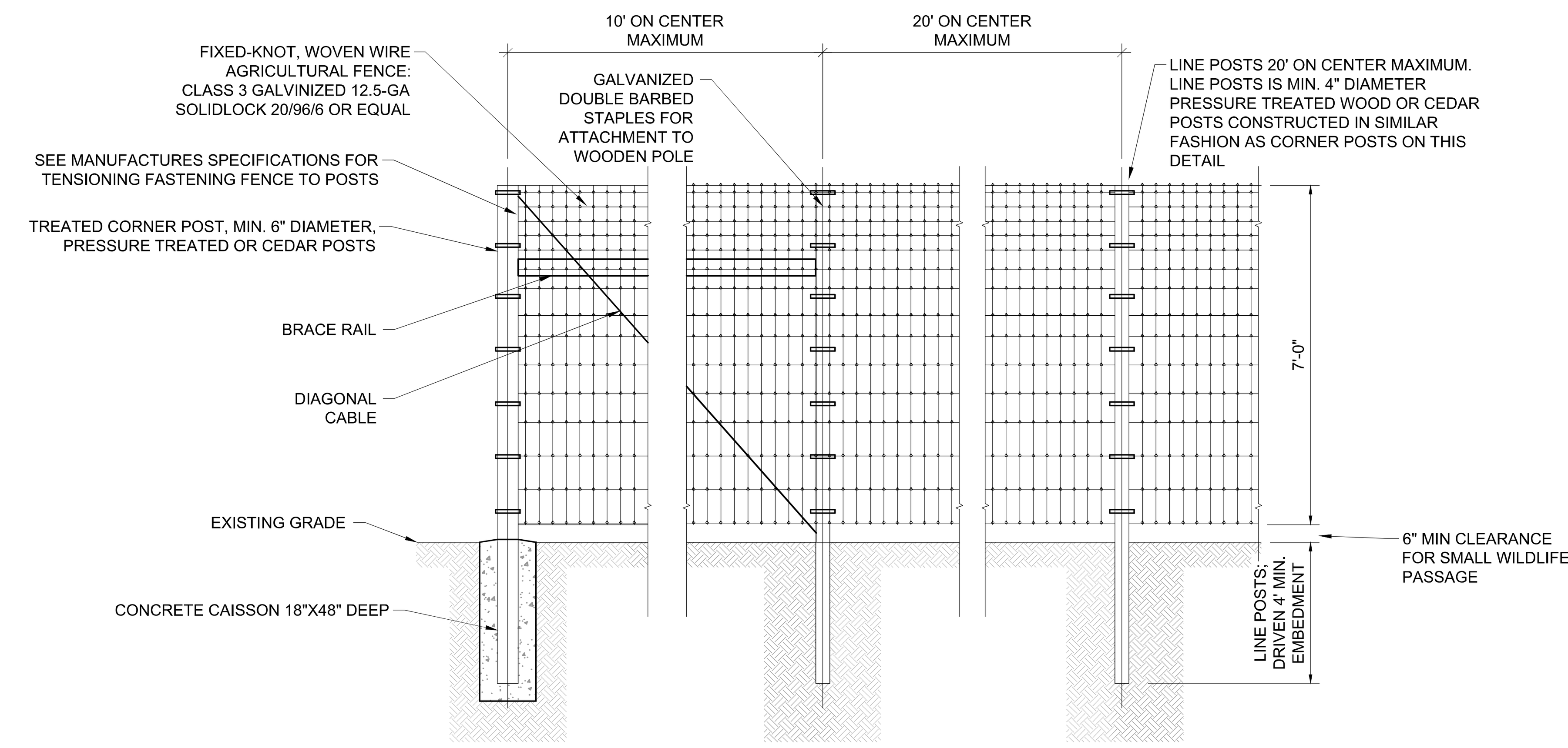
FILE NO.: 500015.0000.0005 08 C504 EQUIPMENT PAD DETAILS.dwg

PRELIMINARY- NOT FOR CONSTRUCTION

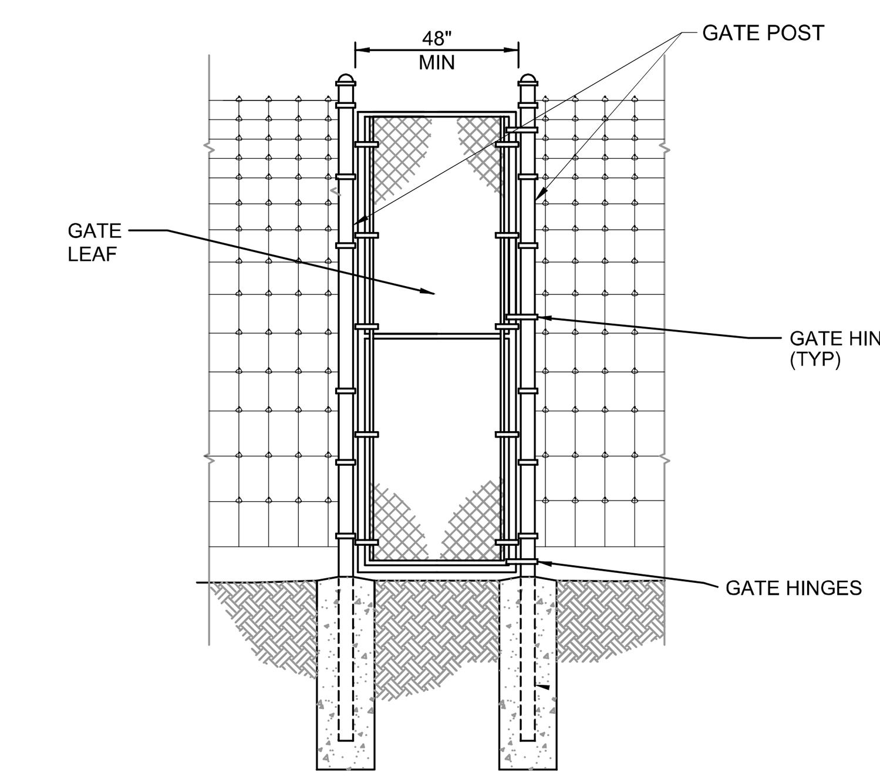
DRAWING NAME: C:\Users\CCameron\projectwise\...\500015.0000.0005 08 C504 EQUIPMENT PAD DETAILS.dwg — PLOT DATE: June 14, 2023 - 5:14PM — LAYOUT: EPD



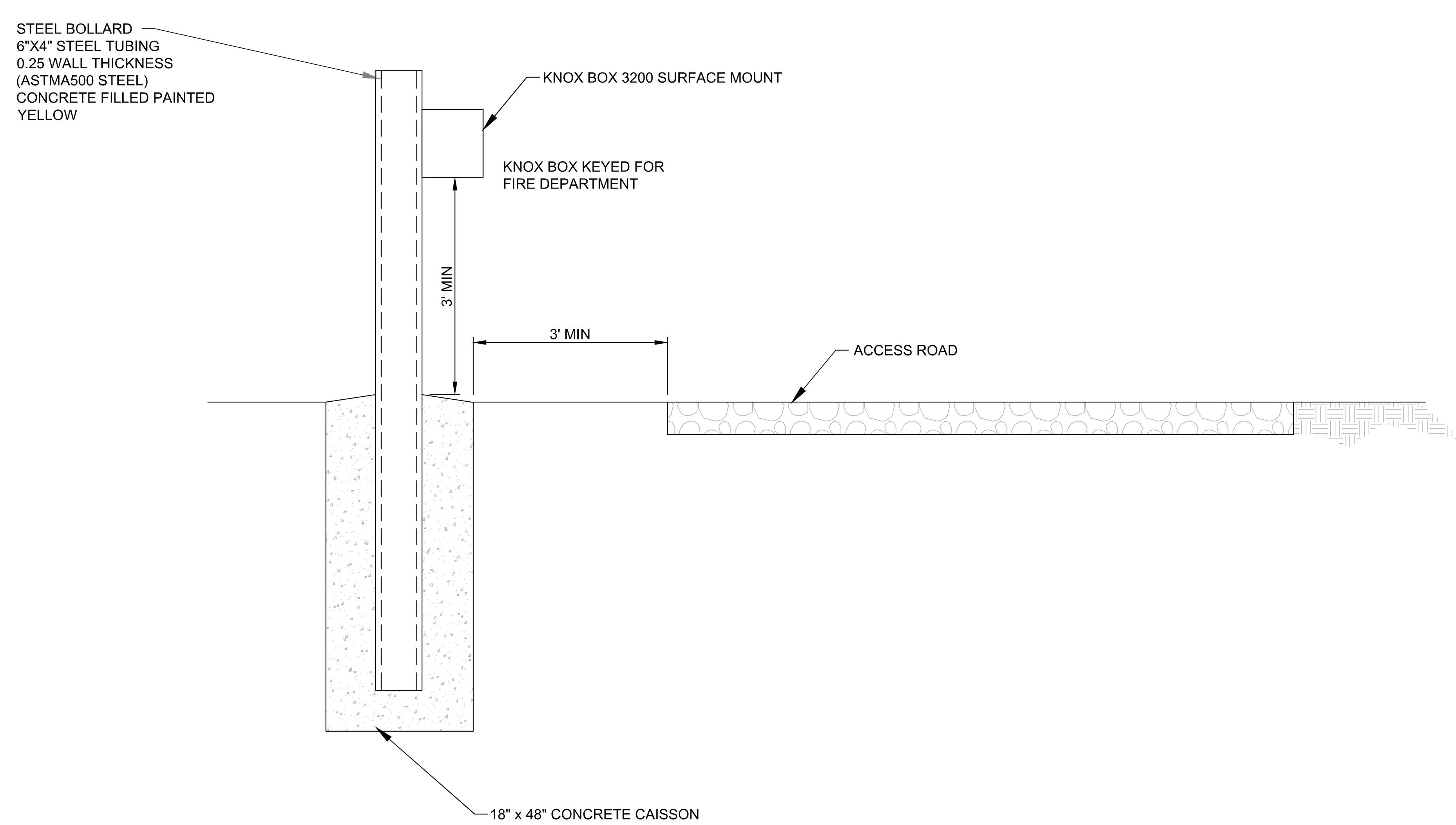
1
C505
TYPICAL VEHICLE GATE PLAN VIEW
NOT TO SCALE



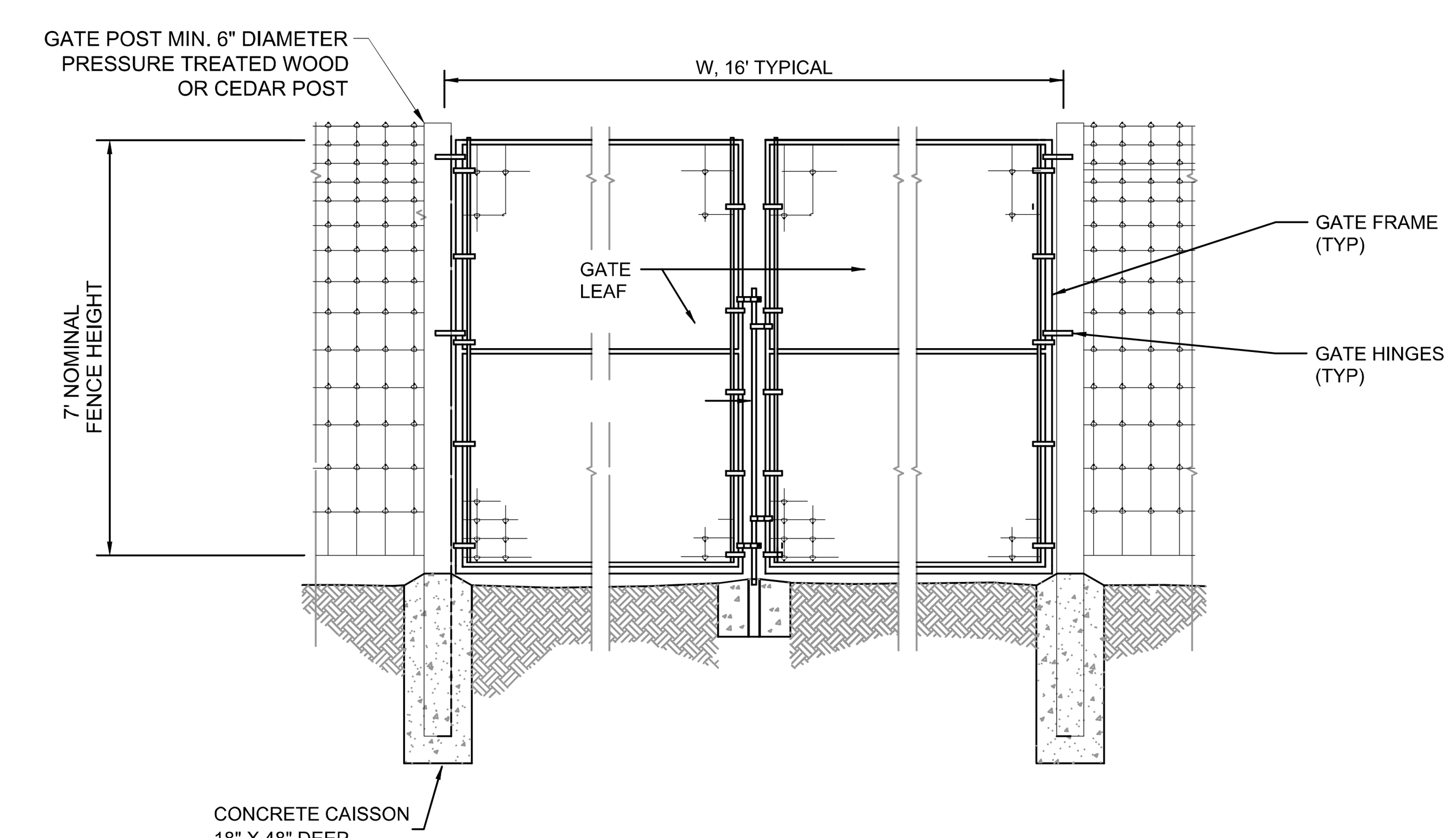
3
C505
TYPICAL PV AREA FENCE DETAIL
NOT TO SCALE



5
C505
TYPICAL PEDESTRIAN ACCESS GATE
NOT TO SCALE



2
C505
OPTIONAL KNOX BOX BOLLARD DETAIL
NOT TO SCALE



4
C505
TYPICAL VEHICLE GATE
NOT TO SCALE

PRELIMINARY - NOT FOR CONSTRUCTION

SEAL:

LICENSED PROFESSIONAL ENGINEER
ANDREW B. GRAHAM
062.048682
STATE OF ILLINOIS

2023.06.15 10:48:39-05'00'

PROFESSIONAL ENGINEER:
ANDREW B. GRAHAM
062048682

EXPIRATION DATE:
11/30/23

TRC ENVIRONMENTAL CORP.
DESIGN FIRM LIC. # 184000496-0002

NO.	BY	DATE	REVISION	APP'D.
1	CC	6/14/2023	ISSUED FOR PERMIT	ABG

PROJECT:
RENEWABLE PROPERTIES, LLC
HIGHWAY 20 SOLAR
KANE COUNTY, IL

TITLE:
FENCING DETAILS

DRAWN BY:	N. SCHULTZ	PROJ. NO.:	500015.0000.0005
CHECKED BY:	A. GRAHAM		C505
APPROVED BY:	A. GRAHAM		
DATE:	JUNE 2023		

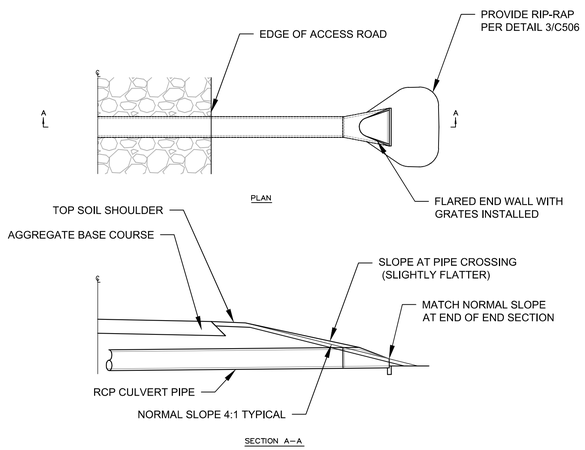
TRC

230 West Monroe St.
Suite 1840
Chicago, IL 60606
Phone: 312.578.0870

FILE NO.: 500015.0000.0005 09 C505 Fencing Details.dwg

DRAWING NAME: C:\Users\CCameron\projectwise\trc\d1217964\500015.0000.0005 09 C505 Fencing Details.dwg — PLOT DATE: June 14, 2023 - 5:19PM — LAYOUT: Details - Fence

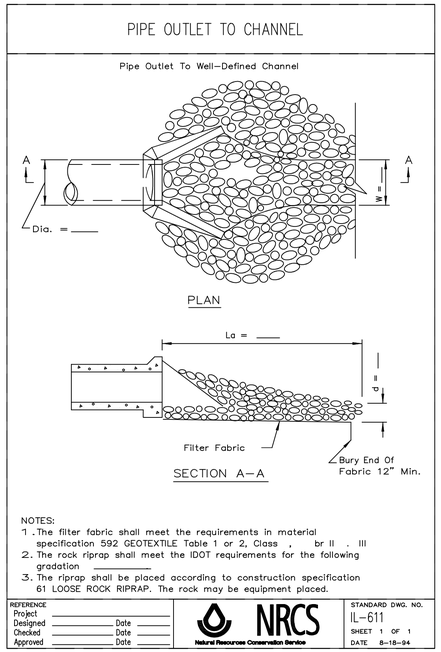
Version: 2017-10-21



1 / C506

TYPICAL RCP CULVERT

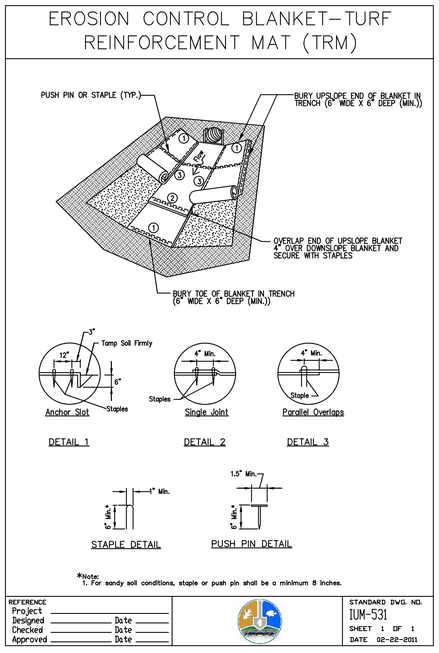
NOT TO SCALE



3 / C506

TYPICAL CULVERT OUTLET STONE

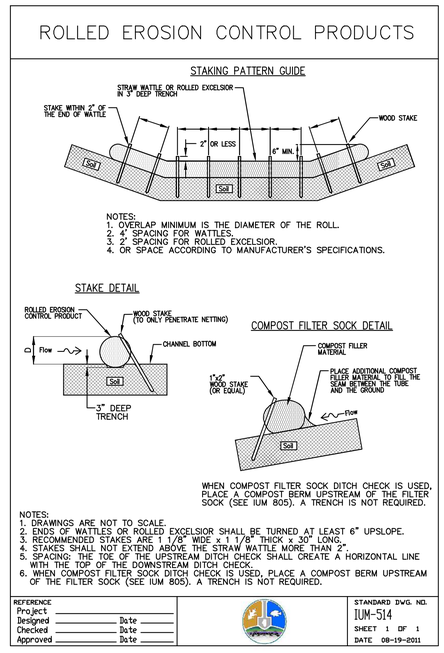
NOT TO SCALE



2 / C506

TYPICAL EROSION CONTROL BLANKET

NOT TO SCALE



4 / C506

TYPICAL DITCH CHECK

NOT TO SCALE

PRELIMINARY - NOT FOR CONSTRUCTION

SEAL:

PROFESSIONAL ENGINEER
ANDREW B. GRAHAM
062048682

EXPIRATION DATE:
11/30/23

TRC ENVIRONMENTAL CORP.
DESIGN FIRM LIC. # 18400496-0002

2023.06.15 10:48:50-05'00'

NO.	BY	DATE	REVISION	APP'D.
1	CC	6/14/2023	ISSUED FOR PERMIT	ABG

PROJECT:
RENEWABLE PROPERTIES, LLC
HIGHWAY 20 SOLAR
KANE COUNTY, IL

TITLE:
CULVERT DETAILS

DRAWN BY:	N. SCHULTZ	PROJ. NO.:	500015.0000.0005
CHECKED BY:	CC		
APPROVED BY:	A. GRAHAM		**C506**
DATE:	JUNE 2023		

TRC
230 West Monroe St.
Suite 1840
Chicago, IL 60606
Phone: 312.578.0870

FILE NO.: 500015.0000.0005 10 C506 Culvert Details.dwg

LEGEND

- PROPERTY LINE
- EASEMENT LINE
- BUILDING SETBACK
- WETLAND SETBACK
- FENCE LINE
- MV CABLE
- PROPOSED OVERHEAD LINE
- EXISTING OVERHEAD LINE
- SILT FENCE
- GRAVEL ACCESS ROAD
- WETLANDS
- FLOOD HAZARD
- ATI 78 MODULE TRACKER ROW
- ATI 52 MODULE TRACKER ROW
- POWER STATION - (1) MV TRANSFORMER, (1) DAS, (1) WEATHER STATION
- VEGETATIVE LANDSCAPE SCREENING

NOTES

1. SEE LANDSCAPE DETAILS SHEETS L101 AND L102 FOR PLANTING AND SEEDING NOTES, LANDSCAPE DETAILS, PLANTING SCHEDULES, AND COORDINATE TABLES.

0 100 200 300 400
SCALE IN FEET

SEAL:

ANDREW B. GRAHAM 062.048682 LICENSED PROFESSIONAL ENGINEER STATE OF ILLINOIS
2023.06.15 10:49:01-05'00'

PROFESSIONAL ENGINEER:
ANDREW B. GRAHAM
062048682

EXPIRATION DATE:
11/30/23

TRC ENVIRONMENTAL CORP.
DESIGN FIRM LIC. # 18400496-0002

NO.	BY	DATE	REVISION	APP'D.
1	CC	6/14/2023	ISSUED FOR PERMIT	ABG

PROJECT:
RENEWABLE PROPERTIES, LLC
HIGHWAY 20 SOLAR
KANE COUNTY, IL

TITLE:
LANDSCAPE PLAN

DRAWN BY:	G. TURNER	PROJ. NO.:	500015.0000.0005
CHECKED BY:	M. ROSS		L100
APPROVED BY:	A. GRAHAM		
DATE:	JUNE 2023		

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FILE NO.: 500015.0000.0005 11 L100 LAND PLAN.dwg

GENERAL LANDSCAPE AND SEEDING NOTES

1. THE LANDSCAPE PLAN AND DETAILS ARE FOR LANDSCAPING INFORMATION ONLY. PLEASE REFER TO THE SITE LAYOUT PLAN, GRADING PLAN AND/OR UTILITIES PLAN FOR ALL OTHER INFORMATION.

2. THE CONTRACTOR SHALL MONITOR AND GUARANTEE THAT ALL PLANTS, TREES, AND SHRUBS SHALL BE HEALTHY AND FREE OF DISEASE FOR A PERIOD OF (1) ONE YEAR AFTER SUBSTANTIAL COMPLETION AND ACCEPTANCE BY THE OWNER. CONTRACTOR SHALL REPLACE ANY DEAD OR UNHEALTHY PLANTS AT CONTRACTOR'S EXPENSE. FINAL ACCEPTANCE SHALL BE MADE IF ALL PLANTS MEET THE GUARANTEE REQUIREMENTS INCLUDING MAINTENANCE. MAINTENANCE RESPONSIBILITIES INCLUDE INVASIVE SPECIES MONITORING, REMOVAL, AND SUPPLEMENTATION. MONITORING OF THE PROJECT SITE SHALL OCCUR IN THE SPRING AND THE FALL TO DETERMINE THE PRESENCE OF INVASIVE SPECIES. SHOULD ANY INVASIVE SPECIES BE IDENTIFIED WITHIN THE PROJECT SITE, THE INVASIVE SPECIES SHALL BE REMOVED ACCORDING TO THE METHODS MOST LIKELY TO BE EFFECTIVE IN CONTROLLING THAT SPECIES AND SUPPLEMENTING ITS REPLACEMENT WITH APPROPRIATE VEGETATION AND SEED MIX IDENTIFIED (AND APPROVED) ON THIS PLAN AND/OR AN APPROVED EQUAL. ADDITIONAL MAINTENANCE RESPONSIBILITIES INCLUDE: APPROVED CULTIVATING, SPRAYING, WEEDING, WATERING, TIGHTENING OF TREE STRAP GUYS, PRUNING, FERTILIZING, MULCHING, AND ANY OTHER OPERATIONS NECESSARY TO MAINTAIN PLANT VIABILITY. MAINTENANCE SHALL BEGIN IMMEDIATELY AFTER PLANTING AND CONTINUE UNTIL 90 DAYS AFTER FINAL ACCEPTANCE.

3. THE CONTRACTOR SHALL SUPPLY ALL LABOR, PLANTS, APPROVED SEEDING MIX, AND MATERIALS IN QUANTITIES SUFFICIENT TO COMPLETE THE WORK SHOWN ON THE DRAWING(S) AND LISTED IN THE PLANT SCHEDULE(S) AND/OR SEEDING TABLE(S). IN THE EVENT OF A DISCREPANCY BETWEEN QUANTITIES SHOWN IN THE PLANT SCHEDULE AND/OR SEEDING TABLE AND THOSE REQUIRED BY THE DRAWINGS, THE LARGER SHALL APPLY. ALL PLANTS SHALL BE ACCLIMATED BY THE SUPPLY NURSERY TO THE LOCAL HARDINESS ZONE AND BE CERTIFIED THAT THE PLANTING MATERIAL HAS BEEN GROWN FOR A MINIMUM OF (2) TWO YEARS AT THE SOURCE AND OBTAINED WITHIN 200 MILES OF PROJECT SITE UNLESS OTHERWISE APPROVED BY OWNER, CERTIFIED LANDSCAPE INSPECTOR, OR LANDSCAPE ARCHITECT.

4. THE LOCATIONS FOR PLANT MATERIAL ARE APPROXIMATE AND ARE SUBJECT TO FIELD ADJUSTMENT DUE TO SLOPE, VEGETATION, AND SITE FACTORS SUCH AS THE LOCATION OF ROCK OUTCROPS. PRIOR TO PLANTING THE CONTRACTOR SHALL ACCURATELY STAKE OUT THE LOCATIONS FOR ALL PLANTS. THE OWNER, CERTIFIED LANDSCAPE INSPECTOR, OR LANDSCAPE ARCHITECT SHALL APPROVE THE FIELD LOCATIONS OR ADJUSTMENTS OF THE PLANT MATERIAL.

5. ALL SHRUB MASSING AREAS SHALL BE MULCHED TO A DEPTH OF 2" WITH SHREDDED HARDWOOD BARK MULCH.

6. NO PLANT SHALL BE PLACED IN THE GROUND BEFORE ROUGH GRADING HAS BEEN COMPLETED AND APPROVED BY THE OWNER, CERTIFIED LANDSCAPE INSPECTOR, OR LANDSCAPE CONTRACTOR. STAKING THE LOCATION OF ALL TREES AND SHRUBS SHALL BE COMPLETED PRIOR TO PLANTING FOR APPROVAL BY THE OWNER, CERTIFIED LANDSCAPE INSPECTOR, OR LANDSCAPE ARCHITECT. STAKING OF THE INSTALLED TREE MUST BE COMPLETED THE SAME DAY AS IT IS INSTALLED. ALL TREES SHALL BE STAKED OR GUYED AS PER THE DETAIL, SEE LANDSCAPING PLAN(S) FOR PLANTING DETAILS.

7. COORDINATE PLANT MATERIAL LOCATIONS WITH SITE UTILITIES. SEE SITE LAYOUT, GRADING AND/OR UTILITY PLANS FOR STORM, SANITARY, GAS, ELECTRIC, TELEPHONE AND WATER LINES. UTILITY LOCATIONS ARE APPROXIMATE. EXERCISE CARE WHEN DIGGING IN AREAS OF POTENTIAL CONFLICT WITH UNDERGROUND OR OVERHEAD UTILITIES. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE DUE TO CONTRACTOR'S NEGLIGENCE AND SHALL REPLACE OR REPAIR ANY DAMAGE AT CONTRACTOR'S EXPENSE.

8. LANDSCAPE PLANTING PITS MUST BE FREE DRAINING. PAVEMENT, COMPACTED SUBGRADE, AND BLASTED ROCK SHALL BE REMOVED TO A DEPTH OF 2' OR TO A GREATER DEPTH IF REQUIRED BY PLANTING DETAILS OR SPECIFICATIONS. REPLACE SOIL WITH MODERATELY COMPACTED LOAM OR SANDY LOAM FREE FROM STONES AND RUBBISH 1" OR GREATER IN DIAMETER AND ANY OTHER MATERIAL HARMFUL TO PLANT GROWTH AND DEVELOPMENT. PLANTING INSTALLATION SHALL BE AS DETAILED AND CONTAIN PLANTING MIX AS SPECIFIED UNLESS RECOMMENDED OTHERWISE BY SOIL ANALYSIS.

   PLANTING SOIL MIXTURE:
   2 PARTS PEAT MOSS
   5 PARTS TOPSOIL
   MYCORRHIZA INOCULANT - "TRANSPLANT 1-STEP" AS MANUFACTURED BY ROOTS, INC. OR APPROVED EQUAL. USE PER MANUFACTURER'S RECOMMENDATIONS FOR TREES AND SHRUBS. FERTILIZER/LIME APPLY AS RECOMMENDED BY SOIL ANALYSIS

- TREES, AND SHRUBS: TREES AND SHRUBS SHALL BE NURSERY GROWN UNLESS OTHERWISE NOTED AND HARDY UNDER CLIMATIC CONDITIONS SIMILAR TO THOSE IN THE LOCATION OF THE PROJECT. THEY SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY, WITH NORMAL HABIT OF GROWTH. THEY SHALL BE SOUND, HEALTHY, VIGOROUS, WELL-BRANCHED AND DENSELY FOLIATED WHEN IN LEAF. THEY SHALL BE FREE OF DISEASE, INSECT PESTS, EGGS OR LARVAE. THEY SHALL HAVE HEALTHY AND WELL-DEVELOPED ROOT SYSTEMS. ALL TREES SHALL HAVE STRAIGHT SINGLE TRUNKS WITH THEIR MAIN LEADER INTACT UNLESS OTHERWISE STATED. THE OWNER, CERTIFIED LANDSCAPE INSPECTOR, OR LANDSCAPE ARCHITECT SHALL ONLY PERMIT SUBSTITUTIONS UPON WRITTEN APPROVAL. THEIR SIZES SHALL CONFORM TO THE MEASUREMENT SPECIFIED ON THE DRAWINGS. PLANTS LARGER THAN SPECIFIED ON THE DRAWINGS MAY BE USED IF APPROVED. THE USE OF SUCH PLANTS SHALL NOT INCREASE THE CONTRACT PRICE. ALL TREES AND SHRUBS SHALL BE MULCHED IN ACCORDANCE WITH THE RESPECTIVE PLANTING DETAIL(S) PROVIDED IN THE LANDSCAPING PLAN.

- ALL PRUNING SHALL CONFORM TO THE TREE CARE INDUSTRY ASSOCIATION (TCIA) ANSI A300 (PART 1) - 2017 PRUNING STANDARDS. PRUNING STANDARDS SHALL RECOGNIZE BUT, ARE NOT LIMITED TO, THE FOLLOWING PRUNING OBJECTIVES: MANAGE RISK, MANAGE HEALTH, DEVELOP STRUCTURE, PROVIDE CLEARANCE, MANAGE SIZE OR SHAPE, IMPROVE AESTHETICS, MANAGE PRODUCTION OF FRUIT, FLOWERS, OR OTHER PRODUCTS, AND/OR MANAGE WILDLIFE HABITAT. DEVELOPING STRUCTURE SHALL IMPROVE BRANCH AND TRUNK ARCHITECTURE, PROMOTE OR SUBORDINATE CERTAIN LEADERS, STEMS, OR BRANCHES; PROMOTE DESIRABLE BRANCH SPACING; PROMOTE OR DISCOURAGE GROWTH IN A PARTICULAR DIRECTION (DIRECTIONAL PRUNING); MINIMIZE FUTURE INTERFERENCE WITH TRAFFIC, LINES OF SIGHT, INFRASTRUCTURE, OR OTHER PLANTS; RESTORE PLANTS FOLLOWING DAMAGE; AND/OR REJUVENATE SHRUBS. PROVIDING CLEARANCE SHALL ENSURE SAFE AND RELIABLE UTILITY SERVICES; MINIMIZE CURRENT INTERFERENCE WITH TRAFFIC, LINES OF SITE, INFRASTRUCTURE, OR OTHER PLANTS; RAISE CROWN(S) FOR MOVEMENT OF TRAFFIC OR LIGHT PENETRATION; ENSURE LINES OF SIGHT OR DESIRED VIEWS; PROVIDE ACCESS TO SITES, BUILDINGS, OR OTHER STRUCTURES; AND/OR COMPLY WITH REGULATIONS.

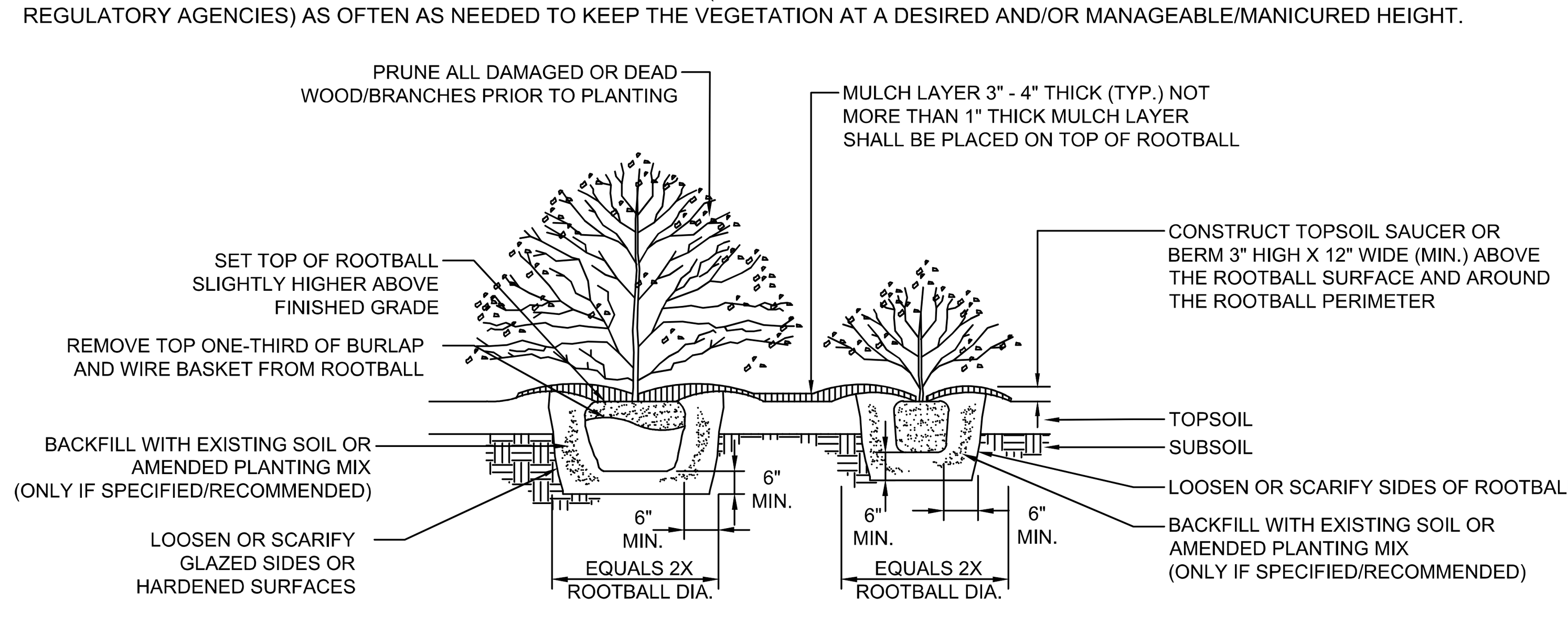
- TOPSOIL SHALL BE INSTALLED AT A MINIMUM DEPTH OF 4 INCHES. CONTRACTOR SHALL SUBMIT TOPSOIL TO A CERTIFIED TESTING LABORATORY TO DETERMINE PH, FERTILITY, ORGANIC CONTENT AND MECHANICAL COMPOSITION. THE CONTRACTOR SHALL SUBMIT THE TEST RESULTS FROM REGIONAL EXTENSION OFFICE OF USDA TO THE OWNER, CERTIFIED LANDSCAPE INSPECTOR, OR LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL. CONTRACTOR SHALL INCORPORATE AMENDMENTS FOR GOOD PLANT GROWTH AND PROPER SOIL ACIDITY RECOMMENDED FROM THE TOPSOIL TEST.

- NO PHOSPHOROUS SHALL BE USED AT PLANTING TIME UNLESS SOIL TESTING HAS BEEN COMPLETED AND TESTED BY A HORTICULTURAL TESTING LAB AND SOIL TESTS SPECIFICALLY INDICATE A PHOSPHOROUS DEFICIENCY THAT IS HARMFUL, OR WILL PREVENT NEW LAWNS/GRASSES AND PLANTINGS FROM ESTABLISHING PROPERLY.

- IF SOIL TESTS INDICATE A PHOSPHOROUS DEFICIENCY THAT WILL IMPACT PLANT AND LAWN ESTABLISHMENT, PHOSPHOROUS SHALL BE APPLIED AT THE MINIMUM RECOMMENDED LEVEL PRESCRIBED IN THE SOIL TEST FOLLOWING ALL APPLICABLE STANDARDS, REQUIREMENTS, AND/OR REGULATIONS.

- ALL SLOPES GREATER THAN 3:1 RECEIVING A WILDFLOWER, WETLAND, AND/OR GRASS SEEDING MIXTURE SHALL BE COVERED WITH AN EROSION CONTROL BLANKET.

- ALL WILDFLOWERS AND GRASSES SOWED SHALL BE ALLOWED TO GROW TO THEIR NATURALLY OCCURRING HEIGHTS WHENEVER POSSIBLE. NATIVE WILDFLOWERS AND/OR GRASSES CAN BE MOWED/MAINTAINED (WITHIN ACCEPTABLE AREAS IDENTIFIED AND/OR APPROVED BY APPROPRIATE REGULATORY AGENCIES) AS OFTEN AS NEEDED TO KEEP THE VEGETATION AT A DESIRED AND/OR MANAGEABLE/MANICURED HEIGHT.

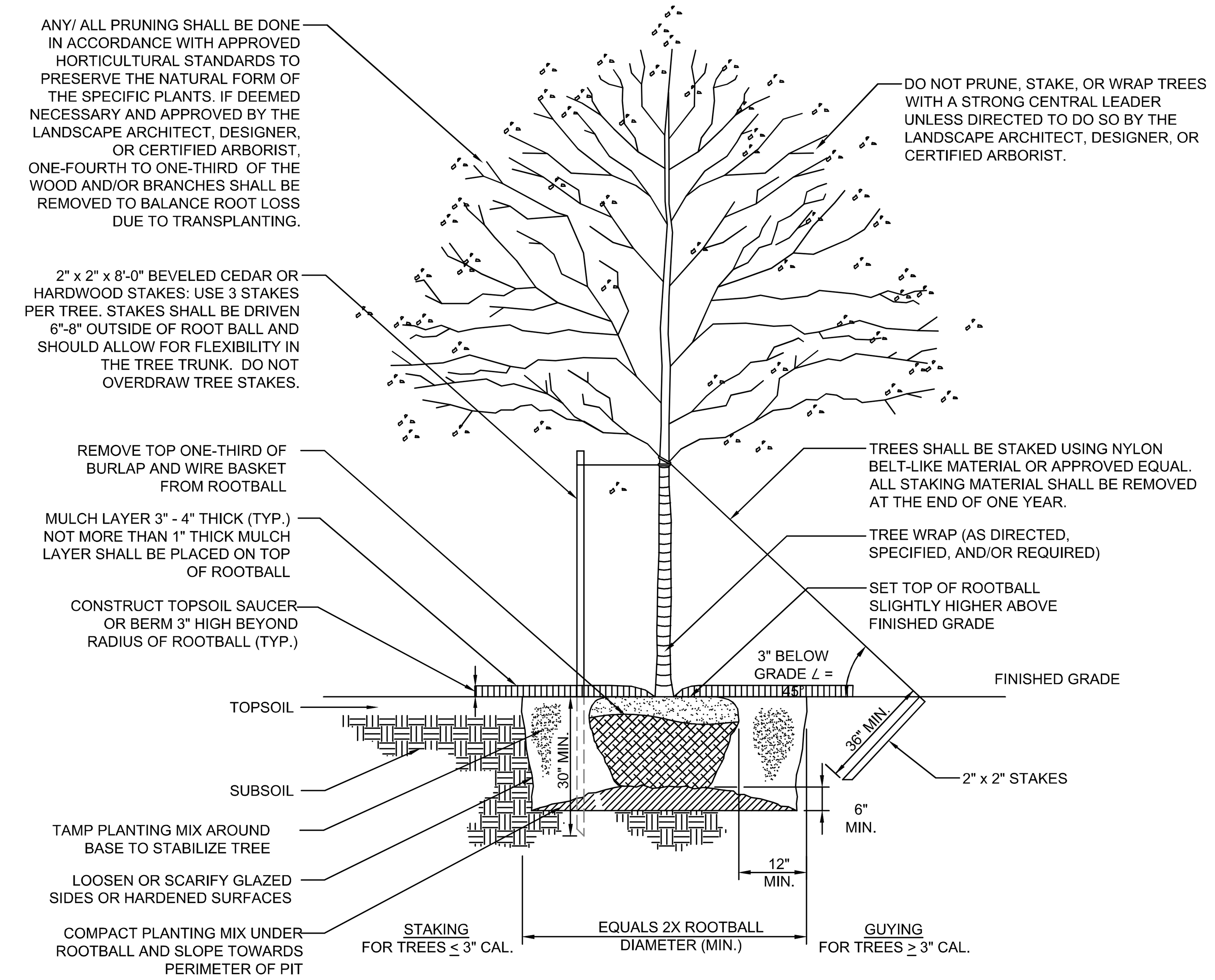


SHRUB PLANTING DETAIL

N.T.S.

NOTE:

- IN AREAS WITH MASS PLANTINGS, CONTINUOUS EXCAVATION AND MULCHING PRACTICES SHALL BE IMPLEMENTED WHENEVER POSSIBLE
- IT IS NOT RECOMMENDED TO AMEND THE EXISTING SOIL BEFORE BACKFILLING THE HOLE UNLESS SOIL CONDITIONS ARE POOR FOR PLANTING.
- WATER THOROUGHLY TO HELP ENSURE THE REMOVAL OF AIR POCKETS.

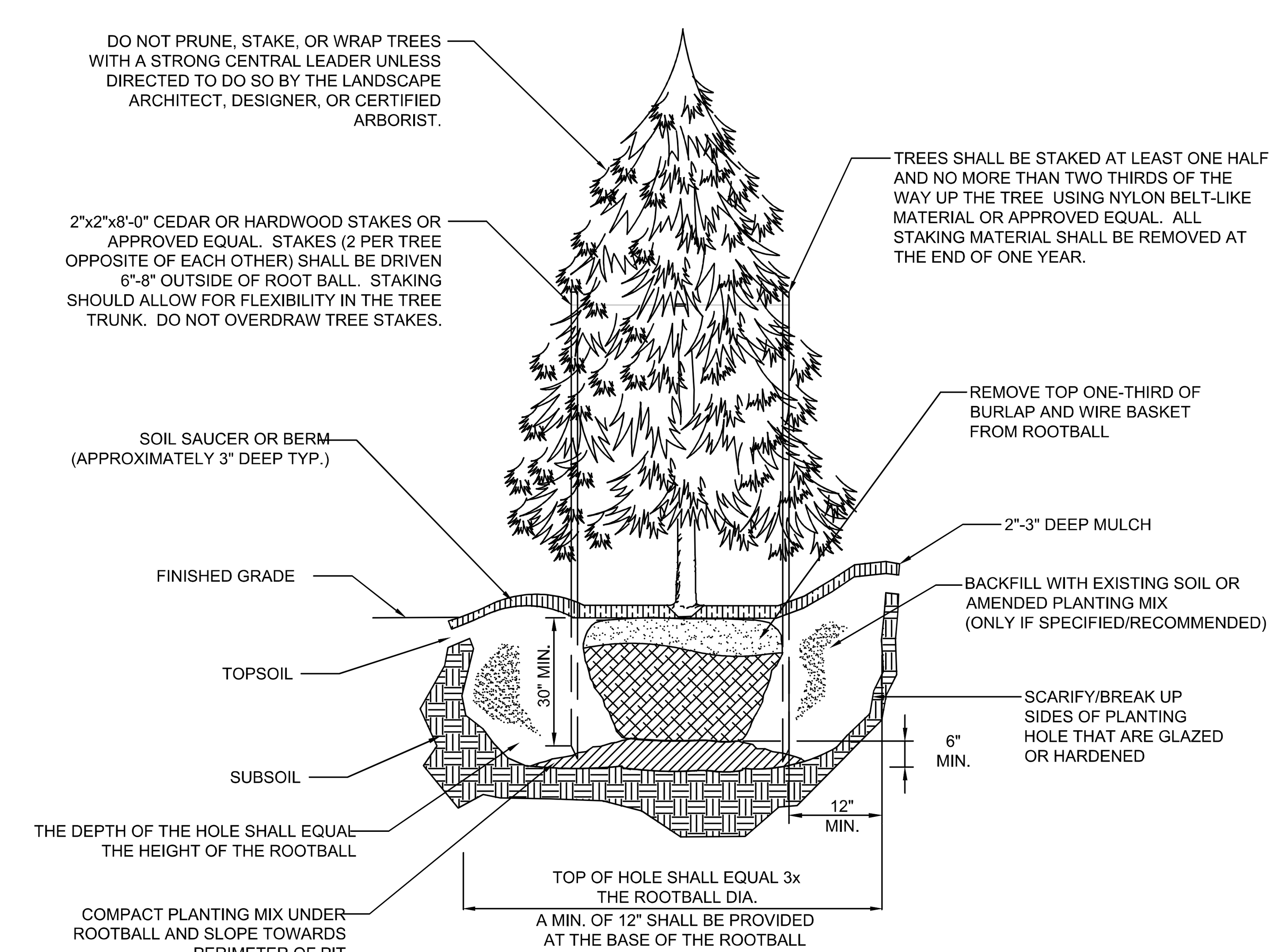


NATIVE/DECIDUOUS TREE PLANTING DETAIL

N.T.S.

NOTES:

- TREE PLANTING SHALL BEAR SAME RELATIONSHIP TO FINISH GRADE AS IT WAS PRE-DUG IN THE NURSERY.
- NEVER CUT THE PRIMARY LEADER.
- IT IS NOT RECOMMENDED TO AMEND THE EXISTING SOIL BEFORE BACKFILLING THE HOLE UNLESS SOIL CONDITIONS ARE POOR FOR PLANTING.
- WATER THOROUGHLY TO HELP ENSURE THE REMOVAL OF AIR POCKETS AND PROPERLY SET THE TREE.



EVERGREEN TREE PLANTING DETAIL

N.T.S.

NOTES:

- TREE PLANTING SHALL BEAR SAME RELATIONSHIP TO FINISH GRADE AS IT WAS PRE-DUG IN THE NURSERY.
- NEVER CUT THE PRIMARY LEADER.
- IT IS NOT RECOMMENDED TO AMEND THE EXISTING SOIL BEFORE BACKFILLING THE HOLE UNLESS SOIL CONDITIONS ARE POOR FOR PLANTING.
- WATER THOROUGHLY TO HELP ENSURE THE REMOVAL OF AIR POCKETS AND PROPERLY SET THE TREE.

LOW GROWING SOLAR ARRAY MIX SOUTH & WEST

SCIENTIFIC NAME	COMMON NAME	SEEDS/SF	RATE (LBS/AC)	% MIX (BY SF)
COVER				
AVENA SATIVA	OATS	6	20.4200	12.85%
FORB				
ACHILLEA MILLEFOLIUM	COMMON YARROW	0.41	0.01	30.83%
ALLIUM STELLATUM	PRAIRIE WILD ONION	0.51	0.12	
ANEMONE CANADESIS	CANADA ANEMONE	0.18	0.06	
ANEMONE CYLINDRICA	LONG-HEADED THIMBLEWEED	0.6	0.06	
ASCLEPIAS SYRIACA	COMMON MILKWEED	0.46	0.30	
ASCLEPIAS VERTICILLATA	WHORLED MILKWEED	0.32	0.08	
ASTRAGALUS CRASSICARPUS	GROUND PLUM	0.36	0.19	
ECHINACEA ANGUSTIFOLIA	NARROW-LEAVED PURPLE CONEFLOWER	0.64	0.25	
EUTHAMIA GRAMINIFOLIA	GRASS LEAVED GOLDENROD	0.8	0.01	
GALIUM BOREALE	NORTHERN BEDSTRAW	0.4	0.02	
LIATRIS ASPERA	ROUGH BLAZING STAR	0.28	0.05	
LOBELIA SPICATA	ROUGH-SPIKED LOBELIA	1.03	0.00	
MONARDA FISTULOSA	WILD BERGAMOT	0.8	0.03	
PENSTEMON GRANDIFLORUS	LARGE-FLOWERED BEARD TONGUE	0.48	0.09	
PHLOX PILOSA	PRAIRIE PHLOX	0.11	0.02	
POTENTILLA ARGUTA	PRAIRIE CINQUEFOIL	0.53	0.01	
PYCNANTHEMUM VIRGINIANUM	VIRGINIA MOUNTAIN MINT	0.76	0.01	
RATIBIDA COLUMNIFERA	PRAIRIE CONEFLOWER	0.96	0.06	
RUDBECKIA HIRTA	BLACK-EYED SUSAN	1.58	0.05	
SISYRINCHIUM CAMPESTRE	FIELD BLUE EYED GRASS	0.52	0.03	
SOLIDAGO RIGIDA	STIFF GOLDENROD	0.47	0.03	
SOLIDAGO SPECIOSA	SHOWY GOLDENROD	0.55	0.02	
SYMPHYOTRICHUM ERICOIDES	HEATH ASTER	0.46	0.01	
SYMPHYOTRICHUM LAEVE	SMOOTH ASTER	0.63	0.03	
ZIZIA APTERA	HEART-LEAVED ALEXANDERS	0.55	0.12	
GRAMINOID				
BOUTELOUA CURTIPENDULA	SIDE-OATS GRAMA	3.31	1.50	41.90%
BOUTELOUA GRACILIS	BLUE GRAMA	4.59	0.31	
KOELERIA MACRANTHA	JUNEGRASS	4.59	0.07	
SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	4.13	0.75	
SPOROBOLUS HETEROLEPIS	PRAIRIE DROPSEED	2.94	0.50	
LEGUME				
ASTRAGALUS CANADENSIS	CANADA MILK VETCH	0.78	0.12	9.83%
DALEA CANDIDA	WHITE PRAIRIE CLOVER	1.74	0.25	
DALEA PURPUREA	PURPLE PRAIRIE CLOVER	2.07	0.38	
SEDGE				
CAREX BICKNELLII	BICKNELL'S SEDGE	0.78	0.12	4.58%
CAREX BREVIOR	SHORT SEDGE	0.67	0.07	
CAREX PENSYLVANICA	PENNSYLVANIA SEDGE	0.69	0.06	

NOTE: GRASS SEED MIXES ARE COMPRISED OF GRASSES THAT ARE NATIVE AND/OR INDIGENOUS TO THE AREA AND/OR CONSIDERED FAVORABLE FOR WILDLIFE HABITAT AND SUSTAINABLE GROWTH. ADDITIONALLY, THE SOLAR FARM SEED MIX WAS DEVELOPED ESPECIALLY FOR NATIVE GRASS PLANTINGS AROUND SOLAR ARRAY FIELDS AND SHALL BE UTILIZED ACCORDINGLY.

SEED MIXES TO FOLLOW SAMPLE SPECIFICATIONS FOR THE ESTABLISHMENT OF NATIVE VEGETATION AS PART OF HABITAT FRIENDLY SOLAR PROJECTS DEVELOPED BY THE MINNESOTA BOARD OF WATER AND SOIL RESOURCES AND THE MINNESOTA DEPARTMENT OF NATURAL RESOURCES.

SEE "PRAIRIE ESTABLISHMENT & MAINTENANCE TECHNICAL GUIDANCE FOR SOLAR PROJECTS" BY THE MINNESOTA DEPARTMENT OF NATURAL RESOURCES, LAST REVISED JULY 2020, FOR FERTILIZER AND PESTICIDE APPLICATION RULES, REGULATIONS AND RESTRICTIONS.

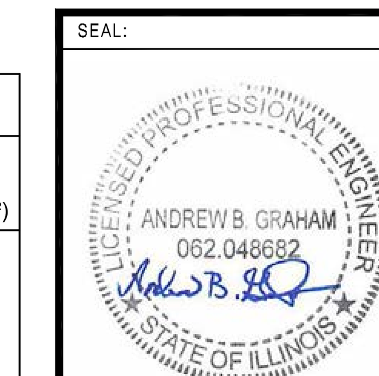
SOLAR FARM SEED MIX

ROUNDSTONE SEED MIX 108: GRASS MEADOW ECONOMY - MED.TO WET SITES

MIX CONCENTRATION	BOTANICAL NAME	COMMON NAME	RATE (LBS/ACRE)	RATE (LBS/1000 FT²)
19.53%	BIG BLUESTEM	ANDROPOGON GERARDII	12	.275
27.34%	VIRGINIA WILD RYE	ELYMUS VIRGINICUS		
11.72%	SWITCHGRASS (BLACKWELL)	PANICUM VIRGATUM		
3.91%	DEER TONGUE GRASS	PANICUM CLANDESTINUM		
1.25%	BUTTERFLY MILKWEED	ASCLEPIAS TUBEROSA		
2.47%	BLACKEYED SUSAN	RUDBECKIA HIRTA		
1.86%	OHIO SPIDERWORT	TRADESCANTIA OHIENSIS		
7.85%	WILD SENNA	CASSIA MARILANDICA		
4.55%	ILLINOIS BUNDLEFLOWER	DESMANTHUS ILLINOENSIS		
6.97%	PURPLE CONEFLOWER	ECHINACEA PURPUREA		
6.60%	FALSE SUNFLOWER	HELIOPSIS HELIANTHOIDES		
0.84%	BERGAMOT	MONARDA FISTULOSA		
0.89%	NEW ENGLAND ASTER	ASTER NOVAE-ANGLIAE		
3.89%	MAXIMILIAN SUNFLOWER	HELIANTHUS MAXIMILIANI		
0.36%	JOE-PYE WEED	EUPATORIUM FISTULOSUM		

WET MEADOW SEED MIX

SEAL:



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PROFESSIONAL ENGINEER:
ANDREW B. GRAHAM
062048682

EXPIRATION DATE:
11/30/23

TRC ENVIRONMENTAL CORP.
DESIGN FIRM LIC. # 18400496-0002

NO.	BY	DATE	REVISION	APP'D.
1	CC	6/14/2023	ISSUED FOR PERMIT	ABG

PROJECT:
RENEWABLE PROPERTIES, LLC
HIGHWAY 20 SOLAR
KANE COUNTY, IL

TITLE:
LANDSCAPE DETAILS 1

DRAWN BY:	G. TURNER	PROJ. NO.:	500015.0000.0005
CHECKED BY:	M. ROSS		L101
APPROVED BY:	A. GRAHAM		
DATE:	JUNE 2023		

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FILE NO.: 500015.0000.0005 11 L100 LAND PLAN.dwg

Version: 2017-10-21

LEGEND

VISUAL MITIGATION PLANTING TEMPLATE - TYPE A
LANDSCAPE PLANTING SCHEDULE (25' PRIMARY VISUAL BUFFER/SCREENING EFFORT)

DECIDUOUS AND EVERGREEN TREES

SYMBOL	BOTANICAL NAME/ COMMON PLANT NAME	QUANTITY	SIZE	ROOT	MATURE HEIGHT
AA	AMELANCHIER ARBOREA DOWNY SHADBUSH	7	6'-8' HT. CLUMP	B&B	15'-20' HT.
CC	CARPINUS CAROLINIANA AMERICAN HORNBEAM	5	2" MIN. CAL.	B&B	25'-30' HT.
HV	HAMAMELIS VIRGINIANA COMMON WITCH HAZEL	6	3'-4' HT.	B&B	20'-25' HT.
JV	JUNIPERUS VIRGINIANA EASTERN RED CEDAR	4	6'-7' HT.	B&B	40'-50' HT.
PA	PICEA ABIES NORWAY SPRUCE	4	6'-7' HT.	B&B	40'-60' HT.
PG	PICEA GLAUCA WHITE SPRUCE	4	6'-7' HT.	B&B	40'-60' HT.
TO	THUJA OCCIDENTALIS NORTHERN WHITE CEDAR	8	6'-7' HT.	B&B	30'-40' HT.

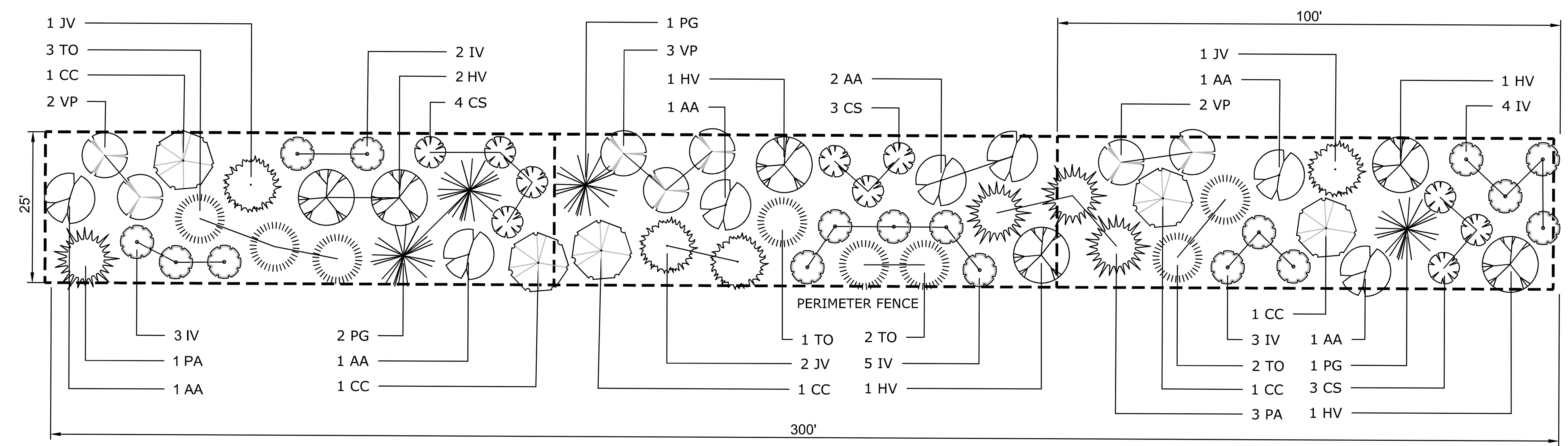
SHRUBS

SYMBOL	BOTANICAL NAME/ COMMON PLANT NAME	QUANTITY	SIZE	ROOT	MATURE HEIGHT
CS	CORNUS SERICEA RED OSIER DOGWOOD	10	24"-30" HT.	3 / 5 GAL. CONT.	7'-9' HT.
IV	ILEX VERTICILLATA COMMON WINTERBERRY	17	24"-30" HT.	3 / 5 GAL. CONT.	10'-12' HT.
VP	VIBURNUM PRUNIFOLIUM BLACKHAW VIBURNUM	7	24"-30" HT.	3 / 5 GAL. CONT.	10'-12' HT.

ADDITIONAL PLANTING NOTES:

SHRUB AND TREE LOCATIONS SHALL BE STAKED OUT AND APPROVED PRIOR TO PLANTING. SEE DETAIL SHEETS L-101 AND L-102 FOR PLANTING DETAILS, NOTES, AND SCHEDULES FOR EACH LANDSCAPE BUFFER.

PLACEMENT OF LANDSCAPE BUFFERS SHALL BE LOCATED AT THE OUTER EDGE OF THE PERIMETER FENCE TO ENHANCE SCREENING EFFORTS AND AVOID SHADING CONCERNS - SOME FIELD ADJUSTMENTS FOR STAKED LOCATIONS WILL BE NECESSARY.



N.T.S.

VISUAL MITIGATION PLANTING TEMPLATE - TYPE A

LEGEND - TYPE A TOTALS

LANDSCAPE PLANTING SCHEDULE — VISUAL MITIGATION PLANTING TEMPLATE TYPE A

DECIDUOUS AND EVERGREEN TREES

SYMBOL	BOTANICAL NAME/ COMMON PLANT NAME	QUANTITY	SIZE	ROOT	MATURE HEIGHT
AA	AMELANCHIER ARBOREA DOWNY SHADBUSH	44	6'-8' HT. CLUMP	B&B	15'-20' HT.
CC	CARPINUS CAROLINIANA AMERICAN HORNBEAM	31	2" MIN. CAL.	B&B	25'-30' HT.
HV	HAMAMELIS VIRGINIANA COMMON WITCH HAZEL	38	3'-4' HT.	B&B	20'-25' HT.
JV	JUNIPERUS VIRGINIANA EASTERN RED CEDAR	25	6'-7' HT.	B&B	40'-50' HT.
PA	PICEA ABIES NORWAY SPRUCE	25	6'-7' HT.	B&B	40'-60' HT.
PG	PICEA GLAUCA WHITE SPRUCE	27	6'-7' HT.	B&B	40'-60' HT.
TO	THUJA OCCIDENTALIS NORTHERN WHITE CEDAR	27	6'-7' HT.	B&B	30'-40' HT.

SHRUBS

SYMBOL	BOTANICAL NAME/ COMMON PLANT NAME	QUANTITY	SIZE	ROOT	MATURE HEIGHT
CS	CORNUS SERICEA RED OSIER DOGWOOD	62	24"-30" HT.	3 / 5 GAL. CONT.	7'-9' HT.
IV	ILEX VERTICILLATA COMMON WINTERBERRY	107	24"-30" HT.	3 / 5 GAL. CONT.	10'-12' HT.
VP	VIBURNUM PRUNIFOLIUM BLACKHAW VIBURNUM	44	24"-30" HT.	3 / 5 GAL. CONT.	10'-12' HT.

VISUAL MITIGATION PLANT TOTALS

LEGEND - VM1

PLANTING TEMPLATE TYPE A
LANDSCAPE PLANTING SCHEDULE — TOTAL MITIGATION LENGTH = 900 LF

DECIDUOUS AND EVERGREEN TREES

SYMBOL	BOTANICAL NAME/ COMMON PLANT NAME	QUANTITY	SIZE	ROOT	MATURE HEIGHT
AA	AMELANCHIER ARBOREA DOWNY SHADBUSH	21	6'-8' HT. CLUMP	B&B	15'-20' HT.
CC	CARPINUS CAROLINIANA AMERICAN HORNBEAM	15	2" MIN. CAL.	B&B	25'-30' HT.
HV	HAMAMELIS VIRGINIANA COMMON WITCH HAZEL	18	3'-4' HT.	B&B	20'-25' HT.
JV	JUNIPERUS VIRGINIANA EASTERN RED CEDAR	12	6'-7' HT.	B&B	40'-50' HT.
PA	PICEA ABIES NORWAY SPRUCE	12	6'-7' HT.	B&B	40'-60' HT.
PG	PICEA GLAUCA WHITE SPRUCE	12	6'-7' HT.	B&B	40'-60' HT.
TO	THUJA OCCIDENTALIS NORTHERN WHITE CEDAR	24	6'-7' HT.	B&B	30'-40' HT.

SHRUBS

SYMBOL	BOTANICAL NAME/ COMMON PLANT NAME	QUANTITY	SIZE	ROOT	MATURE HEIGHT
CS	CORNUS SERICEA RED OSIER DOGWOOD	30	24"-30" HT.	3 / 5 GAL. CONT.	7'-9' HT.
IV	ILEX VERTICILLATA COMMON WINTERBERRY	51	24"-30" HT.	3 / 5 GAL. CONT.	10'-12' HT.
VP	VIBURNUM PRUNIFOLIUM BLACKHAW VIBURNUM	21	24"-30" HT.	3 / 5 GAL. CONT.	10'-12' HT.

LEGEND - VM2

PLANTING TEMPLATE TYPE A
LANDSCAPE PLANTING SCHEDULE — TOTAL MITIGATION LENGTH = 990 LF

DECIDUOUS AND EVERGREEN TREES

SYMBOL	BOTANICAL NAME/ COMMON PLANT NAME	QUANTITY	SIZE	ROOT	MATURE HEIGHT
AA	AMELANCHIER ARBOREA DOWNY SHADBUSH	23	6'-8' HT. CLUMP	B&B	15'-20' HT.
CC	CARPINUS CAROLINIANA AMERICAN HORNBEAM	16	2" MIN. CAL.	B&B	25'-30' HT.
HV	HAMAMELIS VIRGINIANA COMMON WITCH HAZEL	20	3'-4' HT.	B&B	20'-25' HT.
JV	JUNIPERUS VIRGINIANA EASTERN RED CEDAR	13	6'-7' HT.	B&B	40'-50' HT.
PA	PICEA ABIES NORWAY SPRUCE	13	6'-7' HT.	B&B	40'-60' HT.
PG	PICEA GLAUCA WHITE SPRUCE	15	6'-7' HT.	B&B	40'-60' HT.
TO	THUJA OCCIDENTALIS NORTHERN WHITE CEDAR	27	6'-7' HT.	B&B	30'-40' HT.

SHRUBS

SYMBOL	BOTANICAL NAME/ COMMON PLANT NAME	QUANTITY	SIZE	ROOT	MATURE HEIGHT
CS	CORNUS SERICEA RED OSIER DOGWOOD	32	24"-30" HT.	3 / 5 GAL. CONT.	7'-9' HT.
IV	ILEX VERTICILLATA COMMON WINTERBERRY	56	24"-30" HT.	3 / 5 GAL. CONT.	10'-12' HT.
VP	VIBURNUM PRUNIFOLIUM BLACKHAW VIBURNUM	23	24"-30" HT.	3 / 5 GAL. CONT.	10'-12' HT.

PLANTING SCHEDULES VM1-VM2

VM1 - VEGETATIVE BUFFER / SCREEN MITIGATION TABLE

NUMBER	MITIGATION TYPE	LENGTH	LINE/CHORD DIRECTION	START EASTING, NORTHING	END EASTING, NORTHING
L1	TYPE A	571	S00° 00' 27.10"W	E:949321.5409, N:1976166.4251	E:949321.4659, N:1975595.0008
L2	TYPE A	329	N90° 00' 00.00"W	E:949321.4659, N:1975595.0008	E:948992.5961, N:1975595.0008

VM2 - VEGETATIVE BUFFER / SCREEN MITIGATION TABLE

NUMBER	MITIGATION TYPE	LENGTH	LINE/CHORD DIRECTION	START EASTING, NORTHING	END EASTING, NORTHING
L3	TYPE A	310	N89° 59' 50.96"W	E:948942.5934, N:1975594.9883	E:948632.3031, N:1975595.0020
L4	TYPE A	680	N00° 00' 00.00"E	E:948632.3031, N:1975595.0020	E:948632.3031, N:1976275.1617

COORDINATE TABLES: VM1-VM2

SEAL:

LICENSED PROFESSIONAL ENGINEER
ANDREW B. GRAHAM
062.048682
STATE OF ILLINOIS
2023.06.15 10:49:25-05'00'

PROFESSIONAL ENGINEER:
ANDREW B. GRAHAM
062048682

EXPIRATION DATE:
11/30/23

TRC ENVIRONMENTAL CORP.
DESIGN FIRM LIC. # 18400496-0002

NO.	BY	DATE	REVISION	APP'D.
1	CC	6/14/2023	ISSUED FOR PERMIT	ABG

PROJECT:
RENEWABLE PROPERTIES, LLC
HIGHWAY 20 SOLAR
KANE COUNTY, IL

TITLE:
LANDSCAPE DETAILS 2

DRAWN BY:	G. TURNER
CHECKED BY:	M. ROSS
APPROVED BY:	A. GRAHAM
DATE:	JUNE 2023

PROJ. NO.: 500015.0000.0005

L102

TRC
230 West Monroe St.
Suite 1840
Chicago, IL 60606
Phone: 312.578.0870

FILE NO.: 500015.0000.0005 11 L100 LAND PLAN.dwg

230 W. Monroe Street, Suite 1840
Chicago, IL 60606

T 630.370.0017
TRCcompanies.com

Legal Description

EXHIBIT "A"

Legal Description

For APN/Parcel ID(s): 02-19-300-004 and 02-30-100-013

THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 19 AND THE EAST HALF OF THE NORTHWEST QUARTER OF SECTION 30, ALL IN TOWNSHIP 42 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN, (EXCEPTING THAT PART CONVEYED TO THE CHICAGO AND PACIFIC RAIL ROAD COMPANY BY DEED DATED SEPTEMBER 20, 1875 AND RECORDED MAY 11, 1878 IN BOOK 157, PAGE 284 AS DOCUMENT 5035) AND EXCEPTING THAT PART OF THE NORTHWEST QUARTER OF SECTION 30, TOWNSHIP 42 NORTH, RANGE 7 EAST OF THE THIRD PRINCIPAL MERIDIAN, DESCRIBED AS FOLLOWS: COMMENCING AT AN IRON STAKE MARKING THE NORTHEAST CORNER OF SAID NORTHWEST QUARTER; THENCE AZIMUTH 179 DEGREES 50 MINUTES 42 SECONDS (ASSUMED) ALONG AN EXISTING FENCE LINE, 2599.77 FEET TO THE NORTHERLY RIGHT OF WAY LINE OF U.S. ROUTE 20; THENCE AZIMUTH 270 DEGREES 11 MINUTES 35 SECONDS ALONG SAID NORTHERLY RIGHT OF WAY LINE 564.62 FEET TO AN IRON STAKE MARKING A POINT OF CURVATURE, SAID POINT BEING 32.88 FEET WESTERLY OF A CONCRETE RIGHT OF WAY MONUMENT; THENCE WESTERLY ALONG SAID NORTHERLY RIGHT OF WAY LINE AND A CURVE TO THE RIGHT OF RADIUS OF 1392.4 FEET AN ARC DISTANCE OF 309.79 FEET TO AN IRON STAKE FOR THE POINT OF BEGINNING; THENCE CONTINUING ALONG SAID NORTHERLY RIGHT OF WAY LINE ON A CURVE TO THE RIGHT OF RADIUS 1392.4 FEET AN ARC DISTANCE OF 390.25 FEET TO AN IRON STAKE; THENCE AZIMUTH 18 DEGREES 26 MINUTES 15 SECONDS, 71.39 FEET TO AN IRON STAKE; THENCE AZIMUTH 44 DEGREES 58 MINUTES 38 SECONDS, 156.01 FEET TO AN IRON STAKE; THENCE AZIMUTH 13 DEGREES 31 MINUTES 12 SECONDS, 138.08 FEET TO AN IRON STAKE; THENCE AZIMTUH 93 DEGREES 41 MINUTES 17 SECONDS, 64.98 FEET TO AN IRON STAKE; THENCE AZIMUTH 154 DEGREES 44 MINUTES 40 SECONDS, 317.98 FEET TO AN IRON STAKE; THENCE AZIMUTH 180 DEGREES 52 MINUTES 10 SECONDS, 159.78 FEET TO THE POINT OF BEGINNING, IN RUTLAND TOWNSHIP, KANE COUNTY, ILLINOIS, AND AN EASEMENT FOR INGRESS AND EGRESS 20 FEET IN WIDTH FOR THE BENEFIT OF THE ABOVE DESCRIBED PARCEL 1, DESCRIBED AS FOLLOWS: BEGINNING AT AN IRON STAKE AT THE SOUTHWEST CORNER OF SAID PARCEL 1; THENCE AZIMUTH 18 DEGREES 26 MINUTES 15 SECONDS ALONG THE WESTERLY LINE OF PARCEL 1, 71.39 FEET TO AN IRON STAKE; THENCE AZIMUTH 44 DEGREES 58 MINUTES 38 SECONDS ALONG THE WESTERLY LINE OF PARCEL 1, 156.01 FEET TO AN IRON STAKE; THENCE AZIMUTH 13 DEGREES 31 MINUTES 12 SECONDS ALONG THE WESTERLY LINE OF PARCEL 1, 105.0 FEET; THENCE AZIMUTH 283 DEGREES 31 MINUTES 12 SECONDS, 20.0 FEET; THENCE AZIMUTH 193 DEGREES 31 MINUTES 12 SECONDS, 99.37 FEET; THENCE AZIMUTH 224 DEGREES 68 MINUTES 38 SECONDS, 155.10 FEET; THENCE AZIMUTH 198 DEGREES 26 MINUTES 15 SECONDS, 72.22 FEET TO THE NORTHERLY RIGHT OF WAY LINE OF U.S. ROUTE 20; THENCE SOUTHEASTERLY ALONG SAID RIGHT OF WAY LINE ON A CURVE OF RADIUS 1392.4 FEET; CONCAVE TO THE NORTHEAST 20.28 FEET TO THE POINT OF BEGINNING), IN RUTLAND TOWNSHIP, KANE COUNTY, ILLINOIS.

230 W. Monroe Street, Suite 1840
Chicago, IL 60606

T 630.370.0017
TRCcompanies.com

Kane DuPage SWCD
Land Use Opinion

Del Rivero, Giovani

From: Del Rivero, Giovani
Sent: Thursday, June 15, 2023 6:11 PM
To: contact@kanedupageswd.org
Cc: Jeremy Price
Subject: Request for Land Use Opinion Report - Solar Project Highway 20
Attachments: Land use opinion application - Highway 20_opt.pdf; Make A Payment - Receipt - Illinois_Ka...e Soil and Water Conservation District.pdf

Good a ernoon,
I have a ached our LUO Report Applica on for a proposed community solar farm in Kane County. The fee has been paid and receipt a ached.
Please let me know if you need anything else for your review.
Thank you!

Gio Del Rivero
Project Manager – Planning, Permitting, & Licensing

TRC

230 W. Monroe Street, Suite 1840, Chicago, IL 60606
T 773.828.6788 | **C** 630.370.0017 | gdelrivero@trccompanies.com
LinkedIn | Twitter | TRCcompanies.com

Land Use Opinion Report (LUO) Application

Kane-DuPage Soil & Water Conservation District

Petitioner: Renewable Properties, LLC
Contact person: Jeremy Price
Address: 879 Sanchez Street
City, State, Zip: San Fransisco, CA 94114
Phone Number: (978) 382 - 1751
Email: **jprice@renewprop.com**

Owner: Robert G. & Evelyn G. Conro Trust No. 1
Address: Attn: Al Conro 43W708W U.S. Highway 20
City, State, Zip: Hampshire, IL 60140
Phone Number: 847-880-1635
Email: gconromilk@aol.com

Please select: How would you like to receive a copy of the LUO Report? Email ☑ Mail ☐

Site Location
Address: 43W708W U.S. Highway 20
City, State, Zip: Hampshire, IL 60140
Township(s) 42N N Range(s) 7E E Section(s) 30
Parcel Index Number(s): 02-30-100-013

Type of Request
☐ Change in Zoning from _____ to_____
☐ Subdivision or Planned Unit Development (PUD)
☐ Variance (Please describe fully on a separate sheet)
☑ Special Use Permit (Please describe on separate sheet)

Site Information
Permitting Unit of Government: Kane County Hearing Date: TBD
Project Name: Highway 20 Total Acres: 76 Aera of Disturbance: 25
Current Use of Site: Agricultural Proposed Use: Community Solar Farm

Proposed Improvements (Check all that apply)
☐ Dwellings with Basements ☐ Parking Lots ☐ Commercial Buildings ☐ Common Open Space
☐ Dwellings without Basements ☐ Roads and Streets ☑ Utility Structures ☒ Other Solar Farm

Stormwater Treatment
☐ Drainage Ditches or Swales ☐ Dry Detention Basins ☐ No Detention Facilities Proposed
☐ Storm Sewers ☐ Wet Detention Basins ☑ Other permanent deep-rooted vegetation

Water Supply
☐ Individual Wells
☐ Community Water

Wastewater Treatment
☐ Septic System
☐ Sewers

☑ Other NA

Required: Include One Copy of Each of the Following (Processing will not begin until all items are received)
MAIL TO: 2315 DEAN ST. SUITE 100, ST. CHARLES, IL 60175
☑ **Application** (completed and signed)
☑ **Fee** (according to fee schedule on back)
☑ Make Checks payable to Kane-DuPage Soil and Water Conservation District
☑ **Plat of Survey** showing legal description, legal measurments
☑ **Site Plan/Drawings** showing lots, storm water detention areas, open areas, streets etc.
☑ **Project Narrative** with additional details on the proposed use, including total area of ground disturbance
☑ **Location Map** (if not on maps above) include distances from major roadways or tax parcel numbers
If Available- Not Required:
Any applicable surveys including wetland deliniation, detailed soil survey, topographic survey etc.

I (we) understand the filing of this application allows the authorized representative of the Kane-DuPage Soil and Water Conservation District to visit and conduct an evaluation of the site.

Petitioner or Authorized Agent Gio Del Rivero / Engineer / TRC **Date** 06/15/2023

FOR OFFICE USE ONLY

LUO #_____ Natural Resource Review Letter _____ Date Initially rec'd _____ Date all rec'd _____
Date Due _____ Fee Due $_____ Refund Due _____ Check #_____
The opinion will be issued on a nondiscriminatory basis without regard to race, color, religion, sex, age, marital status, handicap, or national origin.
Effective July 1, 2020

DEPARTMENT OF THE ARMY
CHICAGO DISTRICT, CORPS OF ENGINEERS
231 SOUTH LA SALLE STREET
CHICAGO, ILLINOIS 60604-1437

REPLY TO
ATTENTION OF:

January 30, 2023

Operations Division
Regulatory Branch
LRC-2022-00768

SUBJECT: Jurisdictional Determination for the Highway 20 Solar Project in Hampshire, Kane County, Illinois (Latitude 42.092835, Longitude -88.463981)

Stephanie Loucas
Renewable Properties, LLC
879 Sanchez Street
San Francisco, California 94114

Dear Ms. Loucas :

This is in response to your request that the U.S. Army Corps of Engineers complete a jurisdictional determination for the above-referenced site submitted on your behalf by SWCA Environmental Consultants. The subject project has been assigned number LRC-2022-00768. Please reference this number in all future correspondence concerning this project.

Following a review of the information you submitted, this office has determined that there are no waterways, wetlands or other areas considered "waters of the United States" under Corps of Engineers jurisdiction at the site.

Wetlands WD001 & WD002 have been determined to be isolated and therefore not subject to Federal regulation. Please be informed that this office does not concur with the boundaries of waters not under the jurisdiction of this office.

For a detailed description of our determination please refer to the enclosed decision document. This determination covers only your project as depicted in the Wetland and Waterbody Delineation Report dated September 2022, prepared by SWCA Environmental Consultants.

This determination is valid for a period of five (5) years from the date of the letter, unless new information warrants revision of the determination before the expiration date or a District Commander has identified, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.

This letter is considered an approved jurisdictional determination for your subject site. If you object to this determination, you may appeal, according to 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and a Request for Appeal (RFA) form. If you request to appeal the above determination, you must submit a completed RFA form to the Great Lakes/Ohio River Division Office at the following address:

Regulatory Appeals Review Officer
US Army Corps of Engineers
Great Lakes and Ohio River Division
550 Main Street, Room 10-714
Cincinnati, Ohio 45202-3222
Phone: (513) 684-2699 Fax: (513) 684-2460

In order to be accepted, your RFA must be complete, meet the criteria for appeal and be received by the Division Office within sixty (60) days of the date of the NAP, which is March 30, 2023. If you concur with the determination in this letter, submittal of the RFA form to the Division office is not necessary.

This determination has been conducted to identify the limits of the Corps Clean Water Act jurisdiction for the particular site identified in this request. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

It is your responsibility to obtain any required state, county, or local approvals for impacts to wetland areas not under the Department of the Army jurisdiction. In Kane County, please note that isolated non-waters of the United States not under the jurisdiction of the U.S. Army Corps of Commanders are regulated by the Kane County Stormwater Ordinance. For projects in incorporated areas of Kane County, contact the certified community for information related to the ordinance. For projects in unincorporated areas of Kane County, contact the Kane County Department of Environmental Management at (630) 208-3179.

Pursuant to Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers regulates the discharge of dredged or fill material into waters of the United States, including wetlands. A Department of the Army permit is required for any proposed work involving the discharge of dredged or fill material within the jurisdiction of this office. To initiate the permit process, please submit a joint permit application form along with detailed plans of the proposed work. Information concerning our program, including the application form and an application checklist, can be found at and downloaded from our website:
http://www.lrc.usace.army.mil/Missions/Regulatory.aspx

If you have any questions, please contact Mr. Michael J. Machalek of my staff by telephone at (312) 846-5534 or email at Mike.J.Machalek@usace.army.mil.

Sincerely,

Michael J Machalek

Michael J. Machalek
Senior Project Manager
Regulatory Branch

Enclosures

Copy Furnished w/out Enclosures

Kane County Division of Environmental Management (Jodie Wollnik)
TRC Environmental Corporation (Gio Del Rivero)

Wetland and Waterbody Delineation Report for the Illinois Route 20 Solar Project, Kane County, Illinois

SEPTEMBER 2022

PREPARED FOR

Wildcat Renewables, LLC

PREPARED BY

SWCA Environmental Consultants

WETLAND AND WATERBODY DELINEATION REPORT FOR THE ILLINOIS ROUTE 20 SOLAR PROJECT, KANE COUNTY, ILLINOIS

Prepared for

Wildcat Renewables, LLC
879 Sanchez Street
San Francisco, California 94114

Prepared by

SWCA Environmental Consultants
200 West 22nd Street, Suite 220
Lombard, Illinois 60148
(630) 599-3022
www.swca.com

SWCA Project No. 74880

September 2022

CONTENTS

Appendices

Tables

Figures

1 INTRODUCTION

On behalf of Wildcat Renewables, LLC (Wildcat), SWCA Environmental Consultants (SWCA) has prepared this wetland and waterbody delineation report for the Illinois Route 20 Solar Project (project) located in unincorporated Kane County, Illinois. The Study Area is approximately 75.65 acres (Figures 1 and 2).

This report provides the methods, results, and conclusions of a wetland and waterbody delineation conducted on August 31, 2022. The objectives of this survey were to identify and evaluate potentially jurisdictional wetlands and other waters within the Study Area that may be subject to U.S. Army Corps of Engineers (USACE) and Kane County jurisdiction under Section 404 of the Clean Water Act and/or county regulations. Fieldwork was performed by Megan O'Loughlin, who is a trained delineator with experience in the Northcentral and Northeast region.

2 METHODOLOGY

In accordance with USACE methodology outlined in the *Corps of Engineers Wetlands Delineation Manual* (1987 Manual) (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Northcentral and Northeast Region* (Regional Supplement) (USACE 2012), wetlands and other waters were identified and approximated through the combined use of existing publicly available baseline data and field delineation as described below.

2.1 Desktop Analysis

The following publicly available data sources were used to complete a desktop analysis of the Study Area to assess the likelihood of wetlands and other waters being present:

- Current and historical aerial imagery
- Federal Emergency Management Agency (FEMA) National Flood Hazard Layer mapping (FEMA 2022)
- National Land Cover Database (Multi-Resolution Land Characteristics Consortium 2019)
- Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS 2022)
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) mapping (USFWS 2022)
- Kane County Advanced Identification of Wetlands (ADID) (Kane County 2022)
- U.S. Geological Survey (USGS) National Hydrography Dataset (NHD) (USGS 2020)

The results of the desktop analysis were used to identify the likely locations of wetlands and waterbodies for the field delineation.

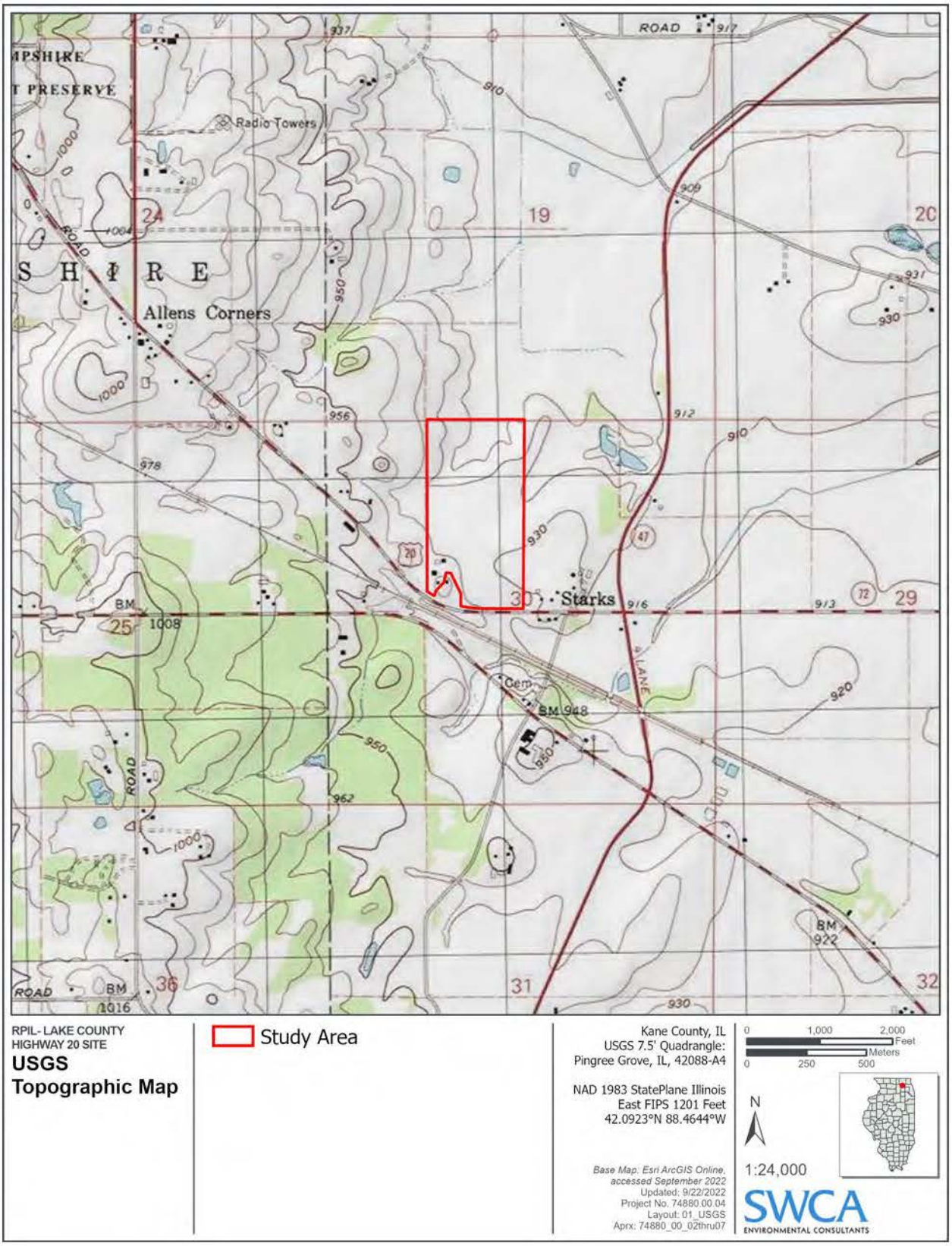


Figure 1. Location map for the Illinois Route 20 Solar Project, Kane County, Illinois, 2022.

Figure 2. Aerial location map for the Illinois Route 20 Solar Project, Kane County, Illinois, 2022.

2.2 Field Delineation

SWCA conducted a field delineation on August 31, 2022, to determine the presence or absence of wetlands and other waters in accordance with guidance and information available from the following sources:

- 1987 Manual (USACE 1987)
- Regional Supplement (USACE 2012)
- *Field Indicators of Hydric Soils in the United States* (Version 8.2) (NRCS 2018)
- *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in* Rapanos v. United States *and* Carabell v. United States (U.S. Environmental Protection Agency 2008)
- USACE Regulatory Guidance Letter 05-05: Ordinary High Water Mark Identification (USACE 2005)

The presence or absence of wetlands was determined in the field using routine determination methods outlined in the 1987 Manual and Regional Supplement (USACE 1987, 2012). Wetlands were identified by positive indicators of hydrology, hydrophytic vegetation, and hydric soils. Under normal conditions, all three parameters must be present for an area to be considered a wetland in accordance with Section 404 of the Clean Water Act. Wetland indicator data were collected at specified data points within the Study Area, which were used to approximate the wetland boundary and were recorded on USACE Northcentral and Northeast Region wetland determination data forms. Wetland boundaries were recorded using global positioning system (GPS) units capable of submeter accuracy.

For each wetland area, a Floristic Quality Assessment was conducted to determine the quality of the plant community and whether any wetlands within the Study Area meet the definition of a high quality aquatic resource according to the 2017 USACE Chicago District Regional Permit Program. Plant species in each wetland were noted to obtain the Floristic Quality Index (FQI) and native mean coefficient of conservatism (C-value). C-values ranging from 0 to 10 were assigned to native plants as listed in *Flora of the Chicago Region* (Wilhelm and Rericha 2017). A native mean C-value was calculated using the Chicago Region Floristic Quality Assessment Calculator to assess native vegetative quality (Herman et al. 2017). A native species FQI was calculated by multiplying the native mean C-value by the square root of the number of observed native species. Native FQI values range from 0 to 60. Wetlands with a FQI of 20 or greater or native mean C-value of 3.5 or greater are considered high quality aquatic resources, which warrant special protection under the 2017 USACE Chicago District Regional Permit Program.

Wetland hydrology was primarily determined in the field by considering the frequency and duration of inundation, visual observation of saturation in the upper 16 inches of the soil profile, and the presence of primary wetland hydrologic indicators (e.g., oxidized rhizospheres on living roots, water-stained leaves, water marks, sediment deposits, or algal matting). Secondary indicators used to determine wetland hydrology include, but are not limited to, surface soil cracks, crayfish burrows, geomorphic position, and drainage patterns. Evidence of these secondary indicators is present even during dry periods, and therefore they are useful indicators of a wetland. If the area sampled displayed one or more primary hydrologic indicators or two or more secondary hydrologic indicators as listed in the 1987 Manual and Regional Supplement, a positive wetland hydrology determination was made (USACE 1987, 2012).

Rainfall has a substantial influence on maintaining wetland hydrology. Therefore, it is important to accurately evaluate the normality of rainfall with respect to its influence on wetland hydrology. This was done by employing the Direct Antecedent Rainfall Evaluation Method (DAREM) (Sprecher and Warne

2000). Using the Applied Climate Information System Wetland Evaluation Tables (WETs) (Applied Climate Information System 2022) as a baseline of normal rainfall, the DAREM method was applied to assess rainfall by considering the 3-month period prior to the month of the field delineation. Evaluation under these methods classified the condition of the site at the time of the delineation as either drier than normal, normal, or wetter than normal.

Vegetation within each sample plot was identified to the species level, when possible, to identify the plant communities present. Hydrophytic vegetation is defined as a plant community with over 50% of the dominant plant species with wetland indicator statuses of as obligate wetland (OBL), facultative wetland (FACW), or facultative (FAC) as recorded in the National Wetland Plant List: Northcentral and Northeast Region (USACE 2020). The appropriate wetland indicator status was assigned to each plant species. The absolute cover of each plant species within the plot area (i.e., 2-meter [m] radius for the herbaceous vegetation stratum, 5-m radius for shrub/vine strata, and 15-m radius for the tree stratum) was visually estimated, and then the absolute percent cover was calculated (e.g., each species may be rated up to 100% and the total can be over 100% cover). Then, either the rapid test (i.e., all dominant species across all strata are OBL or FACW), the dominance test (i.e., 50/20 test; >50% of the total cover represented by plant species combined and including any species >20% of cover by itself, across all strata are rated OBL, FACW, or FAC), or the prevalence index (i.e., average value of wetland indicator statuses [OBL = 1…UPL = 5] of all species in the plot, weighted by percent cover, is less than or equal to 3.0) was used to determine the presence or absence of hydrophytic vegetation.

For each data point recorded, a soil test pit was dug to determine the presence or absence of hydric soil conditions. As defined by the National Technical Committee of Hydric Soils, a hydric soil is a "soil that formed under the conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (NRCS 2015). Common indicators for non-sandy soils as per the USACE's manuals (USACE 1987, 2012) include the presence of organic soils, histic epipedon, hydrogen sulfide odor, reduced soil conditions, gleyed soils, or listing on the hydric soils lists. Hydric soil determinations were made according to criteria listed in the Regional Supplement and *Field Indicators of Hydric Soils in the United States: (Version 8.2)* (NRCS 2018).

Areas meeting the indicators of hydrology, hydrophytic vegetation, and hydric soils were then classified according to the Cowardin system, as described in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). This is a hierarchical system based on the topographic position and vegetation type of a wetland, which aids resource managers and others by providing uniformity of concepts and terms used to define wetlands according to hydrologic, geomorphologic, chemical, and biological factors.

Waterbodies (e.g., creeks, rivers, ditches, ponds) were identified by the presence of an ordinary high-water mark (OHWM), which is usually identifiable by indicators such as the level of water present, scouring of the channel, or a vegetation line within the channel (USACE 2005). The OHWM is a defining element for identifying the lateral jurisdictional limits of non-wetland waters. The OHWMs of waterbodies encountered during the wetland delineation were recorded using GPS units capable of submeter accuracy. Streams were further classified as perennial, intermittent, or ephemeral based on field observations.

3 RESULTS

The following sections summarize the vegetative communities, soils, hydrology, and classification of wetlands and waterbodies within the Study Area, as identified in publicly available data sources.

3.1 Desktop Analysis

3.1.1 *Landscape Setting*

Topography within the Study Area slopes north with the elevation ranging from 277 to 290 m above mean sea level. A review of the FEMA National Flood Hazard Layer (FEMA 2022) indicates the absence of flood hazard areas within the Study Area (Figure 3).

3.1.2 *Vegetation*

A review of the National Land Cover Database (Multi-Resolution Land Characteristics Consortium 2019) indicates that land cover within the Study Area consists primarily of cultivated crops. The Study Area also contains areas identified as hay/pasture and developed (low intensity, medium intensity).

3.1.3 *Soils*

Eight soil map units are present within the Study Area (Figure 4, Table 1) according to the NRCS (2022).

Table 1. Soil Map Units within the Study Area, Kane County, Illinois

Map Unit Symbol	Soil Name	Hydric
149A	Brenton silt loam, 0 to 2 percent slopes	No
323C2	Casco loam, 4 to 6 percent slopes, eroded	No
323D2	Casco loam, 6 to 12 percent slopes, eroded	No
325B	Dresden silt loam, 2 to 4 percent slopes	No
327B	Fox silt loam, 2 to 4 percent slopes	No
327C2	Fox silt loam, 4 to 6 percent slopes, eroded	No
327D2	Fox loam, 6 to 12 percent slopes, eroded	No
329A	Will loam, 0 to 2 percent slopes	Yes

Source: NRCS (2022).

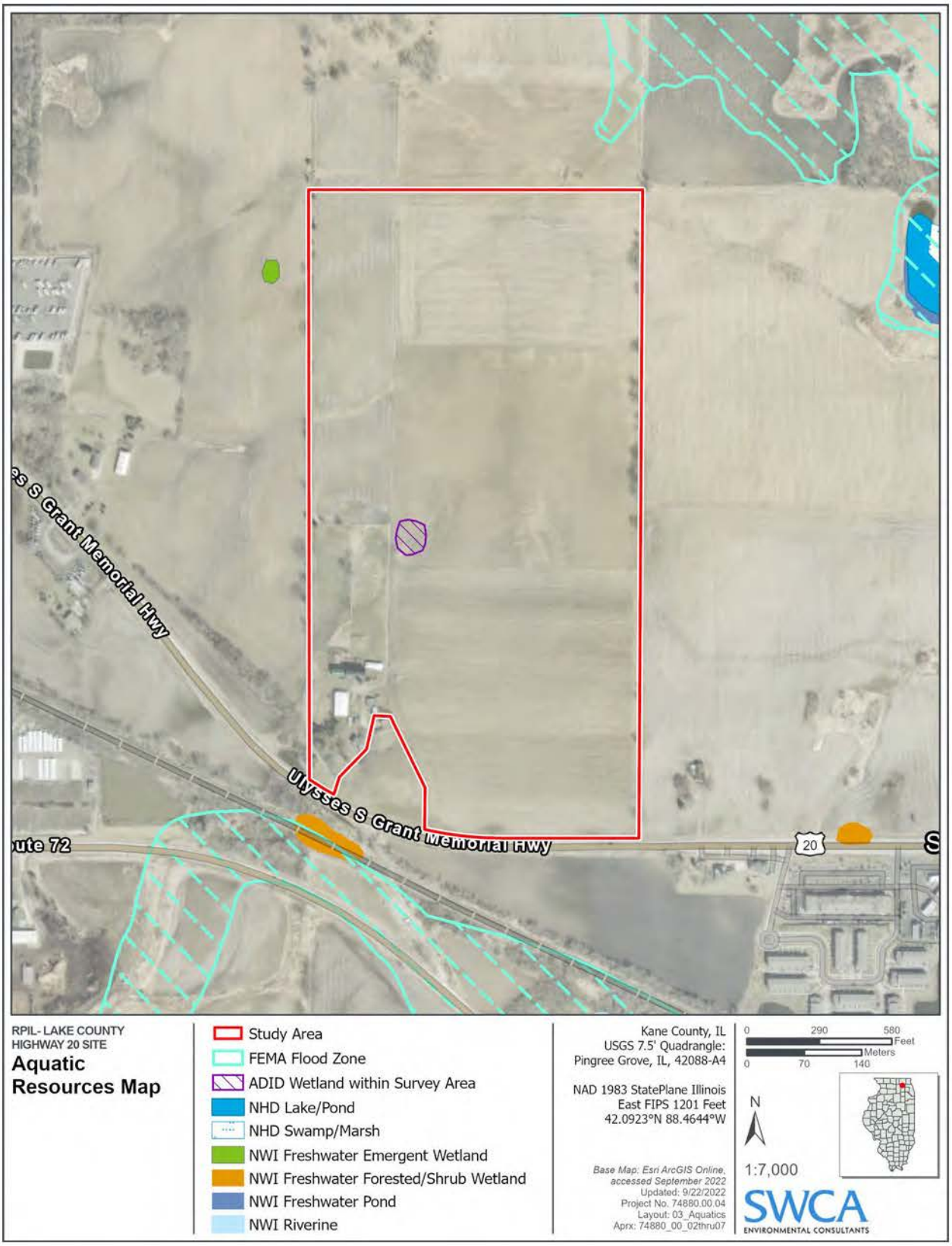


Figure 3. Aquatic resources map for the Illinois Route 20 Solar Project, Kane County, Illinois, 2022.

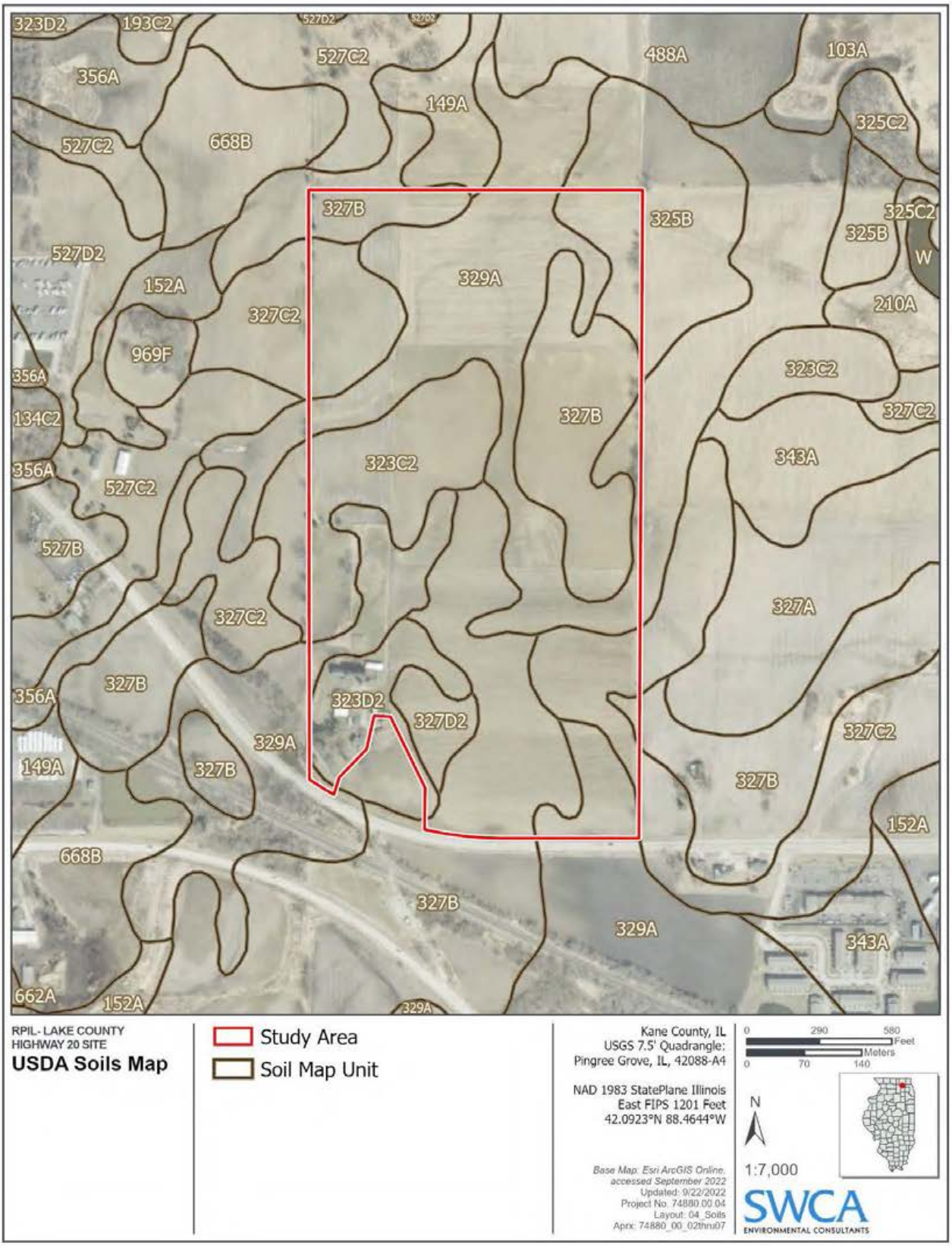


Figure 4. NRCS soil locations within the Illinois Route 20 Solar Project, Kane County, Illinois, 2022.

3.1.4 *Hydrology*

Precipitation data from the National Weather Service's Elgin (Kane County), Illinois, station, which is approximately 9.2 miles southeast of the Study Area, was used to determine the baseline of normal rainfall over the Study Area in May, June, and July 2022 (Applied Climate Information System 2022). This was compared with the DAREM calculations data for Kane County, Illinois, for the 3 months prior to the field survey The DAREM calculations for the 3 months prior to the survey were calculated using observed rainfall data and comparative WETS data (Table 2). Based on these calculations, the 3-month time period prior to the field survey in August 2022 was found to have normal precipitation patterns.

Table 2. Rainfall Summary for Kane County, Illinois, August 2022

Prior Month	WETS Rainfall Percentile (inches)		Measured Rainfall (inches)	Evaluation Month: August 2022		
	30th	70th		Condition[a]	Month Weight[b]	Score[c]
July	2.65	4.65	9.30	3	3	6
June	2.99	5.48	2.74	1	2	2
May	3.23	6.02	5.73	2	1	2
					Total:	**10**
Description[d]						**Normal**

Source: Applied Climate Information System (2022).

[a] Condition values are 1 for <30th percentile, 2 for between 30th and 70th percentile, 3 for >70th percentile.

[b] Month weight is 3 for the most recent month prior, 2 for the second month prior, and 1 for the third month prior.

[c] Score is the product of the condition and month weight.

[d] Description: Drier than normal (sum is 6–9), normal (sum is 10–14), wetter than normal (sum is 15–18)

3.1.5 *National Wetlands Inventory*

SWCA reviewed the USFWS NWI mapping data to determine the potential presence of wetland features within the Study Area (USFWS 2022). NWI wetlands are classified according to the Cowardin system, as described in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). NWI data suggests the absence of wetlands within the Study Area (see Figure 3).

3.1.6 *National Hydrography Dataset*

SWCA reviewed USGS NHD mapping to determine the potential presence of streams and waterbodies within the Study Area (USGS 2020). NHD data suggests the absence of features within the Study Area (see Figure 3).

3.1.7 *Kane County ADID*

SWCA reviewed the Kane County ADID mapping data to determine the potential presence of wetland features within the Study Area (Kane County 2022). Kane County data suggests the presence of one NRCS farmed wetland within the Study Area (see Figure 3).

3.1.8 *Farmed Wetland Determination*

The Study Area consists primarily of agricultural land. SWCA reviewed aerial photographs from one wet year (2020) and the available four years with normal precipitation patterns (2015, 2009, 2007, 2006) to determine if wet signatures were consistently present within the Study Area for at least 3 normal precipitation years. Designation of an area on the NWI map also constitutes 1 year of wetland signature. Presence of a mapped NRCS certified farmed wetland feature on the Kane County ADID map designates an area as a farmed wetland (Kane County 2022, Kane County 2004). As a result of this review, SWCA identified one farmed wetland signature within the Study Area (Table 3; see Appendix A).

3.2 Field Delineation

SWCA conducted the field delineation on August 31, 2022, to assess the general site characteristics, ground-truth any mapped features identified during the desktop analysis, assess the likelihood of wetland presence in areas mapped as hydric soils, and delineate the boundaries of all features determined to be present. Wetland delineation data sheets are provided in Appendix B. The FQI for each wetland is provided in Appendix C. Photographs of the delineated features are provided in Appendix D.

3.2.1 *Wetlands*

SWCA delineated two palustrine emergent (PEM) wetlands, totaling 0.49 acres within the Study Area (Figure 5; see Table 3).

Table 3. Wetlands Identified within the Illinois Route 20 Solar Study Area, Kane County, Illinois

Feature ID	Preliminary Jurisdictional Status*	Classification	Acreage within Study Area	Native Mean C-Value	Native FQI	Kane County Wetland Buffer†
WD001	Kane County	PEM	0.18	0.33	0.58	50 feet
WD002‡	Kane County	PEM	0.31	N/A	N/A	50 feet
Total PEM			**0.49**			

Note: PEM = palustrine emergent

* This determination is SWCA's professional opinion. A jurisdictional determination through Kane County and USACE will be required to determine the official jurisdictional status of each feature.

‡ Denotes farmed wetland.

Figure 5. Water Resources Delineation Map for the Illinois Route 20 Solar Project, Kane County, Illinois, 2022.

3.2.1.1 VEGETATION COMMUNITIES

Mapped land cover types within the Study Area were verified as generally accurate during the field delineation. SWCA observed two vegetation community types within the Study Area including one wetland community types (i.e., PEM) and one non-wetland/upland community types (i.e., agricultural). The species identified at each data point along with their areal coverage are recorded on the data forms in Appendix B. A photographic log of the wetland communities observed within the Study Area is provided in Appendix D. The dominant species identified within each vegetation community type are listed in the following sections.

3.2.1.1.1 Palustrine Emergent Wetland

The PEM wetland community consists of a prevalence of hydrophytic non-woody vegetation and woody plants less than 1 m in height. The dominant herbaceous species include chufa (*Cyperus esculentus*).

3.2.1.1.2 Agricultural Upland

The agricultural upland community consists of cultivated crops. Dominant herbaceous species include alfalfa (*Medicago sativa*), hairy crab grass (*Digitaria sanguinalis*), soybean (*Glycine max*), and yellow bristle grass (*Setaria pumila*).

3.2.1.2 HYDROLOGY

Primary wetland hydrology indicators observed in the Study Area include Algal Mat or Crust (B4). Secondary wetland hydrology indicators observed in the Study Area include Surface Soil Cracks (B6), Saturation Visible on Aerial Imagery (C9), Stunted or Stressed Plans (D1), Geomorphic Position (D2) and a positive FAC-Neutral Test (D5) (see Appendix B).

3.2.1.3 HYDRIC SOIL INDICATORS

Hydric soil indicators observed in the Study Area include Redox Dark Surface (F6) and Depleted Dark Surface (F7) (see Appendix B).

4 CONCLUSIONS

SWCA conducted a field delineation of the Study Area on August 31, 2022. The SWCA wetland ecologist identified two wetlands. A summary of potential wetland jurisdiction status and buffer requirements for identified features is provided in Table 3.

The USACE Chicago District and Kane County have final authority in determining the status and presence of regulated waters and the extent of their boundaries. Any areas not meeting the definition of jurisdictional waters of the U.S. will be considered Isolated Waters, as defined in the Kane County Stormwater Management Ordinance (Kane County 2020).

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APPENDIX A

Farmed Wetland Evaluation

CLIMATIC EVALUATION OF PRECIPITATION

Weather Station: Elgin

	Average	<30%	>30%
Jan	1.84	1.19	2.22
February	1.64	0.88	2
March	2.27	1.38	2.75
April	3.91	2.83	4.61
May	5	3.23	6.02
June	4.56	2.99	5.48
July	3.89	2.65	4.65
August	4.4	2.93	5.27
September	3.49	2.03	4.24

DATE: 8/29/2022
COUNTY: Kane
Project No. 74880
PREPARED BY: Megan O'Loughlin

Evaluation Date	March Precipitation	Type of Month	April Precipitation	Type of Month	May Precipitation	Type of Month	March Score 1X	April Score 2X	May Score 3X	Score for Year	Type of Year
Jun-20	3.69	Wet	5.06	Wet	8.9	Wet	3	6	9	18	WET
Evaluation Date	February Precipitation	Type of Month	March Precipitation	Type of Month	April Precipitation	Type of Month	February Score 1X	March Score 2X	April Score 3X	Score for Year	Type of Year
May-15	1.45	Normal	1.28	Dry	3.14	Normal	2	2	6	10	NORMAL
Evaluation Date	July Precipitation	Type of Month	August Precipitation	Type of Month	September Precipitation	Type of Month	July Score 1X	August Score 2X	September Score 3X	Score for Year	Type of Year
Oct-09	2.44	Dry	6.57	Wet	0.7	Dry	1	6	3	10	NORMAL
Evaluation Date	July Precipitation	Type of Month	August Precipitation	Type of Month	September Precipitation	Type of Month	July Score 1X	August Score 2X	September Score 3X	Score for Year	Type of Year
Oct-07	5.91	Wet	15.69	Wet	0.77	Dry	3	6	3	12	NORMAL
Evaluation Date	May Precipitation	Type of Month	June Precipitation	Type of Month	July Precipitation	Type of Month	May Score 1X	June Score 2X	July Score 3X	Score for Year	Type of Year
Aug-06	4.76	Normal	4.39	Normal	3.75	Normal	2	4	6	12	NORMAL

SCORE

Dry =	1
Normal =	2
Wet =	3

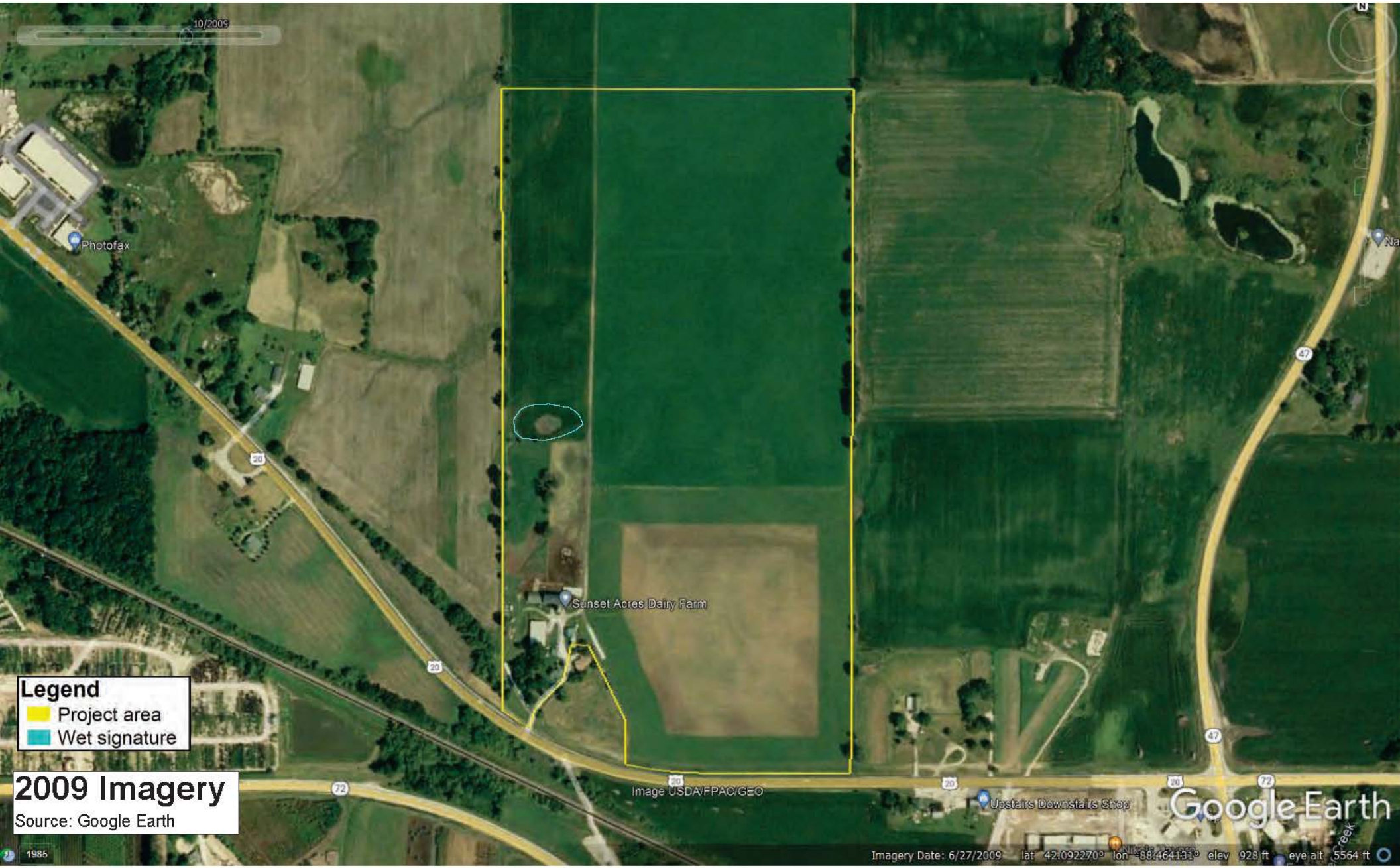
TYPE OF YEAR

Dry =	6 to 9
Normal =	10 to 14
Wet =	14 to 18

COMMENTS: Fifth normal year slide was unavailable. Missing data or wetter than normal precipitation was recorded for the remaining available Google aerial slides.


6/2020
Photofax
Sunset Acres Dairy Farm
Legend
Project area
Wet signature
2020 Imagery
Source: Google Earth
Google Earth
Imagery Date: 6/7/2020 lat 42.092264° lon -88.464403° elev 929 ft eye alt 4938 ft


5/2015
1985
2021
Photofax
Sunset Acres Dairy Farm
Legend
Project area
Wet signature
2015 Imagery
Source: Google Earth
Google Earth
Imagery Date: 5/12/2015 lat 42.095812° lon -88.472497° elev 956 ft eye alt 4938 ft


10/2009
Photofax
Sunset Acres Dairy Farm
Legend
Project area
Wet signature
2009 Imagery
Source: Google Earth
Image USDA/FPAC/GEO
Upstairs Downstairs Shop
Google Earth
1985
Imagery Date: 6/27/2009 lat 42.092270° lon -88.464131° elev 928 ft eye alt 5564 ft


10/2007
1985
2021
Photofax
Sunset Acres Dairy Farm
Upstairs Downstairs Shop
Legend
Project area
Wet signature
2007 Imagery
Source: Google Earth
Google Earth
Imagery Date: 10/10/2007 lat 42.096511° lon -88.473479° elev 959 ft eye alt 5564 ft


8/2006
Photofax
Sunset Acres Dairy Farm
Legend
Project area
Wet signature
2006 Imagery
Source: Google Earth
Image USDA/FPAC/GEO
Upstairs Downstairs Shop
Google Earth
Imagery Date: 6/2/2006 lat 42.092270° lon -88.464131° elev 928 ft eye alt 5564 ft

APPENDIX B

USACE Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM — Northcentral and Northeast Region

Project/Site: IL-20 Solar Project City/County: Kane County Sampling Date: 08/31/2022

Applicant/Owner: Wildcat Renewables State: IL Sampling Point: DPD001_PEM

Investigator(s): M. O'Loughlin Section, Township, Range: Sec. 30 T42N R7E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): <5%

Subregion (LRR or MLRA): MLRA 95B , LRR K Lat: 42.092 Long: -88.4651 Datum: NAD83

Soil Map Unit Name: 329A - Will loam, 0 to 2 percent slopes NWI classification: No

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS — Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes:	X	No:		**Is the Sampled Area within a Wetland?** **Yes** X **No** _____
Hydric Soil Present?	Yes:	X	No:		
Wetland Hydrology Present?	Yes:	X	No:		If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.) Farmed wetland signatures were not observed on >50% of the historic aerials during the farmed wetland determination review. However, this area is mapped as a Kane County ADID Farmed Wetland certified by NRCS.

HYDROLOGY

Wetland Hydrology Indicators:

Primary indicators (minimum of one required: check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: DPD001_PEM

Tree Stratum: (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	=Total Cover	
Sapling/Shrub Stratum: (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	=Total Cover	
Herb Stratum: (Plot size: 5)			
1. Digitaria sanguinalis	25	Y	FACU
2. Medicago sativa	20	Y	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	45	=Total Cover	
Woody Vine Stratum: (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Domant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	25	x 4 =	100
UPL species	20	x 5 =	100
Column Totals:	45 (A)		200 (B)
Prevalence Index = B/A=			4.44

Hydrophytic Vegetation Indicators:

___ 1 - Rapid test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Profice supporting data in Remarks or on a separate sheet)

X Problematic Hydrophytic Vegetation (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree –Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Include photo numbers here or on a separate sheet.) Farmed wetland

SOIL

Sampling Point: DPD001_PEM

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
0-16	10YR 3/1	90	10YR 5/2	10	D	M	Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
X Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
___ Coast Prairie Redox (A16) **(LRR K, L, R)**
___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM — Northcentral and Northeast Region

Project/Site: IL-20 Solar Project City/County: Kane County Sampling Date: 08/31/2022

Applicant/Owner: Wildcat Renewables State: IL Sampling Point: DPD002_UPL

Investigator(s): M. O'Loughlin Section, Township, Range: Sec. 30 T42N R7E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): <5%

Subregion (LRR or MLRA): MLRA 95B , LRR K Lat: 42.091776 Long: -88.463419 Datum: NAD83

Soil Map Unit Name: 329A - Will loam, 0 to 2 percent slopes NWI classification: No

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS — Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes:		No:	X
Hydric Soil Present?	Yes:		No:	X
Wetland Hydrology Present?	Yes:	X	No:	

Is the Sampled Area within a Wetland? Yes _____ No X

If yes, optional Wetland Site ID: _____

Remarks: (Explain alternative procedures here or in a separate report.) Farmed wetland signatures were not observed on >50% of the historic aerials during the farmed wetland determination review. Therefore, this area does not meet the requirements for a farmed wetland designation.

HYDROLOGY

Wetland Hydrology Indicators:

Primary indicators (minimum of one required: check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):	_____
Water Table Present?	Yes ___	No X	Depth (inches):	_____
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	_____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: DPD002_UPL

Tree Stratum: (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	=Total Cover	

Sapling/Shrub Stratum: (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	=Total Cover	

Herb Stratum: (Plot size: 5)			
1. Medicago sativa	70	Y	UPL
2. Digitaria sanguinalis	10	N	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80	=Total Cover	

Woody Vine Stratum: (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Domant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	0	x 2 =	0	
FAC species	0	x 3 =	0	
FACU species	10	x 4 =	40	
UPL species	70	x 5 =	350	
Column Totals:	80	(A)	390	(B)
Prevalence Index = B/A=			4.88	

Hydrophytic Vegetation Indicators:

___ 1 - Rapid test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Profice supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree –Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DPD002_UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
0-8	10YR 3/1	100		0			Silty Clay Loam	
8-16	10YR 3/1	90	10YR 4/3	5	C	M	Silty Clay Loam	
8-16	10YR 3/1	90	10YR 5/2	5	D	M	Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
___ Coast Prairie Redox (A16) **(LRR K, L, R)**
___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks: Redox was observed below 8 inches and does not qualify as hydric soil.

WETLAND DETERMINATION DATA FORM — Northcentral and Northeast Region

Project/Site: IL-20 Solar Project City/County: Kane County Sampling Date: 08/31/2022

Applicant/Owner: Wildcat Renewables State: IL Sampling Point: DPD003_UPL

Investigator(s): M. O'Loughlin Section, Township, Range: Sec. 30 T42N R7E

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): <5%

Subregion (LRR or MLRA): MLRA 95B , LRR K Lat: 42.091296 Long: -88.4631 Datum: NAD83

Soil Map Unit Name: 329A - Will loam, 0 to 2 percent slopes NWI classification: No

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS — Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes:	X	No:		**Is the Sampled Area within a Wetland?** **Yes** _____ **No** X
Hydric Soil Present?	Yes:		No:	X	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes:	X	No:		

Remarks: (Explain alternative procedures here or in a separate report.) Farmed wetland signatures were not observed on >50% of the historic aerials during the farmed wetland determination review. Therefore, this area does not meet the requirements for a farmed wetland designation.

HYDROLOGY

Wetland Hydrology Indicators:

Primary indicators (minimum of one required: check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: DPD003_UPL

Tree Stratum: (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	=Total Cover	
Sapling/Shrub Stratum: (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	=Total Cover	
Herb Stratum: (Plot size: 5)			
1. *Panicum dichotomiflorum*	10	Y	FACW
2. *Glycine max*	5	Y	UPL
3. *Setaria pumila*	5	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	20	=Total Cover	
Woody Vine Stratum: (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Domant Species That Are OBL, FACW, or FAC: 67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	10	x 2 =	20	
FAC species	5	x 3 =	15	
FACU species	0	x 4 =	0	
UPL species	5	x 5 =	25	
Column Totals:	20	(A)	60	(B)
Prevalence Index = B/A=			3.00	

Hydrophytic Vegetation Indicators:

___ 1 - Rapid test for Hydrophytic Vegetation

_X_ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Profice supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree –Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _X_ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DPD003_UPL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
0-15	10YR 3/1	100		0			Silty Clay Loam	
15-16	10YR 3/1	80	10YR 4/1	20	D	M	Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
___ Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
___ Coast Prairie Redox (A16) **(LRR K, L, R)**
___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

WETLAND DETERMINATION DATA FORM — Northcentral and Northeast Region

Project/Site: IL-20 Solar Project City/County: Kane County Sampling Date: 08/31/2022

Applicant/Owner: Wildcat Renewables State: IL Sampling Point: DPD004_PEM

Investigator(s): M. O'Loughlin Section, Township, Range: Sec. 30 T42N R7E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): <5%

Subregion (LRR or MLRA): MLRA 95B , LRR K Lat: 42.09234 Long: -88.466137 Datum: NAD83

Soil Map Unit Name: 329A - Will loam, 0 to 2 percent slopes NWI classification: No

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS — Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes:	X	No:		**Is the Sampled Area within a Wetland?** **Yes** X **No** _____
Hydric Soil Present?	Yes:	X	No:		If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes:	X	No:		

Remarks: (Explain alternative procedures here or in a separate report.) WD001 is PEM wetland. Farmed wetland signatures were not observed on >50% of the historic aerials during the farmed wetland determination review. Therefore, this area does not meet the requirements for a farmed wetland designation.

HYDROLOGY

Wetland Hydrology Indicators:

Primary indicators (minimum of one required: check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary indicators (minimum of two required)

- X Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches):	_____
Water Table Present?	Yes ___	No X	Depth (inches):	_____
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	_____

Wetland Hydrology Present? **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: DPD004_PEM

Tree Stratum: (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	=Total Cover	
Sapling/Shrub Stratum: (Plot size: 15)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	=Total Cover	
Herb Stratum: (Plot size: 5)			
1. Portulaca oleracea	20	Y	FACU
2. Cyperus esculentus	15	Y	FACW
3. Panicum dichotomiflorum	5	N	FACW
4. Amaranthus tuberculatus	5	N	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	45	=Total Cover	
Woody Vine Stratum: (Plot size: 30)			
1.			
2.			
3.			
4.			
	0	=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Domant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	20	x 2 =	40
FAC species	0	x 3 =	0
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	45 (A)		125 (B)
Prevalence Index = B/A=			2.78

Hydrophytic Vegetation Indicators:

___ 1 - Rapid test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Profice supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

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Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: DPD004_PEM

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type [1]	Loc [2]	Texture	Remarks
0-16	10YR 3/1	95	10YR 5/6	5	C	M	Silty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

___ Histosol (A1)
___ Histic Epipedon (A2)
___ Black Histic (A3)
___ Hydrogen Sulfide (A4)
___ Stratified Layers (A5)
___ Depleted Below Dark Surface (A11)
___ Thick Dark Surface (A12)
___ Sandy Mucky Mineral (S1)
___ Sandy Gleyed Matrix (S4)
___ Sandy Redox (S5)
___ Stripped Matrix (S6)
___ Dark Surface (S7) **(LRR R, MLRA 149B)**
___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
___ Loamy Mucky Mineral (F1) **(LRR K, L)**
___ Loamy Gleyed Matrix (F2)
___ Depleted Matrix (F3)
X Redox Dark Surface (F6)
___ Depleted Dark Surface (F7)
___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
___ Coast Prairie Redox (A16) **(LRR K, L, R)**
___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
___ Dark Surface (S7) **(LRR K, L)**
___ Polyvalue Below Surface (S8) **(LRR K, L)**
___ Thin Dark Surface (S9) **(LRR K, L)**
___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
___ Red Parent Material (F21)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

APPENDIX C

Floristic Quality Index

SITE: IL-20
LOCALE: Wetland WD001
BY: M. O'Loughlin
NOTES:

CONSERVATISM-BASED METRICS		ADDITIONAL METRICS	
MEAN C (NATIVE SPECIES)	**0.33**	SPECIES RICHNESS (ALL)	4
MEAN C (ALL SPECIES)	0.25	SPECIES RICHNESS (NATIVE)	3
MEAN C (NATIVE TREES)	n/a	% NON-NATIVE	0.25
MEAN C (NATIVE SHRUBS)	n/a	WET INDICATOR (ALL)	-0.75
MEAN C (NATIVE HERBACEOUS)	0.33	WET INDICATOR (NATIVE)	-1.33
FQAI (NATIVE SPECIES)	**0.58**	% HYDROPHYTE (MIDWEST)	0.75
FQAI (ALL SPECIES)	0.50	% NATIVE PERENNIAL	0.25
ADJUSTED FQAI	2.89	% NATIVE ANNUAL	0.50
% C VALUE 0	0.75	% ANNUAL	0.75
% C VALUE 1-3	0.25	% PERENNIAL	0.25
% C VALUE 4-6	0.00		
% C VALUE 7-10	0.00		

SPECIES ACRONYM	SPECIES NAME (NWPL/ MOHLENBROCK)	SPECIES (SYNONYM)	COMMON NAME	C VALUE	MIDWEST WET INDICATOR	NC-NE WET INDICATOR	WET INDICATOR (NUMERIC)	HABIT	DURATION	NATIVITY
amatub	Amaranthus tuberculatus	Acnida altissima	Rough-Fruit Amaranth	1	OBL	OBL	-2	Forb	Annual	Native
cypesc	Cyperus esculentus	Cyperus esculentus	Chufa	0	FACW	FACW	-1	Sedge	Perennial	Native
pandic	Panicum dichotomiflorum	Panicum dichotomiflorum	Fall Panic Grass	0	FACW	FACW	-1	Grass	Annual	Native
porole	Portulaca oleracea	PORTULACA OLERACEA	Little-Hogweed	0	FACU	FACU	1	Forb	Annual	Adventive

APPENDIX D

Photographs

Photograph 1. Wetland WD001 (PEM), facing north (8/31/2022 by M. O'Loughlin).

Photograph 2. Wetland WD002 (PEM), facing northeast (8/31/2022 by M. O'Loughlin).

Photograph 3. Agircultural upland (DPD002_UPL), facing north (8/31/2022 by M. O'Loughlin).

230 W. Monroe Street, Suite 1840
Chicago, IL 60606

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TRCcompanies.com

Stormwater Report

Runoff and Peak Rate Analysis

RPIL Solar 5, LLC Storm Water

June 2023

Prepared For:

Renewable Properties, LLC
879 Sanchez Street
San Francisco, CA 94114

Prepared By:

TRC
999 Fourier Dr., Suite 101
Madison, Wisconsin 53717

Date: 2023.06.15
20:27:02-05'00'

Anne Rowley, PE
Project Manager

999 Fourier Dr., Suite 101 (53717) Madison, WI 608.826.3600

PROJECT/PROPOSAL NAME	PREPARED		CHECKED		PROJECT/PROPOSAL NO.
	By:	Date:	By:	Date:	
RPIL Solar 5, LLC	C. Zumm	6/15/2023	A. Rowley	6/15/2023	500015.0000.0005

Purpose:

To estimate the change in storm water runoff volume and the peak discharge rate during the 2-year, 10-year, and 100-year, 24-hour storms resulting from a solar development located north of US Highway 20 in Rutland Township, Kane County, Illinois (the Site). This change in storm water runoff volume and the peak discharge rate will dictate which storm water controls, if any, will be required.

Methodologies:

- Analysis of storm water runoff for the post condition was completed using HydroCAD®, Version 10, storm water modeling software (HydroCAD). HydroCAD is largely based on the United States Department of Agriculture (USDA) Soil Conservation Service's (SCS), (also known as the Natural Resources Conservation Service [NRCS]) Technical Release 55 (TR-55) and TR-20 hydrology methods. HydroCAD also incorporates capabilities such as outlet hydraulics, exfiltration calculations, and a range of other features that are not applicable to the TR-55 and TR-20 methods. Additionally, it is able to do different distributions, such as the Huff distribution.
- Drainage areas (subcatchments) and time of concentration lines for both the pre- and post-development conditions were delineated using Autodesk AutoCAD® Civil 3D design software (refer to Figures 1 and 2). These subcatchments and the corresponding time of concentration lines were then entered into HydroCAD. Surface runoff characteristics were determined based on the existing soils and topography at the Site, as well as planned final conditions. Rainfall quantities and storm distributions were determined based on the updated Bulletin 70 (see Attachment 1). HydroCAD was used to generate hydrographs from which the volume and peak discharge of storm water runoff were obtained.
- Both the pre- and post-development conditions were modeled based on topographic survey data performed by WT Group on March 22, 2023.

Assumptions:

- The following assumptions and input parameters were used when modeling the storm water runoff (refer to the attached HydroCAD outputs and references of this section):
  - It will not be necessary for the gravel access road for the Site to have graded storm water ditches to convey flow. Therefore, the flow of storm water will be dependent primarily on the existing topography.
  - Storm water runoff for the existing conditions is modeled as agricultural with overland flow.
  - Storm water runoff for the developed conditions is modeled as meadow with overland flow.
  - The length of sheet flow is 100 feet for each subcatchment.

PROJECT/PROPOSAL NAME	PREPARED		CHECKED		PROJECT/PROPOSAL NO.
	By:	Date:	By:	Date:	
RPIL Solar 5, LLC	C. Zumm	6/15/2023	A. Rowley	6/15/2023	500015.0000.0005

- Calculations in this report are based on a 12-foot-wide gravel access road into the Site.
- Pilings for the solar panels were not accounted for, as the total area was insignificant (less than 30 SF) and impact to storm water is anticipated to be minimal.

Runoff and Routing Methods

- The Natural Resources Conservation Service (NRCS) Web Soil Survey (WSS) was utilized to determine existing soil groups on site. Group B, C, and D hydrologic soil groups (HSG) are present on site.
- Runoff curve numbers were assumed as described below using land type and hydrologic soil group:

Land Description	Area	Curve Number (HSG B)	Curve Number (HSG C)	Curve Number (HSG D)	Reference
Row crops, SR + CR, Good	1, 2, 3, 4, 5	75	82	85	TR-55
>75% Grass cover, Good	1, 2	61	NA	80	TR-55
Woods, Fair	5	NA	73	79	TR-55
Meadow, non-grazed	1, 2, 3, 4, 5	58	71	78	TR-55
Gravel roads	1, 2	85	NA	91	TR-55
Roofs	2	98	NA	NA	TR-55

Storm Events

- The values are based on Illinois State Water Survey (ISWS) Updated Bulletin 70 for standard precipitation estimates (see Attachment 1).
- A 4th Quartile Huff rainfall distribution was utilized when producing runoff hydrographs.
- A 2-year, 24-hour storm event in the vicinity of the Site produces 3.34 inches of rain.
- A 10-year, 24-hour storm event in the vicinity of the Site produces 5.15 inches of rain.
- A 100-year, 24-hour storm event in the vicinity of the Site produces 8.57 inches of rain.

Storm Water Runoff Results:

The results of the storm water runoff calculations are summarized in the tables below. The 2-year, 24-hour storm and 100-year, 24-hour storm have the peak runoff rate and total runoff volume summarized in Tables 1 and 2. Runoff rates for the 10-year, 24-hour storm are provided in Table 4 to compare the pre-development conditions and the post-development conditions. Refer to the attached HydroCAD outputs in Attachments 2 and 3 for more details.

999 Fourier Dr., Suite 101 (53717) Madison, WI 608.826.3600

PROJECT/PROPOSAL NAME	PREPARED		CHECKED		PROJECT/PROPOSAL NO.
	By:	Date:	By:	Date:	
RPIL Solar 5, LLC	C. Zumm	6/15/2023	A. Rowley	6/15/2023	500015.0000.0005

Table 1: Pre-Development Storm Water Runoff Summary

Watershed ID	Area (acres)	Time of Concentration (minutes)	2-Year, 24-Hour Storm		100-Year, 24-Hour Storm	
			Peak Runoff Rate (cfs)	Peak Runoff Volume (acre-ft)	Peak Runoff Rate (cfs)	Peak Runoff Volume (acre-ft)
S-1	10.9	29.9	3.02	1.25	10.49	5.16
S-2	13.7	16.3	3.39	1.30	12.94	6.03
S-3	15.4	25.0	4.28	1.76	14.88	7.25
S-4	3.6	29.3	0.99	0.41	3.44	1.69
S-5	65.1	56.8	18.31	8.18	61.07	31.98
Total Site	108.7	-	-	12.90	-	52.11

Table 2: Post-Development Storm Water Runoff Summary

Watershed ID	Area (acres)	Time of Concentration (minutes)	2-Year, 24-Hour Storm		100-Year, 24-Hour Storm	
			Peak Runoff Rate (cfs)	Peak Runoff Volume (acre-ft)	Peak Runoff Rate (cfs)	Peak Runoff Volume (acre-ft)
S-1	10.9	30.9	3.01	1.25	10.47	5.16
S-2	13.7	16.2	3.39	1.30	12.94	6.03
S-3	15.4	77.7	2.83	1.10	12.29	6.12
S-4	3.6	36.8	0.61	0.21	2.92	1.32
S-5	65.1	65.7	16.99	7.47	59.14	31.00
Total Site	108.7	-	-	11.33	-	49.63

Table 3: Difference in Storm Water Runoff Summary

Watershed ID	2-Year, 24-Hour Storm	100-Year, 24-Hour Storm
	Percent Volume Reduction (%)	Percent Volume Reduction (%)
S-1	0.00	0.00
S-2	0.00	0.00
S-3	37.50	15.59
S-4	48.78	21.89
S-5	8.68	3.06
Total Site	12.17	4.76

PROJECT/PROPOSAL NAME	PREPARED		CHECKED		PROJECT/PROPOSAL NO.
	By:	Date:	By:	Date:	
RPIL Solar 5, LLC	C. Zumm	6/15/2023	A. Rowley	6/15/2023	500015.0000.0005

Table 4: 10-Year, 24-Hour Storm Runoff Rates

Watershed ID	10-Year, 24-Hour Storm	
	Pre-Development Peak Runoff Rate (cfs)	Post-Development Peak Runoff Rate (cfs)
S-1	5.59	5.58
S-2	6.63	6.63
S-3	7.93	5.96
S-4	1.83	1.36
S-5	33.10	31.48

The results indicate a decrease in storm water runoff from each subcatchment. With these results, it is anticipated that no detention storage or other storm water runoff controls will be required for the Site to maintain equal to or better than previous outflow.

Proposed Best Management Practices:

The proposed development adds approximately 21,812 square feet of impervious area to the site. In accordance with the Kane County Stormwater Management Ordinance, Category I Best Management Practices (BMPs) are required to be incorporated into the project. The proposed BMPs will provide runoff volume reduction and water quality treatment for one inch of rainfall over the added impervious area. The volume of water reduction and treatment required is approximately 1,818 cubic feet. Permanent Vegetation is proposed to meet the Category I BMP requirements. A native seeding mix that is suitable for site conditions will be selected in accordance with the Practice Standards of the Illinois Urban Manual. Permanent Vegetation (Code 880) will establish a permanent cover to stabilize soils and enhance permeability while reducing runoff and erosion. Permanent vegetation will be implemented within the fenced area, and in 10-foot-wide strips along portions of the access road within subcatchment S-1 as shown in Figure 2.

BMP Sizing

As discussed in earlier sections, ground cover improvements are proposed for the entire fenced area of the site, however, to be flexible with seeding options, the minimum area of permanent vegetation to meet the BMP requirements was calculated. Calculations in Attachment 4 show that 30,000 square feet, or approximately 0.7 acres, of permanent vegetation must be implemented to meet the BMP volume reduction requirements.

Implementation and Maintenance

Permanent Vegetation will be implemented and maintained in accordance with Illinois Urban Manual practice standards. The landscaping details (Sheets L100 – L102) in the Civil Plan Set show proposed seed mixes, and planting locations. It is expected that this seed mix meets the

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PROJECT/PROPOSAL NAME	PREPARED		CHECKED		PROJECT/PROPOSAL NO.
	By:	Date:	By:	Date:	
RPIL Solar 5, LLC	C. Zumm	6/15/2023	A. Rowley	6/15/2023	500015.0000.0005

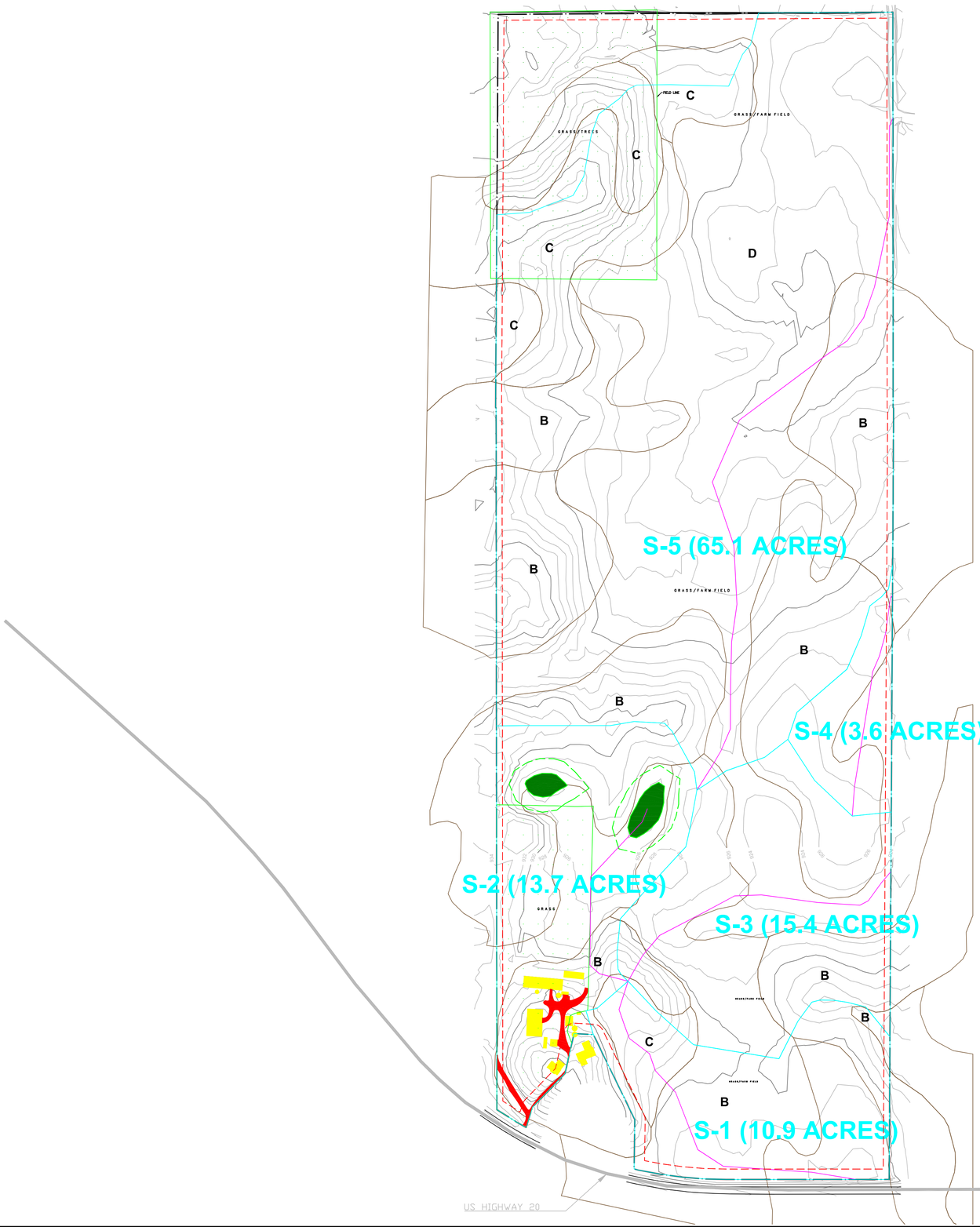
requirements of practice standard 808a which lists acceptable plant species. Low-maintenance plants are prioritized in the landscaping plan. Prescribed burns and frequent mowing will not be implemented. Native grasses, forbs, and legumes are proposed. Low areas of the site, which are prone to inundation, will be seeded with a separate seed mixture as described in the landscaping plan.

References:

HydroCAD® Software Solutions LLC (HydroCAD). 2013. HydroCAD Storm Water Modeling System. Version 10.00.

US Department of Agriculture, Soil Conservation Service (SCS). Urban Hydrology for Small Watersheds. Technical Release No. 55 (TR-55). 2nd Edition. June 1986.

Figures



LEGEND

- SETBACK LINE
- PROPERTY LINE
- CATCHMENT BOUNDARY
- TIME OF CONCENTRATION LINE
- 800 EXISTING CONTOUR
- EXISTING WETLAND
- WETLAND SETBACK
- EXISTING GRASS COVER
- EXISTING ROOFS
- EXISTING GRAVEL COVER
- D SOIL GROUP LABEL
- SOIL GROUP BOUNDARY

10-YEAR, 24-HOUR STORM PEAK RUNOFF RATES		
CATCHMENT	PRE-DEVELOPMENT (CFS)	POST-DEVELOPMENT (CFS)
S-1	5.59	5.58
S-2	6.63	6.63
S-3	7.93	5.96
S-4	1.83	1.36
S-5	33.10	31.48

NOTES

1. GROUP A. SOILS HAVING A HIGH INFILTRATION RATE (LOW RUNOFF POTENTIAL) WHEN THOROUGHLY WET. THESE CONSIST MAINLY OF DEEP, WELL DRAINED TO EXCESSIVELY DRAINED SANDS OR GRAVELLY SANDS. THESE SOILS HAVE A HIGH RATE OF WATER TRANSMISSION.
2. GROUP B. SOILS HAVING A MODERATE INFILTRATION RATE WHEN THOROUGHLY WET. THESE CONSIST CHIEFLY OF MODERATELY DEEP OR DEEP, MODERATELY WELL DRAINED OR WELL DRAINED SOILS THAT HAVE MODERATELY FINE TEXTURE TO MODERATELY COARSE TEXTURE. THESE SOILS HAVE A MODERATE RATE OF WATER TRANSMISSION.
3. GROUP C. SOILS HAVING A SLOW INFILTRATION RATE WHEN THOROUGHLY WET. THESE CONSIST CHIEFLY OF SOILS HAVING A LAYER THAT IMPEDES THE DOWNWARD MOVEMENT OF WATER OR SOILS OF MODERATELY FINE TEXTURE OR FINE TEXTURE. THESE SOILS HAVE A SLOW RATE OF WATER TRANSMISSION.
4. GROUP D. SOILS HAVING A VERY SLOW INFILTRATION RATE (HIGH RUNOFF POTENTIAL) WHEN THOROUGHLY WET. THESE CONSIST CHIEFLY OF CLAYS THAT HAVE A HIGH SHRINK-SWELL POTENTIAL, SOILS THAT HAVE A HIGH WATER TABLE, SOILS THAT HAVE A CLAYPAN OR CLAY LAYER AT OR NEAR THE SURFACE, AND SOILS THAT ARE SHALLOW OVER NEARLY IMPERVIOUS MATERIAL. THESE SOILS HAVE A VERY SLOW RATE OF WATER TRANSMISSION.

N

0 200 400 600 800

SCALE IN FEET

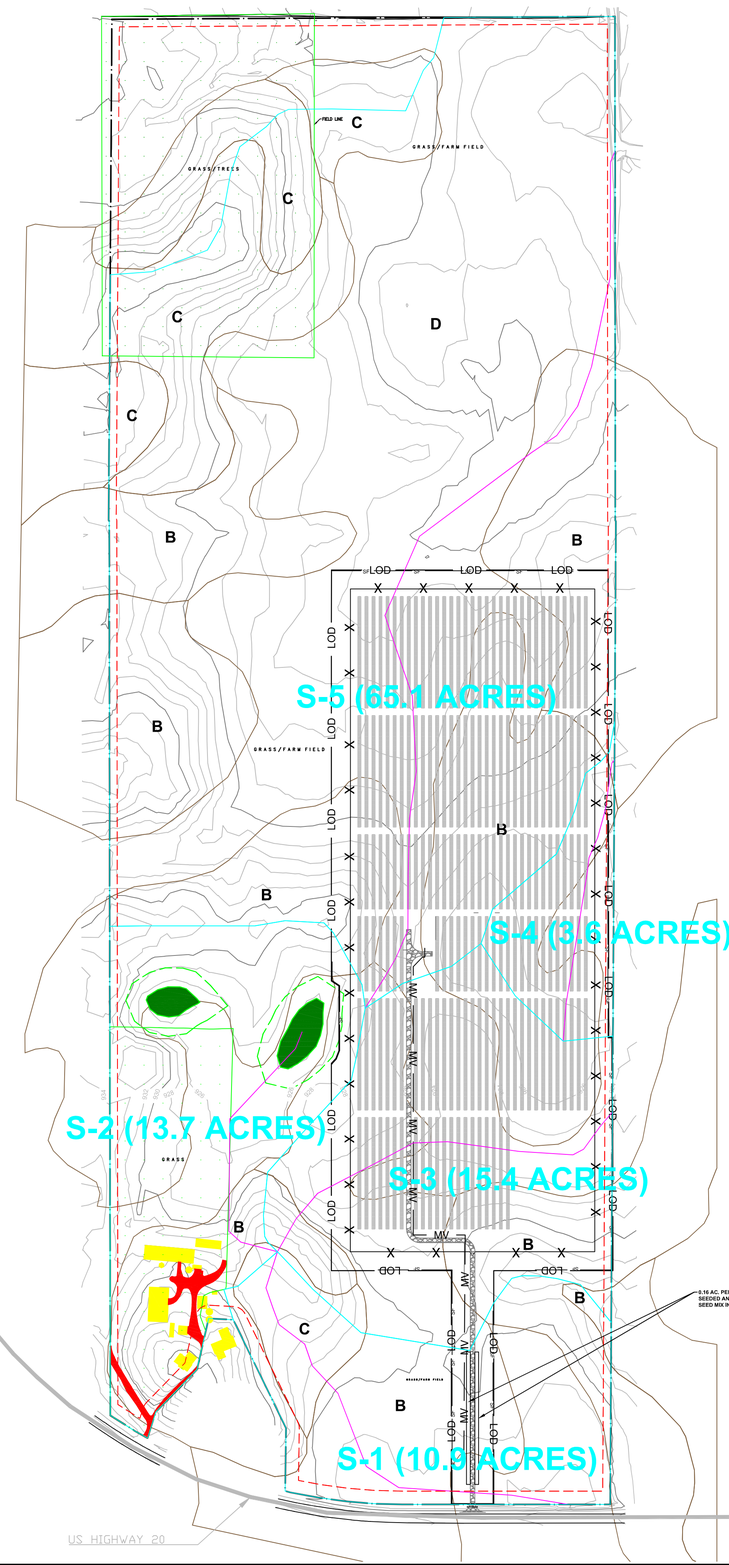
PROJECT:
RPIL SOLAR 5, LLC
KANE COUNTY, IL 60140

TITLE:
PRE-DEVELOPMENT CATCHMENTS

DRAWN BY:	C. ZUMM	PROJ. NO.:	50015.0000.0005
CHECKED BY:	C. ZUMM		
APPROVED BY:	A. ROWLEY		**FIGURE 1**
DATE:	JUNE 2023		

TRC
999 Fourier Drive
Suite 101
Madison, WI 53717
Phone: 608.826.3600

FILE NO.: Catchments and TC with DEM (Pre and Post).dwg



LEGEND

- SETBACK LINE
- PROPERTY LINE
- CATCHMENT BOUNDARY
- TIME OF CONCENTRATION LINE
- 800 — EXISTING CONTOUR
- EXISTING WETLAND
- WETLAND SETBACK
- EXISTING GRASS COVER
- EXISTING ROOFS
- EXISTING GRAVEL COVER
- D — SOIL GROUP LABEL
- SOIL GROUP BOUNDARY
- FENCE LINE
- MV TRANSFORMER
- MODULE ROW
- GRAVEL ACCESS ROAD
- LOD — LIMITS OF DISTURBANCE
- SF — SILT FENCE
- MV — MV CABLE

10-YEAR, 24-HOUR STORM PEAK RUNOFF RATES		
CATCHMENT	PRE-DEVELOPMENT (CFS)	POST-DEVELOPMENT (CFS)
S-1	5.59	5.58
S-2	6.63	6.63
S-3	7.93	5.96
S-4	1.83	1.36
S-5	33.10	31.48

NOTES

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3. GROUP C. SOILS HAVING A SLOW INFILTRATION RATE WHEN THOROUGHLY WET. THESE CONSIST CHIEFLY OF SOILS HAVING A LAYER THAT IMPEDES THE DOWNWARD MOVEMENT OF WATER OR SOILS OF MODERATELY FINE TEXTURE OR FINE TEXTURE. THESE SOILS HAVE A SLOW RATE OF WATER TRANSMISSION.
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N

0 200 400 600 800

SCALE IN FEET

PROJECT:

RPIL SOLAR 5, LLC
KANE COUNTY, IL 60140

TITLE:

POST-DEVELOPMENT CATCHMENTS

DRAWN BY:	C. ZUMM	PROJ. NO.:	50015.0000.0005
CHECKED BY:	C. ZUMM		
APPROVED BY:	A. ROWLEY		**FIGURE 2**
DATE:	JUNE 2023		

TRC
999 Fourier Drive
Suite 101
Madison, WI 53717
Phone: 608.826.3600

FILE NO.: Catchments and TC with DEM (Pre and Post).dwg

Attachment 1
Bulletin 70 Precipitation Estimates

Results

Frequency Estimates

To determine the precipitation frequency, the previously described regional frequency analysis was applied to the AMS data. The results were then converted to the PDS domain based on the relationship defined in Eq. 1 and adjusted for the trend (Eq. 3). These results, however, still had occasional minor inconsistencies caused by several factors, such as variable data length for different durations, which resulted in irregular frequency curves. To produce the final curves, these irregularities had to be smoothed out, which was done based on the authors' professional judgment and knowledge of specific regions and gages.

The results for all sections are shown in the following tables. Table 4 displays the key for the codes used in Table 5 where the results are presented numerically. The results are shown graphically in Figures 8–12.

Table 4 Storm and Sectional Codes for Table 5

Storm Code	
1	240 hours
2	120 hours
3	72 hours
4	48 hours
5	24 hours
6	18 hours
7	12 hours
8	6 hours
9	3 hours
10	2 hours
11	1 hour

Sectional Code	
1	Northwest
2	Northeast
3	West
4	Central
5	East
6	West Southwest
7	Southeast
8	Southwest
9	Southeast
10	South

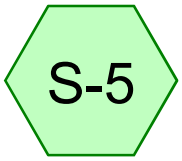
Table 5 Rainfall Frequencies

		Rainfall (inches) for given recurrence interval						
Storm code	Section code	2-year	5-year	10-year	25-year	50-year	100-year	500-year
1	1	5.48	6.86	7.98	9.55	10.84	12.14	15.65
1	2	5.60	7.09	8.25	9.90	11.26	12.65	16.00
1	3	5.62	7.00	8.10	9.60	10.65	11.64	13.99
1	4	5.46	6.87	8.04	9.53	10.55	11.50	13.65
1	5	5.50	6.84	7.90	9.35	10.45	11.55	13.96
1	6	6.00	7.38	8.47	9.95	10.99	11.95	14.08
1	7	6.57	7.86	8.90	10.20	11.20	12.06	13.95
1	8	6.75	8.18	9.30	10.80	11.95	13.10	15.95
1	9	7.06	8.30	9.22	10.37	11.21	11.96	13.75
1	10	6.36	7.65	8.76	10.40	11.66	12.96	16.20
2	1	4.35	5.51	6.46	7.88	8.96	10.20	13.33
2	2	4.42	5.63	6.68	8.16	9.39	10.66	13.81
2	3	4.51	5.66	6.62	7.94	8.93	9.83	11.99
2	4	4.27	5.42	6.42	7.75	8.72	9.60	11.54
2	5	4.34	5.43	6.41	7.73	8.79	9.80	11.93
2	6	4.49	5.60	6.49	7.77	8.69	9.57	11.53
2	7	5.00	6.11	7.01	8.23	9.11	9.95	11.71
2	8	5.31	6.51	7.47	8.79	9.81	10.84	13.45
2	9	5.73	6.78	7.60	8.64	9.47	10.20	11.97
2	10	5.18	6.30	7.29	8.69	9.78	10.91	13.84
3	1	3.90	4.95	5.87	7.21	8.30	9.45	12.30
3	2	3.97	5.08	6.05	7.49	8.64	9.85	12.81
3	3	4.11	5.18	6.08	7.34	8.31	9.18	11.27
3	4	3.88	4.96	5.90	7.17	8.09	8.98	10.81
3	5	3.88	4.90	5.78	7.04	8.01	8.93	11.00
3	6	4.00	5.00	5.83	7.01	7.91	8.73	10.61
3	7	4.35	5.37	6.19	7.34	8.19	8.97	10.57
3	8	4.74	5.82	6.71	7.96	8.89	9.86	12.32
3	9	5.13	6.09	6.86	7.87	8.63	9.34	10.93
3	10	4.54	5.61	6.50	7.78	8.79	9.86	12.55

Table 5 (continued)

Storm code	Section code	Rainfall (inches) for given recurrence interval 2-year	5-year	10-year	25-year	50-year	100-year	500-year
4	1	3.61	4.59	5.43	6.72	7.73	8.83	11.53
4	2	3.66	4.71	5.62	6.99	8.13	9.28	12.10
4	3	3.76	4.76	5.62	6.81	7.72	8.60	10.58
4	4	3.59	4.61	5.47	6.65	7.55	8.40	10.21
4	5	3.54	4.49	5.32	6.48	7.38	8.27	10.26
4	6	3.66	4.61	5.38	6.48	7.33	8.11	9.93
4	7	3.92	4.85	5.61	6.67	7.46	8.21	9.76
4	8	4.28	5.29	6.10	7.25	8.15	9.08	11.40
4	9	4.64	5.54	6.27	7.24	7.94	8.58	10.06
4	10	4.06	5.02	5.86	7.04	8.01	9.02	11.56
5	1	3.34	4.22	5.03	6.20	7.20	8.25	10.84
5	2	3.34	4.30	5.15	6.45	7.50	8.57	11.24
5	3	3.48	4.45	5.24	6.38	7.25	8.06	9.91
5	4	3.32	4.30	5.10	6.20	7.05	7.85	9.53
5	5	3.12	3.97	4.71	5.78	6.62	7.43	9.32
5	6	3.23	4.07	4.76	5.79	6.56	7.31	9.04
5	7	3.49	4.33	5.00	5.98	6.71	7.40	8.84
5	8	3.69	4.56	5.27	6.30	7.14	7.96	10.06
5	9	4.07	4.89	5.55	6.42	7.06	7.68	8.99
5	10	3.63	4.52	5.28	6.38	7.29	8.23	10.57
6	1	3.14	3.97	4.73	5.83	6.77	7.75	10.19
6	2	3.14	4.04	4.84	6.06	7.05	8.06	10.57
6	3	3.27	4.18	4.93	6.00	6.82	7.58	9.32
6	4	3.12	4.04	4.79	5.83	6.63	7.38	8.96
6	5	2.93	3.73	4.43	5.43	6.22	6.98	8.76
6	6	3.04	3.83	4.47	5.44	6.17	6.87	8.50
6	7	3.28	4.07	4.70	5.62	6.31	6.96	8.31
6	8	3.47	4.29	4.95	5.92	6.71	7.48	9.45
6	9	3.83	4.60	5.22	6.03	6.64	7.22	8.45
6	10	3.41	4.25	4.96	6.00	6.85	7.73	9.93

Attachment 2
Pre-Development HydroCAD Calculations



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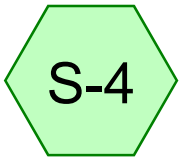

Subcat S-4

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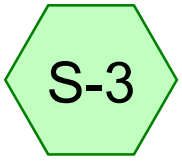
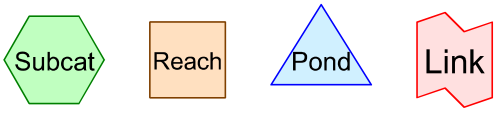
Checked by: GEJ
05/02/2023

Subcat S-2



Subcat S-3

Subcat S-1



Routing Diagram for HWY20 Pre
Prepared by TRC Companies, Printed 6/14/2023

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Huff B70 0-10sm	4Q	Scale	24.00	1	3.34	2
2	10-Year	Huff B70 0-10sm	4Q	Scale	24.00	1	5.15	2
3	100-Year	Huff B70 0-10sm	4Q	Scale	24.00	1	8.57	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.171	61	>75% Grass cover, Good, HSG B (S-1, S-2)
2.099	80	>75% Grass cover, Good, HSG D (S-2)
0.286	85	Gravel roads, HSG B (S-2)
0.007	91	Gravel roads, HSG D (S-2)
0.346	98	Roofs, HSG B (S-2)
47.594	75	Row crops, SR + CR, Good, HSG B (S-1, S-2, S-3, S-4, S-5)
6.435	82	Row crops, SR + CR, Good, HSG C (S-1, S-2, S-3, S-5)
42.749	85	Row crops, SR + CR, Good, HSG D (S-1, S-2, S-3, S-4, S-5)
4.661	73	Woods, Fair, HSG C (S-5)
0.347	79	Woods, Fair, HSG D (S-5)
108.695	**79**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
52.397	HSG B	S-1, S-2, S-3, S-4, S-5
11.095	HSG C	S-1, S-2, S-3, S-5
45.203	HSG D	S-1, S-2, S-3, S-4, S-5
0.000	Other	
108.695		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	4.171	0.000	2.099	0.000	6.270	>75% Grass cover, Good	S-1, S-2
0.000	0.286	0.000	0.007	0.000	0.293	Gravel roads	S-2
0.000	0.346	0.000	0.000	0.000	0.346	Roofs	S-2
0.000	47.594	6.435	42.749	0.000	96.778	Row crops, SR + CR, Good	S-1, S-2, S-3, S-4, S-5
0.000	0.000	4.661	0.347	0.000	5.008	Woods, Fair	S-5
0.000	**52.397**	**11.095**	**45.203**	**0.000**	**108.695**	**TOTAL AREA**	

Time span=9.00-40.00 hrs, dt=0.10 hrs, 311 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S-1: Subcat S-1 Runoff Area=10.911 ac 0.00% Impervious Runoff Depth>1.38"
Flow Length=1,208' Tc=29.9 min CN=78 Runoff=3.02 cfs 1.252 af

Subcatchment S-2: Subcat S-2 Runoff Area=13.741 ac 2.52% Impervious Runoff Depth=1.13"
Flow Length=740' Tc=16.3 min CN=74 Runoff=3.39 cfs 1.295 af

Subcatchment S-3: Subcat S-3 Runoff Area=15.357 ac 0.00% Impervious Runoff Depth>1.38"
Flow Length=1,053' Tc=25.0 min CN=78 Runoff=4.28 cfs 1.761 af

Subcatchment S-4: Subcat S-4 Runoff Area=3.571 ac 0.00% Impervious Runoff Depth>1.38"
Flow Length=759' Tc=29.3 min CN=78 Runoff=0.99 cfs 0.410 af

Subcatchment S-5: Subcat S-5 Runoff Area=65.115 ac 0.00% Impervious Runoff Depth>1.51"
Flow Length=2,541' Tc=56.8 min CN=80 Runoff=18.31 cfs 8.184 af

Total Runoff Area = 108.695 ac Runoff Volume = 12.901 af Average Runoff Depth = 1.42"
99.68% Pervious = 108.349 ac 0.32% Impervious = 0.346 ac

Summary for Subcatchment S-1: Subcat S-1

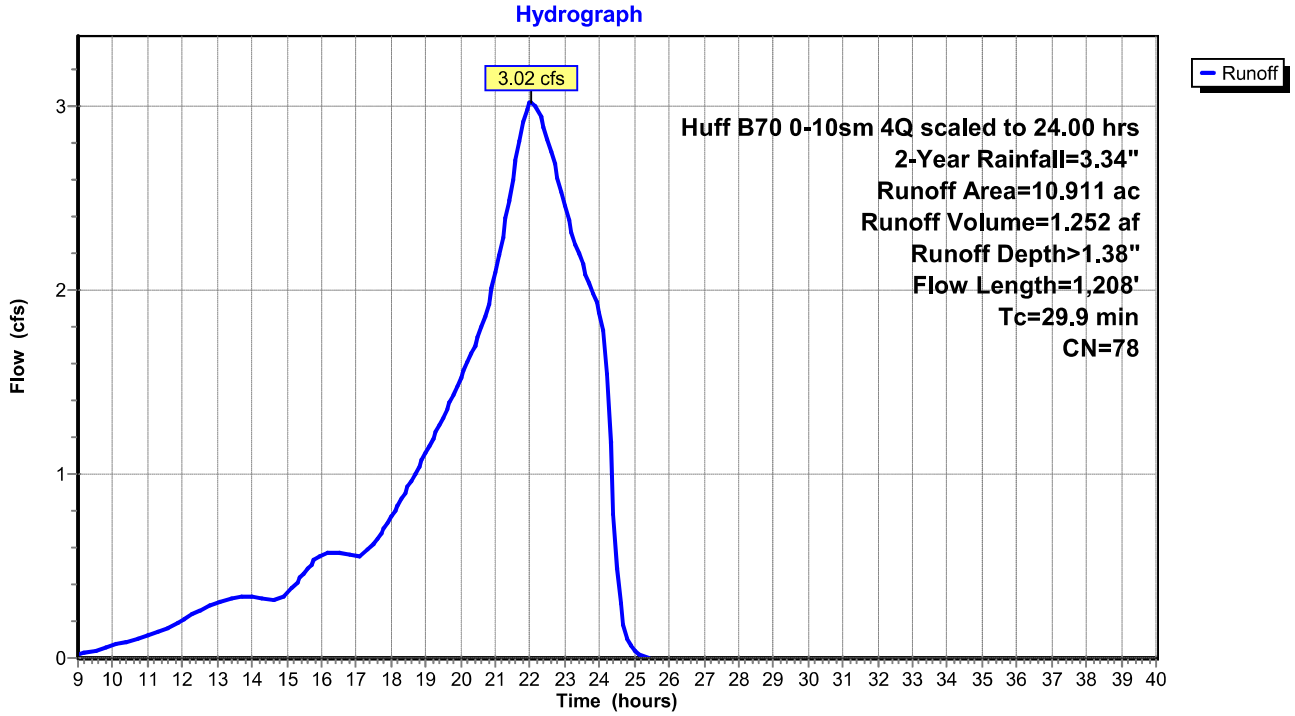
Runoff = 3.02 cfs @ 22.04 hrs, Volume= 1.252 af, Depth> 1.38"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 2-Year Rainfall=3.34"

Area (ac)	CN	Description
0.026	61	>75% Grass cover, Good, HSG B
6.549	75	Row crops, SR + CR, Good, HSG B
1.730	82	Row crops, SR + CR, Good, HSG C
2.606	85	Row crops, SR + CR, Good, HSG D
10.911	78	Weighted Average
10.911		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0217	0.16		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.34"
19.6	1,108	0.0110	0.94		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
29.9	1,208	Total			

Subcatchment S-1: Subcat S-1



Hydrograph for Subcatchment S-1: Subcat S-1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	0.63	0.00	0.02
9.50	0.67	0.00	0.04
10.00	0.71	0.01	0.07
10.50	0.75	0.01	0.10
11.00	0.80	0.02	0.12
11.50	0.85	0.03	0.16
12.00	0.90	0.04	0.21
12.50	0.96	0.05	0.26
13.00	1.02	0.06	0.30
13.50	1.07	0.08	0.33
14.00	1.12	0.09	0.33
14.50	1.17	0.11	0.32
15.00	1.22	0.12	0.35
15.50	1.28	0.15	0.46
16.00	1.35	0.17	0.56
16.50	1.42	0.20	0.57
17.00	1.48	0.22	0.55
17.50	1.55	0.25	0.62
18.00	1.63	0.29	0.77
18.50	1.72	0.34	0.93
19.00	1.82	0.39	1.11
19.50	1.94	0.45	1.31
20.00	2.07	0.52	1.52
20.50	2.21	0.61	1.74
21.00	2.38	0.71	2.09
21.50	2.57	0.83	2.59
22.00	2.78	0.97	**3.01**
22.50	2.95	1.10	2.82
23.00	3.10	1.20	2.45
23.50	3.23	1.30	2.14
24.00	**3.34**	**1.38**	1.88
24.50	3.34	1.38	0.48
25.00	3.34	1.38	0.04
25.50	3.34	1.38	0.00
26.00	3.34	1.38	0.00
26.50	3.34	1.38	0.00
27.00	3.34	1.38	0.00
27.50	3.34	1.38	0.00
28.00	3.34	1.38	0.00
28.50	3.34	1.38	0.00
29.00	3.34	1.38	0.00
29.50	3.34	1.38	0.00
30.00	3.34	1.38	0.00
30.50	3.34	1.38	0.00
31.00	3.34	1.38	0.00
31.50	3.34	1.38	0.00
32.00	3.34	1.38	0.00
32.50	3.34	1.38	0.00
33.00	3.34	1.38	0.00
33.50	3.34	1.38	0.00
34.00	3.34	1.38	0.00
34.50	3.34	1.38	0.00
35.00	3.34	1.38	0.00
35.50	3.34	1.38	0.00
36.00	3.34	1.38	0.00
36.50	3.34	1.38	0.00
37.00	3.34	1.38	0.00
37.50	3.34	1.38	0.00
38.00	3.34	1.38	0.00
38.50	3.34	1.38	0.00
39.00	3.34	1.38	0.00
39.50	3.34	1.38	0.00
40.00	3.34	1.38	0.00

Summary for Subcatchment S-2: Subcat S-2

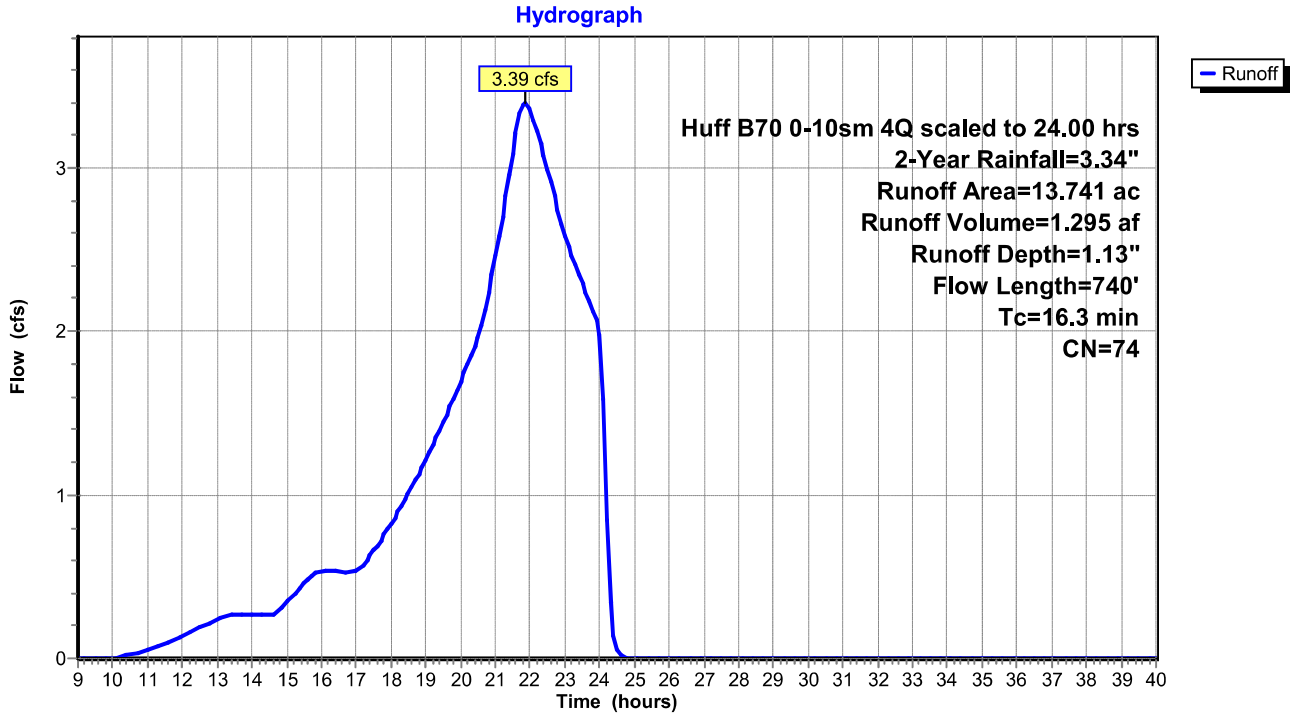
Runoff = 3.39 cfs @ 21.84 hrs, Volume= 1.295 af, Depth= 1.13"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 2-Year Rainfall=3.34"

Area (ac)	CN	Description
4.145	61	>75% Grass cover, Good, HSG B
2.099	80	>75% Grass cover, Good, HSG D
0.286	85	Gravel roads, HSG B
0.007	91	Gravel roads, HSG D
0.346	98	Roofs, HSG B
4.704	75	Row crops, SR + CR, Good, HSG B
0.124	82	Row crops, SR + CR, Good, HSG C
2.030	85	Row crops, SR + CR, Good, HSG D
13.741	74	Weighted Average
13.395		97.48% Pervious Area
0.346		2.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	100	0.0446	0.22		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.34"
8.6	640	0.0188	1.23		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
16.3	740	Total			

Subcatchment S-2: Subcat S-2



Hydrograph for Subcatchment S-2: Subcat S-2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	0.63	0.00	0.00
9.50	0.67	0.00	0.00
10.00	0.71	0.00	0.00
10.50	0.75	0.00	0.02
11.00	0.80	0.00	0.05
11.50	0.85	0.01	0.09
12.00	0.90	0.01	0.14
12.50	0.96	0.02	0.19
13.00	1.02	0.03	0.23
13.50	1.07	0.04	0.27
14.00	1.12	0.04	0.27
14.50	1.17	0.05	0.26
15.00	1.22	0.07	0.34
15.50	1.28	0.08	0.46
16.00	1.35	0.10	0.54
16.50	1.42	0.12	0.53
17.00	1.48	0.14	0.53
17.50	1.55	0.16	0.66
18.00	1.63	0.19	0.82
18.50	1.72	0.23	1.01
19.00	1.82	0.27	1.21
19.50	1.94	0.32	1.44
20.00	2.07	0.38	1.69
20.50	2.21	0.45	1.96
21.00	2.38	0.54	2.46
21.50	2.57	0.65	**3.08**
22.00	2.78	0.77	**3.34**
22.50	2.95	0.88	2.99
23.00	3.10	0.97	2.58
23.50	3.23	1.06	2.29
24.00	**3.34**	**1.13**	1.98
24.50	3.34	1.13	0.06
25.00	3.34	1.13	0.00
25.50	3.34	1.13	0.00
26.00	3.34	1.13	0.00
26.50	3.34	1.13	0.00
27.00	3.34	1.13	0.00
27.50	3.34	1.13	0.00
28.00	3.34	1.13	0.00
28.50	3.34	1.13	0.00
29.00	3.34	1.13	0.00
29.50	3.34	1.13	0.00
30.00	3.34	1.13	0.00
30.50	3.34	1.13	0.00
31.00	3.34	1.13	0.00
31.50	3.34	1.13	0.00
32.00	3.34	1.13	0.00
32.50	3.34	1.13	0.00
33.00	3.34	1.13	0.00
33.50	3.34	1.13	0.00
34.00	3.34	1.13	0.00
34.50	3.34	1.13	0.00
35.00	3.34	1.13	0.00
35.50	3.34	1.13	0.00
36.00	3.34	1.13	0.00
36.50	3.34	1.13	0.00
37.00	3.34	1.13	0.00
37.50	3.34	1.13	0.00
38.00	3.34	1.13	0.00
38.50	3.34	1.13	0.00
39.00	3.34	1.13	0.00
39.50	3.34	1.13	0.00
40.00	3.34	1.13	0.00

Summary for Subcatchment S-3: Subcat S-3

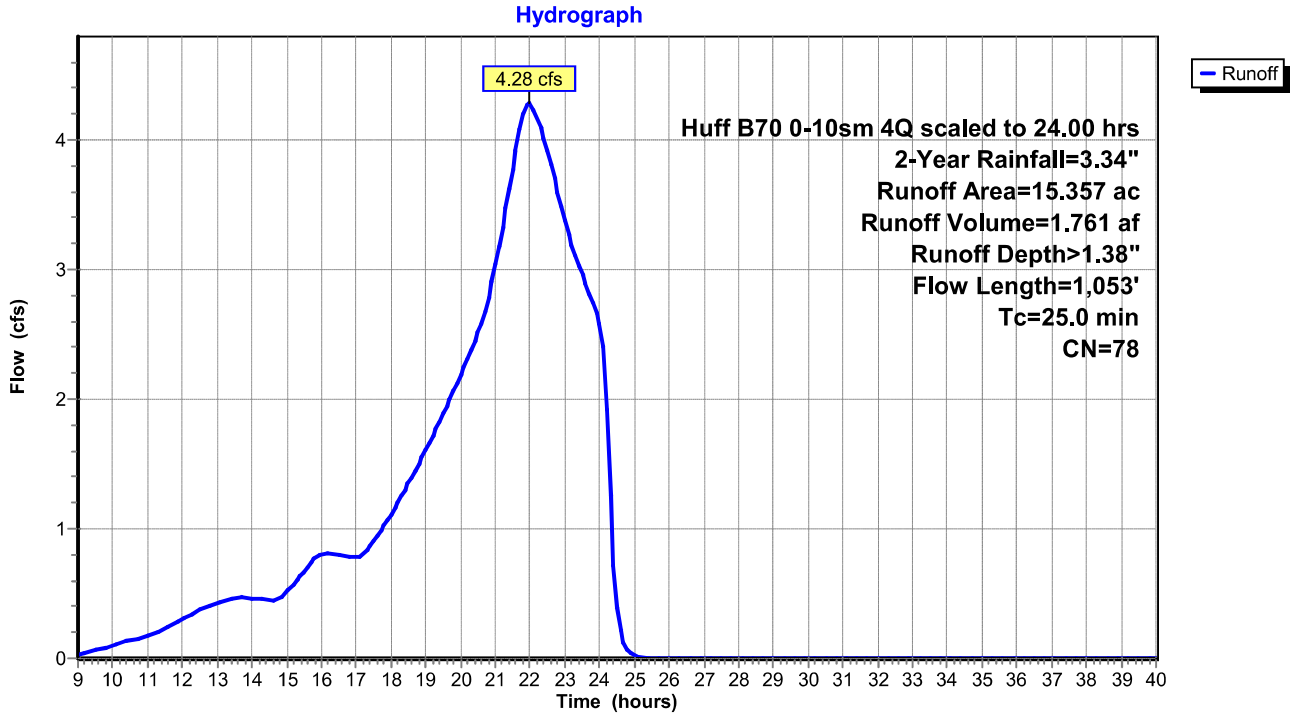
Runoff = 4.28 cfs @ 21.97 hrs, Volume= 1.761 af, Depth> 1.38"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 2-Year Rainfall=3.34"

Area (ac)	CN	Description
10.896	75	Row crops, SR + CR, Good, HSG B
0.245	82	Row crops, SR + CR, Good, HSG C
4.215	85	Row crops, SR + CR, Good, HSG D
15.357	78	Weighted Average
15.357		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.0723	0.26		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.34"
18.7	953	0.0089	0.85		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
25.0	1,053	Total			

Subcatchment S-3: Subcat S-3



Hydrograph for Subcatchment S-3: Subcat S-3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	0.63	0.00	0.03
9.50	0.67	0.00	0.06
10.00	0.71	0.01	0.10
10.50	0.75	0.01	0.14
11.00	0.80	0.02	0.17
11.50	0.85	0.03	0.23
12.00	0.90	0.04	0.30
12.50	0.96	0.05	0.37
13.00	1.02	0.06	0.43
13.50	1.07	0.08	0.47
14.00	1.12	0.09	0.47
14.50	1.17	0.11	0.44
15.00	1.22	0.12	0.51
15.50	1.28	0.15	0.67
16.00	1.35	0.17	0.81
16.50	1.42	0.20	0.80
17.00	1.48	0.22	0.77
17.50	1.55	0.25	0.90
18.00	1.63	0.29	1.11
18.50	1.72	0.34	1.35
19.00	1.82	0.39	1.60
19.50	1.94	0.45	1.88
20.00	2.07	0.52	2.18
20.50	2.21	0.61	2.51
21.00	2.38	0.71	3.04
21.50	2.57	0.83	3.76
22.00	2.78	0.97	**4.28**
22.50	2.95	1.10	3.91
23.00	3.10	1.20	3.37
23.50	3.23	1.30	2.96
24.00	**3.34**	**1.38**	2.58
24.50	3.34	1.38	0.39
25.00	3.34	1.38	0.02
25.50	3.34	1.38	0.00
26.00	3.34	1.38	0.00
26.50	3.34	1.38	0.00
27.00	3.34	1.38	0.00
27.50	3.34	1.38	0.00
28.00	3.34	1.38	0.00
28.50	3.34	1.38	0.00
29.00	3.34	1.38	0.00
29.50	3.34	1.38	0.00
30.00	3.34	1.38	0.00
30.50	3.34	1.38	0.00
31.00	3.34	1.38	0.00
31.50	3.34	1.38	0.00
32.00	3.34	1.38	0.00
32.50	3.34	1.38	0.00
33.00	3.34	1.38	0.00
33.50	3.34	1.38	0.00
34.00	3.34	1.38	0.00
34.50	3.34	1.38	0.00
35.00	3.34	1.38	0.00
35.50	3.34	1.38	0.00
36.00	3.34	1.38	0.00
36.50	3.34	1.38	0.00
37.00	3.34	1.38	0.00
37.50	3.34	1.38	0.00
38.00	3.34	1.38	0.00
38.50	3.34	1.38	0.00
39.00	3.34	1.38	0.00
39.50	3.34	1.38	0.00
40.00	3.34	1.38	0.00

Summary for Subcatchment S-4: Subcat S-4

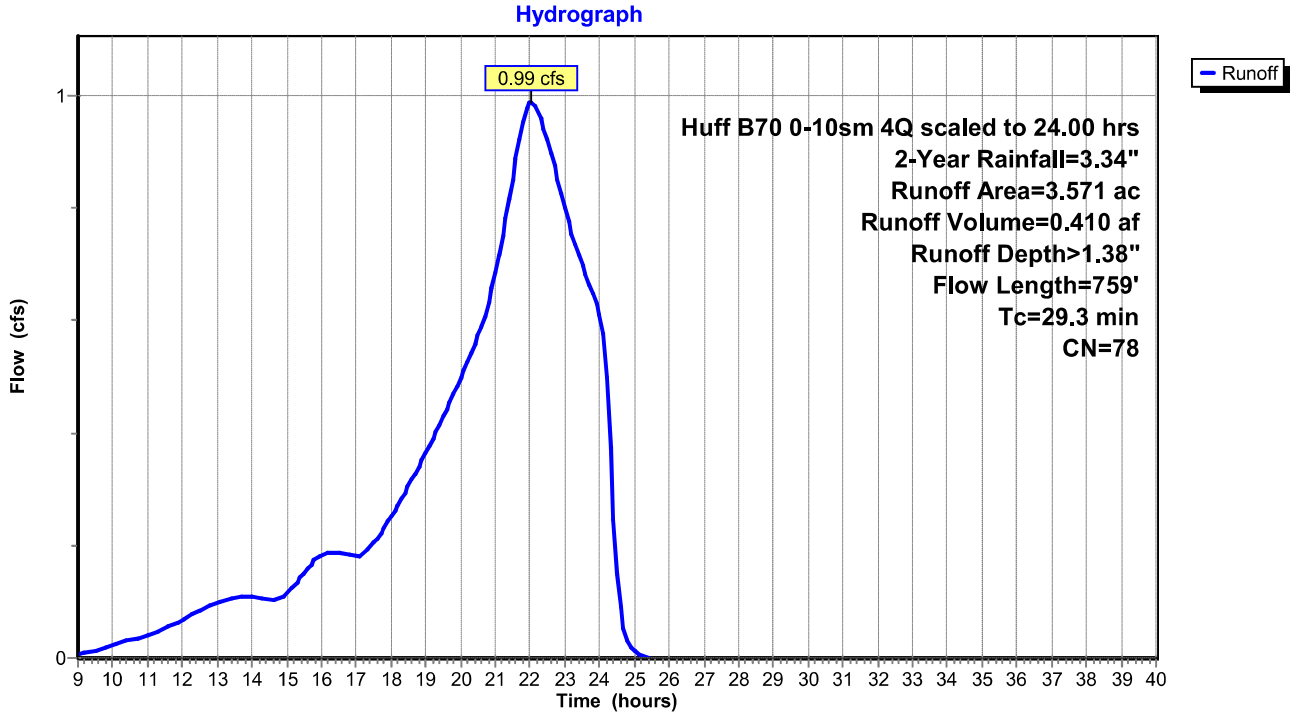
Runoff = 0.99 cfs @ 22.04 hrs, Volume= 0.410 af, Depth> 1.38"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 2-Year Rainfall=3.34"

Area (ac)	CN	Description
2.499	75	Row crops, SR + CR, Good, HSG B
1.073	85	Row crops, SR + CR, Good, HSG D
3.571	78	Weighted Average
3.571		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0107	0.12		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.34"
11.6	447	0.0051	0.64		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
4.1	212	0.0092	0.86		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
29.3	759	Total			

Subcatchment S-4: Subcat S-4



Hydrograph for Subcatchment S-4: Subcat S-4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	0.63	0.00	0.01
9.50	0.67	0.00	0.01
10.00	0.71	0.01	0.02
10.50	0.75	0.01	0.03
11.00	0.80	0.02	0.04
11.50	0.85	0.03	0.05
12.00	0.90	0.04	0.07
12.50	0.96	0.05	0.09
13.00	1.02	0.06	0.10
13.50	1.07	0.08	0.11
14.00	1.12	0.09	0.11
14.50	1.17	0.11	0.10
15.00	1.22	0.12	0.12
15.50	1.28	0.15	0.15
16.00	1.35	0.17	0.18
16.50	1.42	0.20	0.19
17.00	1.48	0.22	0.18
17.50	1.55	0.25	0.20
18.00	1.63	0.29	0.25
18.50	1.72	0.34	0.31
19.00	1.82	0.39	0.36
19.50	1.94	0.45	0.43
20.00	2.07	0.52	0.50
20.50	2.21	0.61	0.57
21.00	2.38	0.71	0.69
21.50	2.57	0.83	0.85
22.00	2.78	0.97	**0.99**
22.50	2.95	1.10	0.92
23.00	3.10	1.20	0.80
23.50	3.23	1.30	0.70
24.00	**3.34**	**1.38**	0.61
24.50	3.34	1.38	0.15
25.00	3.34	1.38	0.01
25.50	3.34	1.38	0.00
26.00	3.34	1.38	0.00
26.50	3.34	1.38	0.00
27.00	3.34	1.38	0.00
27.50	3.34	1.38	0.00
28.00	3.34	1.38	0.00
28.50	3.34	1.38	0.00
29.00	3.34	1.38	0.00
29.50	3.34	1.38	0.00
30.00	3.34	1.38	0.00
30.50	3.34	1.38	0.00
31.00	3.34	1.38	0.00
31.50	3.34	1.38	0.00
32.00	3.34	1.38	0.00
32.50	3.34	1.38	0.00
33.00	3.34	1.38	0.00
33.50	3.34	1.38	0.00
34.00	3.34	1.38	0.00
34.50	3.34	1.38	0.00
35.00	3.34	1.38	0.00
35.50	3.34	1.38	0.00
36.00	3.34	1.38	0.00
36.50	3.34	1.38	0.00
37.00	3.34	1.38	0.00
37.50	3.34	1.38	0.00
38.00	3.34	1.38	0.00
38.50	3.34	1.38	0.00
39.00	3.34	1.38	0.00
39.50	3.34	1.38	0.00
40.00	3.34	1.38	0.00

Summary for Subcatchment S-5: Subcat S-5

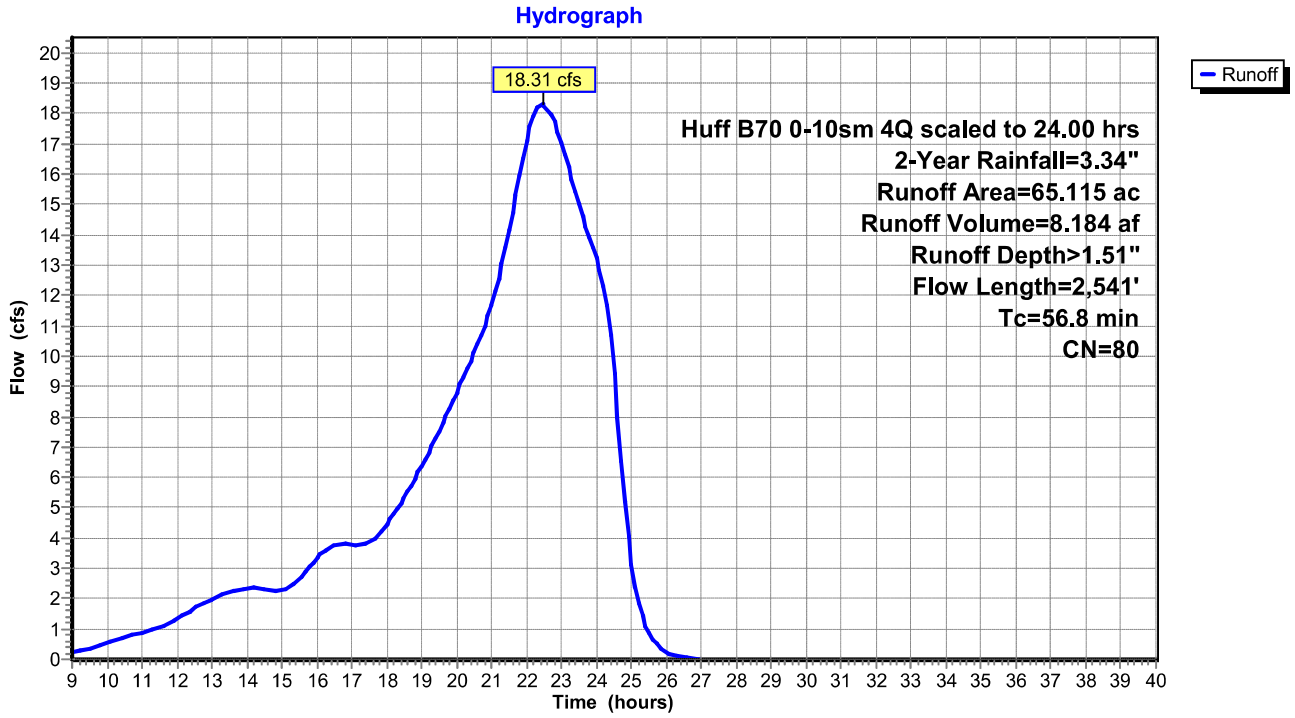
Runoff = 18.31 cfs @ 22.45 hrs, Volume= 8.184 af, Depth> 1.51"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 2-Year Rainfall=3.34"

Area (ac)	CN	Description
22.946	75	Row crops, SR + CR, Good, HSG B
4.335	82	Row crops, SR + CR, Good, HSG C
32.826	85	Row crops, SR + CR, Good, HSG D
4.661	73	Woods, Fair, HSG C
0.347	79	Woods, Fair, HSG D
65.115	80	Weighted Average
65.115		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0238	0.17		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.34"
5.5	380	0.0165	1.16		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
41.4	2,061	0.0085	0.83		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
56.8	2,541	Total			

Subcatchment S-5: Subcat S-5



Hydrograph for Subcatchment S-5: Subcat S-5

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	0.63	0.01	0.23
9.50	0.67	0.01	0.36
10.00	0.71	0.02	0.54
10.50	0.75	0.02	0.73
11.00	0.80	0.03	0.89
11.50	0.85	0.04	1.07
12.00	0.90	0.06	1.35
12.50	0.96	0.07	1.69
13.00	1.02	0.09	1.99
13.50	1.07	0.11	2.22
14.00	1.12	0.12	2.35
14.50	1.17	0.14	2.32
15.00	1.22	0.16	2.29
15.50	1.28	0.19	2.66
16.00	1.35	0.22	3.32
16.50	1.42	0.25	3.76
17.00	1.48	0.27	3.79
17.50	1.55	0.31	3.85
18.00	1.63	0.35	4.43
18.50	1.72	0.40	5.33
19.00	1.82	0.46	6.38
19.50	1.94	0.53	7.53
20.00	2.07	0.60	8.78
20.50	2.21	0.69	10.11
21.00	2.38	0.80	11.70
21.50	2.57	0.94	14.14
22.00	2.78	1.09	17.09
22.50	2.95	1.22	**18.30**
23.00	3.10	1.33	17.06
23.50	3.23	1.43	15.03
24.00	**3.34**	**1.51**	13.21
24.50	3.34	1.51	9.40
25.00	3.34	1.51	3.11
25.50	3.34	1.51	0.84
26.00	3.34	1.51	0.22
26.50	3.34	1.51	0.05
27.00	3.34	1.51	0.00
27.50	3.34	1.51	0.00
28.00	3.34	1.51	0.00
28.50	3.34	1.51	0.00
29.00	3.34	1.51	0.00
29.50	3.34	1.51	0.00
30.00	3.34	1.51	0.00
30.50	3.34	1.51	0.00
31.00	3.34	1.51	0.00
31.50	3.34	1.51	0.00
32.00	3.34	1.51	0.00
32.50	3.34	1.51	0.00
33.00	3.34	1.51	0.00
33.50	3.34	1.51	0.00
34.00	3.34	1.51	0.00
34.50	3.34	1.51	0.00
35.00	3.34	1.51	0.00
35.50	3.34	1.51	0.00
36.00	3.34	1.51	0.00
36.50	3.34	1.51	0.00
37.00	3.34	1.51	0.00
37.50	3.34	1.51	0.00
38.00	3.34	1.51	0.00
38.50	3.34	1.51	0.00
39.00	3.34	1.51	0.00
39.50	3.34	1.51	0.00
40.00	3.34	1.51	0.00

Time span=9.00-40.00 hrs, dt=0.10 hrs, 311 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S-1: Subcat S-1 Runoff Area=10.911 ac 0.00% Impervious Runoff Depth>2.80"
Flow Length=1,208' Tc=29.9 min CN=78 Runoff=5.59 cfs 2.545 af

Subcatchment S-2: Subcat S-2 Runoff Area=13.741 ac 2.52% Impervious Runoff Depth>2.47"
Flow Length=740' Tc=16.3 min CN=74 Runoff=6.63 cfs 2.828 af

Subcatchment S-3: Subcat S-3 Runoff Area=15.357 ac 0.00% Impervious Runoff Depth>2.80"
Flow Length=1,053' Tc=25.0 min CN=78 Runoff=7.93 cfs 3.581 af

Subcatchment S-4: Subcat S-4 Runoff Area=3.571 ac 0.00% Impervious Runoff Depth>2.80"
Flow Length=759' Tc=29.3 min CN=78 Runoff=1.83 cfs 0.833 af

Subcatchment S-5: Subcat S-5 Runoff Area=65.115 ac 0.00% Impervious Runoff Depth>2.97"
Flow Length=2,541' Tc=56.8 min CN=80 Runoff=33.10 cfs 16.137 af

Total Runoff Area = 108.695 ac Runoff Volume = 25.923 af Average Runoff Depth = 2.86"
99.68% Pervious = 108.349 ac 0.32% Impervious = 0.346 ac

Summary for Subcatchment S-1: Subcat S-1

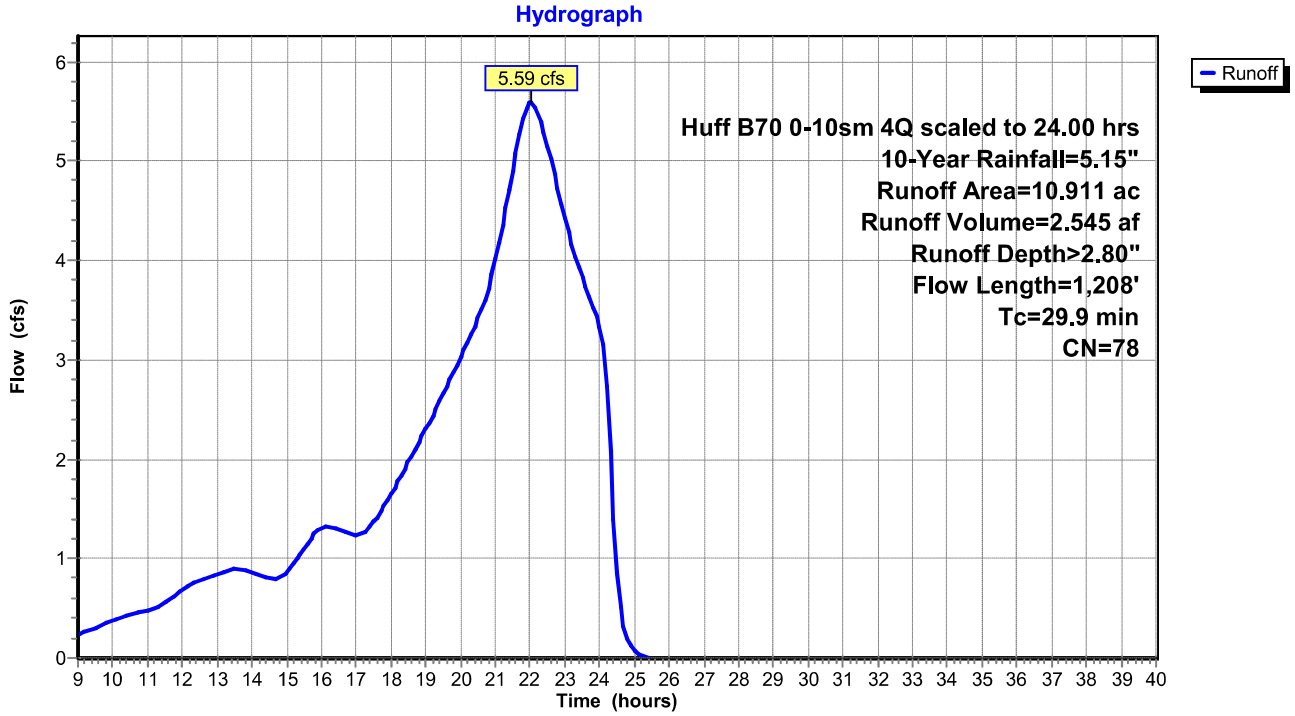
Runoff = 5.59 cfs @ 22.02 hrs, Volume= 2.545 af, Depth> 2.80"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 10-Year Rainfall=5.15"

Area (ac)	CN	Description
0.026	61	>75% Grass cover, Good, HSG B
6.549	75	Row crops, SR + CR, Good, HSG B
1.730	82	Row crops, SR + CR, Good, HSG C
2.606	85	Row crops, SR + CR, Good, HSG D
10.911	78	Weighted Average
10.911		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0217	0.16		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.34"
19.6	1,108	0.0110	0.94		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
29.9	1,208	Total			

Subcatchment S-1: Subcat S-1



Hydrograph for Subcatchment S-1: Subcat S-1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	0.97	0.05	0.23
9.50	1.03	0.07	0.30
10.00	1.09	0.08	0.38
10.50	1.16	0.10	0.43
11.00	1.23	0.13	0.48
11.50	1.30	0.15	0.56
12.00	1.39	0.19	0.68
12.50	1.48	0.22	0.79
13.00	1.57	0.26	0.85
13.50	1.65	0.30	0.89
14.00	1.73	0.34	0.87
14.50	1.80	0.38	0.80
15.00	1.88	0.42	0.86
15.50	1.98	0.47	1.10
16.00	2.09	0.53	1.31
16.50	2.19	0.59	1.30
17.00	2.28	0.65	1.23
17.50	2.38	0.71	1.37
18.00	2.51	0.79	1.65
18.50	2.65	0.89	1.97
19.00	2.81	1.00	2.30
19.50	2.99	1.12	2.65
20.00	3.19	1.27	3.03
20.50	3.41	1.43	3.41
21.00	3.66	1.62	4.02
21.50	3.96	1.86	4.90
22.00	4.28	2.11	**5.59**
22.50	4.55	2.34	5.15
23.00	4.78	2.53	4.42
23.50	4.98	2.70	3.83
24.00	**5.15**	**2.84**	3.33
24.50	5.15	2.84	0.85
25.00	5.15	2.84	0.07
25.50	5.15	2.84	0.00
26.00	5.15	2.84	0.00
26.50	5.15	2.84	0.00
27.00	5.15	2.84	0.00
27.50	5.15	2.84	0.00
28.00	5.15	2.84	0.00
28.50	5.15	2.84	0.00
29.00	5.15	2.84	0.00
29.50	5.15	2.84	0.00
30.00	5.15	2.84	0.00
30.50	5.15	2.84	0.00
31.00	5.15	2.84	0.00
31.50	5.15	2.84	0.00
32.00	5.15	2.84	0.00
32.50	5.15	2.84	0.00
33.00	5.15	2.84	0.00
33.50	5.15	2.84	0.00
34.00	5.15	2.84	0.00
34.50	5.15	2.84	0.00
35.00	5.15	2.84	0.00
35.50	5.15	2.84	0.00
36.00	5.15	2.84	0.00
36.50	5.15	2.84	0.00
37.00	5.15	2.84	0.00
37.50	5.15	2.84	0.00
38.00	5.15	2.84	0.00
38.50	5.15	2.84	0.00
39.00	5.15	2.84	0.00
39.50	5.15	2.84	0.00
40.00	5.15	2.84	0.00

Summary for Subcatchment S-2: Subcat S-2

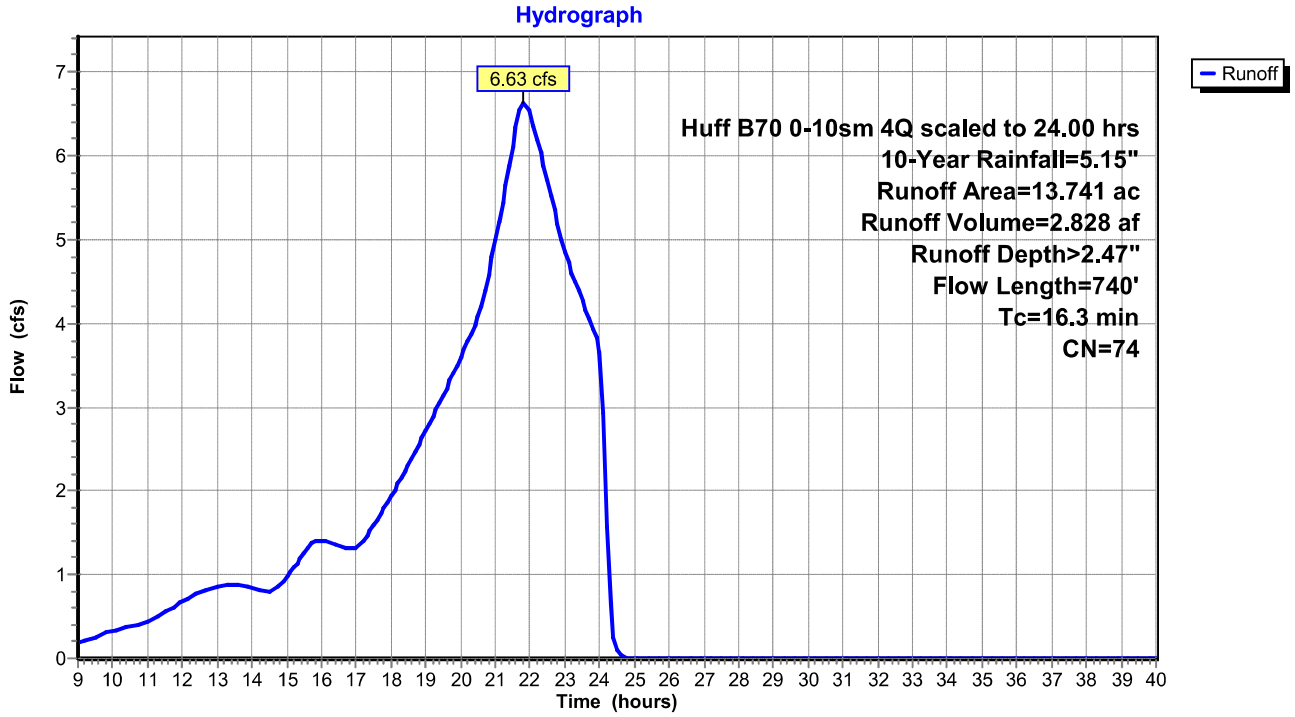
Runoff = 6.63 cfs @ 21.82 hrs, Volume= 2.828 af, Depth> 2.47"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 10-Year Rainfall=5.15"

Area (ac)	CN	Description
4.145	61	>75% Grass cover, Good, HSG B
2.099	80	>75% Grass cover, Good, HSG D
0.286	85	Gravel roads, HSG B
0.007	91	Gravel roads, HSG D
0.346	98	Roofs, HSG B
4.704	75	Row crops, SR + CR, Good, HSG B
0.124	82	Row crops, SR + CR, Good, HSG C
2.030	85	Row crops, SR + CR, Good, HSG D
13.741	74	Weighted Average
13.395		97.48% Pervious Area
0.346		2.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	100	0.0446	0.22		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.34"
8.6	640	0.0188	1.23		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
16.3	740	Total			

Subcatchment S-2: Subcat S-2



Hydrograph for Subcatchment S-2: Subcat S-2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	0.97	0.02	0.18
9.50	1.03	0.03	0.26
10.00	1.09	0.04	0.33
10.50	1.16	0.05	0.38
11.00	1.23	0.07	0.44
11.50	1.30	0.09	0.55
12.00	1.39	0.11	0.68
12.50	1.48	0.14	0.78
13.00	1.57	0.17	0.85
13.50	1.65	0.20	0.89
14.00	1.73	0.23	0.85
14.50	1.80	0.26	0.79
15.00	1.88	0.30	0.97
15.50	1.98	0.34	1.25
16.00	2.09	0.39	1.41
16.50	2.19	0.44	1.35
17.00	2.28	0.49	1.31
17.50	2.38	0.54	1.59
18.00	2.51	0.61	1.94
18.50	2.65	0.69	2.31
19.00	2.81	0.79	2.71
19.50	2.99	0.90	3.14
20.00	3.19	1.03	3.59
20.50	3.41	1.18	4.08
21.00	3.66	1.35	5.00
21.50	3.96	1.57	**6.10**
22.00	4.28	1.81	**6.48**
22.50	4.55	2.01	5.70
23.00	4.78	2.19	4.85
23.50	4.98	2.35	4.27
24.00	**5.15**	**2.48**	3.66
24.50	5.15	2.48	0.10
25.00	5.15	2.48	0.00
25.50	5.15	2.48	0.00
26.00	5.15	2.48	0.00
26.50	5.15	2.48	0.00
27.00	5.15	2.48	0.00
27.50	5.15	2.48	0.00
28.00	5.15	2.48	0.00
28.50	5.15	2.48	0.00
29.00	5.15	2.48	0.00
29.50	5.15	2.48	0.00
30.00	5.15	2.48	0.00
30.50	5.15	2.48	0.00
31.00	5.15	2.48	0.00
31.50	5.15	2.48	0.00
32.00	5.15	2.48	0.00
32.50	5.15	2.48	0.00
33.00	5.15	2.48	0.00
33.50	5.15	2.48	0.00
34.00	5.15	2.48	0.00
34.50	5.15	2.48	0.00
35.00	5.15	2.48	0.00
35.50	5.15	2.48	0.00
36.00	5.15	2.48	0.00
36.50	5.15	2.48	0.00
37.00	5.15	2.48	0.00
37.50	5.15	2.48	0.00
38.00	5.15	2.48	0.00
38.50	5.15	2.48	0.00
39.00	5.15	2.48	0.00
39.50	5.15	2.48	0.00
40.00	5.15	2.48	0.00

Summary for Subcatchment S-3: Subcat S-3

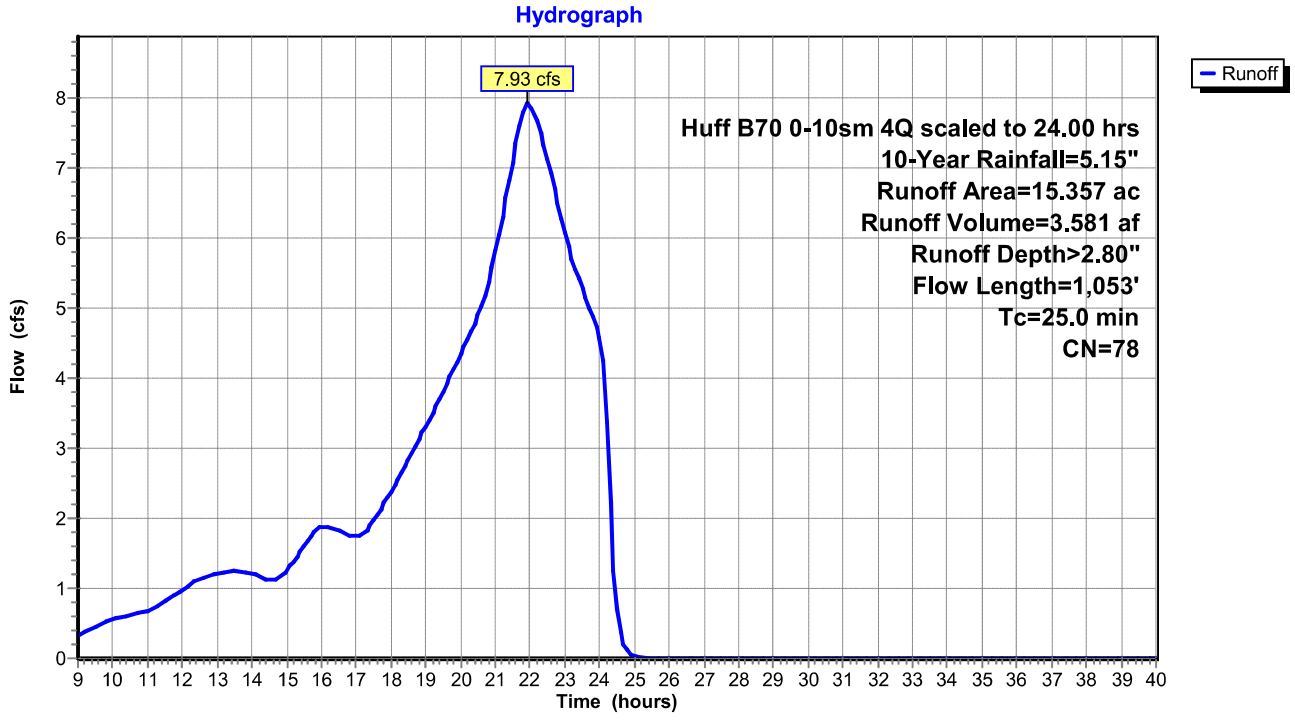
Runoff = 7.93 cfs @ 21.94 hrs, Volume= 3.581 af, Depth> 2.80"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 10-Year Rainfall=5.15"

Area (ac)	CN	Description
10.896	75	Row crops, SR + CR, Good, HSG B
0.245	82	Row crops, SR + CR, Good, HSG C
4.215	85	Row crops, SR + CR, Good, HSG D
15.357	78	Weighted Average
15.357		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.0723	0.26		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.34"
18.7	953	0.0089	0.85		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
25.0	1,053	Total			

Subcatchment S-3: Subcat S-3



Hydrograph for Subcatchment S-3: Subcat S-3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	0.97	0.05	0.34
9.50	1.03	0.07	0.44
10.00	1.09	0.08	0.55
10.50	1.16	0.10	0.62
11.00	1.23	0.13	0.68
11.50	1.30	0.15	0.81
12.00	1.39	0.19	0.98
12.50	1.48	0.22	1.12
13.00	1.57	0.26	1.21
13.50	1.65	0.30	1.26
14.00	1.73	0.34	1.21
14.50	1.80	0.38	1.11
15.00	1.88	0.42	1.25
15.50	1.98	0.47	1.60
16.00	2.09	0.53	1.88
16.50	2.19	0.59	1.82
17.00	2.28	0.65	1.72
17.50	2.38	0.71	1.97
18.00	2.51	0.79	2.39
18.50	2.65	0.89	2.84
19.00	2.81	1.00	3.31
19.50	2.99	1.12	3.81
20.00	3.19	1.27	4.34
20.50	3.41	1.43	4.89
21.00	3.66	1.62	5.82
21.50	3.96	1.86	**7.09**
22.00	4.28	2.11	**7.91**
22.50	4.55	2.34	7.12
23.00	4.78	2.53	6.07
23.50	4.98	2.70	5.28
24.00	**5.15**	**2.84**	4.58
24.50	5.15	2.84	0.69
25.00	5.15	2.84	0.03
25.50	5.15	2.84	0.00
26.00	5.15	2.84	0.00
26.50	5.15	2.84	0.00
27.00	5.15	2.84	0.00
27.50	5.15	2.84	0.00
28.00	5.15	2.84	0.00
28.50	5.15	2.84	0.00
29.00	5.15	2.84	0.00
29.50	5.15	2.84	0.00
30.00	5.15	2.84	0.00
30.50	5.15	2.84	0.00
31.00	5.15	2.84	0.00
31.50	5.15	2.84	0.00
32.00	5.15	2.84	0.00
32.50	5.15	2.84	0.00
33.00	5.15	2.84	0.00
33.50	5.15	2.84	0.00
34.00	5.15	2.84	0.00
34.50	5.15	2.84	0.00
35.00	5.15	2.84	0.00
35.50	5.15	2.84	0.00
36.00	5.15	2.84	0.00
36.50	5.15	2.84	0.00
37.00	5.15	2.84	0.00
37.50	5.15	2.84	0.00
38.00	5.15	2.84	0.00
38.50	5.15	2.84	0.00
39.00	5.15	2.84	0.00
39.50	5.15	2.84	0.00
40.00	5.15	2.84	0.00

Summary for Subcatchment S-4: Subcat S-4

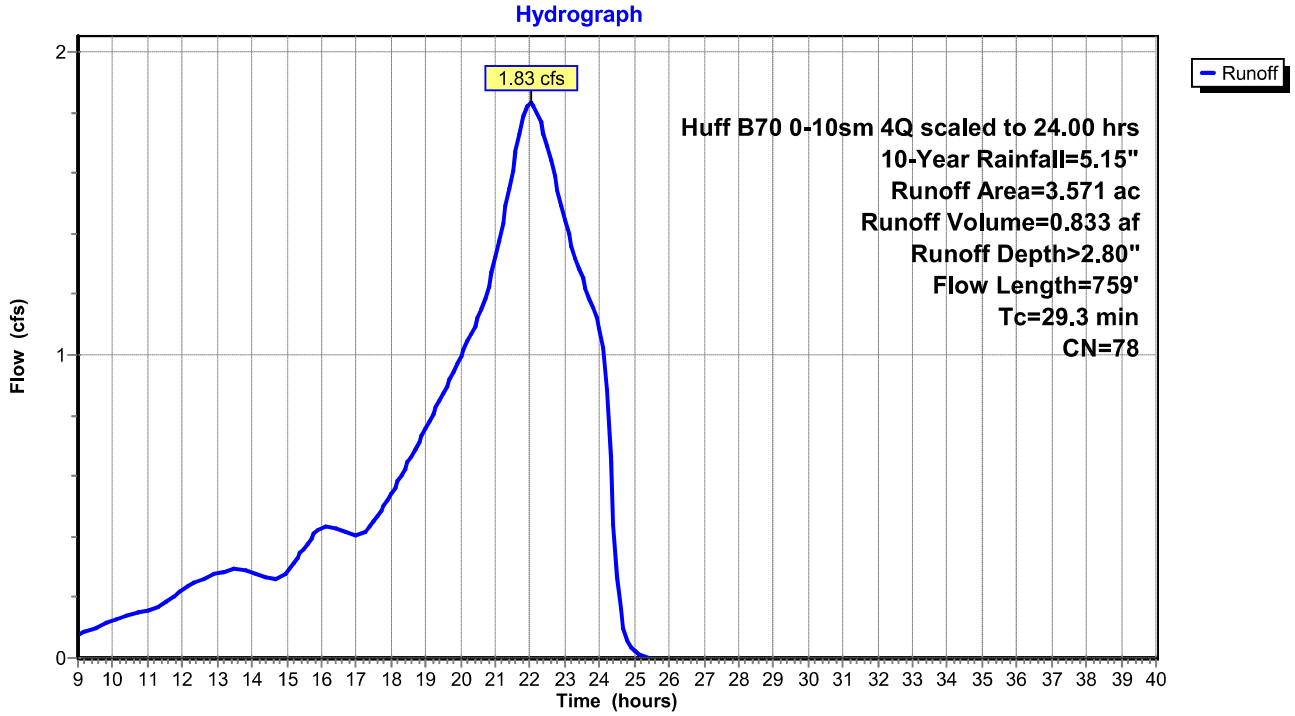
Runoff = 1.83 cfs @ 22.01 hrs, Volume= 0.833 af, Depth> 2.80"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 10-Year Rainfall=5.15"

Area (ac)	CN	Description
2.499	75	Row crops, SR + CR, Good, HSG B
1.073	85	Row crops, SR + CR, Good, HSG D
3.571	78	Weighted Average
3.571		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0107	0.12		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.34"
11.6	447	0.0051	0.64		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
4.1	212	0.0092	0.86		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
29.3	759	Total			

Subcatchment S-4: Subcat S-4



Hydrograph for Subcatchment S-4: Subcat S-4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	0.97	0.05	0.08
9.50	1.03	0.07	0.10
10.00	1.09	0.08	0.13
10.50	1.16	0.10	0.14
11.00	1.23	0.13	0.16
11.50	1.30	0.15	0.18
12.00	1.39	0.19	0.22
12.50	1.48	0.22	0.26
13.00	1.57	0.26	0.28
13.50	1.65	0.30	0.29
14.00	1.73	0.34	0.28
14.50	1.80	0.38	0.26
15.00	1.88	0.42	0.28
15.50	1.98	0.47	0.36
16.00	2.09	0.53	0.43
16.50	2.19	0.59	0.43
17.00	2.28	0.65	0.40
17.50	2.38	0.71	0.45
18.00	2.51	0.79	0.54
18.50	2.65	0.89	0.65
19.00	2.81	1.00	0.76
19.50	2.99	1.12	0.87
20.00	3.19	1.27	0.99
20.50	3.41	1.43	1.12
21.00	3.66	1.62	1.32
21.50	3.96	1.86	1.61
22.00	4.28	2.11	**1.83**
22.50	4.55	2.34	1.68
23.00	4.78	2.53	1.44
23.50	4.98	2.70	1.25
24.00	**5.15**	**2.84**	1.09
24.50	5.15	2.84	0.27
25.00	5.15	2.84	0.02
25.50	5.15	2.84	0.00
26.00	5.15	2.84	0.00
26.50	5.15	2.84	0.00
27.00	5.15	2.84	0.00
27.50	5.15	2.84	0.00
28.00	5.15	2.84	0.00
28.50	5.15	2.84	0.00
29.00	5.15	2.84	0.00
29.50	5.15	2.84	0.00
30.00	5.15	2.84	0.00
30.50	5.15	2.84	0.00
31.00	5.15	2.84	0.00
31.50	5.15	2.84	0.00
32.00	5.15	2.84	0.00
32.50	5.15	2.84	0.00
33.00	5.15	2.84	0.00
33.50	5.15	2.84	0.00
34.00	5.15	2.84	0.00
34.50	5.15	2.84	0.00
35.00	5.15	2.84	0.00
35.50	5.15	2.84	0.00
36.00	5.15	2.84	0.00
36.50	5.15	2.84	0.00
37.00	5.15	2.84	0.00
37.50	5.15	2.84	0.00
38.00	5.15	2.84	0.00
38.50	5.15	2.84	0.00
39.00	5.15	2.84	0.00
39.50	5.15	2.84	0.00
40.00	5.15	2.84	0.00

Summary for Subcatchment S-5: Subcat S-5

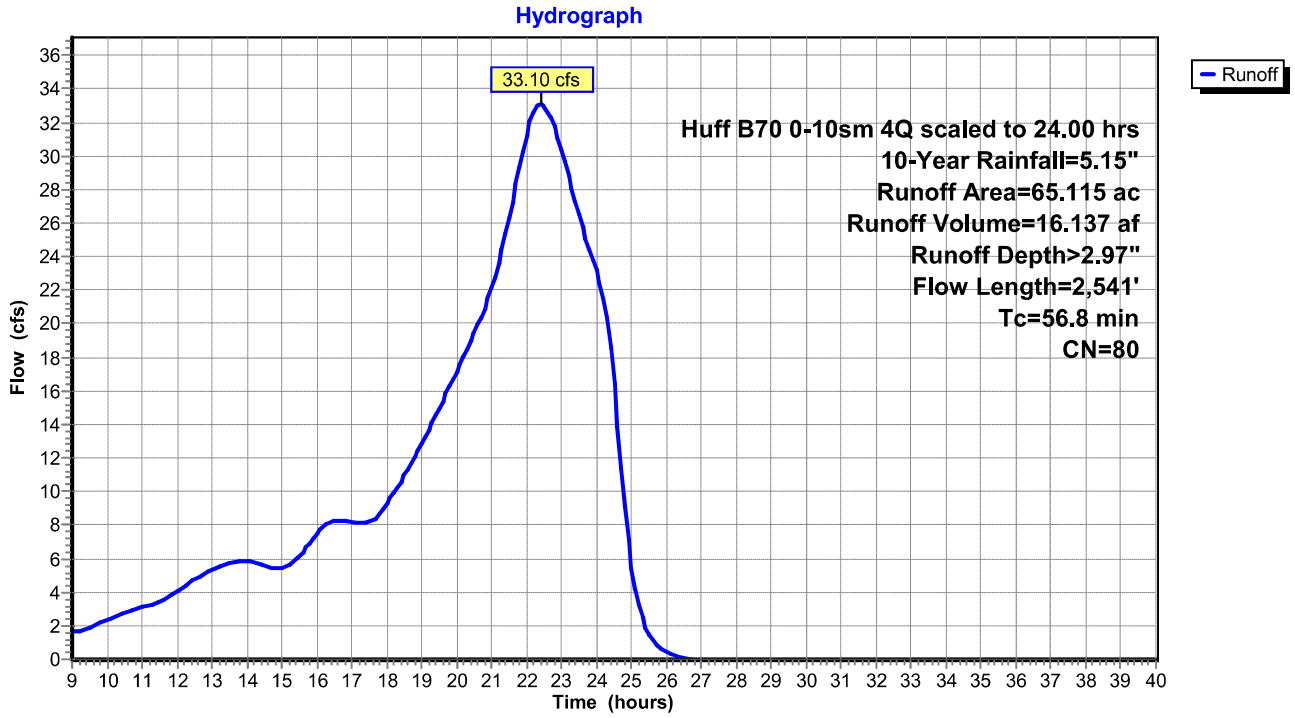
Runoff = 33.10 cfs @ 22.41 hrs, Volume= 16.137 af, Depth> 2.97"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 10-Year Rainfall=5.15"

Area (ac)	CN	Description
22.946	75	Row crops, SR + CR, Good, HSG B
4.335	82	Row crops, SR + CR, Good, HSG C
32.826	85	Row crops, SR + CR, Good, HSG D
4.661	73	Woods, Fair, HSG C
0.347	79	Woods, Fair, HSG D
65.115	80	Weighted Average
65.115		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0238	0.17		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.34"
5.5	380	0.0165	1.16		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
41.4	2,061	0.0085	0.83		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
56.8	2,541	Total			

Subcatchment S-5: Subcat S-5



Hydrograph for Subcatchment S-5: Subcat S-5

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	0.97	0.07	1.63
9.50	1.03	0.09	1.88
10.00	1.09	0.11	2.35
10.50	1.16	0.14	2.79
11.00	1.23	0.16	3.10
11.50	1.30	0.20	3.44
12.00	1.39	0.23	4.03
12.50	1.48	0.27	4.76
13.00	1.57	0.32	5.33
13.50	1.65	0.36	5.71
14.00	1.73	0.41	5.83
14.50	1.80	0.45	5.59
15.00	1.88	0.49	5.38
15.50	1.98	0.55	6.12
16.00	2.09	0.62	7.47
16.50	2.19	0.68	8.28
17.00	2.28	0.74	8.18
17.50	2.38	0.81	8.17
18.00	2.51	0.89	9.25
18.50	2.65	0.99	10.94
19.00	2.81	1.11	12.88
19.50	2.99	1.24	14.95
20.00	3.19	1.39	17.14
20.50	3.41	1.56	19.42
21.00	3.66	1.77	22.10
21.50	3.96	2.01	26.28
22.00	4.28	2.28	**31.26**
22.50	4.55	2.51	**33.01**
23.00	4.78	2.70	30.41
23.50	4.98	2.88	26.54
24.00	**5.15**	**3.02**	23.13
24.50	5.15	3.02	16.39
25.00	5.15	3.02	5.41
25.50	5.15	3.02	1.46
26.00	5.15	3.02	0.38
26.50	5.15	3.02	0.08
27.00	5.15	3.02	0.01
27.50	5.15	3.02	0.00
28.00	5.15	3.02	0.00
28.50	5.15	3.02	0.00
29.00	5.15	3.02	0.00
29.50	5.15	3.02	0.00
30.00	5.15	3.02	0.00
30.50	5.15	3.02	0.00
31.00	5.15	3.02	0.00
31.50	5.15	3.02	0.00
32.00	5.15	3.02	0.00
32.50	5.15	3.02	0.00
33.00	5.15	3.02	0.00
33.50	5.15	3.02	0.00
34.00	5.15	3.02	0.00
34.50	5.15	3.02	0.00
35.00	5.15	3.02	0.00
35.50	5.15	3.02	0.00
36.00	5.15	3.02	0.00
36.50	5.15	3.02	0.00
37.00	5.15	3.02	0.00
37.50	5.15	3.02	0.00
38.00	5.15	3.02	0.00
38.50	5.15	3.02	0.00
39.00	5.15	3.02	0.00
39.50	5.15	3.02	0.00
40.00	5.15	3.02	0.00

Time span=9.00-40.00 hrs, dt=0.10 hrs, 311 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S-1: Subcat S-1 Runoff Area=10.911 ac 0.00% Impervious Runoff Depth>5.67"
Flow Length=1,208' Tc=29.9 min CN=78 Runoff=10.49 cfs 5.158 af

Subcatchment S-2: Subcat S-2 Runoff Area=13.741 ac 2.52% Impervious Runoff Depth>5.27"
Flow Length=740' Tc=16.3 min CN=74 Runoff=12.94 cfs 6.033 af

Subcatchment S-3: Subcat S-3 Runoff Area=15.357 ac 0.00% Impervious Runoff Depth>5.67"
Flow Length=1,053' Tc=25.0 min CN=78 Runoff=14.88 cfs 7.253 af

Subcatchment S-4: Subcat S-4 Runoff Area=3.571 ac 0.00% Impervious Runoff Depth>5.67"
Flow Length=759' Tc=29.3 min CN=78 Runoff=3.44 cfs 1.688 af

Subcatchment S-5: Subcat S-5 Runoff Area=65.115 ac 0.00% Impervious Runoff Depth>5.89"
Flow Length=2,541' Tc=56.8 min CN=80 Runoff=61.07 cfs 31.978 af

Total Runoff Area = 108.695 ac Runoff Volume = 52.110 af Average Runoff Depth = 5.75"
99.68% Pervious = 108.349 ac 0.32% Impervious = 0.346 ac

Summary for Subcatchment S-1: Subcat S-1

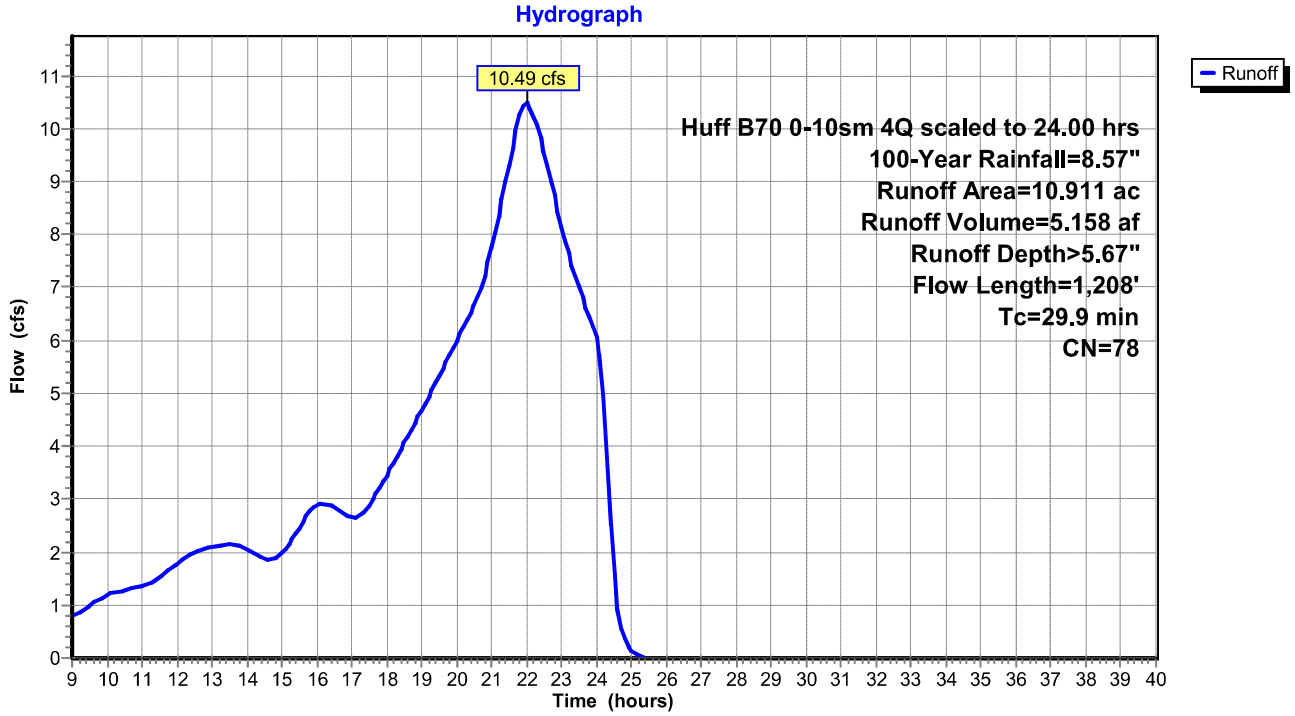
Runoff = 10.49 cfs @ 22.00 hrs, Volume= 5.158 af, Depth> 5.67"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 100-Year Rainfall=8.57"

Area (ac)	CN	Description
0.026	61	>75% Grass cover, Good, HSG B
6.549	75	Row crops, SR + CR, Good, HSG B
1.730	82	Row crops, SR + CR, Good, HSG C
2.606	85	Row crops, SR + CR, Good, HSG D
10.911	78	Weighted Average
10.911		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.0217	0.16		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.34"
19.6	1,108	0.0110	0.94		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
29.9	1,208	Total			

Subcatchment S-1: Subcat S-1



Hydrograph for Subcatchment S-1: Subcat S-1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	1.61	0.28	0.81
9.50	1.71	0.33	0.99
10.00	1.82	0.39	1.19
10.50	1.93	0.45	1.28
11.00	2.04	0.51	1.35
11.50	2.17	0.58	1.52
12.00	2.31	0.67	1.78
12.50	2.46	0.76	2.01
13.00	2.61	0.86	2.10
13.50	2.75	0.95	2.16
14.00	2.88	1.05	2.05
14.50	3.00	1.13	1.86
15.00	3.13	1.22	1.97
15.50	3.29	1.34	2.47
16.00	3.47	1.48	2.90
16.50	3.64	1.60	2.83
17.00	3.79	1.72	2.64
17.50	3.97	1.86	2.89
18.00	4.17	2.03	3.45
18.50	4.41	2.22	4.06
19.00	4.68	2.44	4.68
19.50	4.98	2.69	5.33
20.00	5.31	2.98	5.99
20.50	5.67	3.29	6.67
21.00	6.09	3.66	7.75
21.50	6.60	4.11	9.31
22.00	7.12	4.59	**10.49**
22.50	7.58	5.00	9.57
23.00	7.96	5.35	8.15
23.50	8.29	5.66	7.01
24.00	**8.57**	**5.92**	6.07
24.50	8.57	5.92	1.55
25.00	8.57	5.92	0.13
25.50	8.57	5.92	0.00
26.00	8.57	5.92	0.00
26.50	8.57	5.92	0.00
27.00	8.57	5.92	0.00
27.50	8.57	5.92	0.00
28.00	8.57	5.92	0.00
28.50	8.57	5.92	0.00
29.00	8.57	5.92	0.00
29.50	8.57	5.92	0.00
30.00	8.57	5.92	0.00
30.50	8.57	5.92	0.00
31.00	8.57	5.92	0.00
31.50	8.57	5.92	0.00
32.00	8.57	5.92	0.00
32.50	8.57	5.92	0.00
33.00	8.57	5.92	0.00
33.50	8.57	5.92	0.00
34.00	8.57	5.92	0.00
34.50	8.57	5.92	0.00
35.00	8.57	5.92	0.00
35.50	8.57	5.92	0.00
36.00	8.57	5.92	0.00
36.50	8.57	5.92	0.00
37.00	8.57	5.92	0.00
37.50	8.57	5.92	0.00
38.00	8.57	5.92	0.00
38.50	8.57	5.92	0.00
39.00	8.57	5.92	0.00
39.50	8.57	5.92	0.00
40.00	8.57	5.92	0.00

Summary for Subcatchment S-2: Subcat S-2

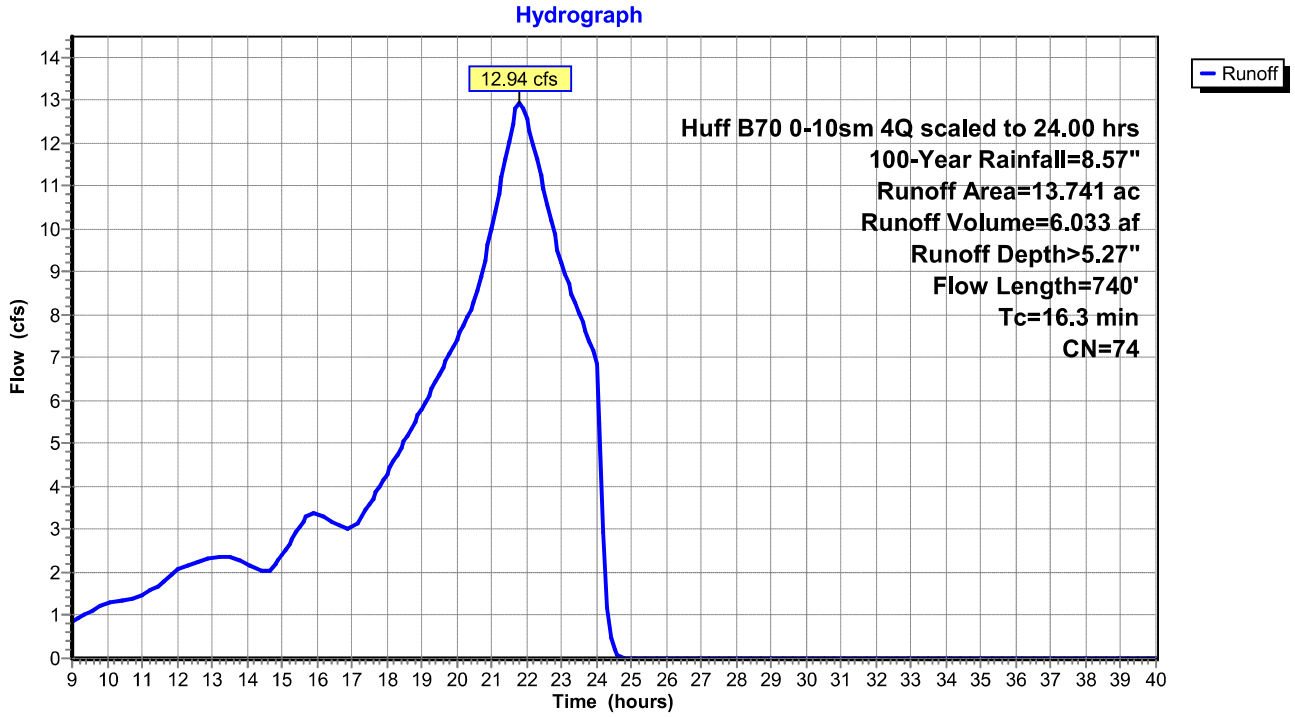
Runoff = 12.94 cfs @ 21.80 hrs, Volume= 6.033 af, Depth> 5.27"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 100-Year Rainfall=8.57"

Area (ac)	CN	Description
4.145	61	>75% Grass cover, Good, HSG B
2.099	80	>75% Grass cover, Good, HSG D
0.286	85	Gravel roads, HSG B
0.007	91	Gravel roads, HSG D
0.346	98	Roofs, HSG B
4.704	75	Row crops, SR + CR, Good, HSG B
0.124	82	Row crops, SR + CR, Good, HSG C
2.030	85	Row crops, SR + CR, Good, HSG D
13.741	74	Weighted Average
13.395		97.48% Pervious Area
0.346		2.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	100	0.0446	0.22		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.34"
8.6	640	0.0188	1.23		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
16.3	740	Total			

Subcatchment S-2: Subcat S-2



Hydrograph for Subcatchment S-2: Subcat S-2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	1.61	0.19	0.86
9.50	1.71	0.22	1.08
10.00	1.82	0.27	1.27
10.50	1.93	0.32	1.36
11.00	2.04	0.37	1.45
11.50	2.17	0.43	1.72
12.00	2.31	0.50	2.04
12.50	2.46	0.58	2.23
13.00	2.61	0.67	2.34
13.50	2.75	0.75	2.37
14.00	2.88	0.83	2.20
14.50	3.00	0.91	2.00
15.00	3.13	0.99	2.42
15.50	3.29	1.10	3.05
16.00	3.47	1.22	3.36
16.50	3.64	1.34	3.16
17.00	3.79	1.45	3.00
17.50	3.97	1.57	3.59
18.00	4.17	1.73	4.30
18.50	4.41	1.90	5.04
19.00	4.68	2.11	5.81
19.50	4.98	2.35	6.61
20.00	5.31	2.61	7.44
20.50	5.67	2.91	8.30
21.00	6.09	3.26	10.02
21.50	6.60	3.69	**12.03**
22.00	7.12	4.15	**12.58**
22.50	7.58	4.55	10.93
23.00	7.96	4.89	9.21
23.50	8.29	5.18	8.06
24.00	**8.57**	**5.44**	6.86
24.50	8.57	5.44	0.19
25.00	8.57	5.44	0.00
25.50	8.57	5.44	0.00
26.00	8.57	5.44	0.00
26.50	8.57	5.44	0.00
27.00	8.57	5.44	0.00
27.50	8.57	5.44	0.00
28.00	8.57	5.44	0.00
28.50	8.57	5.44	0.00
29.00	8.57	5.44	0.00
29.50	8.57	5.44	0.00
30.00	8.57	5.44	0.00
30.50	8.57	5.44	0.00
31.00	8.57	5.44	0.00
31.50	8.57	5.44	0.00
32.00	8.57	5.44	0.00
32.50	8.57	5.44	0.00
33.00	8.57	5.44	0.00
33.50	8.57	5.44	0.00
34.00	8.57	5.44	0.00
34.50	8.57	5.44	0.00
35.00	8.57	5.44	0.00
35.50	8.57	5.44	0.00
36.00	8.57	5.44	0.00
36.50	8.57	5.44	0.00
37.00	8.57	5.44	0.00
37.50	8.57	5.44	0.00
38.00	8.57	5.44	0.00
38.50	8.57	5.44	0.00
39.00	8.57	5.44	0.00
39.50	8.57	5.44	0.00
40.00	8.57	5.44	0.00

Summary for Subcatchment S-3: Subcat S-3

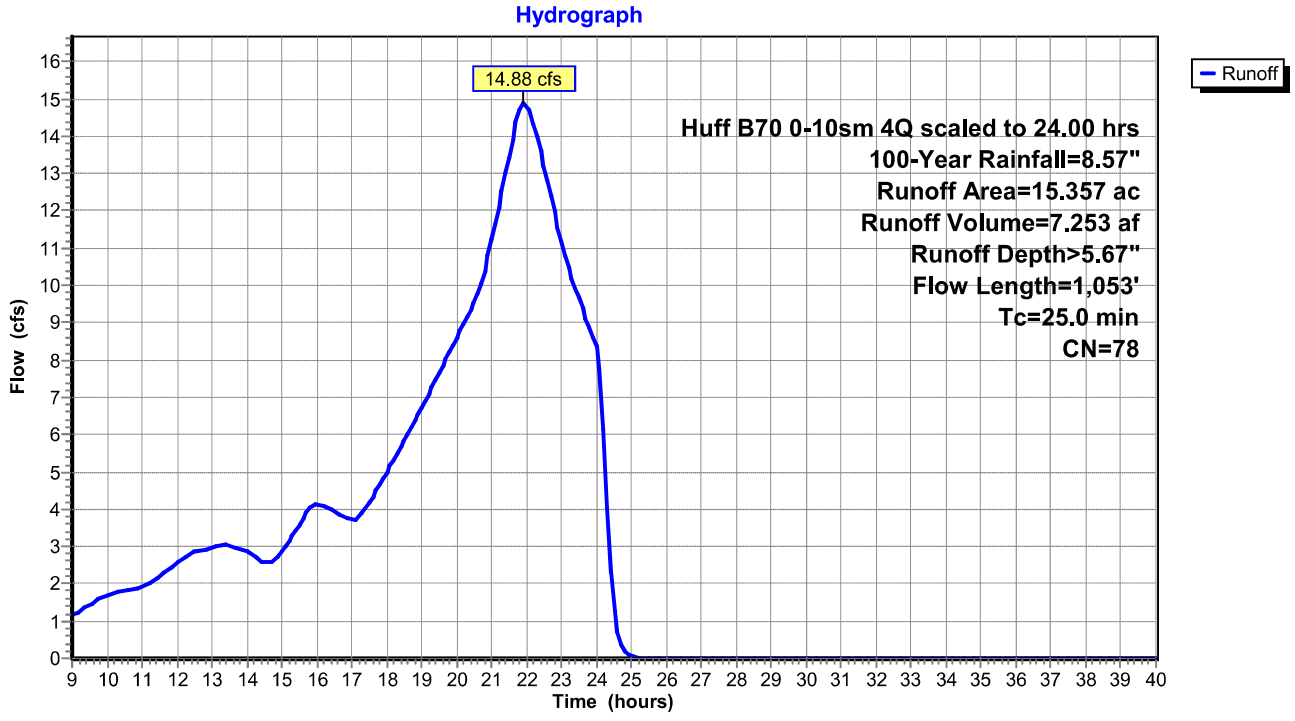
Runoff = 14.88 cfs @ 21.92 hrs, Volume= 7.253 af, Depth> 5.67"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 100-Year Rainfall=8.57"

Area (ac)	CN	Description
10.896	75	Row crops, SR + CR, Good, HSG B
0.245	82	Row crops, SR + CR, Good, HSG C
4.215	85	Row crops, SR + CR, Good, HSG D
15.357	78	Weighted Average
15.357		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.0723	0.26		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.34"
18.7	953	0.0089	0.85		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
25.0	1,053	Total			

Subcatchment S-3: Subcat S-3



Hydrograph for Subcatchment S-3: Subcat S-3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	1.61	0.28	1.16
9.50	1.71	0.33	1.44
10.00	1.82	0.39	1.71
10.50	1.93	0.45	1.82
11.00	2.04	0.51	1.91
11.50	2.17	0.58	2.19
12.00	2.31	0.67	2.57
12.50	2.46	0.76	2.86
13.00	2.61	0.86	2.97
13.50	2.75	0.95	3.04
14.00	2.88	1.05	2.85
14.50	3.00	1.13	2.58
15.00	3.13	1.22	2.85
15.50	3.29	1.34	3.58
16.00	3.47	1.48	4.13
16.50	3.64	1.60	3.95
17.00	3.79	1.72	3.69
17.50	3.97	1.86	4.17
18.00	4.17	2.03	4.98
18.50	4.41	2.22	5.84
19.00	4.68	2.44	6.72
19.50	4.98	2.69	7.64
20.00	5.31	2.98	8.57
20.50	5.67	3.29	9.53
21.00	6.09	3.66	11.20
21.50	6.60	4.11	**13.45**
22.00	7.12	4.59	**14.82**
22.50	7.58	5.00	13.21
23.00	7.96	5.35	11.16
23.50	8.29	5.66	9.65
24.00	**8.57**	**5.92**	8.34
24.50	8.57	5.92	1.26
25.00	8.57	5.92	0.06
25.50	8.57	5.92	0.00
26.00	8.57	5.92	0.00
26.50	8.57	5.92	0.00
27.00	8.57	5.92	0.00
27.50	8.57	5.92	0.00
28.00	8.57	5.92	0.00
28.50	8.57	5.92	0.00
29.00	8.57	5.92	0.00
29.50	8.57	5.92	0.00
30.00	8.57	5.92	0.00
30.50	8.57	5.92	0.00
31.00	8.57	5.92	0.00
31.50	8.57	5.92	0.00
32.00	8.57	5.92	0.00
32.50	8.57	5.92	0.00
33.00	8.57	5.92	0.00
33.50	8.57	5.92	0.00
34.00	8.57	5.92	0.00
34.50	8.57	5.92	0.00
35.00	8.57	5.92	0.00
35.50	8.57	5.92	0.00
36.00	8.57	5.92	0.00
36.50	8.57	5.92	0.00
37.00	8.57	5.92	0.00
37.50	8.57	5.92	0.00
38.00	8.57	5.92	0.00
38.50	8.57	5.92	0.00
39.00	8.57	5.92	0.00
39.50	8.57	5.92	0.00
40.00	8.57	5.92	0.00

Summary for Subcatchment S-4: Subcat S-4

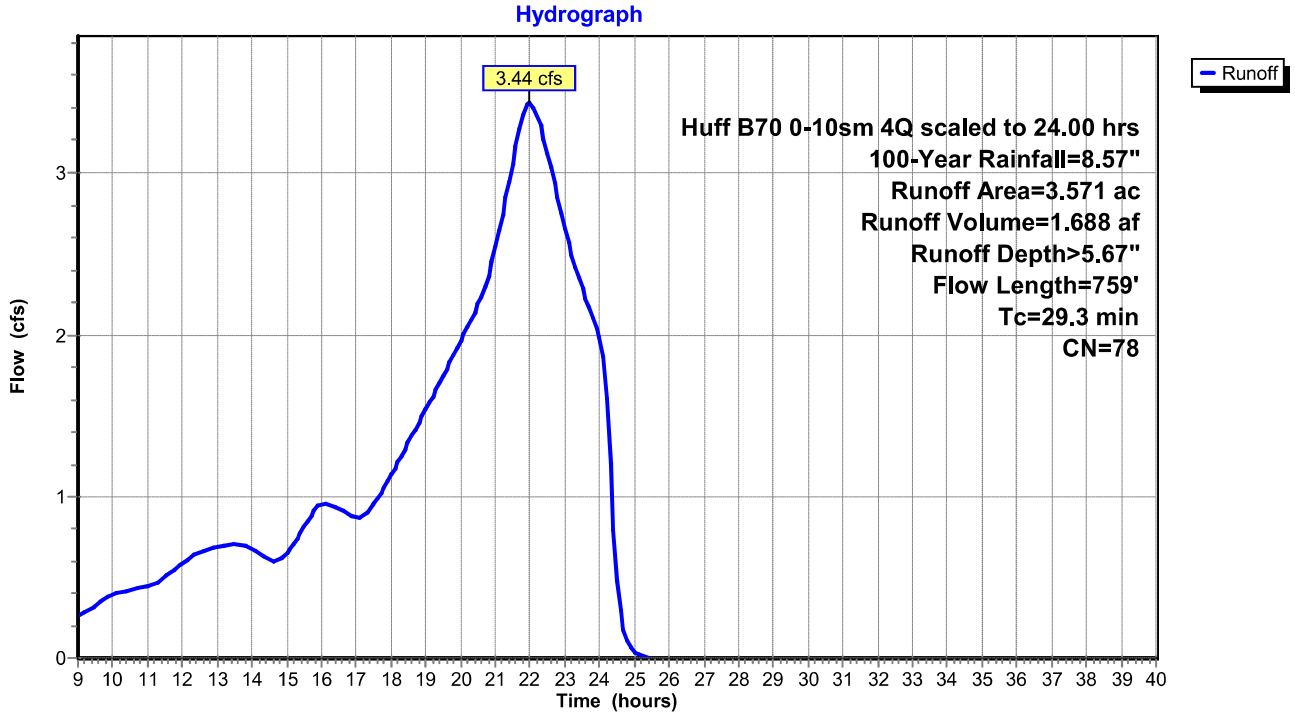
Runoff = 3.44 cfs @ 21.99 hrs, Volume= 1.688 af, Depth> 5.67"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 100-Year Rainfall=8.57"

Area (ac)	CN	Description
2.499	75	Row crops, SR + CR, Good, HSG B
1.073	85	Row crops, SR + CR, Good, HSG D
3.571	78	Weighted Average
3.571		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.6	100	0.0107	0.12		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.34"
11.6	447	0.0051	0.64		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
4.1	212	0.0092	0.86		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
29.3	759	Total			

Subcatchment S-4: Subcat S-4



Hydrograph for Subcatchment S-4: Subcat S-4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	1.61	0.28	0.26
9.50	1.71	0.33	0.33
10.00	1.82	0.39	0.39
10.50	1.93	0.45	0.42
11.00	2.04	0.51	0.44
11.50	2.17	0.58	0.50
12.00	2.31	0.67	0.59
12.50	2.46	0.76	0.66
13.00	2.61	0.86	0.69
13.50	2.75	0.95	0.71
14.00	2.88	1.05	0.67
14.50	3.00	1.13	0.61
15.00	3.13	1.22	0.65
15.50	3.29	1.34	0.81
16.00	3.47	1.48	0.95
16.50	3.64	1.60	0.93
17.00	3.79	1.72	0.86
17.50	3.97	1.86	0.95
18.00	4.17	2.03	1.13
18.50	4.41	2.22	1.33
19.00	4.68	2.44	1.54
19.50	4.98	2.69	1.75
20.00	5.31	2.98	1.96
20.50	5.67	3.29	2.19
21.00	6.09	3.66	2.54
21.50	6.60	4.11	3.06
22.00	7.12	4.59	**3.44**
22.50	7.58	5.00	3.13
23.00	7.96	5.35	2.66
23.50	8.29	5.66	2.29
24.00	**8.57**	**5.92**	1.98
24.50	8.57	5.92	0.48
25.00	8.57	5.92	0.04
25.50	8.57	5.92	0.00
26.00	8.57	5.92	0.00
26.50	8.57	5.92	0.00
27.00	8.57	5.92	0.00
27.50	8.57	5.92	0.00
28.00	8.57	5.92	0.00
28.50	8.57	5.92	0.00
29.00	8.57	5.92	0.00
29.50	8.57	5.92	0.00
30.00	8.57	5.92	0.00
30.50	8.57	5.92	0.00
31.00	8.57	5.92	0.00
31.50	8.57	5.92	0.00
32.00	8.57	5.92	0.00
32.50	8.57	5.92	0.00
33.00	8.57	5.92	0.00
33.50	8.57	5.92	0.00
34.00	8.57	5.92	0.00
34.50	8.57	5.92	0.00
35.00	8.57	5.92	0.00
35.50	8.57	5.92	0.00
36.00	8.57	5.92	0.00
36.50	8.57	5.92	0.00
37.00	8.57	5.92	0.00
37.50	8.57	5.92	0.00
38.00	8.57	5.92	0.00
38.50	8.57	5.92	0.00
39.00	8.57	5.92	0.00
39.50	8.57	5.92	0.00
40.00	8.57	5.92	0.00

Summary for Subcatchment S-5: Subcat S-5

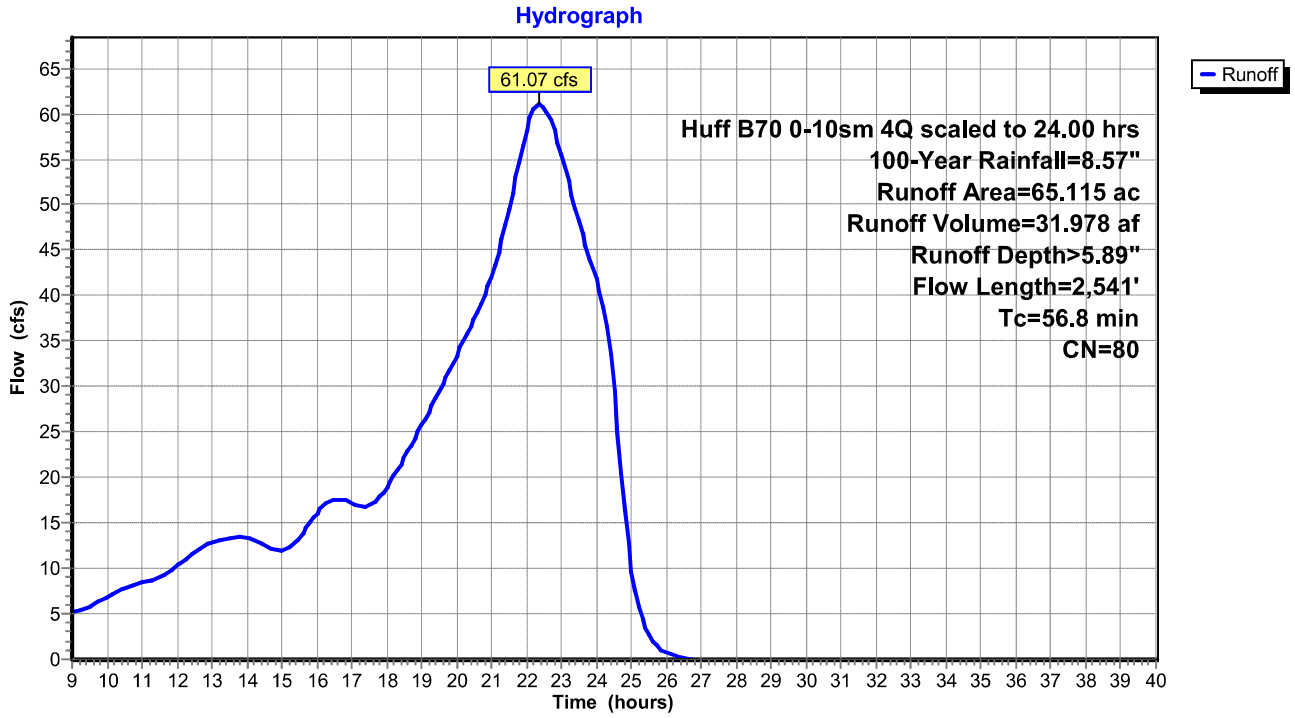
Runoff = 61.07 cfs @ 22.38 hrs, Volume= 31.978 af, Depth> 5.89"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 100-Year Rainfall=8.57"

Area (ac)	CN	Description
22.946	75	Row crops, SR + CR, Good, HSG B
4.335	82	Row crops, SR + CR, Good, HSG C
32.826	85	Row crops, SR + CR, Good, HSG D
4.661	73	Woods, Fair, HSG C
0.347	79	Woods, Fair, HSG D
65.115	80	Weighted Average
65.115		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0238	0.17		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.34"
5.5	380	0.0165	1.16		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
41.4	2,061	0.0085	0.83		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
56.8	2,541	Total			

Subcatchment S-5: Subcat S-5

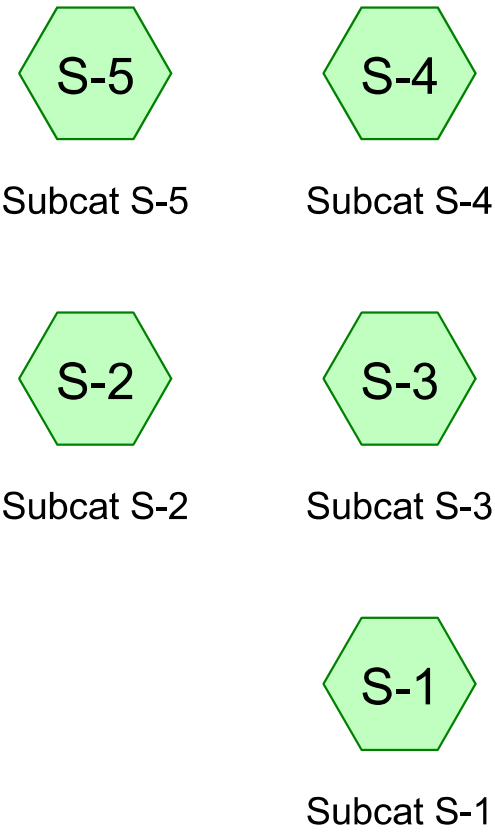


Hydrograph for Subcatchment S-5: Subcat S-5

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	1.61	0.34	5.28
9.50	1.71	0.39	5.78
10.00	1.82	0.46	6.88
10.50	1.93	0.52	7.83
11.00	2.04	0.59	8.38
11.50	2.17	0.67	9.01
12.00	2.31	0.76	10.23
12.50	2.46	0.86	11.73
13.00	2.61	0.96	12.79
13.50	2.75	1.07	13.37
14.00	2.88	1.16	13.38
14.50	3.00	1.25	12.60
15.00	3.13	1.35	11.95
15.50	3.29	1.47	13.37
16.00	3.47	1.62	16.09
16.50	3.64	1.75	17.58
17.00	3.79	1.87	17.15
17.50	3.97	2.01	16.93
18.00	4.17	2.19	18.94
18.50	4.41	2.39	22.13
19.00	4.68	2.62	25.73
19.50	4.98	2.87	29.52
20.00	5.31	3.16	33.42
20.50	5.67	3.49	37.41
21.00	6.09	3.87	42.08
21.50	6.60	4.32	49.46
22.00	7.12	4.81	**58.15**
22.50	7.58	5.23	**60.78**
23.00	7.96	5.59	55.52
23.50	8.29	5.90	48.13
24.00	**8.57**	**6.16**	41.72
24.50	8.57	6.16	29.46
25.00	8.57	6.16	9.72
25.50	8.57	6.16	2.62
26.00	8.57	6.16	0.68
26.50	8.57	6.16	0.15
27.00	8.57	6.16	0.01
27.50	8.57	6.16	0.00
28.00	8.57	6.16	0.00
28.50	8.57	6.16	0.00
29.00	8.57	6.16	0.00
29.50	8.57	6.16	0.00
30.00	8.57	6.16	0.00
30.50	8.57	6.16	0.00
31.00	8.57	6.16	0.00
31.50	8.57	6.16	0.00
32.00	8.57	6.16	0.00
32.50	8.57	6.16	0.00
33.00	8.57	6.16	0.00
33.50	8.57	6.16	0.00
34.00	8.57	6.16	0.00
34.50	8.57	6.16	0.00
35.00	8.57	6.16	0.00
35.50	8.57	6.16	0.00
36.00	8.57	6.16	0.00
36.50	8.57	6.16	0.00
37.00	8.57	6.16	0.00
37.50	8.57	6.16	0.00
38.00	8.57	6.16	0.00
38.50	8.57	6.16	0.00
39.00	8.57	6.16	0.00
39.50	8.57	6.16	0.00
40.00	8.57	6.16	0.00

TABLE OF CONTENTS

Attachment 3
Post-Development HydroCAD Calculations



Created by: CZ 5/1/2023

Checked by: GEJ
05/2/2023

Subcat Reach Pond Link

Routing Diagram for HWY20 Post
Prepared by TRC Companies, Printed 6/15/2023

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Huff B70 0-10sm	4Q	Scale	24.00	1	3.34	2
2	10-Year	Huff B70 0-10sm	4Q	Scale	24.00	1	5.15	2
3	100-Year	Huff B70 0-10sm	4Q	Scale	24.00	1	8.57	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.171	61	>75% Grass cover, Good, HSG B (S-1, S-2)
2.099	80	>75% Grass cover, Good, HSG D (S-2)
0.608	85	Gravel roads, HSG B (S-1, S-2, S-3, S-5)
0.180	91	Gravel roads, HSG D (S-1, S-2, S-3, S-5)
16.707	58	Meadow, non-grazed, HSG B (S-1, S-2, S-3, S-4, S-5)
10.174	78	Meadow, non-grazed, HSG D (S-1, S-3, S-4, S-5)
0.346	98	Roofs, HSG B (S-2)
30.564	75	Row crops, SR + CR, Good, HSG B (S-1, S-2, S-3, S-4, S-5)
6.434	82	Row crops, SR + CR, Good, HSG C (S-1, S-2, S-3, S-5)
32.402	85	Row crops, SR + CR, Good, HSG D (S-1, S-2, S-3, S-4, S-5)
4.661	73	Woods, Fair, HSG C (S-5)
0.347	79	Woods, Fair, HSG D (S-5)
108.695	**76**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
52.398	HSG B	S-1, S-2, S-3, S-4, S-5
11.095	HSG C	S-1, S-2, S-3, S-5
45.203	HSG D	S-1, S-2, S-3, S-4, S-5
0.000	Other	
108.695		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	4.171	0.000	2.099	0.000	6.271	>75% Grass cover, Good	S-1, S-2
0.000	0.608	0.000	0.180	0.000	0.788	Gravel roads	S-1, S-2, S-3, S-5
0.000	16.707	0.000	10.174	0.000	26.882	Meadow, non-grazed	S-1, S-2, S-3, S-4, S-5
0.000	0.346	0.000	0.000	0.000	0.346	Roofs	S-2
0.000	30.564	6.434	32.402	0.000	69.401	Row crops, SR + CR, Good	S-1, S-2, S-3, S-4, S-5
0.000	0.000	4.661	0.347	0.000	5.008	Woods, Fair	S-5
0.000	**52.398**	**11.095**	**45.203**	**0.000**	**108.695**	**TOTAL AREA**	

Time span=9.00-40.00 hrs, dt=0.10 hrs, 311 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S-1: Subcat S-1 Runoff Area=10.911 ac 0.00% Impervious Runoff Depth>1.38"
Flow Length=1,208' Tc=30.9 min CN=78 Runoff=3.01 cfs 1.252 af

Subcatchment S-2: Subcat S-2 Runoff Area=13.741 ac 2.52% Impervious Runoff Depth=1.13"
Flow Length=740' Tc=16.2 min CN=74 Runoff=3.39 cfs 1.295 af

Subcatchment S-3: Subcat S-3 Runoff Area=15.357 ac 0.00% Impervious Runoff Depth=0.86"
Flow Length=1,065' Tc=77.7 min CN=69 Runoff=2.83 cfs 1.100 af

Subcatchment S-4: Subcat S-4 Runoff Area=3.571 ac 0.00% Impervious Runoff Depth=0.71"
Flow Length=758' Tc=36.8 min CN=66 Runoff=0.61 cfs 0.213 af

Subcatchment S-5: Subcat S-5 Runoff Area=65.115 ac 0.00% Impervious Runoff Depth>1.38"
Flow Length=2,540' Tc=65.7 min CN=78 Runoff=16.99 cfs 7.471 af

Total Runoff Area = 108.695 ac Runoff Volume = 11.330 af Average Runoff Depth = 1.25"
99.68% Pervious = 108.349 ac 0.32% Impervious = 0.346 ac

Summary for Subcatchment S-1: Subcat S-1

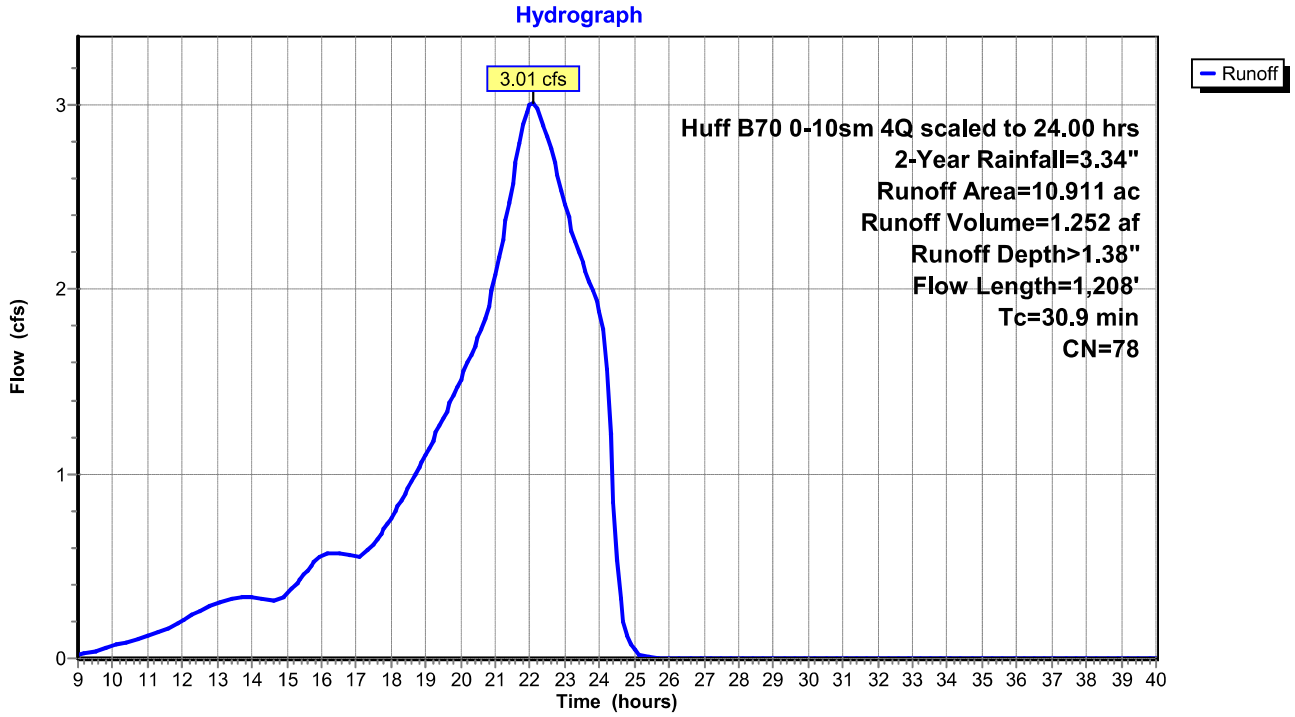
Runoff = 3.01 cfs @ 22.06 hrs, Volume= 1.252 af, Depth> 1.38"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 2-Year Rainfall=3.34"

Area (ac)	CN	Description
0.026	61	>75% Grass cover, Good, HSG B
0.078	85	Gravel roads, HSG B
0.038	91	Gravel roads, HSG D
0.123	58	Meadow, non-grazed, HSG B
0.037	78	Meadow, non-grazed, HSG D
6.347	75	Row crops, SR + CR, Good, HSG B
1.730	82	Row crops, SR + CR, Good, HSG C
2.531	85	Row crops, SR + CR, Good, HSG D
10.911	78	Weighted Average
10.911		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0217	0.16		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.40"
2.5	186	0.0189	1.24		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.7	63	0.0304	1.57		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
12.5	598	0.0078	0.79		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.1	12	0.0117	1.74		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.9	249	0.0088	0.84		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
30.9	1,208	Total			

Subcatchment S-1: Subcat S-1



Hydrograph for Subcatchment S-1: Subcat S-1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	0.63	0.00	0.02
9.50	0.67	0.00	0.04
10.00	0.71	0.01	0.07
10.50	0.75	0.01	0.09
11.00	0.80	0.02	0.12
11.50	0.85	0.03	0.16
12.00	0.90	0.04	0.21
12.50	0.96	0.05	0.26
13.00	1.02	0.06	0.30
13.50	1.07	0.08	0.33
14.00	1.12	0.09	0.33
14.50	1.17	0.11	0.32
15.00	1.22	0.12	0.35
15.50	1.28	0.15	0.45
16.00	1.35	0.17	0.56
16.50	1.42	0.20	0.57
17.00	1.48	0.22	0.55
17.50	1.55	0.25	0.62
18.00	1.63	0.29	0.76
18.50	1.72	0.34	0.93
19.00	1.82	0.39	1.11
19.50	1.94	0.45	1.30
20.00	2.07	0.52	1.51
20.50	2.21	0.61	1.74
21.00	2.38	0.71	2.08
21.50	2.57	0.83	2.58
22.00	2.78	0.97	**3.01**
22.50	2.95	1.10	**2.83**
23.00	3.10	1.20	2.46
23.50	3.23	1.30	2.15
24.00	**3.34**	**1.38**	1.88
24.50	3.34	1.38	0.53
25.00	3.34	1.38	0.05
25.50	3.34	1.38	0.00
26.00	3.34	1.38	0.00
26.50	3.34	1.38	0.00
27.00	3.34	1.38	0.00
27.50	3.34	1.38	0.00
28.00	3.34	1.38	0.00
28.50	3.34	1.38	0.00
29.00	3.34	1.38	0.00
29.50	3.34	1.38	0.00
30.00	3.34	1.38	0.00
30.50	3.34	1.38	0.00
31.00	3.34	1.38	0.00
31.50	3.34	1.38	0.00
32.00	3.34	1.38	0.00
32.50	3.34	1.38	0.00
33.00	3.34	1.38	0.00
33.50	3.34	1.38	0.00
34.00	3.34	1.38	0.00
34.50	3.34	1.38	0.00
35.00	3.34	1.38	0.00
35.50	3.34	1.38	0.00
36.00	3.34	1.38	0.00
36.50	3.34	1.38	0.00
37.00	3.34	1.38	0.00
37.50	3.34	1.38	0.00
38.00	3.34	1.38	0.00
38.50	3.34	1.38	0.00
39.00	3.34	1.38	0.00
39.50	3.34	1.38	0.00
40.00	3.34	1.38	0.00

Summary for Subcatchment S-2: Subcat S-2

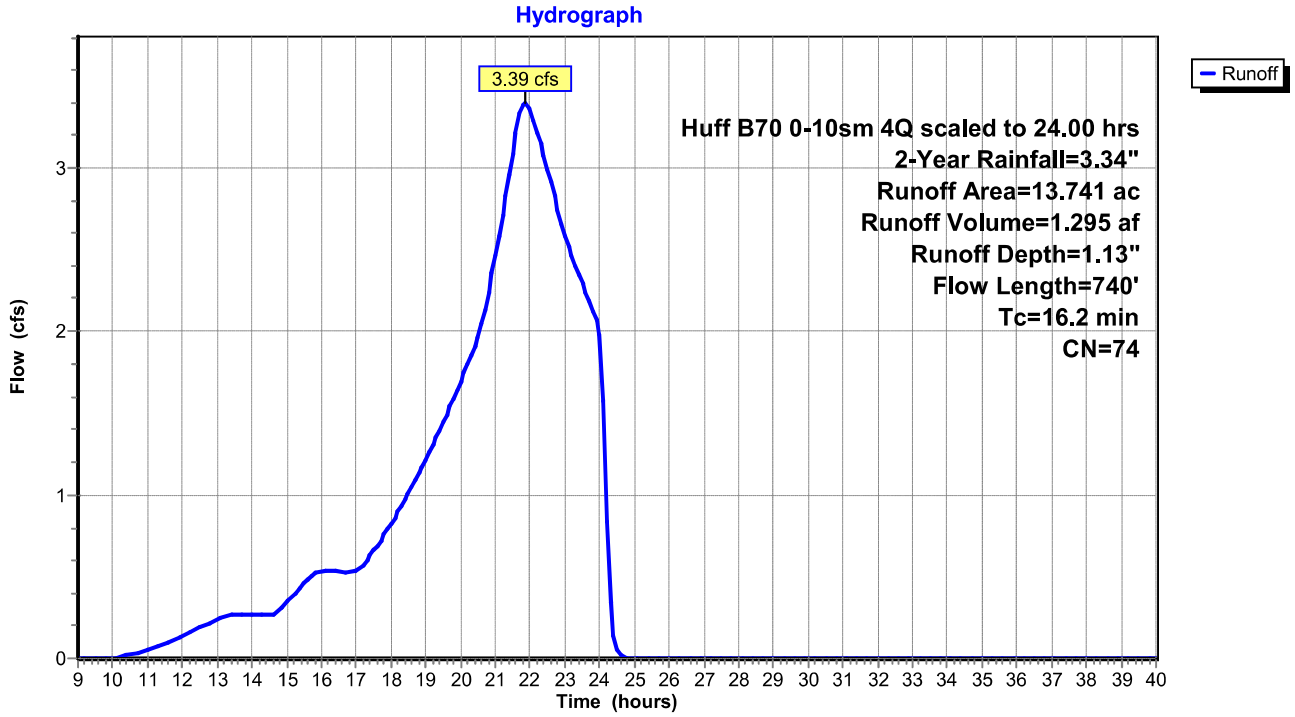
Runoff = 3.39 cfs @ 21.84 hrs, Volume= 1.295 af, Depth= 1.13"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 2-Year Rainfall=3.34"

Area (ac)	CN	Description
4.145	61	>75% Grass cover, Good, HSG B
2.099	80	>75% Grass cover, Good, HSG D
0.286	85	Gravel roads, HSG B
0.007	91	Gravel roads, HSG D
0.239	58	Meadow, non-grazed, HSG B
0.346	98	Roofs, HSG B
4.465	75	Row crops, SR + CR, Good, HSG B
0.124	82	Row crops, SR + CR, Good, HSG C
2.030	85	Row crops, SR + CR, Good, HSG D
13.741	74	Weighted Average
13.395		97.48% Pervious Area
0.346		2.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.0446	0.22		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.40"
8.6	640	0.0188	1.23		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
16.2	740	Total			

Subcatchment S-2: Subcat S-2



Hydrograph for Subcatchment S-2: Subcat S-2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	0.63	0.00	0.00
9.50	0.67	0.00	0.00
10.00	0.71	0.00	0.00
10.50	0.75	0.00	0.02
11.00	0.80	0.00	0.05
11.50	0.85	0.01	0.09
12.00	0.90	0.01	0.14
12.50	0.96	0.02	0.19
13.00	1.02	0.03	0.23
13.50	1.07	0.04	0.27
14.00	1.12	0.04	0.27
14.50	1.17	0.05	0.26
15.00	1.22	0.07	0.34
15.50	1.28	0.08	0.46
16.00	1.35	0.10	0.54
16.50	1.42	0.12	0.53
17.00	1.48	0.14	0.53
17.50	1.55	0.16	0.66
18.00	1.63	0.19	0.82
18.50	1.72	0.23	1.01
19.00	1.82	0.27	1.21
19.50	1.94	0.32	1.44
20.00	2.07	0.38	1.69
20.50	2.21	0.45	1.96
21.00	2.38	0.54	2.47
21.50	2.57	0.65	**3.08**
22.00	2.78	0.77	**3.34**
22.50	2.95	0.88	2.99
23.00	3.10	0.97	2.58
23.50	3.23	1.06	2.29
24.00	**3.34**	**1.13**	1.98
24.50	3.34	1.13	0.05
25.00	3.34	1.13	0.00
25.50	3.34	1.13	0.00
26.00	3.34	1.13	0.00
26.50	3.34	1.13	0.00
27.00	3.34	1.13	0.00
27.50	3.34	1.13	0.00
28.00	3.34	1.13	0.00
28.50	3.34	1.13	0.00
29.00	3.34	1.13	0.00
29.50	3.34	1.13	0.00
30.00	3.34	1.13	0.00
30.50	3.34	1.13	0.00
31.00	3.34	1.13	0.00
31.50	3.34	1.13	0.00
32.00	3.34	1.13	0.00
32.50	3.34	1.13	0.00
33.00	3.34	1.13	0.00
33.50	3.34	1.13	0.00
34.00	3.34	1.13	0.00
34.50	3.34	1.13	0.00
35.00	3.34	1.13	0.00
35.50	3.34	1.13	0.00
36.00	3.34	1.13	0.00
36.50	3.34	1.13	0.00
37.00	3.34	1.13	0.00
37.50	3.34	1.13	0.00
38.00	3.34	1.13	0.00
38.50	3.34	1.13	0.00
39.00	3.34	1.13	0.00
39.50	3.34	1.13	0.00
40.00	3.34	1.13	0.00

Summary for Subcatchment S-3: Subcat S-3

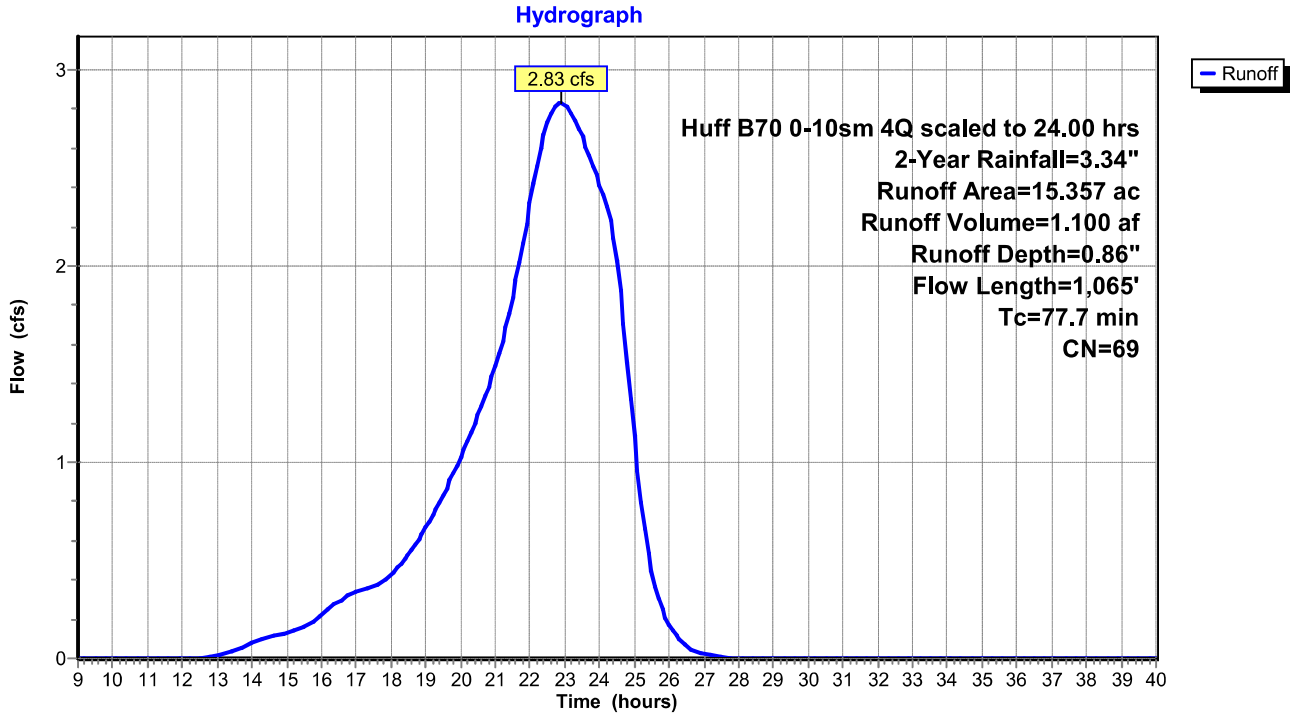
Runoff = 2.83 cfs @ 22.87 hrs, Volume= 1.100 af, Depth= 0.86"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 2-Year Rainfall=3.34"

Area (ac)	CN	Description
0.226	85	Gravel roads, HSG B
0.078	91	Gravel roads, HSG D
6.333	58	Meadow, non-grazed, HSG B
3.808	78	Meadow, non-grazed, HSG D
4.337	75	Row crops, SR + CR, Good, HSG B
0.245	82	Row crops, SR + CR, Good, HSG C
0.329	85	Row crops, SR + CR, Good, HSG D
15.357	69	Weighted Average
15.357		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.0723	0.27		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.40"
1.6	174	0.0430	1.87		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
30.1	179	0.0002	0.10		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	12	0.0180	2.16		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
39.6	600	0.0013	0.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
77.7	1,065	Total			

Subcatchment S-3: Subcat S-3



Hydrograph for Subcatchment S-3: Subcat S-3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	0.63	0.00	0.00
9.50	0.67	0.00	0.00
10.00	0.71	0.00	0.00
10.50	0.75	0.00	0.00
11.00	0.80	0.00	0.00
11.50	0.85	0.00	0.00
12.00	0.90	0.00	0.00
12.50	0.96	0.00	0.00
13.00	1.02	0.00	0.01
13.50	1.07	0.01	0.04
14.00	1.12	0.01	0.08
14.50	1.17	0.02	0.11
15.00	1.22	0.02	0.13
15.50	1.28	0.03	0.16
16.00	1.35	0.04	0.22
16.50	1.42	0.05	0.29
17.00	1.48	0.07	0.34
17.50	1.55	0.08	0.37
18.00	1.63	0.10	0.43
18.50	1.72	0.13	0.53
19.00	1.82	0.16	0.67
19.50	1.94	0.20	0.83
20.00	2.07	0.24	1.02
20.50	2.21	0.30	1.24
21.00	2.38	0.37	1.49
21.50	2.57	0.45	1.84
22.00	2.78	0.55	2.32
22.50	2.95	0.65	**2.73**
23.00	3.10	0.73	**2.82**
23.50	3.23	0.80	2.66
24.00	**3.34**	**0.86**	2.41
24.50	3.34	0.86	2.02
25.00	3.34	0.86	1.13
25.50	3.34	0.86	0.44
26.00	3.34	0.86	0.17
26.50	3.34	0.86	0.06
27.00	3.34	0.86	0.02
27.50	3.34	0.86	0.01
28.00	3.34	0.86	0.00
28.50	3.34	0.86	0.00
29.00	3.34	0.86	0.00
29.50	3.34	0.86	0.00
30.00	3.34	0.86	0.00
30.50	3.34	0.86	0.00
31.00	3.34	0.86	0.00
31.50	3.34	0.86	0.00
32.00	3.34	0.86	0.00
32.50	3.34	0.86	0.00
33.00	3.34	0.86	0.00
33.50	3.34	0.86	0.00
34.00	3.34	0.86	0.00
34.50	3.34	0.86	0.00
35.00	3.34	0.86	0.00
35.50	3.34	0.86	0.00
36.00	3.34	0.86	0.00
36.50	3.34	0.86	0.00
37.00	3.34	0.86	0.00
37.50	3.34	0.86	0.00
38.00	3.34	0.86	0.00
38.50	3.34	0.86	0.00
39.00	3.34	0.86	0.00
39.50	3.34	0.86	0.00
40.00	3.34	0.86	0.00

Summary for Subcatchment S-4: Subcat S-4

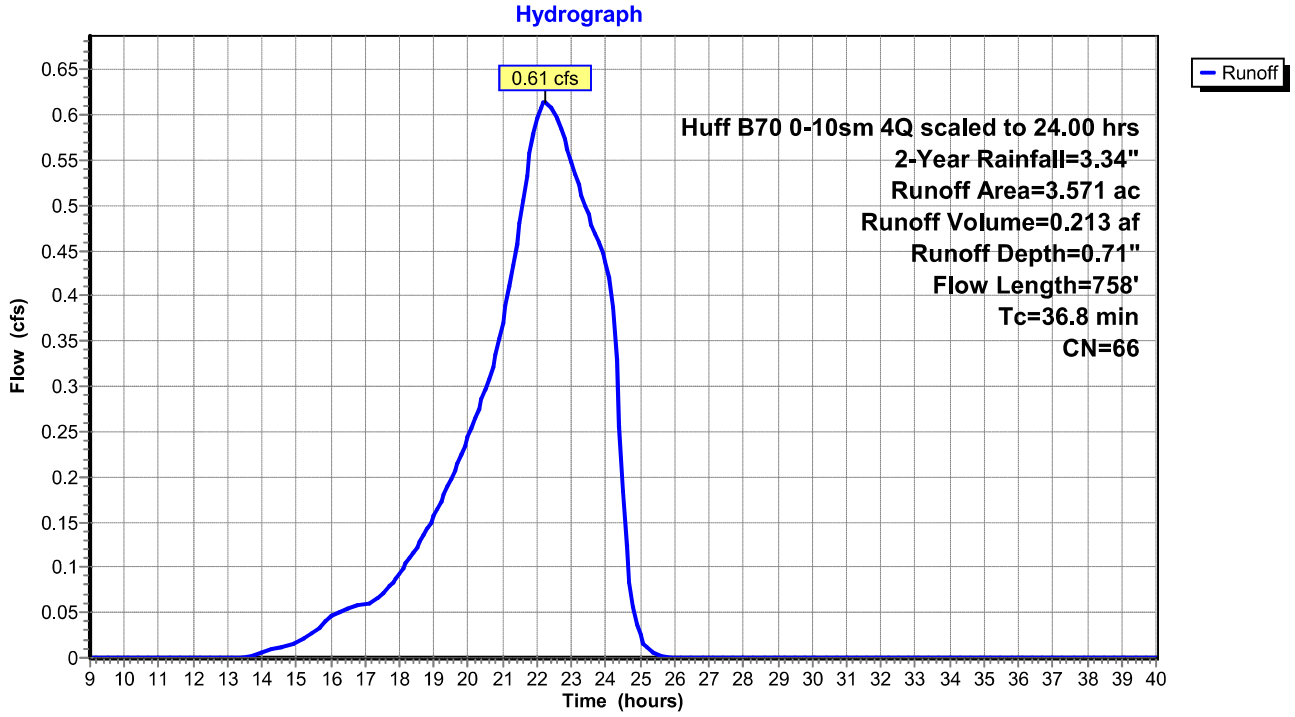
Runoff = 0.61 cfs @ 22.25 hrs, Volume= 0.213 af, Depth= 0.71"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 2-Year Rainfall=3.34"

Area (ac)	CN	Description
2.251	58	Meadow, non-grazed, HSG B
0.624	78	Meadow, non-grazed, HSG D
0.248	75	Row crops, SR + CR, Good, HSG B
0.448	85	Row crops, SR + CR, Good, HSG D
3.571	66	Weighted Average
3.571		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	100	0.0107	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
15.2	456	0.0051	0.50		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	202	0.0096	0.88		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
36.8	758	Total			

Subcatchment S-4: Subcat S-4



Hydrograph for Subcatchment S-4: Subcat S-4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	0.63	0.00	0.00
9.50	0.67	0.00	0.00
10.00	0.71	0.00	0.00
10.50	0.75	0.00	0.00
11.00	0.80	0.00	0.00
11.50	0.85	0.00	0.00
12.00	0.90	0.00	0.00
12.50	0.96	0.00	0.00
13.00	1.02	0.00	0.00
13.50	1.07	0.00	0.00
14.00	1.12	0.00	0.01
14.50	1.17	0.00	0.01
15.00	1.22	0.01	0.02
15.50	1.28	0.01	0.03
16.00	1.35	0.02	0.04
16.50	1.42	0.03	0.05
17.00	1.48	0.04	0.06
17.50	1.55	0.05	0.07
18.00	1.63	0.06	0.09
18.50	1.72	0.08	0.12
19.00	1.82	0.11	0.16
19.50	1.94	0.14	0.20
20.00	2.07	0.17	0.24
20.50	2.21	0.22	0.30
21.00	2.38	0.28	0.37
21.50	2.57	0.35	0.48
22.00	2.78	0.44	**0.60**
22.50	2.95	0.52	**0.60**
23.00	3.10	0.59	0.55
23.50	3.23	0.66	0.49
24.00	**3.34**	**0.71**	0.44
24.50	3.34	0.71	0.18
25.00	3.34	0.71	0.02
25.50	3.34	0.71	0.00
26.00	3.34	0.71	0.00
26.50	3.34	0.71	0.00
27.00	3.34	0.71	0.00
27.50	3.34	0.71	0.00
28.00	3.34	0.71	0.00
28.50	3.34	0.71	0.00
29.00	3.34	0.71	0.00
29.50	3.34	0.71	0.00
30.00	3.34	0.71	0.00
30.50	3.34	0.71	0.00
31.00	3.34	0.71	0.00
31.50	3.34	0.71	0.00
32.00	3.34	0.71	0.00
32.50	3.34	0.71	0.00
33.00	3.34	0.71	0.00
33.50	3.34	0.71	0.00
34.00	3.34	0.71	0.00
34.50	3.34	0.71	0.00
35.00	3.34	0.71	0.00
35.50	3.34	0.71	0.00
36.00	3.34	0.71	0.00
36.50	3.34	0.71	0.00
37.00	3.34	0.71	0.00
37.50	3.34	0.71	0.00
38.00	3.34	0.71	0.00
38.50	3.34	0.71	0.00
39.00	3.34	0.71	0.00
39.50	3.34	0.71	0.00
40.00	3.34	0.71	0.00

Summary for Subcatchment S-5: Subcat S-5

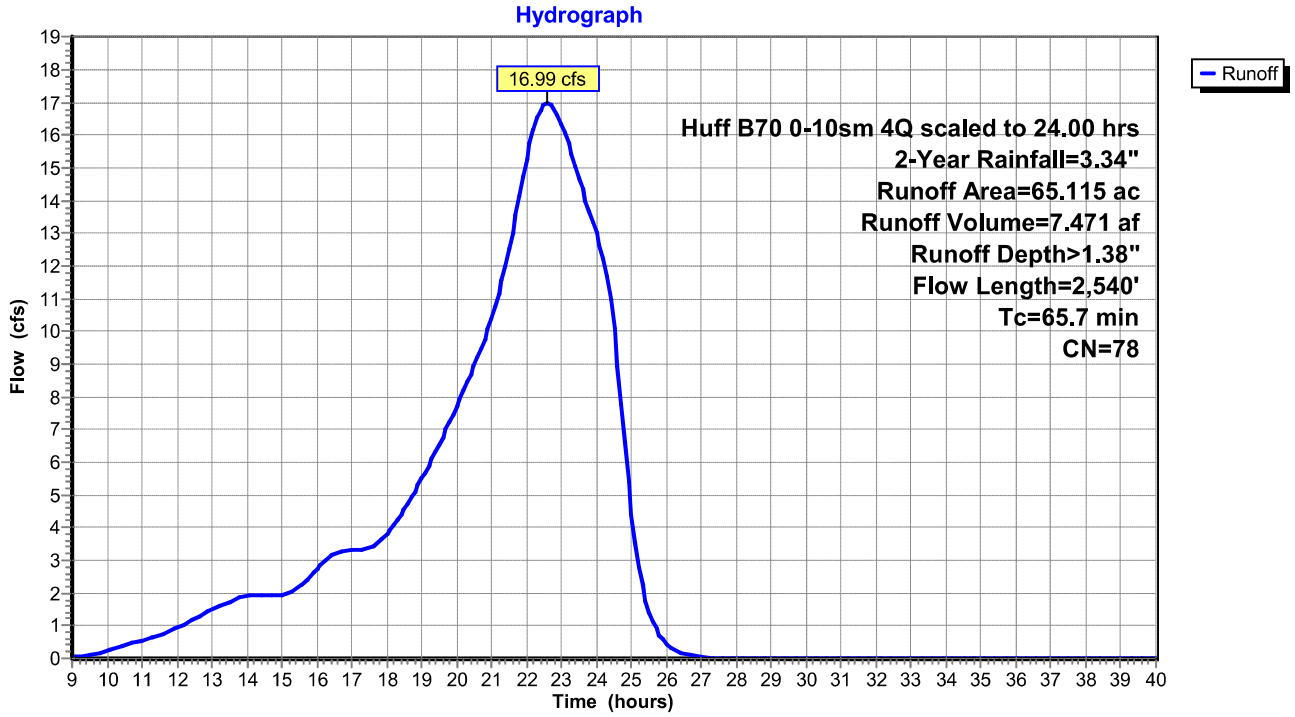
Runoff = 16.99 cfs @ 22.59 hrs, Volume= 7.471 af, Depth> 1.38"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 2-Year Rainfall=3.34"

Area (ac)	CN	Description
0.018	85	Gravel roads, HSG B
0.057	91	Gravel roads, HSG D
7.761	58	Meadow, non-grazed, HSG B
5.704	78	Meadow, non-grazed, HSG D
15.167	75	Row crops, SR + CR, Good, HSG B
4.335	82	Row crops, SR + CR, Good, HSG C
27.064	85	Row crops, SR + CR, Good, HSG D
4.661	73	Woods, Fair, HSG C
0.347	79	Woods, Fair, HSG D
65.115	78	Weighted Average
65.115		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	100	0.0238	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
21.5	1,066	0.0140	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
31.3	1,374	0.0066	0.73		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
65.7	2,540	Total			

Subcatchment S-5: Subcat S-5



Hydrograph for Subcatchment S-5: Subcat S-5

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	0.63	0.00	0.04
9.50	0.67	0.00	0.11
10.00	0.71	0.01	0.24
10.50	0.75	0.01	0.40
11.00	0.80	0.02	0.55
11.50	0.85	0.03	0.71
12.00	0.90	0.04	0.94
12.50	0.96	0.05	1.22
13.00	1.02	0.06	1.50
13.50	1.07	0.08	1.74
14.00	1.12	0.09	1.90
14.50	1.17	0.11	1.94
15.00	1.22	0.12	1.93
15.50	1.28	0.15	2.18
16.00	1.35	0.17	2.72
16.50	1.42	0.20	3.18
17.00	1.48	0.22	3.31
17.50	1.55	0.25	3.37
18.00	1.63	0.29	3.80
18.50	1.72	0.34	4.56
19.00	1.82	0.39	5.50
19.50	1.94	0.45	6.55
20.00	2.07	0.52	7.71
20.50	2.21	0.61	8.96
21.00	2.38	0.71	10.40
21.50	2.57	0.83	12.53
22.00	2.78	0.97	15.26
22.50	2.95	1.10	**16.95**
23.00	3.10	1.20	**16.37**
23.50	3.23	1.30	14.71
24.00	**3.34**	**1.38**	13.01
24.50	3.34	1.38	10.07
25.00	3.34	1.38	4.41
25.50	3.34	1.38	1.42
26.00	3.34	1.38	0.45
26.50	3.34	1.38	0.14
27.00	3.34	1.38	0.03
27.50	3.34	1.38	0.00
28.00	3.34	1.38	0.00
28.50	3.34	1.38	0.00
29.00	3.34	1.38	0.00
29.50	3.34	1.38	0.00
30.00	3.34	1.38	0.00
30.50	3.34	1.38	0.00
31.00	3.34	1.38	0.00
31.50	3.34	1.38	0.00
32.00	3.34	1.38	0.00
32.50	3.34	1.38	0.00
33.00	3.34	1.38	0.00
33.50	3.34	1.38	0.00
34.00	3.34	1.38	0.00
34.50	3.34	1.38	0.00
35.00	3.34	1.38	0.00
35.50	3.34	1.38	0.00
36.00	3.34	1.38	0.00
36.50	3.34	1.38	0.00
37.00	3.34	1.38	0.00
37.50	3.34	1.38	0.00
38.00	3.34	1.38	0.00
38.50	3.34	1.38	0.00
39.00	3.34	1.38	0.00
39.50	3.34	1.38	0.00
40.00	3.34	1.38	0.00

Time span=9.00-40.00 hrs, dt=0.10 hrs, 311 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S-1: Subcat S-1 Runoff Area=10.911 ac 0.00% Impervious Runoff Depth>2.80"
Flow Length=1,208' Tc=30.9 min CN=78 Runoff=5.58 cfs 2.546 af

Subcatchment S-2: Subcat S-2 Runoff Area=13.741 ac 2.52% Impervious Runoff Depth>2.47"
Flow Length=740' Tc=16.2 min CN=74 Runoff=6.63 cfs 2.828 af

Subcatchment S-3: Subcat S-3 Runoff Area=15.357 ac 0.00% Impervious Runoff Depth>2.07"
Flow Length=1,065' Tc=77.7 min CN=69 Runoff=5.96 cfs 2.645 af

Subcatchment S-4: Subcat S-4 Runoff Area=3.571 ac 0.00% Impervious Runoff Depth=1.83"
Flow Length=758' Tc=36.8 min CN=66 Runoff=1.36 cfs 0.545 af

Subcatchment S-5: Subcat S-5 Runoff Area=65.115 ac 0.00% Impervious Runoff Depth>2.81"
Flow Length=2,540' Tc=65.7 min CN=78 Runoff=31.48 cfs 15.248 af

Total Runoff Area = 108.695 ac Runoff Volume = 23.811 af Average Runoff Depth = 2.63"
99.68% Pervious = 108.349 ac 0.32% Impervious = 0.346 ac

Summary for Subcatchment S-1: Subcat S-1

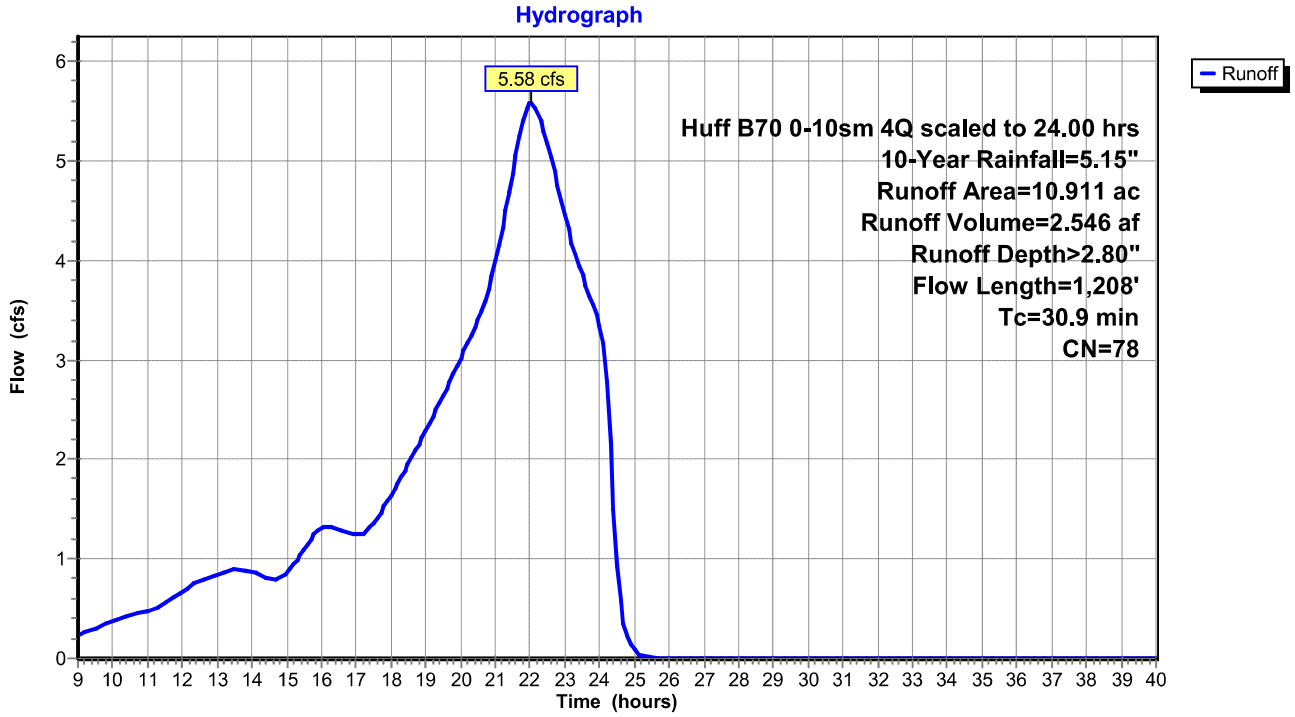
Runoff = 5.58 cfs @ 22.03 hrs, Volume= 2.546 af, Depth> 2.80"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 10-Year Rainfall=5.15"

Area (ac)	CN	Description
0.026	61	>75% Grass cover, Good, HSG B
0.078	85	Gravel roads, HSG B
0.038	91	Gravel roads, HSG D
0.123	58	Meadow, non-grazed, HSG B
0.037	78	Meadow, non-grazed, HSG D
6.347	75	Row crops, SR + CR, Good, HSG B
1.730	82	Row crops, SR + CR, Good, HSG C
2.531	85	Row crops, SR + CR, Good, HSG D
10.911	78	Weighted Average
10.911		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0217	0.16		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.40"
2.5	186	0.0189	1.24		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.7	63	0.0304	1.57		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
12.5	598	0.0078	0.79		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.1	12	0.0117	1.74		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.9	249	0.0088	0.84		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
30.9	1,208	Total			

Subcatchment S-1: Subcat S-1



Hydrograph for Subcatchment S-1: Subcat S-1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	0.97	0.05	0.23
9.50	1.03	0.07	0.30
10.00	1.09	0.08	0.38
10.50	1.16	0.10	0.43
11.00	1.23	0.13	0.47
11.50	1.30	0.15	0.55
12.00	1.39	0.19	0.67
12.50	1.48	0.22	0.78
13.00	1.57	0.26	0.85
13.50	1.65	0.30	0.89
14.00	1.73	0.34	0.87
14.50	1.80	0.38	0.80
15.00	1.88	0.42	0.86
15.50	1.98	0.47	1.09
16.00	2.09	0.53	1.31
16.50	2.19	0.59	1.30
17.00	2.28	0.65	1.23
17.50	2.38	0.71	1.36
18.00	2.51	0.79	1.64
18.50	2.65	0.89	1.96
19.00	2.81	1.00	2.29
19.50	2.99	1.12	2.64
20.00	3.19	1.27	3.01
20.50	3.41	1.43	3.40
21.00	3.66	1.62	4.00
21.50	3.96	1.86	4.87
22.00	4.28	2.11	**5.58**
22.50	4.55	2.34	5.17
23.00	4.78	2.53	4.45
23.50	4.98	2.70	3.85
24.00	**5.15**	**2.84**	3.35
24.50	5.15	2.84	0.94
25.00	5.15	2.84	0.08
25.50	5.15	2.84	0.00
26.00	5.15	2.84	0.00
26.50	5.15	2.84	0.00
27.00	5.15	2.84	0.00
27.50	5.15	2.84	0.00
28.00	5.15	2.84	0.00
28.50	5.15	2.84	0.00
29.00	5.15	2.84	0.00
29.50	5.15	2.84	0.00
30.00	5.15	2.84	0.00
30.50	5.15	2.84	0.00
31.00	5.15	2.84	0.00
31.50	5.15	2.84	0.00
32.00	5.15	2.84	0.00
32.50	5.15	2.84	0.00
33.00	5.15	2.84	0.00
33.50	5.15	2.84	0.00
34.00	5.15	2.84	0.00
34.50	5.15	2.84	0.00
35.00	5.15	2.84	0.00
35.50	5.15	2.84	0.00
36.00	5.15	2.84	0.00
36.50	5.15	2.84	0.00
37.00	5.15	2.84	0.00
37.50	5.15	2.84	0.00
38.00	5.15	2.84	0.00
38.50	5.15	2.84	0.00
39.00	5.15	2.84	0.00
39.50	5.15	2.84	0.00
40.00	5.15	2.84	0.00

Summary for Subcatchment S-2: Subcat S-2

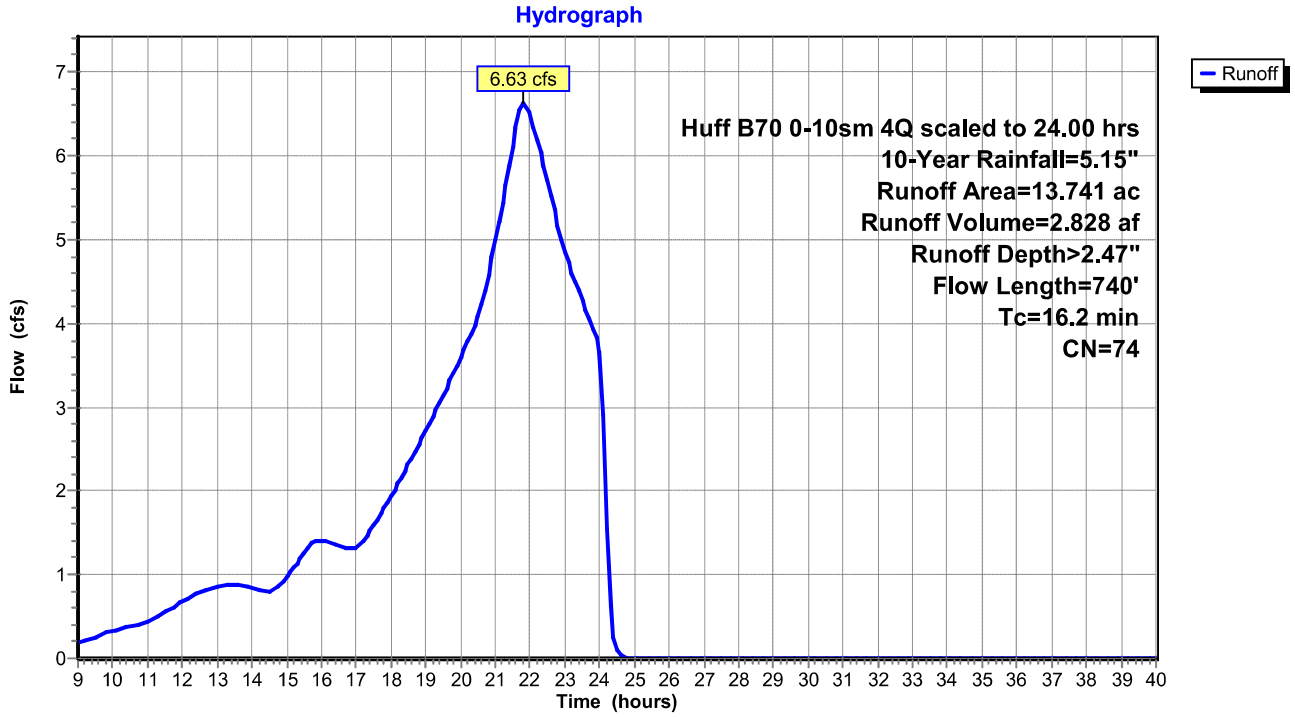
Runoff = 6.63 cfs @ 21.82 hrs, Volume= 2.828 af, Depth> 2.47"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 10-Year Rainfall=5.15"

Area (ac)	CN	Description
4.145	61	>75% Grass cover, Good, HSG B
2.099	80	>75% Grass cover, Good, HSG D
0.286	85	Gravel roads, HSG B
0.007	91	Gravel roads, HSG D
0.239	58	Meadow, non-grazed, HSG B
0.346	98	Roofs, HSG B
4.465	75	Row crops, SR + CR, Good, HSG B
0.124	82	Row crops, SR + CR, Good, HSG C
2.030	85	Row crops, SR + CR, Good, HSG D
13.741	74	Weighted Average
13.395		97.48% Pervious Area
0.346		2.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.0446	0.22		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.40"
8.6	640	0.0188	1.23		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
16.2	740	Total			

Subcatchment S-2: Subcat S-2



Hydrograph for Subcatchment S-2: Subcat S-2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	0.97	0.02	0.18
9.50	1.03	0.03	0.26
10.00	1.09	0.04	0.33
10.50	1.16	0.05	0.38
11.00	1.23	0.07	0.44
11.50	1.30	0.09	0.55
12.00	1.39	0.11	0.68
12.50	1.48	0.14	0.78
13.00	1.57	0.17	0.85
13.50	1.65	0.20	0.89
14.00	1.73	0.23	0.85
14.50	1.80	0.26	0.79
15.00	1.88	0.30	0.98
15.50	1.98	0.34	1.26
16.00	2.09	0.39	1.41
16.50	2.19	0.44	1.35
17.00	2.28	0.49	1.31
17.50	2.38	0.54	1.59
18.00	2.51	0.61	1.94
18.50	2.65	0.69	2.31
19.00	2.81	0.79	2.71
19.50	2.99	0.90	3.14
20.00	3.19	1.03	3.59
20.50	3.41	1.18	4.08
21.00	3.66	1.35	5.00
21.50	3.96	1.57	**6.11**
22.00	4.28	1.81	**6.48**
22.50	4.55	2.01	5.70
23.00	4.78	2.19	4.85
23.50	4.98	2.35	4.27
24.00	**5.15**	**2.48**	3.66
24.50	5.15	2.48	0.10
25.00	5.15	2.48	0.00
25.50	5.15	2.48	0.00
26.00	5.15	2.48	0.00
26.50	5.15	2.48	0.00
27.00	5.15	2.48	0.00
27.50	5.15	2.48	0.00
28.00	5.15	2.48	0.00
28.50	5.15	2.48	0.00
29.00	5.15	2.48	0.00
29.50	5.15	2.48	0.00
30.00	5.15	2.48	0.00
30.50	5.15	2.48	0.00
31.00	5.15	2.48	0.00
31.50	5.15	2.48	0.00
32.00	5.15	2.48	0.00
32.50	5.15	2.48	0.00
33.00	5.15	2.48	0.00
33.50	5.15	2.48	0.00
34.00	5.15	2.48	0.00
34.50	5.15	2.48	0.00
35.00	5.15	2.48	0.00
35.50	5.15	2.48	0.00
36.00	5.15	2.48	0.00
36.50	5.15	2.48	0.00
37.00	5.15	2.48	0.00
37.50	5.15	2.48	0.00
38.00	5.15	2.48	0.00
38.50	5.15	2.48	0.00
39.00	5.15	2.48	0.00
39.50	5.15	2.48	0.00
40.00	5.15	2.48	0.00

Summary for Subcatchment S-3: Subcat S-3

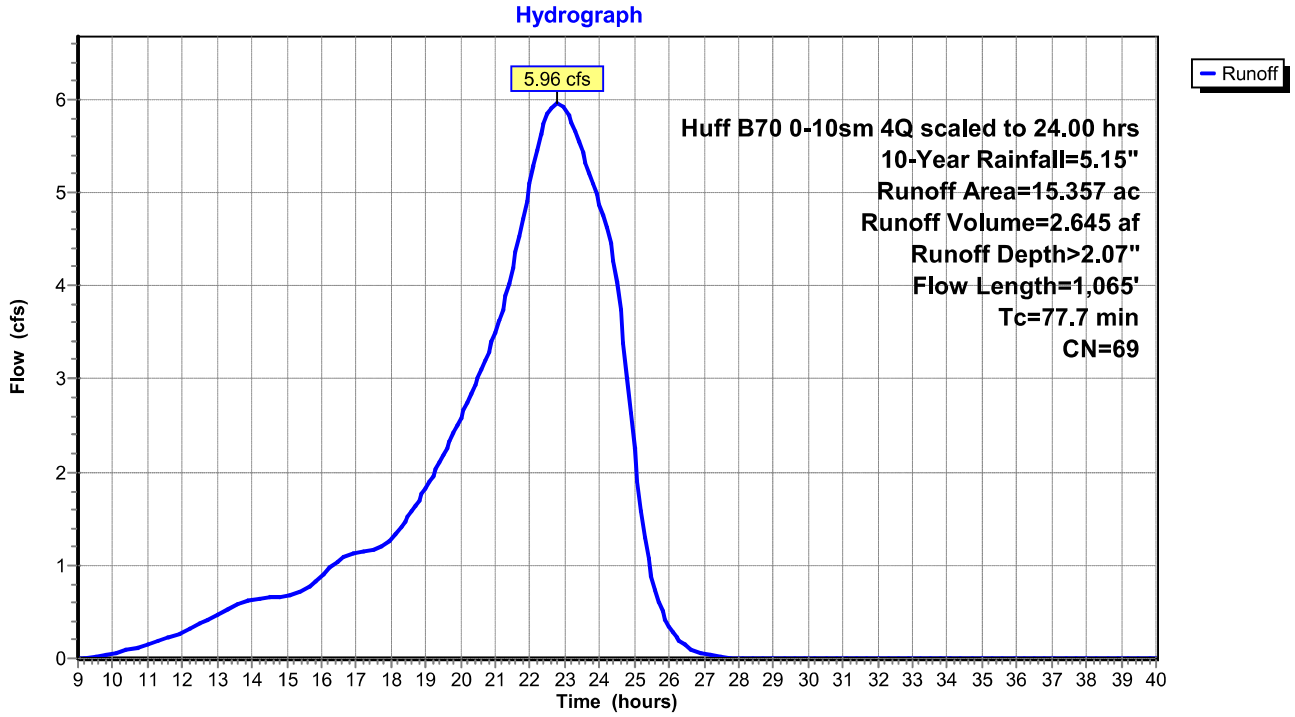
Runoff = 5.96 cfs @ 22.78 hrs, Volume= 2.645 af, Depth> 2.07"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 10-Year Rainfall=5.15"

Area (ac)	CN	Description
0.226	85	Gravel roads, HSG B
0.078	91	Gravel roads, HSG D
6.333	58	Meadow, non-grazed, HSG B
3.808	78	Meadow, non-grazed, HSG D
4.337	75	Row crops, SR + CR, Good, HSG B
0.245	82	Row crops, SR + CR, Good, HSG C
0.329	85	Row crops, SR + CR, Good, HSG D
15.357	69	Weighted Average
15.357		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.0723	0.27		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.40"
1.6	174	0.0430	1.87		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
30.1	179	0.0002	0.10		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	12	0.0180	2.16		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
39.6	600	0.0013	0.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
77.7	1,065	Total			

Subcatchment S-3: Subcat S-3



Hydrograph for Subcatchment S-3: Subcat S-3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	0.97	0.00	0.00
9.50	1.03	0.00	0.02
10.00	1.09	0.01	0.05
10.50	1.16	0.01	0.10
11.00	1.23	0.02	0.15
11.50	1.30	0.03	0.21
12.00	1.39	0.05	0.28
12.50	1.48	0.07	0.37
13.00	1.57	0.09	0.47
13.50	1.65	0.11	0.56
14.00	1.73	0.13	0.63
14.50	1.80	0.15	0.66
15.00	1.88	0.18	0.66
15.50	1.98	0.21	0.72
16.00	2.09	0.25	0.88
16.50	2.19	0.29	1.06
17.00	2.28	0.32	1.14
17.50	2.38	0.37	1.17
18.00	2.51	0.42	1.28
18.50	2.65	0.49	1.51
19.00	2.81	0.57	1.82
19.50	2.99	0.67	2.18
20.00	3.19	0.77	2.58
20.50	3.41	0.90	3.01
21.00	3.66	1.05	3.50
21.50	3.96	1.24	4.18
22.00	4.28	1.45	5.10
22.50	4.55	1.64	**5.84**
23.00	4.78	1.80	**5.89**
23.50	4.98	1.94	5.44
24.00	**5.15**	**2.07**	4.86
24.50	5.15	2.07	4.03
25.00	5.15	2.07	2.25
25.50	5.15	2.07	0.88
26.00	5.15	2.07	0.34
26.50	5.15	2.07	0.13
27.00	5.15	2.07	0.05
27.50	5.15	2.07	0.01
28.00	5.15	2.07	0.00
28.50	5.15	2.07	0.00
29.00	5.15	2.07	0.00
29.50	5.15	2.07	0.00
30.00	5.15	2.07	0.00
30.50	5.15	2.07	0.00
31.00	5.15	2.07	0.00
31.50	5.15	2.07	0.00
32.00	5.15	2.07	0.00
32.50	5.15	2.07	0.00
33.00	5.15	2.07	0.00
33.50	5.15	2.07	0.00
34.00	5.15	2.07	0.00
34.50	5.15	2.07	0.00
35.00	5.15	2.07	0.00
35.50	5.15	2.07	0.00
36.00	5.15	2.07	0.00
36.50	5.15	2.07	0.00
37.00	5.15	2.07	0.00
37.50	5.15	2.07	0.00
38.00	5.15	2.07	0.00
38.50	5.15	2.07	0.00
39.00	5.15	2.07	0.00
39.50	5.15	2.07	0.00
40.00	5.15	2.07	0.00

Summary for Subcatchment S-4: Subcat S-4

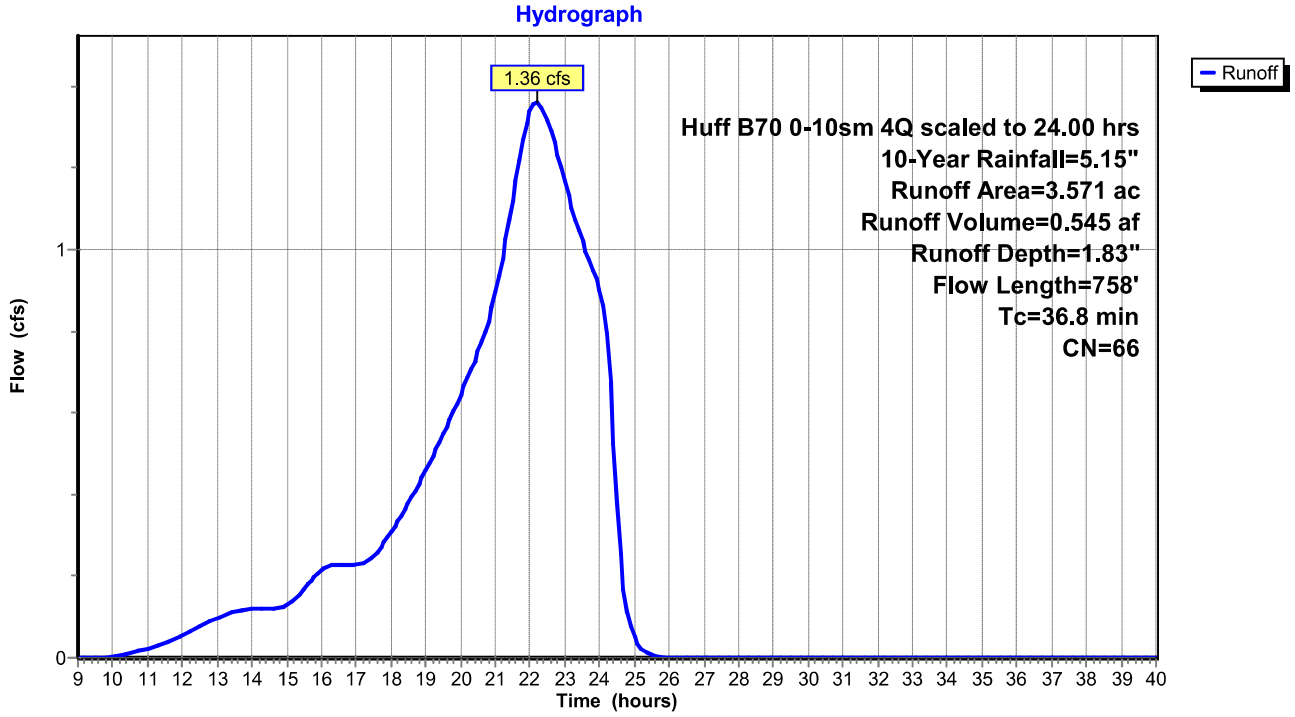
Runoff = 1.36 cfs @ 22.18 hrs, Volume= 0.545 af, Depth= 1.83"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 10-Year Rainfall=5.15"

Area (ac)	CN	Description
2.251	58	Meadow, non-grazed, HSG B
0.624	78	Meadow, non-grazed, HSG D
0.248	75	Row crops, SR + CR, Good, HSG B
0.448	85	Row crops, SR + CR, Good, HSG D
3.571	66	Weighted Average
3.571		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	100	0.0107	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
15.2	456	0.0051	0.50		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	202	0.0096	0.88		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
36.8	758	Total			

Subcatchment S-4: Subcat S-4



Hydrograph for Subcatchment S-4: Subcat S-4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	0.97	0.00	0.00
9.50	1.03	0.00	0.00
10.00	1.09	0.00	0.00
10.50	1.16	0.00	0.01
11.00	1.23	0.01	0.02
11.50	1.30	0.01	0.04
12.00	1.39	0.02	0.06
12.50	1.48	0.04	0.08
13.00	1.57	0.05	0.10
13.50	1.65	0.07	0.11
14.00	1.73	0.08	0.12
14.50	1.80	0.10	0.12
15.00	1.88	0.12	0.13
15.50	1.98	0.15	0.17
16.00	2.09	0.18	0.22
16.50	2.19	0.21	0.23
17.00	2.28	0.24	0.23
17.50	2.38	0.28	0.25
18.00	2.51	0.33	0.31
18.50	2.65	0.39	0.38
19.00	2.81	0.46	0.46
19.50	2.99	0.54	0.55
20.00	3.19	0.64	0.64
20.50	3.41	0.75	0.75
21.00	3.66	0.89	0.90
21.50	3.96	1.06	1.12
22.00	4.28	1.26	**1.34**
22.50	4.55	1.43	**1.32**
23.00	4.78	1.58	1.17
23.50	4.98	1.71	1.02
24.00	**5.15**	**1.83**	0.90
24.50	5.15	1.83	0.38
25.00	5.15	1.83	0.05
25.50	5.15	1.83	0.01
26.00	5.15	1.83	0.00
26.50	5.15	1.83	0.00
27.00	5.15	1.83	0.00
27.50	5.15	1.83	0.00
28.00	5.15	1.83	0.00
28.50	5.15	1.83	0.00
29.00	5.15	1.83	0.00
29.50	5.15	1.83	0.00
30.00	5.15	1.83	0.00
30.50	5.15	1.83	0.00
31.00	5.15	1.83	0.00
31.50	5.15	1.83	0.00
32.00	5.15	1.83	0.00
32.50	5.15	1.83	0.00
33.00	5.15	1.83	0.00
33.50	5.15	1.83	0.00
34.00	5.15	1.83	0.00
34.50	5.15	1.83	0.00
35.00	5.15	1.83	0.00
35.50	5.15	1.83	0.00
36.00	5.15	1.83	0.00
36.50	5.15	1.83	0.00
37.00	5.15	1.83	0.00
37.50	5.15	1.83	0.00
38.00	5.15	1.83	0.00
38.50	5.15	1.83	0.00
39.00	5.15	1.83	0.00
39.50	5.15	1.83	0.00
40.00	5.15	1.83	0.00

Summary for Subcatchment S-5: Subcat S-5

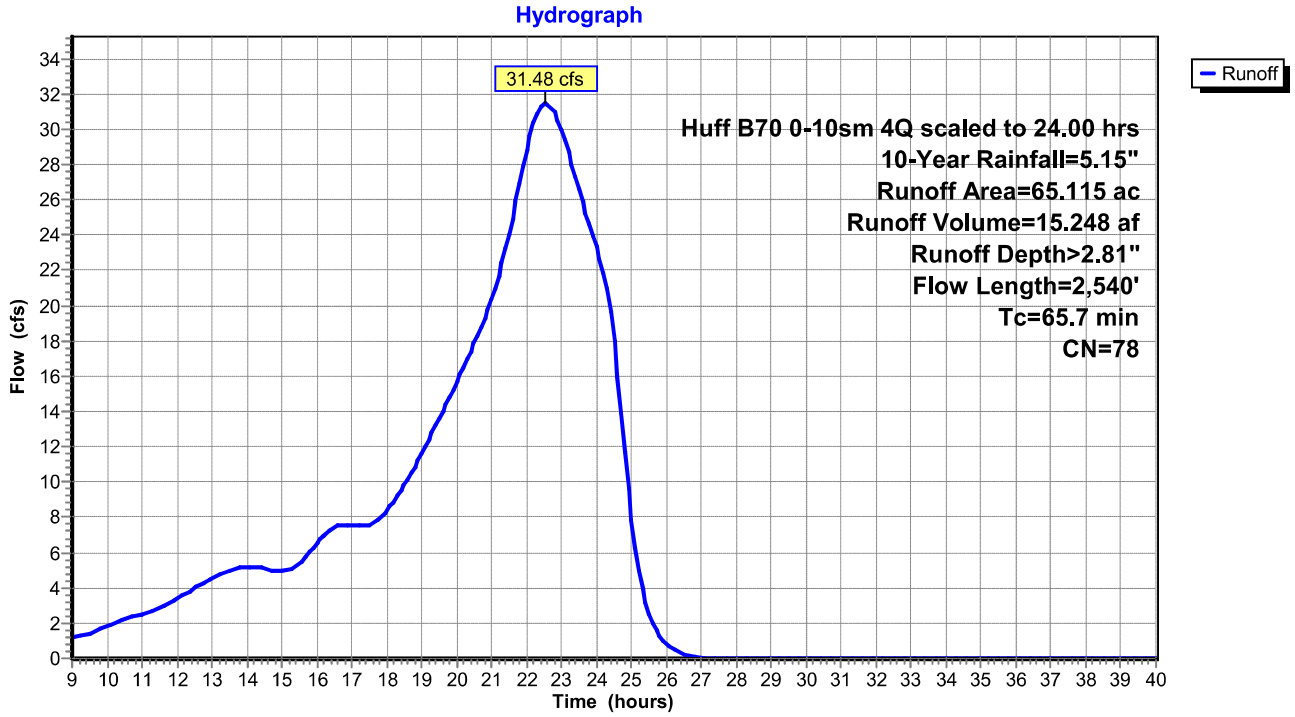
Runoff = 31.48 cfs @ 22.54 hrs, Volume= 15.248 af, Depth> 2.81"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 10-Year Rainfall=5.15"

Area (ac)	CN	Description
0.018	85	Gravel roads, HSG B
0.057	91	Gravel roads, HSG D
7.761	58	Meadow, non-grazed, HSG B
5.704	78	Meadow, non-grazed, HSG D
15.167	75	Row crops, SR + CR, Good, HSG B
4.335	82	Row crops, SR + CR, Good, HSG C
27.064	85	Row crops, SR + CR, Good, HSG D
4.661	73	Woods, Fair, HSG C
0.347	79	Woods, Fair, HSG D
65.115	78	Weighted Average
65.115		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	100	0.0238	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
21.5	1,066	0.0140	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
31.3	1,374	0.0066	0.73		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
65.7	2,540	Total			

Subcatchment S-5: Subcat S-5



Hydrograph for Subcatchment S-5: Subcat S-5

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	0.97	0.05	1.24
9.50	1.03	0.07	1.43
10.00	1.09	0.08	1.81
10.50	1.16	0.10	2.22
11.00	1.23	0.13	2.53
11.50	1.30	0.15	2.85
12.00	1.39	0.19	3.34
12.50	1.48	0.22	3.99
13.00	1.57	0.26	4.57
13.50	1.65	0.30	4.98
14.00	1.73	0.34	5.20
14.50	1.80	0.38	5.09
15.00	1.88	0.42	4.91
15.50	1.98	0.47	5.39
16.00	2.09	0.53	6.53
16.50	2.19	0.59	7.45
17.00	2.28	0.65	7.57
17.50	2.38	0.71	7.55
18.00	2.51	0.79	8.35
18.50	2.65	0.89	9.82
19.00	2.81	1.00	11.61
19.50	2.99	1.12	13.56
20.00	3.19	1.27	15.66
20.50	3.41	1.43	17.85
21.00	3.66	1.62	20.35
21.50	3.96	1.86	24.07
22.00	4.28	2.11	28.78
22.50	4.55	2.34	**31.46**
23.00	4.78	2.53	29.97
23.50	4.98	2.70	26.63
24.00	**5.15**	**2.84**	23.34
24.50	5.15	2.84	17.95
25.00	5.15	2.84	7.84
25.50	5.15	2.84	2.52
26.00	5.15	2.84	0.80
26.50	5.15	2.84	0.24
27.00	5.15	2.84	0.06
27.50	5.15	2.84	0.00
28.00	5.15	2.84	0.00
28.50	5.15	2.84	0.00
29.00	5.15	2.84	0.00
29.50	5.15	2.84	0.00
30.00	5.15	2.84	0.00
30.50	5.15	2.84	0.00
31.00	5.15	2.84	0.00
31.50	5.15	2.84	0.00
32.00	5.15	2.84	0.00
32.50	5.15	2.84	0.00
33.00	5.15	2.84	0.00
33.50	5.15	2.84	0.00
34.00	5.15	2.84	0.00
34.50	5.15	2.84	0.00
35.00	5.15	2.84	0.00
35.50	5.15	2.84	0.00
36.00	5.15	2.84	0.00
36.50	5.15	2.84	0.00
37.00	5.15	2.84	0.00
37.50	5.15	2.84	0.00
38.00	5.15	2.84	0.00
38.50	5.15	2.84	0.00
39.00	5.15	2.84	0.00
39.50	5.15	2.84	0.00
40.00	5.15	2.84	0.00

Time span=9.00-40.00 hrs, dt=0.10 hrs, 311 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S-1: Subcat S-1 Runoff Area=10.911 ac 0.00% Impervious Runoff Depth>5.67"
Flow Length=1,208' Tc=30.9 min CN=78 Runoff=10.47 cfs 5.159 af

Subcatchment S-2: Subcat S-2 Runoff Area=13.741 ac 2.52% Impervious Runoff Depth>5.27"
Flow Length=740' Tc=16.2 min CN=74 Runoff=12.94 cfs 6.033 af

Subcatchment S-3: Subcat S-3 Runoff Area=15.357 ac 0.00% Impervious Runoff Depth>4.79"
Flow Length=1,065' Tc=77.7 min CN=69 Runoff=12.29 cfs 6.124 af

Subcatchment S-4: Subcat S-4 Runoff Area=3.571 ac 0.00% Impervious Runoff Depth>4.44"
Flow Length=758' Tc=36.8 min CN=66 Runoff=2.92 cfs 1.321 af

Subcatchment S-5: Subcat S-5 Runoff Area=65.115 ac 0.00% Impervious Runoff Depth>5.71"
Flow Length=2,540' Tc=65.7 min CN=78 Runoff=59.14 cfs 30.998 af

Total Runoff Area = 108.695 ac Runoff Volume = 49.634 af Average Runoff Depth = 5.48"
99.68% Pervious = 108.349 ac 0.32% Impervious = 0.346 ac

Summary for Subcatchment S-1: Subcat S-1

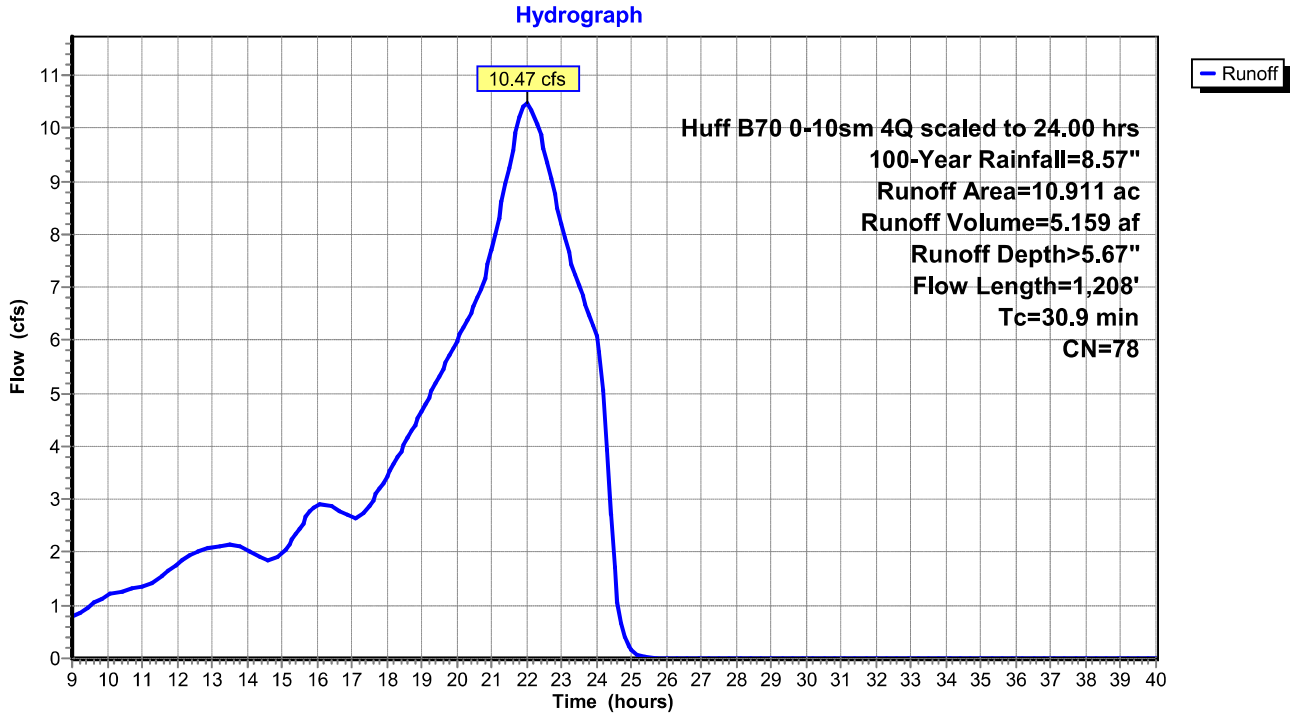
Runoff = 10.47 cfs @ 22.01 hrs, Volume= 5.159 af, Depth> 5.67"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 100-Year Rainfall=8.57"

Area (ac)	CN	Description
0.026	61	>75% Grass cover, Good, HSG B
0.078	85	Gravel roads, HSG B
0.038	91	Gravel roads, HSG D
0.123	58	Meadow, non-grazed, HSG B
0.037	78	Meadow, non-grazed, HSG D
6.347	75	Row crops, SR + CR, Good, HSG B
1.730	82	Row crops, SR + CR, Good, HSG C
2.531	85	Row crops, SR + CR, Good, HSG D
10.911	78	Weighted Average
10.911		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0217	0.16		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.40"
2.5	186	0.0189	1.24		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.7	63	0.0304	1.57		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
12.5	598	0.0078	0.79		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
0.1	12	0.0117	1.74		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.9	249	0.0088	0.84		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
30.9	1,208	Total			

Subcatchment S-1: Subcat S-1



Hydrograph for Subcatchment S-1: Subcat S-1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	1.61	0.28	0.80
9.50	1.71	0.33	0.99
10.00	1.82	0.39	1.18
10.50	1.93	0.45	1.28
11.00	2.04	0.51	1.35
11.50	2.17	0.58	1.52
12.00	2.31	0.67	1.77
12.50	2.46	0.76	2.00
13.00	2.61	0.86	2.10
13.50	2.75	0.95	2.16
14.00	2.88	1.05	2.05
14.50	3.00	1.13	1.87
15.00	3.13	1.22	1.97
15.50	3.29	1.34	2.45
16.00	3.47	1.48	2.89
16.50	3.64	1.60	2.84
17.00	3.79	1.72	2.65
17.50	3.97	1.86	2.88
18.00	4.17	2.03	3.43
18.50	4.41	2.22	4.04
19.00	4.68	2.44	4.66
19.50	4.98	2.69	5.31
20.00	5.31	2.98	5.97
20.50	5.67	3.29	6.64
21.00	6.09	3.66	7.71
21.50	6.60	4.11	9.26
22.00	7.12	4.59	**10.47**
22.50	7.58	5.00	9.61
23.00	7.96	5.35	8.19
23.50	8.29	5.66	7.04
24.00	**8.57**	**5.92**	6.09
24.50	8.57	5.92	1.71
25.00	8.57	5.92	0.15
25.50	8.57	5.92	0.01
26.00	8.57	5.92	0.00
26.50	8.57	5.92	0.00
27.00	8.57	5.92	0.00
27.50	8.57	5.92	0.00
28.00	8.57	5.92	0.00
28.50	8.57	5.92	0.00
29.00	8.57	5.92	0.00
29.50	8.57	5.92	0.00
30.00	8.57	5.92	0.00
30.50	8.57	5.92	0.00
31.00	8.57	5.92	0.00
31.50	8.57	5.92	0.00
32.00	8.57	5.92	0.00
32.50	8.57	5.92	0.00
33.00	8.57	5.92	0.00
33.50	8.57	5.92	0.00
34.00	8.57	5.92	0.00
34.50	8.57	5.92	0.00
35.00	8.57	5.92	0.00
35.50	8.57	5.92	0.00
36.00	8.57	5.92	0.00
36.50	8.57	5.92	0.00
37.00	8.57	5.92	0.00
37.50	8.57	5.92	0.00
38.00	8.57	5.92	0.00
38.50	8.57	5.92	0.00
39.00	8.57	5.92	0.00
39.50	8.57	5.92	0.00
40.00	8.57	5.92	0.00

Summary for Subcatchment S-2: Subcat S-2

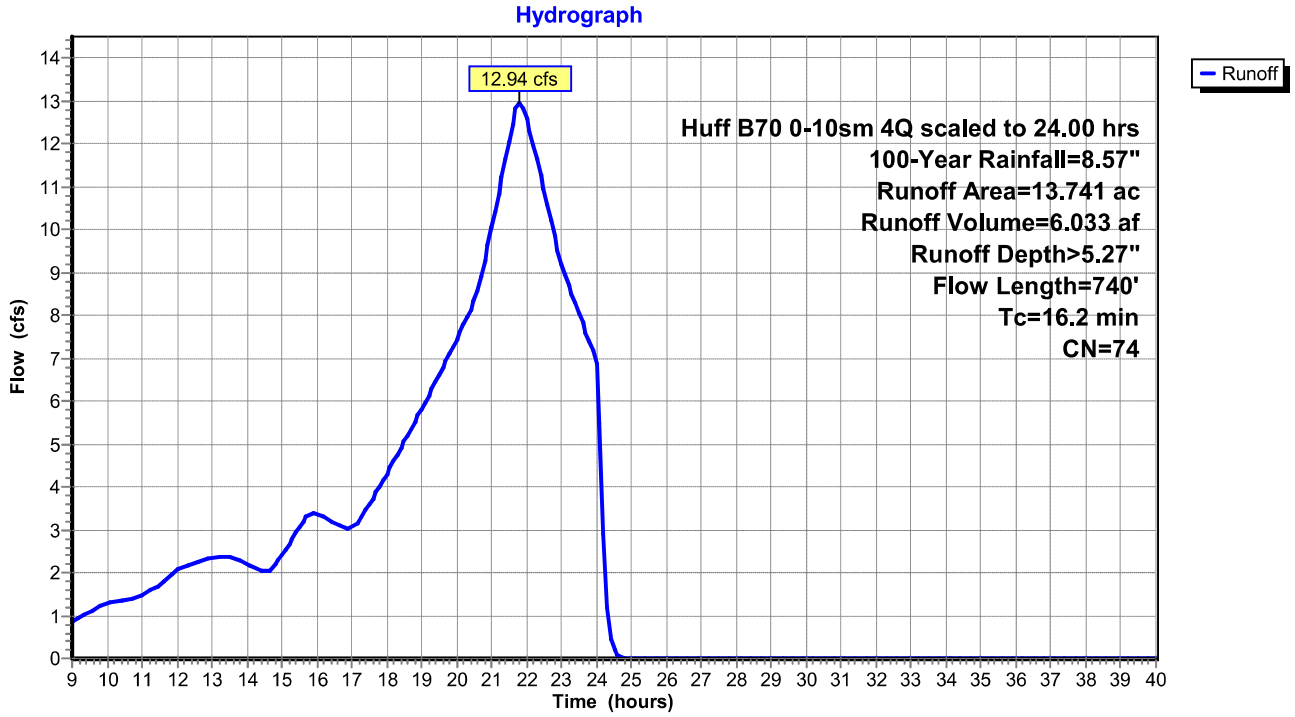
Runoff = 12.94 cfs @ 21.80 hrs, Volume= 6.033 af, Depth> 5.27"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 100-Year Rainfall=8.57"

Area (ac)	CN	Description
4.145	61	>75% Grass cover, Good, HSG B
2.099	80	>75% Grass cover, Good, HSG D
0.286	85	Gravel roads, HSG B
0.007	91	Gravel roads, HSG D
0.239	58	Meadow, non-grazed, HSG B
0.346	98	Roofs, HSG B
4.465	75	Row crops, SR + CR, Good, HSG B
0.124	82	Row crops, SR + CR, Good, HSG C
2.030	85	Row crops, SR + CR, Good, HSG D
13.741	74	Weighted Average
13.395		97.48% Pervious Area
0.346		2.52% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.0446	0.22		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.40"
8.6	640	0.0188	1.23		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
16.2	740	Total			

Subcatchment S-2: Subcat S-2



Hydrograph for Subcatchment S-2: Subcat S-2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	1.61	0.19	0.86
9.50	1.71	0.22	1.09
10.00	1.82	0.27	1.27
10.50	1.93	0.32	1.36
11.00	2.04	0.37	1.45
11.50	2.17	0.43	1.72
12.00	2.31	0.50	2.04
12.50	2.46	0.58	2.23
13.00	2.61	0.67	2.34
13.50	2.75	0.75	2.37
14.00	2.88	0.83	2.20
14.50	3.00	0.91	2.00
15.00	3.13	0.99	2.42
15.50	3.29	1.10	3.05
16.00	3.47	1.22	3.36
16.50	3.64	1.34	3.16
17.00	3.79	1.45	3.00
17.50	3.97	1.57	3.60
18.00	4.17	1.73	4.30
18.50	4.41	1.90	5.04
19.00	4.68	2.11	5.82
19.50	4.98	2.35	6.62
20.00	5.31	2.61	7.44
20.50	5.67	2.91	8.31
21.00	6.09	3.26	10.03
21.50	6.60	3.69	**12.04**
22.00	7.12	4.15	**12.58**
22.50	7.58	4.55	10.92
23.00	7.96	4.89	9.20
23.50	8.29	5.18	8.05
24.00	**8.57**	**5.44**	6.86
24.50	8.57	5.44	0.18
25.00	8.57	5.44	0.00
25.50	8.57	5.44	0.00
26.00	8.57	5.44	0.00
26.50	8.57	5.44	0.00
27.00	8.57	5.44	0.00
27.50	8.57	5.44	0.00
28.00	8.57	5.44	0.00
28.50	8.57	5.44	0.00
29.00	8.57	5.44	0.00
29.50	8.57	5.44	0.00
30.00	8.57	5.44	0.00
30.50	8.57	5.44	0.00
31.00	8.57	5.44	0.00
31.50	8.57	5.44	0.00
32.00	8.57	5.44	0.00
32.50	8.57	5.44	0.00
33.00	8.57	5.44	0.00
33.50	8.57	5.44	0.00
34.00	8.57	5.44	0.00
34.50	8.57	5.44	0.00
35.00	8.57	5.44	0.00
35.50	8.57	5.44	0.00
36.00	8.57	5.44	0.00
36.50	8.57	5.44	0.00
37.00	8.57	5.44	0.00
37.50	8.57	5.44	0.00
38.00	8.57	5.44	0.00
38.50	8.57	5.44	0.00
39.00	8.57	5.44	0.00
39.50	8.57	5.44	0.00
40.00	8.57	5.44	0.00

Summary for Subcatchment S-3: Subcat S-3

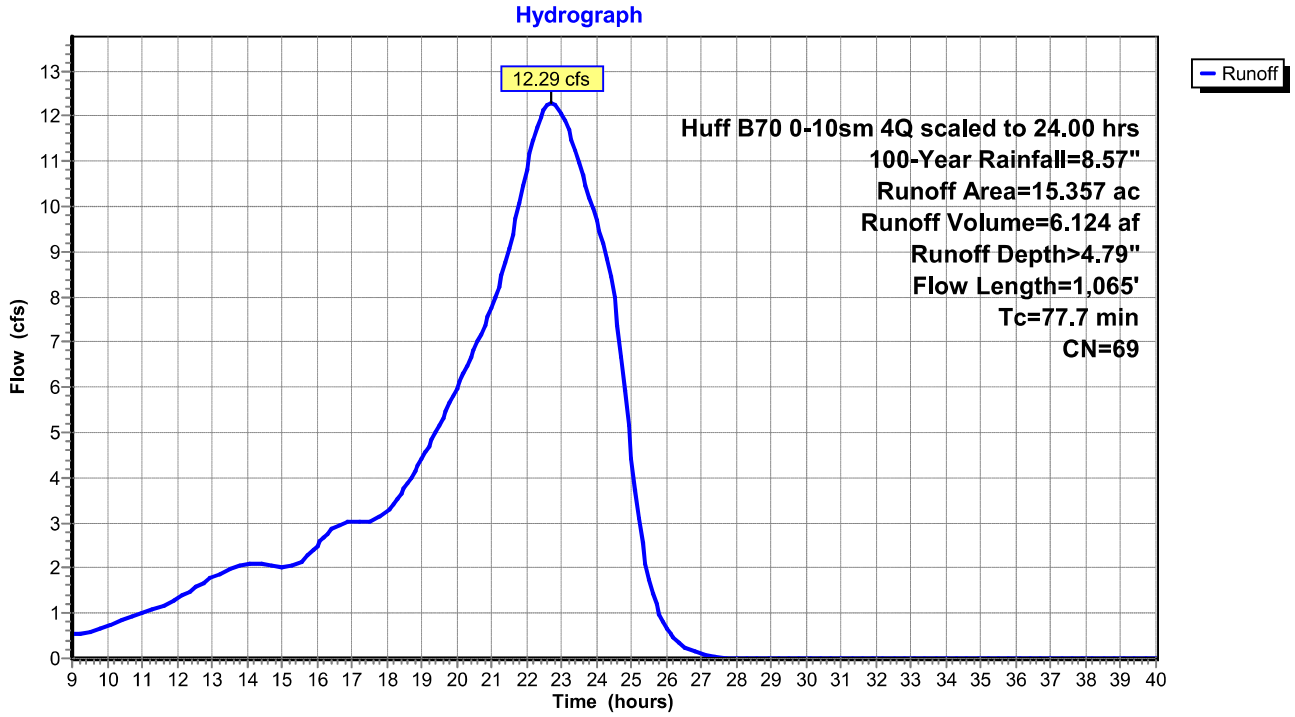
Runoff = 12.29 cfs @ 22.72 hrs, Volume= 6.124 af, Depth> 4.79"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 100-Year Rainfall=8.57"

Area (ac)	CN	Description
0.226	85	Gravel roads, HSG B
0.078	91	Gravel roads, HSG D
6.333	58	Meadow, non-grazed, HSG B
3.808	78	Meadow, non-grazed, HSG D
4.337	75	Row crops, SR + CR, Good, HSG B
0.245	82	Row crops, SR + CR, Good, HSG C
0.329	85	Row crops, SR + CR, Good, HSG D
15.357	69	Weighted Average
15.357		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.0723	0.27		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 3.40"
1.6	174	0.0430	1.87		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
30.1	179	0.0002	0.10		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	12	0.0180	2.16		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
39.6	600	0.0013	0.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
77.7	1,065	Total			

Subcatchment S-3: Subcat S-3



Hydrograph for Subcatchment S-3: Subcat S-3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	1.61	0.10	0.53
9.50	1.71	0.12	0.59
10.00	1.82	0.16	0.72
10.50	1.93	0.19	0.88
11.00	2.04	0.23	1.01
11.50	2.17	0.28	1.14
12.00	2.31	0.34	1.31
12.50	2.46	0.40	1.56
13.00	2.61	0.47	1.80
13.50	2.75	0.54	1.98
14.00	2.88	0.61	2.09
14.50	3.00	0.67	2.09
15.00	3.13	0.74	2.02
15.50	3.29	0.83	2.12
16.00	3.47	0.94	2.50
16.50	3.64	1.04	2.89
17.00	3.79	1.13	3.03
17.50	3.97	1.25	3.03
18.00	4.17	1.38	3.25
18.50	4.41	1.54	3.76
19.00	4.68	1.73	4.42
19.50	4.98	1.94	5.17
20.00	5.31	2.18	5.97
20.50	5.67	2.46	6.82
21.00	6.09	2.79	7.76
21.50	6.60	3.19	9.07
22.00	7.12	3.62	10.82
22.50	7.58	3.99	**12.15**
23.00	7.96	4.32	**12.06**
23.50	8.29	4.60	10.98
24.00	**8.57**	**4.84**	9.71
24.50	8.57	4.84	7.98
25.00	8.57	4.84	4.43
25.50	8.57	4.84	1.74
26.00	8.57	4.84	0.67
26.50	8.57	4.84	0.25
27.00	8.57	4.84	0.09
27.50	8.57	4.84	0.03
28.00	8.57	4.84	0.00
28.50	8.57	4.84	0.00
29.00	8.57	4.84	0.00
29.50	8.57	4.84	0.00
30.00	8.57	4.84	0.00
30.50	8.57	4.84	0.00
31.00	8.57	4.84	0.00
31.50	8.57	4.84	0.00
32.00	8.57	4.84	0.00
32.50	8.57	4.84	0.00
33.00	8.57	4.84	0.00
33.50	8.57	4.84	0.00
34.00	8.57	4.84	0.00
34.50	8.57	4.84	0.00
35.00	8.57	4.84	0.00
35.50	8.57	4.84	0.00
36.00	8.57	4.84	0.00
36.50	8.57	4.84	0.00
37.00	8.57	4.84	0.00
37.50	8.57	4.84	0.00
38.00	8.57	4.84	0.00
38.50	8.57	4.84	0.00
39.00	8.57	4.84	0.00
39.50	8.57	4.84	0.00
40.00	8.57	4.84	0.00

Summary for Subcatchment S-4: Subcat S-4

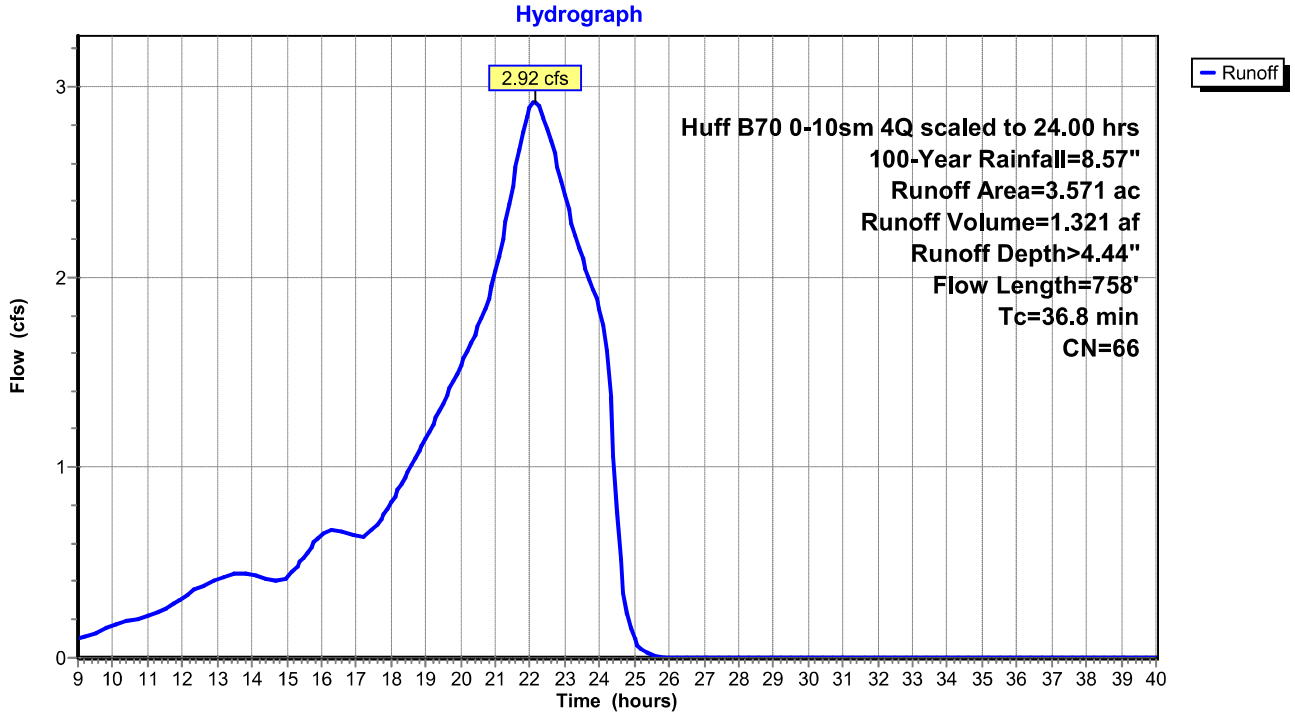
Runoff = 2.92 cfs @ 22.13 hrs, Volume= 1.321 af, Depth> 4.44"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 100-Year Rainfall=8.57"

Area (ac)	CN	Description
2.251	58	Meadow, non-grazed, HSG B
0.624	78	Meadow, non-grazed, HSG D
0.248	75	Row crops, SR + CR, Good, HSG B
0.448	85	Row crops, SR + CR, Good, HSG D
3.571	66	Weighted Average
3.571		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.8	100	0.0107	0.09		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
15.2	456	0.0051	0.50		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.8	202	0.0096	0.88		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
36.8	758	Total			

Subcatchment S-4: Subcat S-4



Hydrograph for Subcatchment S-4: Subcat S-4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	1.61	0.06	0.10
9.50	1.71	0.08	0.13
10.00	1.82	0.11	0.17
10.50	1.93	0.13	0.20
11.00	2.04	0.17	0.22
11.50	2.17	0.21	0.26
12.00	2.31	0.25	0.31
12.50	2.46	0.31	0.37
13.00	2.61	0.37	0.41
13.50	2.75	0.43	0.44
14.00	2.88	0.49	0.43
14.50	3.00	0.54	0.41
15.00	3.13	0.61	0.42
15.50	3.29	0.69	0.53
16.00	3.47	0.79	0.65
16.50	3.64	0.88	0.66
17.00	3.79	0.96	0.63
17.50	3.97	1.07	0.68
18.00	4.17	1.19	0.82
18.50	4.41	1.34	0.98
19.00	4.68	1.51	1.15
19.50	4.98	1.71	1.34
20.00	5.31	1.94	1.53
20.50	5.67	2.20	1.74
21.00	6.09	2.51	2.03
21.50	6.60	2.89	2.47
22.00	7.12	3.30	**2.89**
22.50	7.58	3.67	**2.78**
23.00	7.96	3.97	2.43
23.50	8.29	4.24	2.10
24.00	**8.57**	**4.48**	1.83
24.50	8.57	4.48	0.76
25.00	8.57	4.48	0.10
25.50	8.57	4.48	0.01
26.00	8.57	4.48	0.00
26.50	8.57	4.48	0.00
27.00	8.57	4.48	0.00
27.50	8.57	4.48	0.00
28.00	8.57	4.48	0.00
28.50	8.57	4.48	0.00
29.00	8.57	4.48	0.00
29.50	8.57	4.48	0.00
30.00	8.57	4.48	0.00
30.50	8.57	4.48	0.00
31.00	8.57	4.48	0.00
31.50	8.57	4.48	0.00
32.00	8.57	4.48	0.00
32.50	8.57	4.48	0.00
33.00	8.57	4.48	0.00
33.50	8.57	4.48	0.00
34.00	8.57	4.48	0.00
34.50	8.57	4.48	0.00
35.00	8.57	4.48	0.00
35.50	8.57	4.48	0.00
36.00	8.57	4.48	0.00
36.50	8.57	4.48	0.00
37.00	8.57	4.48	0.00
37.50	8.57	4.48	0.00
38.00	8.57	4.48	0.00
38.50	8.57	4.48	0.00
39.00	8.57	4.48	0.00
39.50	8.57	4.48	0.00
40.00	8.57	4.48	0.00

Summary for Subcatchment S-5: Subcat S-5

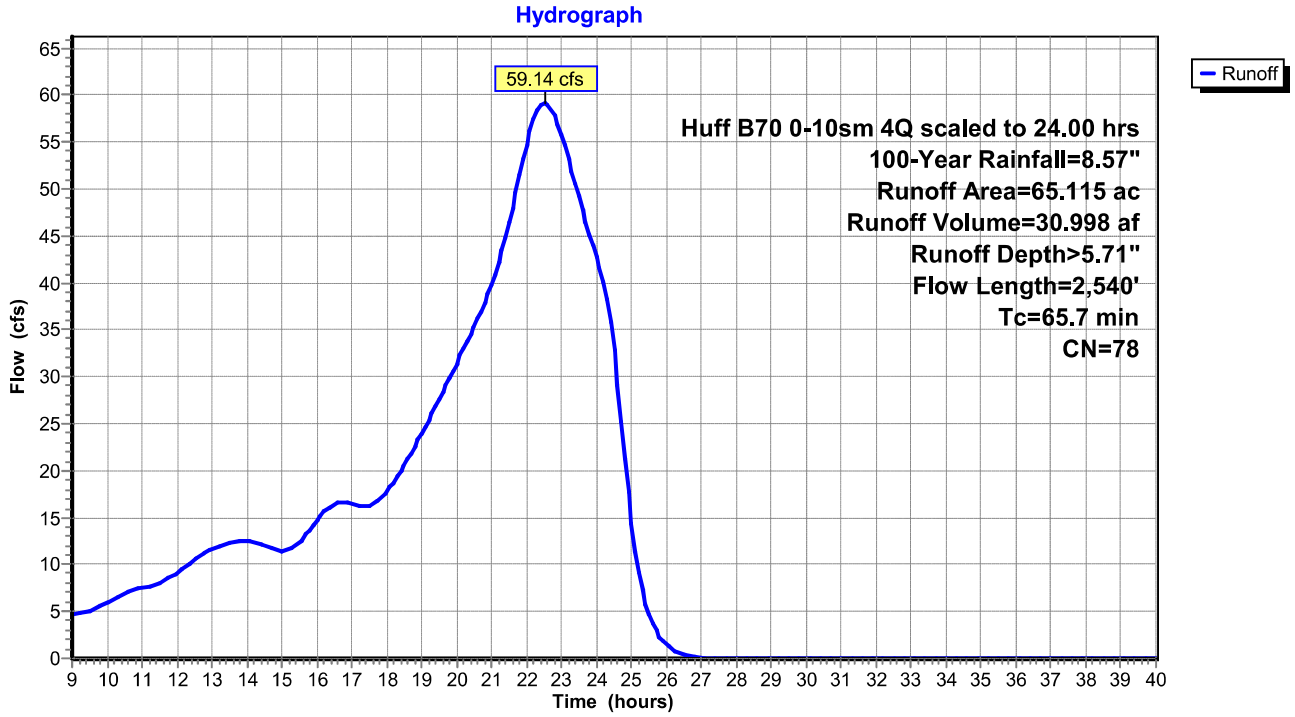
Runoff = 59.14 cfs @ 22.51 hrs, Volume= 30.998 af, Depth> 5.71"
Routed to nonexistent node 2L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 9.00-40.00 hrs, dt= 0.10 hrs
Huff B70 0-10sm 4Q scaled to 24.00 hrs 100-Year Rainfall=8.57"

Area (ac)	CN	Description
0.018	85	Gravel roads, HSG B
0.057	91	Gravel roads, HSG D
7.761	58	Meadow, non-grazed, HSG B
5.704	78	Meadow, non-grazed, HSG D
15.167	75	Row crops, SR + CR, Good, HSG B
4.335	82	Row crops, SR + CR, Good, HSG C
27.064	85	Row crops, SR + CR, Good, HSG D
4.661	73	Woods, Fair, HSG C
0.347	79	Woods, Fair, HSG D
65.115	78	Weighted Average
65.115		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	100	0.0238	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.40"
21.5	1,066	0.0140	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
31.3	1,374	0.0066	0.73		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
65.7	2,540	Total			

Subcatchment S-5: Subcat S-5



Hydrograph for Subcatchment S-5: Subcat S-5

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
9.00	1.61	0.28	4.72
9.50	1.71	0.33	5.03
10.00	1.82	0.39	5.94
10.50	1.93	0.45	6.89
11.00	2.04	0.51	7.51
11.50	2.17	0.58	8.09
12.00	2.31	0.67	9.14
12.50	2.46	0.76	10.52
13.00	2.61	0.86	11.67
13.50	2.75	0.95	12.36
14.00	2.88	1.05	12.59
14.50	3.00	1.13	12.08
15.00	3.13	1.22	11.43
15.50	3.29	1.34	12.33
16.00	3.47	1.48	14.67
16.50	3.64	1.60	16.46
17.00	3.79	1.72	16.49
17.50	3.97	1.86	16.22
18.00	4.17	2.03	17.70
18.50	4.41	2.22	20.54
19.00	4.68	2.44	23.95
19.50	4.98	2.69	27.59
20.00	5.31	2.98	31.42
20.50	5.67	3.29	35.35
21.00	6.09	3.66	39.75
21.50	6.60	4.11	46.39
22.00	7.12	4.59	54.74
22.50	7.58	5.00	**59.14**
23.00	7.96	5.35	55.78
23.50	8.29	5.66	49.16
24.00	**8.57**	**5.92**	42.79
24.50	8.57	5.92	32.75
25.00	8.57	5.92	14.30
25.50	8.57	5.92	4.60
26.00	8.57	5.92	1.46
26.50	8.57	5.92	0.44
27.00	8.57	5.92	0.11
27.50	8.57	5.92	0.01
28.00	8.57	5.92	0.00
28.50	8.57	5.92	0.00
29.00	8.57	5.92	0.00
29.50	8.57	5.92	0.00
30.00	8.57	5.92	0.00
30.50	8.57	5.92	0.00
31.00	8.57	5.92	0.00
31.50	8.57	5.92	0.00
32.00	8.57	5.92	0.00
32.50	8.57	5.92	0.00
33.00	8.57	5.92	0.00
33.50	8.57	5.92	0.00
34.00	8.57	5.92	0.00
34.50	8.57	5.92	0.00
35.00	8.57	5.92	0.00
35.50	8.57	5.92	0.00
36.00	8.57	5.92	0.00
36.50	8.57	5.92	0.00
37.00	8.57	5.92	0.00
37.50	8.57	5.92	0.00
38.00	8.57	5.92	0.00
38.50	8.57	5.92	0.00
39.00	8.57	5.92	0.00
39.50	8.57	5.92	0.00
40.00	8.57	5.92	0.00

TABLE OF CONTENTS

Attachment 4
BMP Sizing Calculations

999 Fourier Drive, Suite 101, Madison, WI 53717 • www.TRCcompanies.com

PROJECT NAME / LOCATION: Highway 20 Solar		
SUBJECT: BMP Volume Reduction Calculations		
PREPARED BY: C. Zumm	DATE: 6/15/2023	PROJECT NO.
CHECKED BY: A. Rowley	DATE: 6/15/2023	50015.0000.0005

BMP Sizing

Purpose: This calculation determines the required area of Permanent Vegetation that must be implemented to meet volume reduction requirements.

Methodology: The TR-55 Method was determined to be appropriate for calculating runoff volumes. The curve number (CN) is the primary variable for calculation of runoff volumes. The Kane County Stormwater Management Ordinance requires volume reduction of 1-inch over the proposed impervious area. To be conservative, these calculations use the 2-year, 24-hour storm value of 3.34 inches over the impervious area as the standard for volume reduction.

Curve numbers are representative of existing and proposed land covers. Existing and proposed covers on-site include row crops, meadow, and gravel roads.

Variables: Q = total runoff (in), P = rainfall (in), S = potential maximum retention after runoff begins (in), I_a = initial abstraction (in)

RUNOFF VOLUME COMPUTATION			
TR-55			
EXISTING SITE INFO			
	CN=	75	(Row crops, SR+CR, Good)
	2-year, 24-hour P=	3.34	in
S=(1000/CN)-10			
	S=	3.33	
INITIAL ABSTRACTION			
	I_a = 0.2*S =	0.67	in
RUNOFF			
$Q = (P-I_a)^2 / (P-I_a+S)$			
	Q=	1.19	in

RUNOFF VOLUME COMPUTATION			
TR-55			
PROPOSED SITE INFO			
	CN=	58	(Meadow, non-grazed)
	2-year, 24-hour P=	3.34	in
S=(1000/CN)-10			
	S=	7.24	
INITIAL ABSTRACTION			
	I_a=	1.45	in
RUNOFF			
$Q = (P-I_a)^2 / (P-I_a+S)$			
	Q=	0.39	in

REQUIRED VOLUME REDUCTION COMPUTATION			
	Proposed Impevious Area=	21812	sf
	24 hr P=	1.00	in
RUNOFF VOLUME (NO ABSTRACTIONS)			
V=A*P			
	V=	1817.67	cf

ACTUAL VOLUME REDUCTION COMPUTATION			
$\Delta Q = Q_{existing} - Q_{proposed}$			
	$Q_{existing} - Q_{proposed}$ =	0.80	in
	Proposed BMP AREA = A =	30000	sf
Proposed Volume Reduction			
V=Q*A			
	V=	1995	cf

Results: The proposed BMP volume reduction requirements will be met by adding a minimum of 30,000 square feet (approximately 0.69 acres) of permanent vegetation.

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Chicago, IL 60606

T 630.370.0017
TRCcompanies.com

Decommissioning Plan

HIGHWAY 20 SOLAR PROJECT
4.99 MW (AC) SOLAR FACILITY
DECOMMISSIONING PLAN

Highway 20 Solar

Kane County, Illinois 60140

Prepared For:

RENEWABLE PROPERTIES

RPIL Solar 5, LLC
879 Sanchez Street
San Francisco, CA 9411

Prepared By:

TRC
230 West Monroe Street
Suite 1840
Chicago, IL 60606

P/N: 500015.0000.0051, P5

June 2023

Table of Contents

PRELIMINARY DECOMMISSIONING PLAN AND COST ESTIMATE
RPIL Solar 5, LLC
Highway 20 Solar

BACKGROUND

On behalf of RPIL Solar 5 LLC TRC has prepared this decommissioning plan and cost estimate (the Plan) for the Highway 20 Solar facility (Facility), a photovoltaic (PV) facility, Solar Energy System (SES) or Solar Farm located on Highway 20 in Kane County, Illinois. The project site is located east of Illinois Highway 47, and north of Highway 20. The Facility will consist of a 4.99-megawatt (MW) alternating current (AC) solar electrical array covering a total area of approximately 25.93 acres on an approximately 115.73-acre parcel of agricultural land. The Facility will include ground-mounted, solar arrays, perimeter security fencing, concrete pads for transformers and switch gear, and a gravel access road. The Facility will produce power using PV panels, mounted on ground support galvanized piles.

The purpose of this Plan is to provide the general scope of decommissioning work as well as a construction cost estimate for a decommissioning financial assurance mechanism of the Facility as described herein and subject to Kane County Code, Chapter 25, Zoning Ordinance Chapter 25-5-4-9 regarding Commercial Solar Energy Entities (Ordinance), as well as the Agricultural Impact Mitigation Agreement (AIMA). This document outlines the decommissioning activities required to remove above-ground structures, debris, underground foundations, and cables and restore soil and vegetation after termination of operations of the SES. This decommissioning plan and cost estimate has been prepared in accordance with the Kane County Ordinance, as well as AIMA, for approval of Highway 20 Solar.

The attached decommissioning cost estimate was prepared based on estimated quantities of site features, panels, racking, and electrical equipment from the preliminary plan set and experience in the design and construction of energy facilities and are subject to final engineering. Costs generally include contractor fees, sitework removal & restoration, racking & module removal, power conditioning equipment removal, and corresponding salvage, which reflect the overall decommissioning process. The reported costs include labor, materials, taxes, insurance, transport costs, disposal fees, equipment rental, contractor's overhead, and contractor's profit; the labor costs have been estimated using regional labor rates and labor efficiencies from the Bureau of Labor statistics along with previous decommission plan estimates completed for other similar projects.

Owner/Operator

RPIL Solar 5, LLC will be responsible for the ensuring completion of final civil and electrical engineering plans. TRC is the consultant responsible for the preparation of the independent decommissioning plan.

Facility Description

The Facility will consist of a 4.99MW AC solar electrical array covering a total area of approximately 25.93 acres on an approximately 115.73-acre parcel of agricultural land. The Facility will be secured within a security fence surrounding the solar panels and electrical equipment. The site

can be accessed via lock-controlled gates located on the proposed gravel access road. The Facility will include the following site features:

- Total site development area with solar panels, associated electrical equipment, racking, and a gravel access road of approximately 24.56 acres; (fenced area with approximately 12,974 solar panels);
- Two (2) concrete electrical pads with transformers, and switchgears;
- 12-foot-wide gravel access road and turnaround;
- Seven (7)-foot Fixed-Knot, Woven Wire Agricultural fencing (encasing entire project area);
- Above-ground electrical wire conduits; and
- Underground electrical wire conduits unless authorized otherwise by AIMA guidelines.

DECOMMISSIONING ACTIVITIES

The Facility will be decommissioned by completing the following major steps:

1. Installation of soil erosion and sediment controls
2. Removal of modules, racking, and piles;
3. Removal of cabling, trays, and electrical equipment;
4. Removal of concrete pads, foundations, fence, and debris;
5. Removal of the gravel access road (if required by the landowner);
6. Site stabilization by placing soil and reseeding; and
7. Removal and Disposal or Recycling of materials
8. Demobilization and removal of soil erosion and sediment controls following final inspection and approval.

The procedures for decommissioning of the project will involve restoring soils and vegetation to agricultural productivity or pre-existing conditions.

Schedule

The decommissioning process is estimated to take approximately two (2) months but may change depending on weather and soil moisture conditions and is intended to occur outside of the winter season.

Decommissioning During Construction (Abandonment of Project)

If construction or operation activities cease prior to facility completion, with no expectation to restart for more than twelve (12) months, the project would be decommissioned as follows in this plan. Any installed components will be removed and managed, as per the following sections, and the site will be restored to a vegetated condition.

Decommissioning After Ceasing Operation

Properly maintained PV panels have an expected lifespan of thirty-five (35) years. At this time or if for six (6) consecutive months, the facility owner has failed to pay the landowner amounts owed in accordance with an underlying agreement, it shall be considered a “cessation or abandonment of operations”. Installed components will be removed and reused/recycled where possible, and the site restored in accordance with the activities discussed below. The proposed date of discontinued operations and plans for removal shall be provided by the owner or operator to the County by certified mail.

Should the project be considered abandoned, the County will have the right to access the property, pursuant to reasonable notice, in order to affect or complete decommissioning.

Offsite Impacts During Decommissioning

As with the project’s construction, noise levels during the decommission work will increase. Proper steps will be followed to minimize the disturbance, such as using proper equipment for removing the support piles. Work hours are assumed to be eight (8) hours a day, during daylight. Also, as with the project’s construction, road traffic in the area may increase temporarily due to crews and equipment movements. Further details of the on-site restoration are included in subsequent sections.

Dismantlement and Demolition

Decommissioning shall include removal of all solar electric systems, buildings, ballasts, cabling, electrical components, road(s), foundations, pilings, and any other associated facilities. This will include removal of all items identified in the decommissioning activities above.

A significant amount of the components of the PV system at the Facility will include recyclable or re-saleable components, including copper, aluminum, galvanized steel, and panels. Due to their resale monetary value, these components will be dismantled and disassembled rather than being demolished and disposed of.

Following coordination with the local utility company regarding timing and required procedures for disconnecting the Facility from the utility, all electrical connections to the system will be disconnected and all connections will be tested locally to confirm that no electric current is running through them before proceeding. All electrical connections to the panels will be disconnected at the panel and then removed from their framework by cutting or dismantling the connections to the supports. Then panels, inverters, transformers, meters, fans, lighting fixtures, and other electrical structures will be removed. Disposal of these materials at a landfill will be governed by federal, state, and local laws, including the Code of Illinois Regulations governing waste disposal at local area landfills, which may be amended from time to time. Any materials deemed to be hazardous at the time of disposal will be handled and disposed according to applicable laws and regulations.

The PV mounting system framework will be dismantled and recycled. The galvanized support piles will be completely removed and recycled.

Finally, all associated structures will be demolished and removed from the site for recycling or disposal. This will include the site fence, gates, access road(s), equipment foundations, and underground cables, which will be removed or recycled.

Consultation with the landowner and the county will determine if the access roads should be left in place for their continued use. If the access road is deemed unnecessary, the contractor will remove the access roads and all non-adaptable parts of the project to a minimum depth of 60" as required by the AIMA and restore this area with native soils and seeding. All concrete associated with the Facility on-site will be broken and removed in its entirety, and clean concrete will be crushed and disposed of or recycled off-site. Final stabilization thresholds on the entire site shall be met prior to approval of site decommissioning. Underground conduits and raceways are to be removed. Above ground lines and poles that are not owned by the utility will be removed, along with associated equipment (isolation switches, fuses, metering) and holes will be filled with clean topsoil. Temporary sanitary facilities will be provided on-site for the workers conducting the decommissioning of the Facility.

Erosion and sediment control measures are required during the decommissioning process. These measures include construction access, silt fence, concrete washout stations, and land stabilization. The owner/operator will restore the project location to a vegetated condition consistent with pre-construction conditions.

Disposal or Recycle

During the decommissioning phase, a variety of excess materials can be salvaged. A significant amount of the materials used in a solar facility are reusable, including copper, aluminum, galvanized steel, and the PV panels. Due to their resale monetary value, these components will be dismantled and disassembled rather than being demolished and disposed. Any remaining materials will be removed and disposed of off-site at an appropriate facility. The project general contractor will maximize recycling and reuse and will work with manufacturers, local subcontractors and waste firms to segregate material to be recycled, reused and/or disposed of properly. Hazardous materials as outlined in CFR Part 261 are not anticipated to be encountered as a result of decommissioning activity.

RPIL Solar 5 LLC or its successors, will be responsible for arranging the collection or recycling of fence, racking piles, PV panels, panel tracker equipment, AC and DC wiring, inverters, and miscellaneous equipment for salvage value. In the event that Kane County must take over decommissioning activity from RPIL Solar 5 LLC, the County will have the right to transfer applicable commercial solar energy facility materials to salvage firms.

Gravel may be reused as general fill on site with landowner approval. Remaining gravel, geotextile fabric, concrete, and debris need to be separated and transported off-site by truck to the appropriate facilities for recycling and disposal in accordance with federal, state, and local waste management regulations. A final site walkthrough with the appropriate local authorities will be conducted to verify removal of debris and/or trash generated within the site during the

decommissioning process and will include removal and proper disposal of any debris that may have been wind-blown to areas outside the immediate footprint of the facility being removed.

Removal of Landscape Materials and Site Stabilization:

The areas of the Facility that are disturbed (during decommissioning) will be subject to minor re-grading (no imported soil is anticipated), to establish a uniform slope and stabilization, including application of a selected grass seed mix to surfaces disturbed (estimated to be 50% of the site) during the decommissioning process. The seed mix is expected to be a blend of various fescue and/or rye grass seeds. The actual seed blend will depend on factors including availability and time of year that planting would occur.

It is expected that soil and vegetation will be restored to pre-existing conditions. Details will be discussed with the property owner, Kane County, and the Kane-DuPage Soil and Water Conservation District. Planting trees, shrubs, and other woodsy vegetation (re-forestation) or other beautification are not expected to be required and are not included in the costs. It is assumed that major site grading activities are not proposed as part of the project. Imported fill will be provided, if necessary, to restore to original conditions. Only minor grading is anticipated with regards to site restoration (from construction, demolition, and traffic damage) and access drives removal. All site stabilization activities will be completed in accordance with regulatory requirements and the approved Storm Water Pollution Prevention Plan (SWPPP)NPDES Construction General Permit and the Watershed Development Permit.

PERMITTING REQUIREMENTS FOR DECOMMISSIONING

Approvals are currently required prior to initiation of ground-disturbing activity. This cost estimate assumes the same approvals are required when decommissioning occurs in the future. The permitting requirements listed below will be reviewed and might be subject to revisions based on local, state, and federal regulations at the time of decommissioning.

National Pollutant Discharge Elimination System (NPDES) Construction General Permit

U.S. Environmental Protection Agency - Ground disturbance of greater than 1 acre requires preparation of a Storm Water Pollution Prevention Plan, including erosion and sedimentation controls.

Kane County Stormwater Management Permit

Kane County Stormwater Management Commission (SMC) - Ground disturbance of greater than 5,000 square feet of soil requires preparation of a SWPPP and permit application.

Building Permit

A building permit is required to construct the facility. A building permit must also be obtained for any construction, alteration, repair, demolition, or change to the use or occupancy of a building.

Permit Requirement Assumptions

No significant ground disturbance or grading associated with decommissioning, including temporary laydown areas, are required within areas subject to additional local, state, or federal permitting.

SOLAR DECOMMISSIONING ESTIMATE

The following items can be salvaged and recycled: fence material, racking piles, PV panels, miscellaneous tracker equipment, AC and DC wiring, combiner boxes, inverters, transformers, medium voltage equipment, electrical equipment posts, and customer owned utility poles.

The decommissioning cost estimate is based on 2023 Kane County prevailing labor rates equipment rates and credits for salvaging project material in 2023. The equipment rates have been estimated using publicly available data from the Federal Emergency Management Agency (FEMA) published Schedule of Equipment Rates, 2021. The salvage value rates have been estimated using publicly available data (e.g., http://www.scrapmonster.com), as well as industry provided actual salvage values and previous experience with similar projects.

The estimated costs utilize hourly and monthly rates listed below:

2023 Wages

- Labor at $48.15/hr;
- Operating engineer at $59.10/hr;
- Truck driver at $41.61hr;
- Electrician at $57.83/hr;
- Skid steer rental at $2,350.00/month;
- Excavator rental at $4,925.00/month; and
- Dump truck rental at $52.96/hr

2023 Salvage Values

- Steel (e.g., fence, racking, posts) at $0.15/lb.;
- PV panels at $20/panel;
- Electrical components (e.g., combiner boxes, inverters, transformer) at $0.28/lb.;
- DC wiring (copper) at $1.50/lb.; and
- AC wiring (copper and aluminum) at $1.31/lb.

The estimated cost of construction activities associated with decommissioning using current wages is $510,297. The material salvage value is $340,461 for a net decommissioning cost of $169,836. The detailed costs are attached.

The attached preliminary decommissioning cost estimate is based on the preliminary plans for permitting purposes dated May 4, 2023. Changes to the plans and construction details may affect the scope and costs of Facility decommissioning. The opinion of probable costs is based on experience in the design and construction of energy facilities and are subject to final engineering/construction.

If at any time in the future, the prevailing professionally accepted standards of economic feasibility of recycling and or environmental implications of hazardous waste changes to increase the costs associated with decommissioning, the cost estimate may need to be revised, and the bonds may need to be modified accordingly to cover said cost.

This opinion assumes a third-party contractor, experienced in the construction and decommissioning of photovoltaic facilities will lead the effort. The reported costs include labor materials, taxes, insurance, transport costs, equipment rental, contractor's overhead, and contractor's profit; the labor costs have been estimated using regional labor rates and labor efficiencies that have been published for the local area along with previous decommissioning plan estimates completed for other similar projects.

RPIL Solar 5, LLC, by its duly authorized representative's signature below, hereby acknowledges that it has reviewed this Decommissioning Plan, and approves of the same, and agrees to be bound by the terms and conditions contained therein. RPIL Solar 5, LLC also acknowledges that the terms of this Decommissioning Plan shall be binding upon themself as the applicant, as well as any of their successors-in-interest and assigns.

Authorized Representative: 

Print Name: Stephanie Loucas

Title: Chief Development Officer

Date: June 15, 2023

Highway 20 Solar

Decommissioning Cost Estimate

Preliminary Decommissioning Cost Estimate
RPIL Solar 5, LLC
Highway 20 Solar Facility

Task	Unit	Estimated Quantity	Cost per Unit 2023	Total Gross Cost 2023	Salvage Value 2023	Net Costs 2023
Engineering & Permitting	LS	1	$ 11,250.00	$ 11,250.00		$ 11,250.00
Mobilization	LS	1	$ 35,117.20	$ 35,117.20		$ 35,117.20
Silt Fence	LF	5,000	$ 2.90	$ 14,500.00		$ 14,500.00
Access Road Removal & Restoration	SF	16,980	$ 3.60	$ 61,128.00		$ 61,128.00
Equipment Pad & Restoration	EA	2	$ 900.00	$ 1,800.00		$ 1,800.00
Seed Disturbed Areas (50% disturbed ar	AC	14	$ 992.00	$ 13,888.00		$ 13,888.00
Fence Removal	LF	5,000	$ 3.00	$ 15,000.00	$ (3,720.00)	$ 11,280.00
Site Clean Up	AC	28	$ 270.00	$ 7,560.00		$ 7,560.00
Rack and Post Removal	EA	2,200	$ 90.00	$ 198,000.00	$ (82,500.00)	$ 115,500.00
Remove Panels	EA	12,974	$ 3.60	$ 46,706.40	$ (246,506.00)	$ (199,799.60)
AC Wiring-Direct Burial and Overhead	LF	17,100	$ 0.27	$ 4,647.20	$ (2,008.40)	$ 2,638.80
DC Wire Removal	LF	49,000	$ 0.50	$ 24,500.00	$ (2,940.00)	$ 21,560.00
Electrical Disconnect	EA	1	$ 240.00	$ 240.00		$ 240.00
Inverter	EA	40	$ 210.00	$ 8,400.00	$ (1,084.16)	$ 7,315.84
Transformer	EA	2	$ 500.00	$ 1,000.00	$ (1,702.40)	$ (702.40)
SUBTOTAL				**$ 443,736.80**	**$ (340,460.96)**	**$ 103,275.84**
Other Costs						
Contractor Profit	%	8%		$ 35,498.94		$ 35,498.94
Contractor Overhead & Management	%	5%		$ 22,186.84		$ 22,186.84
Contractor Insurance	%	2%		$ 8,874.74		$ 8,874.74
SUBTOTAL				**$ 66,560.52**		**$ 66,560.52**
DECOMMISSIONING TOTAL				**$ 510,297.32**		**$ 169,836.36**

**Material, equipment and labor cost estimated utilizing FEMA 2021 schedule of equipment rates, and the Kane County, IL Prevailing Labor rates.

Kane County Prevailing Wage Rates posted on 4/3/2023

						Overtime								
Trade Title	**Rg**	**Type**	**C**	**Base**	**Foreman**	**M-F**	**Sa**	**Su**	**Hol**	**H/W**	**Pension**	**Vac**	**Trng**	**Other Ins**
ASBESTOS ABT-GEN	All	ALL		47.40	48.40	1.5	1.5	2.0	2.0	15.11	17.15	0.00	0.90	
ASBESTOS ABT-MEC	All	BLD		39.60	42.77	1.5	1.5	2.0	2.0	14.77	13.59	0.00	0.86	
BOILERMAKER	All	BLD		53.66	58.48	2.0	2.0	2.0	2.0	6.97	23.69	0.00	2.67	
BRICK MASON	All	BLD		49.81	54.79	1.5	1.5	2.0	2.0	12.10	21.56	0.00	1.10	
CARPENTER	All	ALL		52.01	54.01	1.5	1.5	2.0	2.0	11.79	25.27	1.00	0.80	
CEMENT MASON	All	ALL		49.70	51.70	2.0	1.5	2.0	2.0	11.65	26.65	0.00	0.55	
CERAMIC TILE FINISHER	All	BLD		44.18	44.18	1.5	1.5	2.0	2.0	12.25	14.77	0.00	1.00	
CERAMIC TILE LAYER	All	BLD		51.44	55.44	1.5	1.5	2.0	2.0	12.25	18.48	0.00	1.08	
COMMUNICATION TECHNICIAN	N	BLD		44.56	46.96	1.5	1.5	2.0	2.0	14.08	17.14	0.00	0.89	
COMMUNICATION TECHNICIAN	S	BLD		43.08	45.88	1.5	1.5	2.0	2.0	17.30	15.06	0.00	1.51	
ELECTRIC PWR EQMT OP	All	ALL		47.56	64.89	1.5	1.5	2.0	2.0	7.00	13.32	0.00	1.19	1.43
ELECTRIC PWR GRNDMAN	All	ALL		36.53	64.89	1.5	1.5	2.0	2.0	7.00	10.23	0.00	0.92	1.10
ELECTRIC PWR LINEMAN	All	ALL		57.17	64.89	1.5	1.5	2.0	2.0	7.00	16.01	0.00	1.43	1.72
ELECTRIC PWR TRK DRV	All	ALL		37.86	64.89	1.5	1.5	2.0	2.0	7.00	10.61	0.00	0.95	1.14
ELECTRICIAN	N	ALL		53.43	57.83	1.5	2.0	2.0	2.0	15.95	20.51	0.00	1.60	
ELECTRICIAN	S	BLD		51.84	56.09	1.5	1.5	2.0	2.0	18.05	18.52	0.00	1.81	
ELEVATOR CONSTRUCTOR	All	BLD		62.47	70.28	2.0	2.0	2.0	2.0	16.03	20.21	5.00	0.65	
FENCE ERECTOR	All	ALL		48.83	52.74	2.0	2.0	2.0	2.0	13.31	25.25	0.00	1.28	
GLAZIER	All	BLD		48.75	50.25	1.5	2.0	2.0	2.0	15.19	24.43	0.00	1.70	
HEAT/FROST INSULATOR	All	BLD		52.80	55.97	1.5	1.5	2.0	2.0	14.77	16.76	0.00	0.86	
IRON WORKER	All	ALL		48.83	52.74	2.0	2.0	2.0	2.0	13.31	25.25	0.00	1.28	
LABORER	All	ALL		47.40	48.15	1.5	1.5	2.0	2.0	15.11	17.15	0.00	0.90	
LATHER	All	ALL		52.01	54.01	1.5	1.5	2.0	2.0	11.79	25.27	1.00	0.80	
MACHINIST	All	BLD		53.18	57.18	1.5	1.5	2.0	2.0	9.93	8.95	1.85	1.47	
MARBLE FINISHER	All	ALL		38.00	51.41	1.5	1.5	2.0	2.0	12.10	19.60	0.00	0.60	
MARBLE SETTER	All	BLD		48.96	53.86	1.5	1.5	2.0	2.0	12.10	21.03	0.00	0.78	
MATERIAL TESTER I	All	ALL		37.40		1.5	1.5	2.0	2.0	15.11	17.15	0.00	0.90	
MATERIALS TESTER II	All	ALL		42.40		1.5	1.5	2.0	2.0	15.11	17.15	0.00	0.90	
MILLWRIGHT	All	ALL		52.01	54.01	1.5	1.5	2.0	2.0	11.79	25.27	1.00	0.80	
OPERATING ENGINEER	All	BLD	1	55.10	59.10	2.0	2.0	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	BLD	2	53.80	59.10	2.0	2.0	2.0	2.0	22.15	19.30	2.00	2.55	

OPERATING ENGINEER	All	BLD	3	51.25	59.10	2.0	2.0	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	BLD	4	49.50	59.10	2.0	2.0	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	BLD	5	58.85	59.10	2.0	2.0	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	BLD	6	56.10	59.10	2.0	2.0	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	BLD	7	58.10	59.10	2.0	2.0	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	FLT		41.00	41.00	1.5	1.5	2.0	2.0	20.90	17.85	2.00	2.15	
OPERATING ENGINEER	All	HWY	1	53.30	57.30	1.5	1.5	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	HWY	2	52.75	57.30	1.5	1.5	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	HWY	3	50.70	57.30	1.5	1.5	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	HWY	4	49.30	57.30	1.5	1.5	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	HWY	5	48.10	57.30	1.5	1.5	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	HWY	6	56.30	57.30	1.5	1.5	2.0	2.0	22.15	19.30	2.00	2.55	
OPERATING ENGINEER	All	HWY	7	54.30	57.30	1.5	1.5	2.0	2.0	22.15	19.30	2.00	2.55	
ORNAMENTAL IRON WORKER	All	ALL		48.83	52.74	2.0	2.0	2.0	2.0	13.31	25.25	0.00	1.28	
PAINTER	All	ALL		50.30	52.30	1.5	1.5	1.5	2.0	19.73	4.15	0.00	1.55	
PAINTER - SIGNS	All	BLD		41.55	46.67	1.5	1.5	2.0	2.0	3.04	3.90	0.00	0.00	
PILEDRIVER	All	ALL		52.01	54.01	1.5	1.5	2.0	2.0	11.79	25.27	1.00	0.80	
PIPEFITTER	All	BLD		53.00	56.00	1.5	1.5	2.0	2.0	11.85	22.85	0.00	2.92	
PLASTERER	All	BLD		47.75	50.62	1.5	1.5	2.0	2.0	17.08	19.18	0.00	1.00	
PLUMBER	All	BLD		54.80	58.10	1.5	1.5	2.0	2.0	16.70	17.04	0.00	1.58	
ROOFER	All	BLD		48.00	53.00	1.5	1.5	2.0	2.0	11.83	15.26	0.00	0.99	
SHEETMETAL WORKER	All	BLD		53.33	56.00	1.5	1.5	2.0	2.0	11.85	19.43	0.00	1.59	2.54
SPRINKLER FITTER	All	BLD		54.55	57.30	1.5	1.5	2.0	2.0	14.20	18.70	0.00	0.75	
STEEL ERECTOR	All	ALL		48.83	52.74	2.0	2.0	2.0	2.0	13.31	25.25	0.00	1.28	
STONE MASON	All	BLD		49.81	54.79	1.5	1.5	2.0	2.0	12.10	21.56	0.00	1.10	
TERRAZZO FINISHER	All	BLD		45.57	45.57	1.5	1.5	2.0	2.0	12.25	17.14	0.00	1.03	
TERRAZZO MECHANIC	All	BLD		49.41	52.91	1.5	1.5	2.0	2.0	12.25	18.60	0.00	1.07	
TRAFFIC SAFETY WORKER I	All	HWY		39.30	40.90	1.5	1.5	2.0	2.0	9.65	9.10	0.00	0.10	
TRAFFIC SAFETY WORKER II	ALL	HWY		40.30	41.90	1.5	1.5	2.0	2.0	9.65	9.10	0.00	0.10	
TRUCK DRIVER	All	ALL	1	41.06	41.61	1.5	1.5	2.0	2.0	10.83	14.15	0.00	0.15	
TRUCK DRIVER	All	ALL	2	41.21	41.61	1.5	1.5	2.0	2.0	10.83	14.15	0.00	0.15	
TRUCK DRIVER	All	ALL	3	41.41	41.61	1.5	1.5	2.0	2.0	10.83	14.15	0.00	0.15	
TRUCK DRIVER	All	ALL	4	41.61	41.61	1.5	1.5	2.0	2.0	10.83	14.15	0.00	0.15	
TUCKPOINTER	All	BLD		49.53	50.53	1.5	1.5	2.0	2.0	9.04	21.06	0.00	1.07	

Legend
Rg Region
Type Trade Type - All,Highway,Building,Floating,Oil & Chip,Rivers
C Class
Base Base Wage Rate
OT M-F Unless otherwise noted, OT pay is required for any hour greater than 8 worked each day, Mon through Fri. The number listed is the multiple of the base wage.
OT Sa Overtime pay required for every hour worked on Saturdays
OT Su Overtime pay required for every hour worked on Sundays
OT Hol Overtime pay required for every hour worked on Holidays
H/W Health/Welfare benefit
Vac Vacation
Trng Training
Other Ins Employer hourly cost for any other type(s) of insurance provided for benefit of worker.

Explanations KANE COUNTY

ELECTRICIANS AND COMMUNICATIONS TECHNICIAN (NORTH) - Townships of Burlington, Campton, Dundee, Elgin, Hampshire, Plato, Rutland, St. Charles (except the West half of Sec. 26, all of Secs. 27, 33, and 34, South half of Sec. 28, West half of Sec. 35), Virgil and Valley View CCC and Elgin Mental Health Center.

The following list is considered as those days for which holiday rates of wages for work performed apply: New Years Day, Memorial Day, Fourth of July, Labor Day, Thanksgiving Day, Christmas Day and Veterans Day in some classifications/counties. Generally, any of these holidays which fall on a Sunday is celebrated on the following Monday. This then makes work performed on that Monday payable at the appropriate overtime rate for holiday pay. Common practice in a given local may alter certain days of celebration. If in doubt, please check with IDOL.

EXPLANATION OF CLASSES

ASBESTOS - GENERAL - removal of asbestos material/mold and hazardous materials from any place in a building, including mechanical systems where those mechanical systems are to be removed. This includes the removal of asbestos materials/mold and hazardous materials from ductwork or pipes in a building when the building is to be demolished at the time or at some close future date.

ASBESTOS - MECHANICAL - removal of asbestos material from mechanical systems, such as pipes, ducts, and boilers, where the mechanical systems are to remain.

CERAMIC TILE FINISHER

The grouting, cleaning, and polishing of all classes of tile, whether for interior or exterior purposes, all burned, glazed or unglazed products; all composition materials, granite tiles, warning detectable tiles, cement tiles, epoxy composite materials, pavers, glass, mosaics, fiberglass, and all substitute materials, for tile made in tile-like units; all mixtures in tile like form of cement, metals, and other materials that are for and intended for use as a finished floor surface, stair treads, promenade roofs, walks, walls, ceilings, swimming pools, and all other places where tile is to form a finished interior or exterior. The mixing of all setting mortars including but not limited to thin-set mortars, epoxies, wall mud, and any other sand and cement mixtures or adhesives when used in the preparation, installation, repair, or maintenance of tile and/or similar materials. The handling and unloading of all sand, cement, lime, tile, fixtures, equipment, adhesives, or any other materials to be used in the preparation, installation, repair, or maintenance of tile and/or similar materials. Ceramic Tile Finishers shall fill all joints and voids regardless of method on all tile work, particularly and especially after installation of said tile work. Application of any and all protective coverings to all types of tile installations including, but not be limited to, all soap compounds, paper products, tapes, and all polyethylene coverings,

plywood, masonite, cardboard, and any new type of products that may be used to protect tile installations, Blastrac equipment, and all floor scarifying equipment used in preparing floors to receive tile. The clean up and removal of all waste and materials. All demolition of existing tile floors and walls to be re-tiled.

COMMUNICATIONS TECHNICIAN

Construction, installation, maintenance and removal of telecommunication facilities (voice, sound, data and video), telephone, security systems, fire alarm systems that are a component of a multiplex system and share a common cable, and data inside wire, interconnect, terminal equipment, central offices, PABX and equipment, micro waves, V-SAT, bypass, CATV, WAN (wide area network), LAN (local area networks), and ISDN (integrated system digital network), pulling of wire in raceways, but not the installation of raceways.

MARBLE FINISHER

Loading and unloading trucks, distribution of all materials (all stone, sand, etc.), stocking of floors with material, performing all rigging for heavy work, the handling of all material that may be needed for the installation of such materials, building of scaffolding, polishing if needed, patching, waxing of material if damaged, pointing up, caulking, grouting and cleaning of marble, holding water on diamond or Carborundum blade or saw for setters cutting, use of tub saw or any other saw needed for preparation of material, drilling of holes for wires that anchor material set by setters, mixing up of molding plaster for installation of material, mixing up thin set for the installation of material, mixing up of sand to cement for the installation of material and such other work as may be required in helping a Marble Setter in the handling of all material in the erection or installation of interior marble, slate, travertine, art marble, serpentine, alberene stone, blue stone, granite and other stones (meaning as to stone any foreign or domestic materials as are specified and used in building interiors and exteriors and customarily known as stone in the trade), carrara, sanionyx, vitrolite and similar opaque glass and the laying of all marble tile, terrazzo tile, slate tile and precast tile, steps, risers treads, base, or any other materials that may be used as substitutes for any of the aforementioned materials and which are used on interior and exterior which are installed in a similar manner.

MATERIAL TESTER I: Hand coring and drilling for testing of materials; field inspection of uncured concrete and asphalt.

MATERIAL TESTER II: Field inspection of welds, structural steel, fireproofing, masonry, soil, facade, reinforcing steel, formwork, cured concrete, and concrete and asphalt batch plants; adjusting proportions of bituminous mixtures.

OPERATING ENGINEER - BUILDING

Class 1. Asphalt Plant; Asphalt Spreader; Autograde; Backhoes with Caisson Attachment; Batch Plant; Benoto (requires Two Engineers); Boiler and Throttle Valve; Caisson Rigs; Central Redi-Mix Plant; Combination Back Hoe Front End-loader Machine; Compressor and Throttle Valve; Concrete Breaker (Truck Mounted); Concrete Conveyor; Concrete Conveyor (Truck Mounted); Concrete Paver Over 27E cu. ft; Concrete Paver 27E cu. ft. and Under: Concrete Placer; Concrete Placing Boom; Concrete Pump (Truck Mounted); Concrete Tower; Cranes, All; Cranes, Hammerhead; Cranes, (GCI and similar Type); Creter Crane; Spider Crane; Crusher, Stone, etc.; Derricks, All; Derricks, Traveling; Formless Curb and Gutter Machine; Grader, Elevating; Grouting Machines; Heavy Duty Self-Propelled Transporter or Prime Mover; Highlift Shovels or Front Endloader 2-1/4 yd. and over; Hoists, Elevators, outside type rack and pinion and similar machines; Hoists, One, Two and Three Drum; Hoists, Two Tugger One Floor; Hydraulic Backhoes; Hydraulic Boom Trucks; Hydro Vac (and similar equipment); Locomotives, All; Motor Patrol; Lubrication Technician; Manipulators; Pile Drivers and Skid Rig; Post Hole Digger; Pre-Stress Machine; Pump Cretes Dual Ram; Pump Cretes: Squeeze Cretes-Screw Type Pumps; Gypsum Bulker and Pump; Raised and Blind Hole Drill; Roto Mill Grinder; Scoops - Tractor Drawn; Slip-Form Paver; Straddle Buggies; Operation of Tie Back Machine; Tournapull; Tractor with Boom and Side Boom; Trenching Machines.

Class 2. Boilers; Broom, All Power Propelled; Bulldozers; Concrete Mixer (Two Bag and Over); Conveyor, Portable; Forklift Trucks; Highlift Shovels or Front Endloaders under 2-1/4 yd.; Hoists, Automatic; Hoists, Inside Elevators; Hoists, Sewer Dragging Machine;

Hoists, Tugger Single Drum; Laser Screed; Rock Drill (Self-Propelled); Rock Drill (Truck Mounted); Rollers, All; Steam Generators; Tractors, All; Tractor Drawn Vibratory Roller; Winch Trucks with "A" Frame.

Class 3. Air Compressor; Combination Small Equipment Operator; Generators; Heaters, Mechanical; Hoists, Inside Elevators (remodeling or renovation work); Hydraulic Power Units (Pile Driving, Extracting, and Drilling); Pumps, over 3" (1 to 3 not to exceed a total of 300 ft.); Low Boys; Pumps, Well Points; Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches.

Class 4. Bobcats and/or other Skid Steer Loaders; Oilers; and Brick Forklift.

Class 5. Assistant Craft Foreman.

Class 6. Gradall.

Class 7. Mechanics; Welders.

OPERATING ENGINEERS - HIGHWAY CONSTRUCTION

Class 1. Asphalt Plant; Asphalt Heater and Planer Combination; Asphalt Heater Scarfire; Asphalt Spreader; Autograder/GOMACO or other similar type machines: ABG Paver; Backhoes with Caisson Attachment; Ballast Regulator; Belt Loader; Caisson Rigs; Car Dumper; Central Redi-Mix Plant; Combination Backhoe Front Endloader Machine, (1 cu. yd. Backhoe Bucket or over or with attachments); Concrete Breaker (Truck Mounted); Concrete Conveyor; Concrete Paver over 27E cu. ft.; Concrete Placer; Concrete Tube Float; Cranes, all attachments; Cranes, Tower Cranes of all types: Creter Crane: Spider Crane; Crusher, Stone, etc.; Derricks, All; Derrick Boats; Derricks, Traveling; Dredges; Elevators, Outside type Rack & Pinion and Similar Machines; Formless Curb and Gutter Machine; Grader, Elevating; Grader, Motor Grader, Motor Patrol, Auto Patrol, Form Grader, Pull Grader, Subgrader; Guard Rail Post Driver Truck Mounted; Hoists, One, Two and Three Drum; Heavy Duty Self-Propelled Transporter or Prime Mover; Hydraulic Backhoes; Backhoes with shear attachments up to 40' of boom reach; Lubrication Technician; Manipulators; Mucking Machine; Pile Drivers and Skid Rig; Pre-Stress Machine; Pump Cretes Dual Ram; Rock Drill - Crawler or Skid Rig; Rock Drill - Truck Mounted; Rock/Track Tamper; Roto Mill Grinder; Slip-Form Paver; Snow Melters; Soil Test Drill Rig (Truck Mounted); Straddle Buggies; Hydraulic Telescoping Form (Tunnel); Operation of Tieback Machine; Tractor Drawn Belt Loader; Tractor Drawn Belt Loader (with attached pusher - two engineers); Tractor with Boom; Tractaire with Attachments; Traffic Barrier Transfer Machine; Trenching; Truck Mounted Concrete Pump with Boom; Raised or Blind Hole Drills (Tunnel Shaft); Underground Boring and/or Mining Machines 5 ft. in diameter and over tunnel, etc; Underground Boring and/or Mining Machines under 5 ft. in diameter; Wheel Excavator; Widener (APSCO).

Class 2. Batch Plant; Bituminous Mixer; Boiler and Throttle Valve; Bulldozers; Car Loader Trailing Conveyors; Combination Backhoe Front Endloader Machine (Less than 1 cu. yd. Backhoe Bucket or over or with attachments); Compressor and Throttle Valve; Compressor, Common Receiver (3); Concrete Breaker or Hydro Hammer; Concrete Grinding Machine; Concrete Mixer or Paver 7S Series to and including 27 cu. ft.; Concrete Spreader; Concrete Curing Machine, Burlap Machine, Belting Machine and Sealing Machine; Concrete Wheel Saw; Conveyor Muck Cars (Haglund or Similar Type); Drills, All; Finishing Machine - Concrete; Highlift Shovels or Front Endloader; Hoist - Sewer Dragging Machine; Hydraulic Boom Trucks (All Attachments); Hydro-Blaster; Hydro Excavating (excluding hose work); Laser Screed; All Locomotives, Dinky; Off-Road Hauling Units (including articulating) Non Self-Loading Ejection Dump; Pump Cretes: Squeeze Cretes - Screw Type Pumps, Gypsum Bulker and Pump; Roller, Asphalt; Rotary Snow Plows; Rototiller, Seaman, etc., self-propelled; Self-Propelled Compactor; Spreader - Chip - Stone, etc.; Scraper - Single/Twin Engine/Push and Pull; Scraper - Prime Mover in Tandem (Regardless of Size); Tractors pulling attachments, Sheeps Foot, Disc, Compactor, etc.; Tug Boats.

Class 3. Boilers; Brooms, All Power Propelled; Cement Supply Tender; Compressor, Common Receiver (2); Concrete Mixer (Two Bag and Over); Conveyor, Portable; Farm-Type Tractors Used for Mowing, Seeding, etc.; Forklift Trucks; Grouting Machine; Hoists, Automatic; Hoists, All Elevators; Hoists, Tugger Single Drum; Jeep Diggers; Low Boys; Pipe Jacking Machines; Post-Hole Digger; Power Saw, Concrete Power Driven; Pug Mills; Rollers, other than Asphalt; Seed and Straw Blower; Steam Generators; Stump

Machine; Winch Trucks with "A" Frame; Work Boats; Tamper-Form-Motor Driven.

Class 4. Air Compressor; Combination - Small Equipment Operator; Directional Boring Machine; Generators; Heaters, Mechanical; Hydraulic Power Unit (Pile Driving, Extracting, or Drilling); Light Plants, All (1 through 5); Pumps, over 3" (1 to 3 not to exceed a total of 300 ft.); Pumps, Well Points; Vacuum Trucks (excluding hose work); Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches.

Class 5. SkidSteer Loader (all); Brick Forklifts; Oilers.

Class 6. Field Mechanics and Field Welders

Class 7. Dowell Machine with Air Compressor; Gradall and machines of like nature.

OPERATING ENGINEERS - FLOATING

Diver. Diver Wet Tender, Diver Tender, ROV Pilot, ROV Tender

TRAFFIC SAFETY Worker I

Traffic Safety Worker I - work associated with the delivery, installation, pick-up and servicing of safety devices during periods of roadway construction, including such work as set-up and maintenance of barricades, barrier wall reflectors, drums, cones, delineators, signs, crash attenuators, glare screen and other such items, and the layout and application or removal of conflicting and/or temporary roadway markings utilized to control traffic in construction zones, as well as flagging for these operations.

TRAFFIC SAFETY WORKER II

Work associated with the installation and removal of permanent pavement markings and/or pavement markers including both installations performed by hand and installations performed by truck.

TRUCK DRIVER - BUILDING, HEAVY AND HIGHWAY CONSTRUCTION Class 1. Two or three Axle Trucks. A-frame Truck when used for transportation purposes; Air Compressors and Welding Machines, including those pulled by cars, pick-up trucks and tractors; Ambulances; Batch Gate Lockers; Batch Hopperman; Car and Truck Washers; Carry-alls; Fork Lifts and Hoisters; Helpers; Mechanics Helpers and Greasers; Oil Distributors 2-man operation; Pavement Breakers; Pole Trailer, up to 40 feet; Power Mower Tractors; Self-propelled Chip Spreader; Skipman; Slurry Trucks, 2-man operation; Slurry Truck Conveyor Operation, 2 or 3 man; Teamsters; Unskilled Dumpman; and Truck Drivers hauling warning lights, barricades, and portable toilets on the job site.

Class 2. Four axle trucks; Dump Crets and Adgetors under 7 yards; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnapulls or Turnatrailers when pulling other than self-loading equipment or similar equipment under 16 cubic yards; Mixer Trucks under 7 yards; Ready-mix Plant Hopper Operator, and Winch Trucks, 2 Axles.

Class 3. Five axle trucks; Dump Crets and Adgetors 7 yards and over; Dumpsters, Track Trucks, Euclids, Hug Bottom Dump Turnatrailers or turnapulls when pulling other than self-loading equipment or similar equipment over 16 cubic yards; Explosives and/or Fission Material Trucks; Mixer Trucks 7 yards or over; Mobile Cranes while in transit; Oil Distributors, 1-man operation; Pole Trailer, over 40 feet; Pole and Expandable Trailers hauling material over 50 feet long; Slurry trucks, 1-man operation; Winch trucks, 3 axles or more; Mechanic--Truck Welder and Truck Painter.

Class 4. Six axle trucks; Dual-purpose vehicles, such as mounted crane trucks with hoist and accessories; Foreman; Master Mechanic; Self-loading equipment like P.B. and trucks with scoops on the front.

TERRAZZO FINISHER

The handling of sand, cement, marble chips, and all other materials that may be used by the Mosaic Terrazzo Mechanic, and the

mixing, grinding, grouting, cleaning and sealing of all Marble, Mosaic, and Terrazzo work, floors, base, stairs, and wainscoting by hand or machine, and in addition, assisting and aiding Marble, Masonic, and Terrazzo Mechanics.

Other Classifications of Work:

For definitions of classifications not otherwise set out, the Department generally has on file such definitions which are available. If a task to be performed is not subject to one of the classifications of pay set out, the Department will upon being contacted state which neighboring county has such a classification and provide such rate, such rate being deemed to exist by reference in this document. If no neighboring county rate applies to the task, the Department shall undertake a special determination, such special determination being then deemed to have existed under this determination. If a project requires these, or any classification not listed, please contact IDOL at 217-782-1710 for wage rates or clarifications.

LANDSCAPING

Landscaping work falls under the existing classifications for laborer, operating engineer and truck driver. The work performed by landscape plantsman and landscape laborer is covered by the existing classification of laborer. The work performed by landscape operators (regardless of equipment used or its size) is covered by the classifications of operating engineer. The work performed by landscape truck drivers (regardless of size of truck driven) is covered by the classifications of truck driver.

MATERIAL TESTER & MATERIAL TESTER/INSPECTOR I AND II

Notwithstanding the difference in the classification title, the classification entitled "Material Tester I" involves the same job duties as the classification entitled "Material Tester/Inspector I". Likewise, the classification entitled "Material Tester II" involves the same job duties as the classification entitled "Material Tester/Inspector II".

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
2	8010	Air Compressor	Air Delivery	41 CFM	to 10	Hoses included.	hour	$1.31
3	8011	Air Compressor	Air Delivery	103 CFM	to 30	Hoses included.	hour	$9.67
4	8012	Air Compressor	Air Delivery	130 CFM	to 50	Hoses included.	hour	$11.50
5	8013	Air Compressor	Air Delivery	175 CFM	to 90	Hoses included.	hour	$18.65
6	8014	Air Compressor	Air Delivery	400 CFM	to 145	Hoses included.	hour	$36.88
7	8015	Air Compressor	Air Delivery	575 CFM	to 230	Hoses included.	hour	$56.30
8	8016	Air Compressor	Air Delivery	1100 CFM	to 355	Hoses included.	hour	$100.54
9	8017	Air Compressor	Air Delivery	1600 CFM	to 500	Hoses included.	hour	$103.33
10	8040	Ambulance			to 150		hour	$28.48
11	8041	Ambulance			to 210		hour	$41.76
12	8050	Board, Arrow			to 8	Trailer Mounted.	hour	$5.65
13	8051	Gasoline Powered Message Board,			to 5	Trailer Mounted.	hour	$11.39
14	8052	Solar Powered Arrow/Message Board	SMC 5000 Mast-Mini	Mini Matrix Board, Smaller 3' x 6' Display			hour	$4.00
15	8053	Solar Powered Message Board	PCMS-1500	Full Matrix Board, Display			hour	$5.10
16	8060	Auger, Portable	Hole Diameter	16 In	to 6		hour	$1.95
17	8061	Auger, Portable	Hole Diameter	18 In	to 13		hour	$4.34
18	8062	Auger, Tractor Mounted	Max. Auger Diameter	36 In	to 13	Includes digger, boom & mounting hardware	hour	$3.29
19	8063	Auger, Truck Mounted	Max. Auger Size	24 In	to 100	Includes digger, boom & mounting hardware and Tractor rate.	hour	$35.68
20	8064	Hydraulic Sign Post Driver	Greenlee; HPD-HV-U	W/ 13 Hp power unit, 2ksi preasure	13	w/Double Hose Assembly	hour	$5.69
21	8064-1	Hydraulic Sign Post Driver	Drophammar (D)	8" x 8" x 10"'	to 100	Guard Rail Post	hour	$35.27
22	8065	Auger	Horizontal Directional Boring Machine	250 X 100	300	DD-140B YR-2003	hour	$241.89

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
23	8066	Auger	Horizontal Directional Boring Machine	50 X 100	24	Average to 7,000 lbs	hour	$34.30
24	8067	Auger, Directional Boring Machine	Auger, Directional Boring Machine	7,000 - 10,000 lbs	45	JT920L (2013)	hour	$43.80
25	8067-1	Directional Boring Machine	Vermeer D24X40A (disc. 2001)	Spindle Torque 4000 ft/lb	125		hour	$93.30
26	8068	Bush Hog	Bush Hog - Model 326	Single Spindle Rotary Cutters			hour	$20.90
27	8068-1	Bush Hog	Bush Hog - Model 3210	Lift, Pull, Semi-Mount & Offset Model			hour	$29.14
28	8068-2	Bush Hog	Bush Hog - Model 2815	Flex Wing Rotary Cutters			hour	$43.77
29	8070	Automobile			to 130	Transporting people.	mile	$0.56
30	8071	Automobile			to 130	Transporting cargo.	hour	$12.60
31	8072	Automobile, Police			to 250	Patrolling.	mile	$0.56
32	8073	Automobile, Police			to 250	Stationary with engine running.	hour	$16.27
33	8074	Automobile, Police	Ford Explorer		210		hour	$18.75
34	8075	Motorcycle, Police					mile	$0.52
35	8076	Automibile - Chevy Trailblazer	6 or 8 cl		285 to 300		hour	$20.77
36	8077	Automobile - Ford Expedition	Fire Command Center	EcoBoost V-6	360	2015 Model	hour	$19.97
37	8078	MRAP Armored Rescue Vehicle	Search and Rescue	Military Surplus Vehicle	375-450	Qualified foe operational rate on	hour	$52.53
38	8079	MRAP C-MTV	Multi-Theater (Military Surplus)Vehicle	gvwr 55000 Lbs	to 350	Qualified foe operational rate on	hour	$49.03
39	8079-1	MRPA with 6-Tires			300		hour	$53.00

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
40	8079-2	MRAP- BAE CAIMAN II Model	Police Armored Rescue/SWAT Team Vehicle		320		hour	$54.00
41	8080	All Terrain Vehicle (ATV)	Engine 110cc, 4-Wheel; 20" tyre		6.5-7.5		hour	$8.35
42	8081	All Terrain Vehicle (ATV)	Engine 125cc, 4-Wheel; 21" tyre		7.6-8.6		hour	$8.79
43	8082	All Terrain Vehicle (ATV)	Engine 150cc, 4-Wheel; 22" tyre		9.0-10.0		hour	$8.80
44	8083	All Terrain Vehicle (ATV)	Engine 200cc, 4-Wheel; 24" tyre		12-14.0		hour	$9.36
45	8084	All Terrain Vehicle (ATV)	Engine 250cc, 4-Wheel; 24" tyre		15-17		hour	$9.95
46	8085	All Terrain Vehicle (ATV)	Engine 300cc, 4-Wheel; 24" tyre		18-20		hour	$10.81
47	8086	All Terrain Vehicle (ATV)	Engine 400cc. 4-Wheel; 25" tyre		26-28		hour	$12.37
48	8087	All Terrain Vehicle (ATV)	Engine 450cc, 4-Wheel; 25" tyre		26-28		hour	$13.25
49	8088	All Terrain Vehicle (ATV)	Engine 650cc, 4-Wheel; 25" tyre		38-40		hour	$14.05
50	8089	All Terrain Vehicle (ATV)	Engine 750cc, 4-Wheel; 25" tyre		44-46		hour	$15.00
51	8090	All Terrain Vehicle	Polaris-Ranger 900				hour	$26.30
52	8091	All Terrain Vehicle	Honda Pioneer-1000-3				hour	$27.00
53	8110	Barge, Deck	Size	50'x35'x7.25'	0	Push by Tug-Boat	hour	$52.73
54	8111	Barge, Deck	Size	50'x35'x9'	0	Push by Tug-Boat	hour	$56.53
55	8112	Barge, Deck	Size	120'x45'x10'	0	Push by Tug-Boat	hour	$109.11
56	8113	Barge, Deck	Size	160'x45'x11''	0	Push by Tug-Boat	hour	$132.11
57	8120	Boat, Tow	Size	55'x20'x5'	to 870	Steel.	hour	$335.23
58	8121	Boat, Tow	Size	60'x21'x5'	to 1050	Steel.	hour	$377.40

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
59	8122	Boat, Tow	Size	70'x30'x7.5'	to 1350	Steel.	hour	$597.02
60	8123	Boat, Tow	Size	120'x34'x8'	to 2000	Steel.	hour	$1,129.95
61	8124	Airboat	815AGIS Airboat w/spray unit	15'x8'	400		hour	$33.16
62	8125	Airboat	815AGIS Airboat w/spray unit	15'x8'	425		hour	$33.52
63	8126	Swamp Buggy	Conquest		360		hour	$41.93
64	8130	Boat, Row			0	Heavy duty.	hour	$1.49
65	8131	Boat, Runabout	Size	13'x5'	to 50	Outboard.	hour	$12.73
66	8132	Boat, Tender	Size	14'x7'	to 100	Inboard with 360 degree drive.	hour	$15.53
67	8133	Boat, Push	Size	45'x21'x6'	to 435	Flat hull.	hour	$227.27
68	8134	Boat, Push	Size	54'x21'x6'	to 525	Flat hull.	hour	$282.11
69	8135	Boat, Push	Size	58'x24'x7.5'	to 705	Flat hull.	hour	$340.76
70	8136	Boat, Push	Size	64'x25'x8'	to 870	Flat hull.	hour	$375.08
71	8140	Boat, Tug	Length	16 Ft	to 100		hour	$45.23
72	8141	Boat, Tug	Length	18 Ft	to 175		hour	$65.79
73	8142	Boat, Tug	Length	26 Ft	to 250		hour	$82.83
74	8143	Boat, Tug	Length	40 Ft	to 380		hour	$207.27
75	8144	Boat, Tug	Length	51 Ft	to 700		hour	$285.33
76	8145	Jet Ski	3-seater				hour	$28.09
77	8146	Jet Ski					hour	$8.72
78	8147	Boat, Inflatable Rescue Raft	Zodiac		0		hour	$1.15
79	8148	Boat, Runabout	1544 lbs	11 passenger capacity	190-250		hour	$66.43
80	8149	Boat, Removable Engine	2000 Johnson Outboard Motor w 15" shaft		15		hour	$1.60
81	8150	Pavement Brooms	Self Propelled		to 37		hour	$24.08
82	8151	Broom, Pavement	Broom Length	96 In	to 100		hour	$31.17

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
83	8153	Broom, Pavement, Mounted	Broom Length	72 In	to 18	Add Prime Mover cost for total rate	hour	$5.76
84	8154	Broom, Pavement, Pull	Broom Length	84 In	to 20	Add Prime Mover cost for total rate	hour	$15.32
85	8155	Broom, Pavement	Broom Length	72 In	to 35		hour	$24.57
86	8157	Sweeper, Pavement			to 110		hour	$85.20
87	8158	Sweeper, Pavement			to 230		hour	$100.11
88	8180	Bus			to 150		hour	$21.90
89	8181	Bus			to 210		hour	$26.18
90	8182	Bus			to 300		hour	$40.21
91	8183	Blower	Gasoline powered Toro Pro Force		27		hour	$15.62
92	8183-1	Mosquito Sprayer	2015 Adapco Guardian 95 ES	15-gal; 350 lbs			hour	$19.09
93	8184	Back-Pack Blower			to 4.4		hour	$1.55
94	8185	Walk-Behind Blower			13		hour	$6.93
95	8187	Chainsaw	Bar Length = 20 in	3.0 cu in	3		hour	$1.94
96	8188	Chainsaw	Bar Length = 20 in	5.0 cu in	6		hour	$3.39
97	8189	Chainsaw	Bar Length = 20 in	6.0 cu in	7		hour	$3.60
98	8190	Chain Saw	Bar Length = 16 in	2.5 cu in	2		hour	$2.07
99	8191	Chain Saw	Bar Length = 25 in	7.5 cu in	8		hour	$4.54
100	8192	Chain Saw	Bar Length = 18 in	4.0 cu in	3.2		hour	$2.13
101	8193	Skidder	model 748 E		to 173		hour	$115.15
102	8194	Skidder	model 648 G11		to 177		hour	$138.73

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
103	8195	Cutter, Brush	Cutter Size	8 ft	to 150		hour	$124.22
104	8196	Cutter, Brush	Cutter Size	8 ft	to 190		hour	$137.38
105	8197	Cutter, Brush	Cutter Size	10 ft	to 245		hour	$144.78
106	8198	Bruncher Cutter	Cutter, Brush - 247 hp, 1997 Model 511 Feller		to 247		hour	$198.34
107	8199	Log Trailer	40 ft		0		hour	$10.29
108	8200	Chipper, Brush	Chipping Capacity	6 In	to 35	Trailer Mounted.	hour	$9.10
109	8201	Chipper, Brush	Chipping Capacity	9 In	to 65	Trailer Mounted.	hour	$17.30
110	8202	Chipper, Brush	Chipping Capacity	12 In	to 100	Trailer Mounted.	hour	$32.26
111	8203	Chipper, Brush	Chipping Capacity	15 In	to 125	Trailer Mounted.	hour	$34.17
112	8204	Chipper, Brush	Chipping Capacity	18 In	to 200	Trailer Mounted.	hour	$51.12
113	8208	Loader - Tractor - Knuckleboom	model Barko 595 ML		to 173		hour	$172.12
114	8209	Loader - Wheel	model 210 w/ Buck Saw 50 inch Bar		to 240		hour	$95.11
115	8210	Clamshell & Dragline, Crawler		149,999 lbs	to 235	Bucket not included in rate.	hour	$131.38
116	8211	Clamshell & Dragline, Crawler		250,000 lbs	to 520	Bucket not included in rate.	hour	$174.33
117	8212	Clamshell & Dragline, Truck			to 240	Bucket not included in rate.	hour	$142.26
118	8217	Compactor	2-ton pavement roller	to 76" wide	40		hour	$27.29
119	8218	BOMAG Compactor	BW100AD-3		33		Hour	$29.33

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
120	8219	Compactor -2-Ton Pavement Roller	Single Drum Vibratoty Compactor	to 2.9 Ton	28		hour	$29.12
121	8220	Compactor			to 10		hour	$15.32
122	8221	Compactor, Towed, Vibratory Drum			to 45	Plus tow Truck	hour	$35.01
123	8222	Compactor, Vibratory, Drum			to 75		hour	$25.34
124	8223	Compactor, Pneumatic, Wheel			to 100		hour	$52.15
125	8224	Vibratory Compactor	Caterpillar CP-563D		145		hour	$60.75
126	8225	Compactor, Sanitation			to 300		hour	$97.46
127	8226	Compactor, Sanitation			to 400		hour	$156.79
128	8227	Compactor, Sanitation			535		hour	$308.62
129	8228	Compactor, Towed, Pneumatic, Wheel	Hercules PT-11,	10,000 lbs		11-Wheels (Towed)	hour	$18.71
130	8229	Compactor,Towed Steel Drum Static Compactor	GTD-54120	20,000 lbs		Grid Drum (Towed)	hour	$23.95
131	8240	Feeder, Grizzly			to 35		hour	$27.43
132	8241	Feeder, Grizzly			to 55		hour	$34.74
133	8242	Feeder, Grizzly			to 75		hour	$65.75
134	8250	Dozer, Crawler	Deere 450J LT		to 75		hour	$55.15
135	8251	Dozer, Crawler	Deere 650K LGP; ROPS/FOPS		to 105		hour	$73.31
136	8252	Dozer, Crawler			to 160		hour	$95.45
137	8253	Dozer, Crawler			to 250		hour	$152.20
138	8254	Dozer, Crawler			to 360		hour	$223.35

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
139	8255	Dozer, Crawler	Make/Model: CAT D10T (disc. 2014); Protection: EROPS; Type Semi-U		to 574		hour	$348.96
140	8256	Dozer, Crawler			to 850		hour	$363.50
141	8260	Dozer, Wheel			to 300		hour	$106.42
142	8261	Dozer, Wheel			to 400		hour	$102.64
143	8262	Dozer, Wheel			to 500		hour	$200.86
144	8263	Dozer, Wheel			to 625		hour	$242.66
145	8269	Box Scraper	3 hitch attach for tractor; 2007 Befco		0		hour	$3.70
146	8270	Bucket, Clamshell	Capacity	1.0 CY	0	Includes teeth. Does not include Clamshell & Dragline	hour	$4.74
147	8271	Bucket, Clamshell	Capacity	2.5 CY	0	Includes teeth. Does not include Clamshell & Dragline	hour	$9.12
148	8272	Bucket, Clamshell	Capacity	5.0 CY	0	Includes teeth. Does not include Clamshell & Dragline	hour	$13.62
149	8273	Bucket, Clamshell	Capacity	7.5 CY	0	Includes teeth. Does not include Clamshell & Dragline	hour	$26.52
150	8275	Bucket, Dragline	Capacity	2.0 CY	0	Does not include Clamshell & Dragline	hour	$4.06
151	8276	Bucket, Dragline	Capacity	5.0 CY	0	Does not include Clamshell & Dragline	hour	$10.14

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
152	8277	Bucket, Dragline	Capacity	10 CY	0	Does not include Clamshell & Dragline	hour	$14.62
153	8278	Bucket, Dragline	Capacity	14 CY	0	Does not include Clamshell & Dragline	hour	$19.02
154	8280	Excavator, Hydraulic	Bucket Capacity	0.5 CY	to 45	Crawler, Truck & Wheel. Includes bucket.	hour	$20.46
155	8281	Excavator, Hydraulic	Bucket Capacity	1.0 CY	to 90	Crawler, Truck & Wheel. Includes bucket.	hour	$57.67
156	8282	Excavator, Hydraulic	Bucket Capacity	1.5 CY	to 160	Crawler, Truck & Wheel. Includes bucket.	hour	$82.48
157	8283	Excavator, Hydraulic	Bucket Capacity	2.5 CY	to 265	Crawler, Truck & Wheel. Includes bucket.	hour	$137.11
158	8284	Excavator, Hydraulic	Bucket Capacity	4.5 CY	to 420	Crawler, Truck & Wheel. Includes bucket.	hour	$272.66
159	8285	Excavator, Hydraulic	Bucket Capacity	7.5 CY	to 650	Crawler, Truck & Wheel. Includes bucket.	hour	$309.18
160	8286	Excavator, Hydraulic	Bucket Capacity	12 CY	to 1000	Crawler, Truck & Wheel. Includes bucket.	hour	$472.94
161	8287	Excavator	2007 model Gradall XL3100 III		184		hour	$104.57
162	8288	Excavator	2003 model Gradall XL4100 III		238		hour	$120.67
163	8289	Excavator	2006 model Gradall XL5100		230		hour	$135.66
164	8290	Trowel, Concrete	Diameter	48 In	to 12		hour	$4.46
165	8300	Fork Lift	Capacity	6000 Lbs	to 60		hour	$13.63
166	8301	Fork Lift	Capacity	12000 Lbs	to 90		hour	$18.66
167	8302	Fork Lift	Capacity	18000 Lbs	to 140		hour	$26.03
168	8303	Fork Lift	Capacity	50000 Lbs	to 215		hour	$57.41

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
169	8306	Fork Lift Material Handler	Diesel, CAT TH360B	6600-11500 gvwr lbs	94.9	3.1- 3.5 Mton	hour	$46.49
170	8307	Fork Lift Material Handler	Diesel, CAT TH460B	9000 Lbs	94.9	4.5 - 4.9 Mton	hour	$53.54
171	8308	Fork Lift Material Handler	Diesel, CAT TH560B	10000 Lbs	117.5	4.5 - 4.9 Mton	hour	$58.74
172	8309	Fork Lift Accessory	2003 ACS Paddle Fork		0		hour	$3.58
173	8310	Generator	Prime Output	5.5 KW	to 10		hour	$4.95
174	8311	Generator	Prime Output	16 KW	to 25		hour	$7.92
175	8311-1	Generator		20 KVA	44		hour	$25.00
176	8312	Generator	Prime Output	60KW	to 88		hour	$25.92
177	8313	Generator	Prime Output	100 KW	to 125		hour	$40.01
178	8314	Generator	Prime Output	150 KW	to 240		hour	$55.67
179	8315	Generator	Prime Output	210 KW	to 300		hour	$77.67
180	8316	Generator	Prime Output	280 KW	to 400		hour	$88.84
181	8317	Generator	Prime Output	350 KW	to 500		hour	$99.73
182	8317-1	Generator	Prime Output	400KVA = 320KW	464	Enclosed	hour	$118.18
183	8318	Generator	Prime Output	530 KW	to 750		hour	$159.09
184	8319	Generator	Prime Output	710 KW	to 1000		hour	$204.67
185	8320	Generator	Prime Output	1100 KW	1645	Open	hour	$362.20
186	8321	Generator	Prime Output	2500 KW	to 3000		hour	$561.53
187	8322	Generator	Prime Output	1,000 KW	to 1645	Enclosed	hour	$467.83
188	8323	Generator	Prime Output	1,500 KW	to 2500	Enclosed	hour	$544.93
189	8324	Generator	Prime Output	1100KW	2500	Enclosed	hour	$544.93
190	8325	Generator	Prime Output	40KW	63	Open	hour	$23.48
191	8326	Generator	Prime Output	20KW	35	Open/Closed	hour	$16.70
192	8327	Generator Large	Prime Output	800 KW	1065		hour	$235.71
193	8327-1	Generator	Prime Output	80 KW	120		hour	$32.09
194	8327-2	SOLAR/GAS Turbine Generator-Taurus 70	7-Megawatts Solar, 3-Megawatts Stean Turbine	7000 KW	10915	12470- Volts to Micro grid, or 115000 Volts to City Utility, When operated with gas	hour	$2,600.00

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
195	8327-3	SOLAR/GAS Turbine Generator-Taurus 70	7-Megawatts Solar, 3-Megawatts Stean Turbine	7001 KW	10915	12470- Volts to Micro grid, or 115000 Volts to City Utility, When operated with Solar	hour	$800.00
196	8328	Generator	Prime Output	900 KW	1355		hour	$299.28
197	8328-1	Generator Heavy Duty	Prime Output	2000KW		Open	hour	$496.86
198	8329	Generator	Prime Output	1000 KW	to 1645	Open	hour	$450.78
199	8330	Graders	Moldboard Size	10 Ft	to 110	Includes Rigid and Articulate equipment.	hour	$44.60
200	8331	Graders	Moldboard Size	12 Ft	to 150	Includes Rigid and Articulate equipment.	hour	$65.12
201	8332	Graders	Moldboard Size	14 Ft	to 225	Includes Rigid and Articulate equipment.	hour	$100.61
202	8334	Graders	CAT 140; ROPS; Diesel; Moldboard Size: 168 x 24 x 0.9	Diesel	275		hour	$124.00
203	8350	Hose, Discharge	Diameter	3 In	0	Per 25 foot length. Includes couplings.	hour	$0.16
204	8351	Hose, Discharge	Diameter	4 In	0	Per 25 foot length. Includes couplings.	hour	$0.24
205	8352	Hose, Discharge	Diameter	6 In	0	Per 25 foot length. Includes couplings.	hour	$0.61
206	8353	Hose, Discharge	Diameter	8 In	0	Per 25 foot length. Includes couplings.	hour	$0.63

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
207	8354	Hose, Discharge	Diameter	12 In	0	Per 25 foot length. Includes couplings.	hour	$0.93
208	8355	Hose, Discharge	Diameter	16 In	0	Per 25 foot length. Includes couplings.	hour	$1.73
209	8356	Hose, Suction	Diameter	3 In	0	Per 25 foot length. Includes couplings.	hour	$0.29
210	8357	Hose, Suction	Diameter	4 In	0	Per 25 foot length. Includes couplings.	hour	$0.34
211	8358	Hose, Suction	Diameter	6 In	0	Per 25 foot length. Includes couplings.	hour	$1.13
212	8359	Hose, Suction	Diameter	8 In	0	Per 25 foot length. Includes couplings.	hour	$1.13
213	8360	Hose, Suction	Diameter	12 In	0	Per 25 foot length. Includes couplings.	hour	$1.75
214	8361	Hose, Suction	Diameter	16 In	0	Per 25 foot length. Includes couplings.	hour	$3.34
215	8380	Loader, Crawler	Bucket Capacity	0.5 CY	to 32	Includes bucket.	hour	$20.66
216	8381	Loader, Crawler	Bucket Capacity	1 CY	to 60	Includes bucket.	hour	$35.85
217	8382	Loader, Crawler	Bucket Capacity	2 CY	to 118	Includes bucket.	hour	$69.98
218	8383	Loader, Crawler	Bucket Capacity	3 CY	to 178	Includes bucket.	hour	$126.60
219	8384	Loader, Crawler	Bucket Capacity	4 CY	to 238	Includes bucket.	hour	$120.21
220	8390	Loader, Wheel	Bucket Capacity	0.5 CY	to 38		hour	$21.01
221	8391	Loader, Wheel	Bucket Capacity	1 CY	to 60		hour	$41.05
222	8392	Loader, Wheel	Bucket Capacity	2 CY	to 105	CAT-926	hour	$39.35
223	8393	Loader, Wheel	Bucket Capacity	3 CY	to 152		hour	$46.45

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
224	8394	Loader, Wheel	Bucket Capacity	4 CY	232		hour	$78.13
225	8395	Loader, Wheel	Bucket Capacity	5 CY	255		hour	$80.80
226	8396	Loader, Wheel	Bucket Capacity	6 CY	to 305		hour	$113.83
227	8397	Loader, Wheel	Bucket Capacity	7 CY	to 360		hour	$139.70
228	8398	Loader, Wheel	Bucket Capacity	8 CY	to 530		hour	$190.00
229	8399	Tractor	John Deere 6605	Tractor with mower	95		hour	$17.33
230	8400	Tractor	New Holland T6031	Tractor - agriculture all purpose	115		hour	$35.56
231	8401	Loader, Tractor, Wheel	Bucket Capacity	0.87 CY	to 80	Case 580 Super L	hour	$37.76
232	8410	Mixer, Concrete Portable	Batching Capacity	10 Cft	8	Diesel Powered	hour	$3.17
233	8411	Mixer, Concrete Portable	Batching Capacity	12 Cft	11	Gasoline Powered	hour	$5.48
234	8412	Mixer, Concrete, Trailer Mounted	Batching Capacity	11 Cft	to 10		hour	$14.59
235	8413	Mixer, Concrete, Trailer Mounted	Batching Capacity	16 Cft	to 25		hour	$19.70
236	8414	Truck, Concrete Mixer	Mixer Capacity	13 CY	to 300		hour	$85.90
237	8419	Hand-Held, Pavement Breakers	Air Tool/Electric Power	90 Lbs	0		hour	$1.17
238	8420	Self-Propelled Pavement Breaker,	Self-Propelled (Diesel)		to 70-80		hour	$59.37
239	8421	Vibrator, Concrete	Hand Held		to 4		hour	$1.65
240	8423	Spreader, Chip	Spread Hopper Width	12.5 Ft	to 152		hour	$88.36
241	8424	Spreader, Chip	Spread Hopper Width	16.5 Ft	to 215		hour	$121.45
242	8425	Spreader, Chip, Mounted	Hopper Size	8 Ft	to 8	Trailer & truck mounted.	hour	$4.65
243	8430	Paver, Asphalt, Towed			0	Does not include Prime Mover.	hour	$12.84

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
244	8431	Paver, Asphalt	Crawler		to 50	Includes wheel and crawler equipment.	hour	$66.94
245	8432	Paver, Asphalt	Crawler		to 125	Includes wheel and crawler equipment.	hour	$92.45
246	8433	Paver, Asphalt	Crawler		to 175	Includes wheel and crawler equipment.	hour	$252.13
247	8434	Paver, Asphalt		35,000Lbs & Over	to 250	Includes wheel and crawler equipment.	hour	$246.91
248	8436	Pick-up, Asphalt			to 110		hour	$112.03
249	8437	Pick-up, Asphalt	Cederapids	CR MS-2	113 to 140	Asphalt-Pick-up Machine	hour	$146.98
250	8438	Pick-up, Asphalt	Blaw-Knox	MC-330	184 to 200	Asphalt-Pick-up Machine	hour	$196.08
251	8439	Pick-up, Asphalt		MTV 1000C	to 275	Asphalt-Pick-up Machine	hour	$282.37
252	8440	Striper	Paint Capacity	40 Gal	to 22		hour	$16.76
253	8441	Striper	Paint Capacity	90 Gal	to 60		hour	$23.17
254	8442	Striper	Paint Capacity	120 Gal	to 122		hour	$42.65
255	8445	Striper, Truck Mounted	Paint Capacity	120 Gal	to 460		hour	$76.28
256	8446	Striper, Walk-behind	Paint Capacity	12 Gal	5		hour	$3.96
257	8447	Paver Accessory - Belt Extension	2002 Leeboy Conveyor Belt Extension	24' X 50'	0	crawler	hour	$37.18
258	8450	Plow, Snow, Grader Mounted	Width	to 10 Ft	0	Include Grader for total cost	hour	$28.51
259	8451	Plow, Snow, Grader Mounted	Width	to 14 Ft	0	Include Grader for total cost	hour	$33.00

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
260	8452	Plow, Truck Mounted	Width	to 15 Ft	0	Include truck for total cost	hour	$23.80
261	8453	Plow, Truck Mounted	Width	to 15 Ft	0	With leveling wing. Include truck for total cost	hour	$40.69
262	8455	Spreader, Sand	Mounting	Tailgate, Chassis	0	Truck not included	hour	$8.02
263	8456	Spreader, Sand	Mounting	Dump Body	0	Truck not included	hour	$10.88
264	8457	Spreader, Sand	Mounting	Truck (10yd)	0	Truck not included	hour	$13.62
265	8458	Spreader, Chemical	Capacity	5 CY	to 4	Trailer & truck mounted.	hour	$6.49
266	8469	Pump - Trash Pump	10 MTC	2" Pump	to 7	10,000 gph	hour	$8.28
267	8470	Pump	Centrifugal, 8M pump	2" - 10,000 gal/hr.	to 4.5	Hoses not included.	hour	$7.79
268	8471	Pump	Diaphragm pump	2" - 3,000 gal/hr.	to 6	Hoses not included.	hour	$9.59
269	8472	Pump	Centrifugal, 18M pump	3" - 18,000 gal/hr. pump	to 10	Hoses not included.	hour	$9.05
270	8473	Pump			to 15	Hoses not included.	hour	$12.25
271	8474	Pump			to 25	Hoses not included.	hour	$13.96
272	8475	Pump			to 40	Hoses not included.	hour	$17.22
273	8476	Pump	4"	40,000 gal/hr.	to 60	Hoses not included.	hour	$26.88
274	8477	Pump			to 95	Hoses not included.	hour	$34.78
275	8478	Pump			to 140	Hoses not included.	hour	$41.19
276	8479	Pump			to 200	Hoses not included.	hour	$51.50
277	8480	Pump			to 275	Does not include Hoses.	hour	$69.29
278	8481	Pump			to 350	Does not include Hoses.	hour	$82.80
279	8482	Pump			to 425	Does not include Hoses.	hour	$100.40
280	8483	Pump			to 500	Does not include Hoses.	hour	$118.85
281	8484	Pump			to 575	Does not include Hoses.	hour	$138.44
282	8484-1	Pump	Electric Motor		600		hour	$142.65
283	8485	Pump			to 650	Does not include Hoses.	hour	$157.05
284	8485-1	Pump			746		hour	$177.36
285	8485-2	Pump			905		hour	$215.60

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
286	8485-3	Pump		110,000 gpm	1000		hour	$360.00
287	8485-4	Pump	CAT-3606 Engine		2250		hour	$775.00
288	8485-5	Pump		464,125 gpm	2500		hour	$780.00
289	8485-6	Pump -High Powered Pump with Caterpillar Engine	C280-12 CAT Engine	1000-RPM, 20,000 CFM	5444	Fairbanks Morse/Lufkin Heavy Duty Pump	hour	$1,285.00
290	8486	Aerial Lift, Truck Mounted	Max. Platform Height	40 Ft		Add this rate to truck rate for total lift and truck rate	hour	$12.05
291	8487	Aerial Lift, Truck Mounted	Max. Platform Height	61 Ft		Add this rate to truck rate for total lift and truck rate	hour	$20.95
292	8488	Aerial Lift, Truck Mounted	Max. Platform Height	80 Ft		Add this rate to truck rate for total lift and truck rate	hour	$38.85
293	8489	Aerial Lift, Truck Mounted	Max. Platform Load - 600Lbs	81 Ft -100 Ft. Ht.		Articulated and Telescoping. Add this rate to truck rate for total lift and truck rate	hour	$39.10
294	8490	Aerial Lift, Self-Propelled	Max. Platform Height	37 Ft. Ht.	to 15	Articulated, Telescoping, Scissor.	hour	$9.15
295	8491	Aerial Lift, Self-Propelled	Max. Platform Height	60 Ft. Ht.	to 30	Articulated, Telescoping, Scissor.	hour	$33.24
296	8492	Aerial Lift, Self-Propelled	Max. Platform Height	70 Ft. Ht.	to 50	Articulated, Telescoping, Scissor.	hour	$26.58
297	8493	Aerial Lift, Self-Propelled	Max. Platform Height	125 Ft. Ht.	to 85	Articulated and Telescoping.	hour	$57.49
298	8494	Aerial Lift, Self-Propelled	Max. Platform Height	150 Ft. Ht.	to 130	Articulated and Telescoping.	hour	$74.93
299	8495	I.C. Aerial Lift, Self-Propelled	Max. Platform Load - 500 Lbs	75"x155", 40Ft Ht.	to 80	2000 Lbs Capacity	hour	$30.13

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
300	8496	Crane, Truck Mounted	Max. Lift Capacity	24000 Lbs	0	Include truck rate for total cost	hour	$20.80
301	8497	Crane, Truck Mounted	Max. Lift Capacity	36000 Lbs	0	Include truck rate for total cost	hour	$29.28
302	8498	Crane, Truck Mounted	Max. Lift Capacity	60000 Lbs	0	Include truck rate for total cost	hour	$45.07
303	8500	Crane	Max. Lift Capacity	8 MT	to 80		hour	$59.49
304	8501	Crane	Max. Lift Capacity	15 MT	to 150		hour	$98.07
305	8502	Crane	Max. Lift Capacity	50 MT	to 200		hour	$141.89
306	8503	Crane	Max. Lift Capacity	70 MT	to 300		hour	$198.29
307	8504	Crane (Crawler)	Max. Lift Capacity	110 MT	to 350		hour	$232.88
308	8510	Saw, Concrete	Blade Diameter	14 In	to 14		hour	$7.29
309	8511	Saw, Concrete	Blade Diameter	26 In	to 35		hour	$11.63
310	8512	Saw, Concrete	Blade Diameter	48 In	to 65		hour	$24.18
311	8513	Saw, Rock	Blade Diameter		to 100		hour	$41.98
312	8514	Saw, Rock	Blade Diameter		to 200		hour	$94.55
313	8517	Jackhammer (Dry)	Weight Class	25-45 Lbs	0	Pneumatic Powered	hour	$1.71
314	8518	Jackhammer (Wet)	Weight Class	30-55 Lbs	0	Pneumatic Powered	hour	$1.90
315	8521	Scraper	Scraper Capacity	15 CY	to 262		hour	$131.34
316	8522	Scraper	Scraper Capacity	22 CY	to 365		hour	$213.55
317	8523	Scraper	Scraper Capacity	34 CY	to 500		hour	$275.45
318	8524	Scraper	Scraper Capacity	44 CY	to 604		hour	$327.93
319	8540	Loader, Skid-Steer	Operating Capacity	976 - 1250 Lbs	to 36		hour	$26.04
320	8541	Loader, Skid-Steer	Operating Capacity	1751 - 2200 Lbs	to 66		hour	$31.16
321	8542	Loader, Skid-Steer	Operating Capacity	2901 to 3300 Lbs	to 81		hour	$36.76

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
322	8549	Snow Plower, Salt Spreader	Towed Salt Spreader/Snow Plower	26 ft X 8 ft	260	Plus Towed Salt Spreader	hour	$25.00
323	8550	Snow Blower, Truck Mounted	Capacity	600 Tph	to 75	Does not include truck	hour	$33.74
324	8551	Snow Blower, Truck Mounted	Capacity	1400 Tph	to 200	Does not include truck	hour	$90.01
325	8552	Snow Blower, Truck Mounted	Capacity	2000 Tph	to 340	Does not include truck	hour	$135.34
326	8553	Snow Blower, Truck Mounted	Capacity	2500 Tph	to 400	Does not include truck	hour	$147.02
327	8558	Snow Thrower, Walk Behind	Cutting Width	25 in	to 5		hour	$3.01
328	8559	Snow Thrower, Walk Behind	Cutting Width	60 in	to 15		hour	$14.67
329	8559-1	SnowBroom	Oshkosh Snow Broom	Blower Airport Equipment Model 2718	450-500		hour	$184.00
330	8560	Snow Blower	Capacity	2,000 Tph	to 400		hour	$232.52
331	8561	Snow Blower	Capacity	2,500 Tph	to 500		hour	$251.98
332	8561-1	Snow Blower	MTE Snow Mauler		428		hour	$260.00
333	8561-2	Snow Blower	Vammas PSB 4500MTE	Uses high quality Bristles	420		hour	$266.00
334	8562	Snow Blower	Capacity	3,500 Tph	to 600		hour	$278.68
335	8563	The Vammas 4500	Snow Remover	26ft Plow, 20ft Broom + Airblast	428	Equip with Plow & Broom	hour	$263.64
336	8564	The Vammas 5500	RM300	96"W x 20"D	350	Soil Stabilization, Reclaimer	hour	$214.97
337	8565	Pavement Sweeper	H-Series		420	Equip with Broom	hour	$232.21
338	8569	Dust Control De-Ice Unit	1300-2000 gal	173"Lx98"Wx51"H	5.5	Hydro Pump w/100' 1/2" hose	hour	$3.59

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
339	8570	Loader-Backhoe, Wheel	Loader Bucket Capacity	0.5 CY	to 40	Loader and Backhoe Buckets included.	hour	$22.97
340	8571	Loader-Backhoe, Wheel	Loader Bucket Capacity	1 CY	to 70	Loader and Backhoe Buckets included.	hour	$30.36
341	8572	Loader-Backhoe, Wheel	Loader Bucket Capacity	1.5 CY	to 95	Loader and Backhoe Buckets included.	hour	$43.91
342	8573	Loader-Backhoe, Wheel	Loader Bucket Capacity	1.75 CY	to 115	Loader and Backhoe Buckets included.	hour	$52.69
343	8580	Distributor, Asphalt	Tank Capacity Mounted on Trailer	550 Gal	16	burners, insulated tank, and circulating spray bar.	hour	$18.40
344	8581	Distributor, Asphalt	Tank Capacity Mounted on Trailer	1000 Gal	38	Truck Mounted. Includes burners, insulated tank, and circulating spray bar. Include truck rate.	hour	$27.35
345	8582	Distributor, Asphalt	Tank Capacity Mounted on Truck	4000 Gal		Truck Mounted. Includes burners, insulated tank, and circulating spray bar. Include truck rate.	hour	$39.34
346	8583	Distributor	ETNYRE Oil Distributor Model - PB348		300		hour	$44.18
347	8584	Distributor	ETNYRE Quad Chip Spreader		280		hour	$88.36
348	8590	Trailer, Dump	Capacity	20 CY	0	Does not include Prime Mover.	hour	$12.81

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
349	8591	Trailer, Dump	Capacity	30 CY	0	Does not include Prime Mover.	hour	$13.56
350	8600	Trailer, Equipment	Capacity	30 Tons	0		hour	$16.99
351	8601	Trailer, Equipment	Capacity	40 Tons	0		hour	$18.74
352	8602	Trailer, Equipment	Capacity	60 Tons	0		hour	$23.01
353	8603	Trailer, Equipment	Capacity	120 Tons	0		hour	$34.36
354	8610	Trailer, Water	Tank Capacity	4000 Gal	0	Includes a centrifugal pump with sump and a rear spraybar.	hour	$15.84
355	8611	Trailer, Water	Tank Capacity	6000 Gal	0	Includes a centrifugal pump with sump and a rear spraybar.	hour	$19.44
356	8612	Trailer, Water	Tank Capacity	10000 Gal	0	Includes a centrifugal pump with sump and a rear spraybar.	hour	$22.61
357	8613	Trailer, Water	Tank Capacity	14000 Gal	0	Includes a centrifugal pump with sump and a rear spraybar.	hour	$28.09
358	8614	Truck- Water Tanker	1000 gal. tank		175		hour	$32.44
359	8620	Tub Grinder			to 440		hour	$99.68
360	8621	Tub Grinder			to 630		hour	$150.70
361	8622	Tub Grinder			to 760		hour	$192.21
362	8623	Tub Grinder			to 1000		hour	$337.45
363	8627	Horizontal Grinder	Model HG6000		630		hour	$59.95
364	8628	Stump Grinder	1988 Vermeer SC-112		102		hour	$49.27
365	8629	Stump Grinder	24" grinding wheel		110		hour	$46.96

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
366	8630	Sprayer, Seed	Working Capacity	750 Gal	to 30	Trailer & truck mounted. Does not include Prime Mover.	hour	$14.61
367	8631	Sprayer, Seed	Working Capacity	1250 Gal	to 50	Trailer & truck mounted. Does not include Prime Mover.	hour	$20.21
368	8632	Sprayer, Seed	Working Capacity	3500 Gal	to 115	Trailer & truck mounted. Does not include Prime Mover.	hour	$30.20
369	8633	Mulcher, Trailer Mounted	Working Capacity	7 TPH	to 35		hour	$15.17
370	8634	Mulcher, Trailer Mounted	Working Capacity	10 TPH	to 55		hour	$22.34
371	8635	Mulcher, Trailer Mounted	Working Capacity	20 TPH	to 120		hour	$31.50
372	8636	Scraper	Soil Recycler WR 2400	w 317 gal fuel tank	563		hour	$320.08
373	8637	Trailer	Double Belly Bottom-dump Trailer	26 CY of soil in one dump	330	13 CY of soil each berry	hour	$40.53
374	8638	Rake	Barber Beach Sand Rake 600HDr, towed		0	Towed by Beach vehicle	hour	$16.00
375	8639	Chipper	Wildcat 626 Cougar Trommel Screen chipper w belt		125		hour	$35.88
376	8640	Trailer, Office	Trailer Size	8' x 24'	0	Cargo Size 16ft	hour	$2.31
377	8641	Trailer, Office	Trailer Size	8' x 32'	0	Cargo Size 24ft	hour	$2.74
378	8642	Trailer, Office	Trailer Size	10' x 32'	0	Cargo Size 20ft	hour	$3.62

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
379	8643	Trailer	Haz-Mat Equipment trailer	8'x18'	0	Move by Tractor to Location	hour	$39.42
380	8644	Trailer, Covered Utility Trailer	(7’ X 16’)		0	Move by Tractor to Location	hour	$5.96
381	8645	Trailer, Dodge Ram	8' x 24' shower trailer- 12 showers		101		hour	$30.75
382	8646	Trailer, Dodge	8' x 32’ flatbed water	25,000 MGVW	200	4x2-Axle	hour	$29.00
383	8650	Trencher			to 40	Walk-behind, Crawler & Wheel Mounted. Chain and Wheel.	hour	$17.24
384	8651	Trencher			to 85	Walk-behind, Crawler & Wheel Mounted. Chain and Wheel.	hour	$29.85
385	8652	Trencher/Ditcher	New Holland B115B (disc. 2012)	EROPS 4WD	108		hour	$36.56
386	8653	Trencher/Ditcher	New Holland T8.330	EROPS 4WD	284		hour	$86.94
387	8654	Trencher Accessories	2008 Griswold Trenchbox		0		hour	$1.99
388	8660	Plow, Cable	Plow Depth	24 in	to 30		hour	$13.93
389	8661	Plow, Cable	Plow Depth	36 in	to 65		hour	$40.95
390	8662	Plow, Cable	Plow Depth	48 in	to 110		hour	$43.15
391	8670	Derrick, Hydraulic Digger	Max. Boom = 60 Ft, 12,000 Ft-Lb Hydraulic	Lift Capacity 15,500 Lbs	275	Includes hydraulic pole alignment attachment. Include truck rate	hour	$36.15

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
392	8671	Derrick, Hydraulic Digger	Max. Boom = 90 Ft, 14000 Ft-Lb Hydraulic	Lift Capacity 26,700 Lbs	310	Includes hydraulic pole alignment attachment. Include truck rate	hour	$56.38
393	8672	Movax SP-60	28-32 ton Head	134KW	178	Sonic Sidegrip Vibratory Pile Driver	Hour	$110.73
394	8680	Truck, Fire Aerial Platform	112Ft Ladder	3000gpm/1000 gal Water or Foam	600	2-1000gpm Nozzles 1-Each side of Platform	Hour	$85.90
395	8681	Truck, Fire, Engine Type-1		1000GPM/300gal		Engine, with Pump & Roll	hour	$141.96
396	8682	Truck, Fire, Engine Type-2		500GPM/300gal		Engine, with Pump & Roll	hour	$133.85
397	8683	Truck, Fire, Engine Type-3	48 ft Ladder	150gpm/500gal,	115-149	Hose 1-1/2"D 500' Long	hour	$120.97
398	8684	Truck, Fire	Aerial 100Ft Ladder	2000gpm/500gal	450	1500gpm Monitor/nozzle	hour	$180.49
399	8685	Truck, Fire (Type-I)	48 ft Ladder	1000gpm/400gal, 500gpm Master Stream	200-250	Hose 2-1/2"D 1200' Long	hour	$156.16
400	8686	Truck, Fire (Type-II)	48 ft Ladder	500gpm/300gal	100-199	Hose 2-1/2"D 1000' Long	hour	$133.34
401	8687	Truck, Fire, Support Water Tender S1		300GPM/4000gal	115-149	S1 Water Tender	hour	$116.10
402	8688	Truck, Fire, Support Water Tender S2		200GPM/2500gal		S2 Water Tender	hour	$104.95
403	8689	Truck, Fire, Support Water Tender S3		200GPM/1000gal		S3 Water Tender	hour	$80.11
404	8690	Truck, Fire		1000 GPM @150 psi			hour	$71.31
405	8691	Truck, Fire		1250 GPM/2500 gal	500		hour	$75.61
406	8692	Truck, Fire		1500 GPM/1000 gal	500		hour	$82.24
407	8693	Truck, Fire		2000 GPM			hour	$85.22

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
408	8694	Truck, Fire Ladder	Aerial 75 ft Ladder	1500GPM/600 gal	475		hour	$122.69
409	8695	Truck, Fire Ladder	Aerial 150 ft Ladder	150 FT		No Platform,	hour	$148.48
410	8696	Truck, Fire	No Ladder		330	Rescue Equipment	hour	$97.71
411	8697	Truck, Fire, Tactical Water Tender T1		250GPM/2000gal	175		hour	$121.17
412	8698	Truck, Fire, Tactical Water Tender T2		250GPM/1000gal			hour	$104.11
413	8699	Truck, Fire, Engine Type-3		150GPM/500gal		Engine, with Pump & Roll	hour	$128.27
414	8700	Truck, Flatbed	Maximum Gvw	15000 Lbs	to 200	Diesel Engine	hour	$22.24
415	8701	Truck, Flatbed	Maximum Gvw	25000 Lbs	to 275	Gasoline Engine	hour	$33.72
416	8701-1	Truck, Flatbed	Maximum Gvw	25000 Lbs	200	Diesel Engine	hour	$28.95
417	8702	Truck, Flatbed	Maximum Gvw	30000 Lbs	217	Diesel Engine	hour	$29.31
418	8703	Truck, Flatbed	Maximum Gvw	45000 Lbs	to 380	Diesel Engine	hour	$48.23
419	8708	Trailer, Semi	48ft to 53ft, flat-bed, freight, two axle	50,000 gvwr	0		hour	$8.79
420	8709	Trailer, Semi	enclosed 48 ft to 53 ft, two axles	50,000 gvwr	0	Enclosed	hour	$9.96
421	8710	Trailer, Semi	28ft, single axle, freight	25,000 gvwr	0		hour	$10.15
422	8711	Flat Bed Utility Trailer	6 ton		0		hour	$3.62
423	8711-1	Sewer Camera Inspection Truck		Aries Pathfinder System Control Center, Work Station			hour	$14.00
424	8712	Cleaner, Sewer/Catch Basin	Hopper Capacity	5 CY	50	Truck Mounted. (350 gal)	hour	$25.81
425	8713	Cleaner, Sewer/Catch Basin	Hopper Capacity	14 CY	60	Truck Mounted. (1500 Gal)	hour	$31.96

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
426	8714	Combined Sewer Cleaning	800 Gal Spoils/400 Gal Water	500/800 gal	190	with water & waste Tanks	hour	$86.29
427	8714-1	Vector Combine Vacuum Truck	1500 gal Water	15 Cu Yd	330	with water & waste Tanks	hour	$88.16
428	8714-2	Combined Sewer Cleaning	Peterbilt	1500 gal Water	345		hour	$90.00
429	8714-3	Combined Sewer Cleaning	VACCON Combined Sewer Vacuum	500-1500 gals	370		hour	$80.00
430	8715	Truck, Hydro Vac	model LP555DT	pump	36	Towed by tractor	hour	$18.76
431	8716	Leaf Vac	Tow by Truck 22,000 cfm capacity		85	Leaf Vac + Truck Code 8811	hour	$53.67
432	8717	Truck, Vacuum	60,000 GVW		400		hour	$77.79
433	8718	Trash Pump	CPB Rating - 10MTC	10000 gal/Hr	7	Self- Priming Trash Pump	hour	$7.87
434	8719	Litter Picker	model 2007 Barber		0	Towed by tractor	hour	$9.59
435	8720	Truck, Dump	Struck Capacity	8 CY	to 220		hour	$52.96
436	8721	Truck, Dump	Struck Capacity	10 CY	to 320		hour	$65.75
437	8722	Truck, Dump	Struck Capacity	12 CY	to 400		hour	$73.31
438	8723	Truck, Dump	Struck Capacity	14 CY	to 400		hour	$78.59
439	8724	Truck, Dump, Off Highway	Struck Capacity	28 CY	to 450		hour	$139.82
440	8725	Truck, Dump	Struck Capacity	18 CY	to 400		hour	$84.27
441	8726	Truck, Dump	Caterpillar Sand hauling truck		489		hour	$132.00
442	8730	Truck, Garbage	Capacity	25 CY	to 255		hour	$50.49
443	8731	Truck, Garbage	Capacity	32 CY	to 325		hour	$57.86

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
444	8733	E-BAM Services	Environmental Beta Attenuation Air Monitor		0	Powered by Solar System	hour	$3.11
445	8734	Attenuator, Safety	that can stop a vehicle at 60 mph		0		hour	$5.44
446	8735	Truck, Attenuator	2004 Truck Mounted for 60 mph		0		hour	$3.94
447	8736	Truck, Tow	1987 Chevy Kodiak 70		175		hour	$29.13
448	8744	Van, Custom	Special Service Canteen Truck		350		hour	$18.61
449	8745	Van, Sstep	model MT10FD		300		hour	$22.36
450	8746	Van-up to 15 Passenger	light duty, class 1		225-300		hour	$20.77
451	8747	Van-up to 15 Passenger	light duty, class 2		225-300		hour	$21.06
452	8748	Van-Cargo	light duty, class 1		225 - 300		hour	$22.75
453	8749	Van-Cargo	light duty, class 2		225-300		hour	$23.00
454	8750	Vehicle, Small			to 30		hour	$6.50
455	8753	Vehicle, Recreational			to 10		hour	$2.91
456	8754	Motor Coach	GVW 50534	56 Passenger + 1-Driver	430	Passenger Transportation	Hour	$64.84
457	8755	Golf Cart	Battery operated	2 person	0		hour	$3.85
458	8761	Vibrator, Concrete	Shaft Length 16-ft, Head Diameter 2.5-in		2		hour	$1.51
459	8770	Welder, Portable			to 16	Includes ground cable and lead cable.	hour	$3.89

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
460	8771	Welder, Portable			to 34	Includes ground cable and lead cable.	hour	$7.09
461	8772	Welder, Portable			to 50	Includes ground cable and lead cable.	hour	$11.95
462	8773	Welder, Portable			to 80	Includes ground cable and lead cable.	hour	$12.22
463	8780	Truck, Water	Tank Capacity	2500 Gal	to 175	Include pump and rear spray system.	hour	$28.95
464	8781	Truck, Water	Tank Capacity	4000 Gal	to 250	Include pump and rear spray system.	hour	$52.59
465	8788	Container & Roll Off Truck	Roll off Truck	30 yds,	200	Roll-off-Truck only	hour	$24.06
466	8789	Truck, Tractor	1997 Freightliner F120		430		hour	$57.61
467	8790	Truck, Tractor	4 x 2	25000 lbs	to 210		hour	$40.49
468	8791	Truck, Tractor	4 x 2	35000 lbs	to 330		hour	$49.93
469	8792	Truck, Tractor	6 x 2	45000 lbs	to 360		hour	$57.25
470	8793	Truck	Ford F-450 Cutaway Truck		225		hour	$85.78
471	8794	Truck, Freight	Enclosed w/lift gate. Medium duty class 5	gvwr 16000-19500 Lbs	200	4 X 2 Axle (D)	hour	$27.63
472	8795	Truck, Backhoe Carrier	Three axle, class 8, heavy duty	over 33000Lbs	280		hour	$35.04

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
473	8796	Truck, Freight	Eenclosed w/lift gate. Heavy duty, class 7	26,001 to 33,000 lbs gvwr	217	4 X 2 Axle (D)	hour	$31.87
474	8797	Truck, Freight	M2-106	Refrigerated Box Truck	250		hour	$31.41
475	8798	Truck	Tilt and roll-back, two axle, class 7 heavy duty,	to 33,000 gvwr	217	4 X 2 Axle (D)	hour	$32.58
476	8799	Truck,	Tilt and roll back, three axle. class 8 heavy duty	over 33,001 gvwr	280	6 X 4 Axle (D)	hour	$42.92
477	8800	Truck, Pickup				When transporting people.	mile	$0.56
478	8801	Truck, Pickup	1/2-ton Pickup Truck	4x2-Axle	160		hour	$11.75
479	8802	Truck, Pickup	1-ton Pickup Truck	4x2-Axle	234		hour	$16.81
480	8803	Truck, Pickup	1 1/4-ton Pickup Truck	4x2-Axle	260		hour	$21.10
481	8804	Truck, Pickup	1 1/2-ton Pickup Truck	4x2-Axle	300		hour	$21.13
482	8805	Truck, Pickup	1 3/4-ton Pickup Truck	4x2-Axle	300		hour	$21.94
483	8806	Truck, Pickup	3/4-ton Pickup Truck	4x2-Axle	165		hour	$12.77
484	8807	Truck, Pickup	3/4-ton Pickup Truck	4x4-Axle	285	Crew	hour	$19.87
485	8808	Truck, Pickup	1-ton Pickup Truck	4x4-Axle	340	Crew	hour	$20.57

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
486	8809	Truck, Pickup	1 1/4-ton Pickup Truck	4x4-Axle	360	Crew	hour	$25.19
487	8810	Truck, Pickup	1 1/2-ton Pickup Truck	4x4-Axle	362	Crew	hour	$25.53
488	8811	Truck, Pickup	1 3/4-ton Pickup Truck	4x4-Axle	362	Crew	hour	$26.24
489	8820	Skidder Accessory	2005 JCB Grapple Claw		0		hour	$1.77
490	8821	Forklift, Accessory	2005 ACS Grapple Bucket		0		hour	$1.58
491	8822	Truck, Loader	Debris/Log (Knuckleboom Loader/Truck)		230		hour	$53.97
492	8823	Chipper- Wood Recycler	Cat 16 engine		700		hour	$120.16
493	8824	Skidder	model Cat 525B		up to 160		hour	$110.67
494	8825	Skidder	40K lbs- model Cat 525C		161 and up		hour	$132.45
495	8840	Truck, Service	fuel and lube	up to 26,000 gvwr	215-225		hour	$40.75
496	8841	Truck, Fuel	2009 International 1,800 gal. storage tank		200		hour	$32.46
497	8842	Mobile Command Trailer	(8’ X 28’) with 7.5 KW Generator		0	Move to Location by Tractor	hour	$14.94
498	8843	Mobile Response Trailer	(8’ X 31’) with 4.5 KW Generator?		0	Move to Location by Tractor	hour	$14.06
499	8844	Mobile Command Center	(unified) (RV) Ulitimaster MP-35	43 FT Long with Generator	400		hour	$87.31
500	8845	Mobile Command Post Vehicle	(RV) (In- Motion)	22-Ft Long	340		hour	$31.99

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
501	8846	Mobile Command Post Vehicle	(RV) (Stationary) w/9.6 KW Generator	22-Ft Long	340		hour	$20.61
502	8847	Mobile Command Center (Trailer)	48'x8' Trailer, Fully Equiped Mobile Command Center	48-Ft Long	0	Move to Location by Tractor	hour	$32.13
503	8848	Mobile Command Center (Trailer)	48'x8' When being Moved w/Truck Tractor		310		hour	$51.40
504	8849	Mobile Command Center	43'x8.5' x 13.5'H with self 30kw Generator		280	Generator Rate not included	hour	$56.15
505	8850	Mobile Command Center	2007-Freightliner MT-55, (RV)		260		hour	$47.78
506	8851	Mobile Command Van	1990- Ford Econoline-Communication Van		230	Communication Equipment	hour	$43.38
507	8852	Mobile Command Center	47.5' X 8.75 Fully Equip' (In motion) (RV)		410		hour	$68.99
508	8853	Mobile Command Center	47.5' X 8.75 Fully Equip' (Stationary)		410		hour	$46.53
509	8854	Mobile Command Vehicle	53' X 8.75 Fully Equip		480-550		hour	$100.22
510	8870	Light Tower	Terex/Amida AL 4000. with (4) 500 watt lights	10kw power unit	13.5		hour	$10.56
511	8871	Light Tower	2004 Allmand		7.5		hour	$6.67

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
512	8872	SandBagger Machine	(Spider) automatic	Vibration & Conveyor Motors	2-4.5		hour	$50.11
513	8900	Helicopter	OH-58 KIOWA (Military) is the same as “Bell-206B3		420		hour	$538.00
514	8901	Helicopter	OH-58 KIOWA (Military) is the same as “Bell-206BR		420		hour	$495.85
515	8902	Helicopter	Model Bell 206-L3 Jet Range Helicopter		650	Jet Range III-Helicopter	hour	$583.05
516	8903	Helicopter	Model Bell 206L1 Long Ranger		650	Long Ranger	hour	$593.67
517	8904	Helicopter	Model Bell 206LT Long Range Twinranger		450	Twinranger	hour	$773.99
518	8905	Helicopter	Model Bell 407 EMS- Ambulance		630		hour	$666.00
519	8906	Fixed wing	Model Navajo PA-31		310		hour	$450.00
520	8907	Fixed wing	PA-31-350, Navajo Chieftn twin engine		350		hour	$490.00
521	8908	Helicopter	Model UH-60 (Blackhawk) medium lift	Medium Lift	1890	Fire Fighter Same as S70C	hour	$3,016.09
522	8909	Helicopter	Model UH-A (Blackhawk) Medium lift	Medium Lift	1890	Fire Fighter	hour	$5,636.87

	A	B	C	D	E	F	G	H
1	Cost Code	Equipment	Specifications	Capacity or Size	HP	Notes	Unit	2021 Rate
523	8910	Helicopter	Model CH-47 (Chinook) heavy lift	Heavy Lift	2850	Fire Fighter	hour	$11,009.51
524	8911	Helicopter- light utility	Model Bell 407GX - 7 seater	7-Seaters	675	Passenger Aircraft	hour	$657.00
525	8912	Helicopter- light utility	Modle Bell 206L-7 seater	7-Seaters	420	Passenger Aircraft	hour	$616.43
526	8913	Helicopter	Model Bell-206L4		726		hour	$570.00
527	8914	Fixed wing	Blackhawk King Air B200XP61		669		hour	$1,608.00
528	8915	Fixed wing	Blackhawk Caravan XP42 A		850		hour	$864.00
529	8916	Fixed wing	King Air C90 XP135 A		550		hour	$1,416.00
530	8917	Aerostar Helicopter	Aerostar 601P		290		hour	$463.00
531	8918	Huey Helicopter	Engine:1 × Lycoming T53-L-11 turboshaft		1100	Travel Range 253 Nautical Miles	hour	$1,396.01
532	8919	Helicopter	Utility Bell 429		710		hour	$920.00
533	8920	Helicopter	Commercial Bell Huey II				hour	$1,107.00
534	8943	Wire Puller Machine	Overhead Wire Pulling Machine		30	Overhead/Underground Wire Pulling Machine	hour	$20.44
535	8944	Wire Tensioning Machine	3000 Lbs			Overhead Wire Tensioning Machine	hour	$15.05
536	8945	Aerial Lift	model 2008 Genie Scissor Lift	1000 Lbs		24 Volt	hour	$6.53

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Site Distance Study

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Driveway Sight Distance Study for Highway Access Technical Memorandum

Date:	May 9, 2023
To:	Jim Auld, Renewable Properties
From:	Gio Del Rivero, TRC
Subject:	Kane County, Highway 20 Solar Project
Project No.:	500015.0000.0005

1.0 Introduction

On behalf of RPIL Solar 5 LLC, TRC conducted a driveway sight distance study for the Kane County, Illinois, Highway 20 Solar Project (Project). The Project will be located on approximately 25 acres within a 116-acre parcel of land along U.S. Highway 20, west of Pingree Grove, Illinois. The Project is for proposed ground-mounted solar PV energy generation. During the pre-application meeting with Kane County zoning staff, a sight distance study was requested due to concerns of the proposed project driveway location along a curve on U.S. Highway 20.

2.0 Methodology

The sight distance study involves observing the furthest an object (i.e., an approaching vehicle approximately 2 feet above the center of the traffic lane) can be seen from the driver's eye.

Gio Del Rivero and Amanda Larsen, TRC biologists, conducted a site visit on March 22, 2023, under the supervision of Doug K. Illes, PR, MBA, TRC Senior Traffic Engineer, to complete the site distance study within the location of the proposed Project driveway area.

Prior to the field survey, TRC reviewed 'Table 13 – Sight Distance For Access' and 'Table 14 – Minimum Stopping Sight Distance for Access' from Section 2 of the Kane County Division of Transportation Access Permit and Access Control Regulations, dated January 1, 2004. According to these regulations, the distances listed in Table 13 shall be goals to meet or exceed when positioning an access driveway along the property frontage. Should these sight distances by physically unobtainable, the access shall be at a location that provides the sight distance closest to that required, provided that the minimum stopping sight distance, as listed in Table 14, is met or exceeded. Design speed is considered to be the posted speed limit plus 5 miles per hour.

The driver's eye was observed from 17 feet back from pavement edge and 3.5 feet above pavement edge at the proposed driveway location for the Project. The posted speed limit for U.S. Highway 20 was observed in

the field to be 55 miles per hour, therefor, the design speed per Table 13/14 is 60 miles per hour. Recommended sight distance (Table 13) for this design speed is 1,125 feet and minimum stopping sight distance (Table 14) is 570 feet.

TRC utilized sub-meter accurate GPS units to map the location of the furthest sight distance from the proposed driveway location.

3.0 Survey Findings

Observed sight distance west of the proposed driveway location was found to be 1,015 feet due to the curve of U.S. Highway 20 and existing vegetation and topography. Observed sight distance east of the proposed driveway location was found to be 670 feet due to existing topography. These distances are depicted in Figure 1 in Attachment A. Representative site photographs are included in Attachment B.

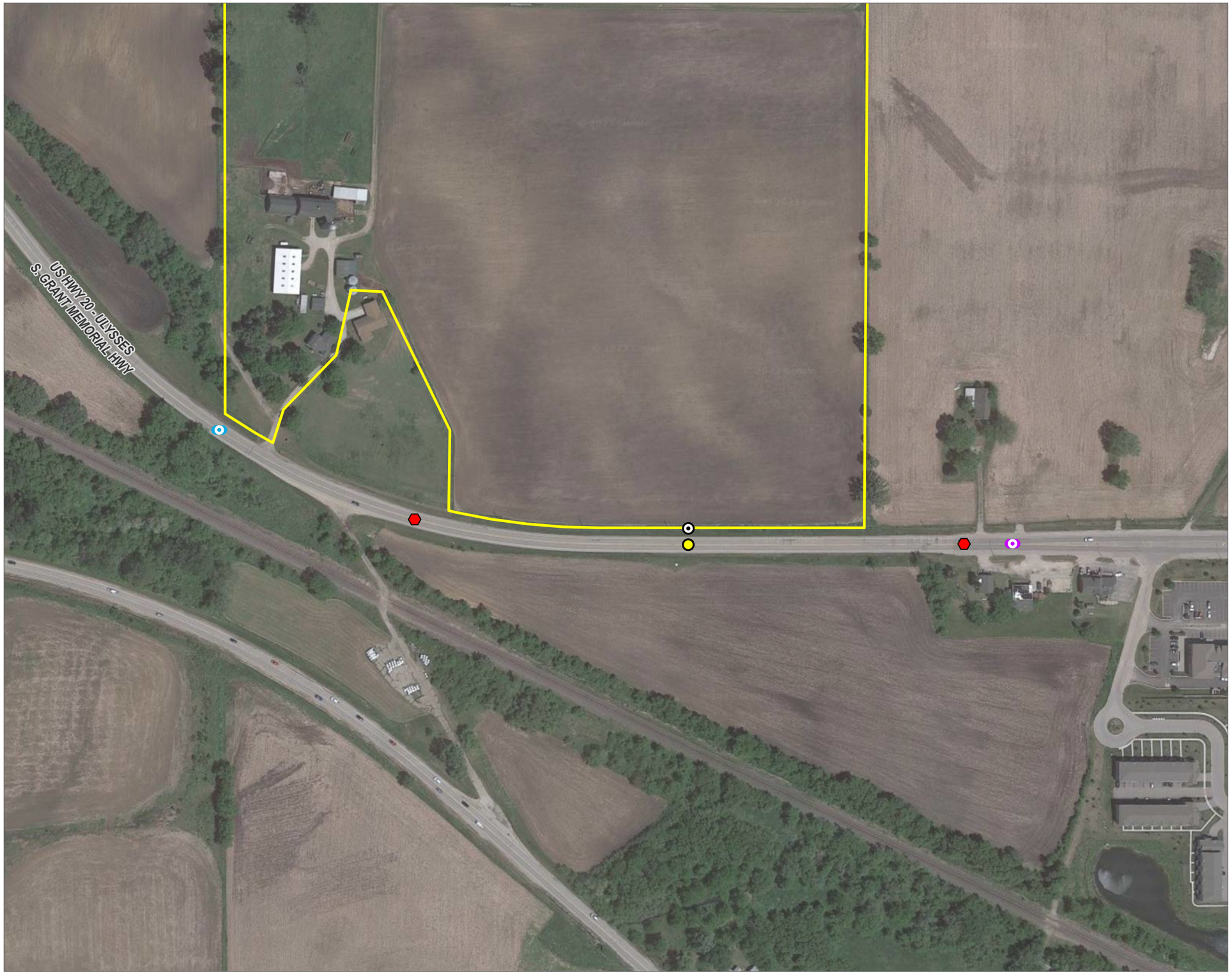
4.0 Conclusions

Sight distance to the west of the proposed driveway location was found to be 110 feet less than recommended but 445 feet more than minimum stopping sight distance. Sight distance to the east of the proposed driveway location was found to be 455 feet less than recommended but 100 feet more than minimum stopping sight distance. Accordingly, we believe no further action is required and the proposed entrance location will facilitate safe access to the site during throughout the Project's life cycle.

Attachment A: Figure 1 – Sight Distance Study
Attachment B: Representative Photographs

ATTACHMENT A

FIGURE 1 - SITE DISTANCE STUDY



STUDY AREA
1015 FOOT SIGHT DISTANCE
670 FOOT SIGHT DISTANCE
570 FOOT STOPPING DISTANCE
DRIVER'S EYE
PROPOSED DRIVEWAY ENTRANCE

NOTES:
1. BASE MAP IMAGERY FROM GOOGLE, MAY 2021.

1:2,400
1" = 200'

0 250 500 FEET

PROJECT:
RENEWABLE PROPERTIES - HIGHWAY 20
KANE COUNTY, IL

TITLE:
SIGHT DISTANCE STUDY

DRAWN BY:	A. FOJTIK	PROJ. NO.:	500015.0005
CHECKED BY:	G. DEL RIVERO		
APPROVED BY:	G. DEL RIVERO		**FIGURE 1**
DATE:	MAY 2023		

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FILE: T_E_Figures.aprx

Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet; Map Rotation: 0
Saved By AFOJTIK on 5/2/2023 10:21:19 AM; File Path: T:\1_PROJECTS\Renewable_Properties_LLC\500015_0005_Highway20\2-APRX\T_E_Figures.aprx; Layout Name: Fig01_SightDistanceStudy

ATTACHMENT B

REPRESENTATIVE PHOTOGRAPHS

Site Photographs

Project Name	Site Location	Project No.
Highway 20 Solar	Kane County, Illinois	500015.0005

Photo No.	Date
1	03/22/2023

Description

View from driver's eye, facing west.

Photo No.	Date
2	03/22/2023

Description

View from driver's eye, facing west.

Site Photographs

Project Name	Site Location	Project No.
Highway 20 Solar	Kane County, Illinois	500015.0005

Photo No.	Date
3	03/22/2023

Description

View toward driver's eye, facing north from center of road.

Photo No.	Date
4	03/22/2023

Description

View from driver's eye, facing south toward road.

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Natural Resources Survey

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Natural Resources Survey
Technical Memorandum

Date:	January 20, 2023
To:	Jim Auld, Renewable Properties
From:	Laura Giese, TRC
Subject:	Kane County, IL Hwy 20 Solar Project
Project No.:	500015.0000.0005

1.0 Introduction

On behalf of Renewable Properties, TRC conducted a natural resources survey for the Kane County Illinois Hwy 20 Solar Project (Project). The Project will be located on approximately 76 acres along Hwy 20 (43W708) in Hampshire (Attachment A). The Project plans to generate roughly 5 megawatts alternating current of clean, reliable solar energy and connect to ComEd's electrical distribution system, which is located onsite.

2.0 Statement of Qualifications

Dr. Laura A.B. Giese is a Senior Biologist/Forester with over 25 years of experience working in natural resources. Her credentials include Senior Professional Wetland Scientist (#1363), Professional Wetland Delineator – VA, Lake County, Illinois Certified Wetland Specialist, Certified Forester (#801), Registered Professional Forester-MD (#364), and Certified Senior Ecologist. She has been the principal investigator on surveys including rare, threatened and endangered species; botanical and floristic quality; wetlands and streams; anuran, avian, and reptile; forestry; and other natural resource assessments.

3.0 Methodology

The natural resources survey involves traversing the parcel to evaluate the potential presence of natural areas (woodlands, significant trees, and habitat for threatened and endangered species) within the Project area.

Laura Giese, TRC biologist/forester conducted a site visit on November 28, 2022, to complete the natural resources survey within the Project area.

Although Kane County does not have specific woodland protection standards, the natural resources survey adopted standards similar to Lake County, Illinois. Woodland categories and heritage/significant trees are categorized as such based on the Lake County Ordinance:

(a) *Mature woodlands.* A mature woodland is an area or stand of trees whose total combined canopy covers an area of 20,000 square feet or more, at least 50% of which is composed of trees having a diameter breast height of 16 inches or more.

(b) *Groves.* A grove is a stand of five or more individual trees whose total combined canopy covers an area of less than 20,000 square feet, at least 50% of which is composed of trees having a diameter breast height of 16 inches or more.

(c) *Young woodlands.* A young woodland is an area or stand of trees whose total combined canopy covers an area of 20,000 square feet or more, at least 50% of which is composed of trees having a diameter breast height of at least three inches and less than 16 inches.

(d) *Significant/Heritage trees.* Significant trees are trees having a diameter breast height (four and one-half feet above average ground elevation) of 24/25 inches or greater for deciduous trees and 12 inches or greater for evergreen trees.

Both heritage and significant trees were GPS-located and given a condition health rating of one of the following health categories: excellent, very good, good, fair, or poor.

Undesirable or non-native tree species (i.e., noxious species) such as *Acer negundo* (box elder), *Robinia pseudoacacia* (black locust), *Rhamnus cathartica* (common buckthorn), *Rhamnus frangula* (smooth buckthorn), Ailanthus altissima (tree of heaven), *Morus alba* (white or common mulberry), *Eleagnus angustifolia* (Russian olive), *Eleagnus umbellata* (autumn olive), *Populus alba* (white poplar) and *Ulmus pumila* (Siberian elm) generally shall not require protection.

Prior to the field survey a review for federally-and state-listed threatened and endangered species that may occur within the Study Areas was conducted by reviewing the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) website (https://ecos.fws.gov/ipac/). A review for state-listed species was conducted using the Illinois Department of Natural Resources (IDNR) EcoCAT tool. The data obtained from the USFWS IPaC report and IDNR EcoCAT tool was reviewed and habitat requirements of federally- and state-listed species was considered while completing the field survey.

A map was prepared showing areas that meet a woodland category definition, heritage and significant tree location, and areas that may be considered to have suitable habitat for state or federal threatened or endangered species within the Project area.

4.0 Survey Findings

Woodlands and Significant/Heritage Trees

The Study Area is comprised of an old farmstead with multiple buildings, cattle pasture, and several large fields. Fence rows border the east and west sides, with some minor internal fencing.

Twenty-eight (28) significant/heritage trees were GPS – located and are shown on Attachment B. Species included cottonwood (*Populus deltoides*), bur oak (*Quercus macrocarpa*), white oak (*Q. alba*), shagbark hickory

(*Carya ovata*), Norway spruce (*Picea abies*), black walnut (*Juglans nigra*), white pine (*Pinus strobus*), Scots pine (*P. sylvestris*), white fir (*Abies concolor*), and Norway maple (*Acer platanoides*). The heritage/significant trees are primarily scattered along the east and west sides, with a few in the pasture. Significant/heritage trees that were close but on the other side of the fence were not included. An approximately 0.42-acre grove of primarily planted ornamental trees, which includes some heritage/significant trees, is located in the southwestern portion of the Project Area near the farmstead. Most of the significant/heritage trees were in good health with fair form. A few trees were in fair to poor health and form.

Threatened and Endangered Species Habitat

Several species that may be present within the Project area were identified from the IPaC and EcoCAT review (Attachment C). The potential for suitable habitat with the Project area is discussed below.

Potential suitable roosting habitat was present for the northern long-eared bat (*Myotis septentrionalis*) within the grove near the farmstead, and the few shagbark hickory trees along the east side (Attachment B).

Several milkweed plants (*Asclepias syriaca*), the host plant for the Monarch butterfly (*Danaus plexippus*), were along the fenceline/field edges (Attachment B). There was no suitable habitat for the eastern prairie fringed orchid (*Platanthera leucophaea*).

Swainson's hawks (*Buteo swainsoni*) favor open habitats for foraging and have adjusted to agricultural settings. The hawk relies on scattered stands of trees near agricultural fields and grasslands for nesting sites. Suitable foraging habitat was present, but suitable nesting habitat was not. The IDNR has concluded that adverse effects are unlikely for this species as identified in the EcoCAT; therefore, consultation was terminated (Attachment C).

5.0 Conclusions

The natural resources survey identified a potential 0.42-acre grove, 28 heritage/significant trees, and potentially suitable habitat for the northern long-eared bat, monarch butterfly, and Swainson's hawk.

The proposed development plan does not involve removal of any native vegetation and entails construction in previously disturbed areas (e.g., manicured lawn, active agricultural fields, graveled, or otherwise un-vegetated areas that do not require impacts to trees). In addition, TRC has determined there are no potential impacts to surface or groundwater that could have consequences for species or critical habitats. Based on these factors, a "No Effect" determination is appropriate because the proposed development will not remove suitable habitat for any listed species and/or no habitat disturbance is anticipated. Hence, no listed species or designated critical habitat is anticipated to be directly or indirectly affected by the proposed development and consultation with the USFWS is not warranted.

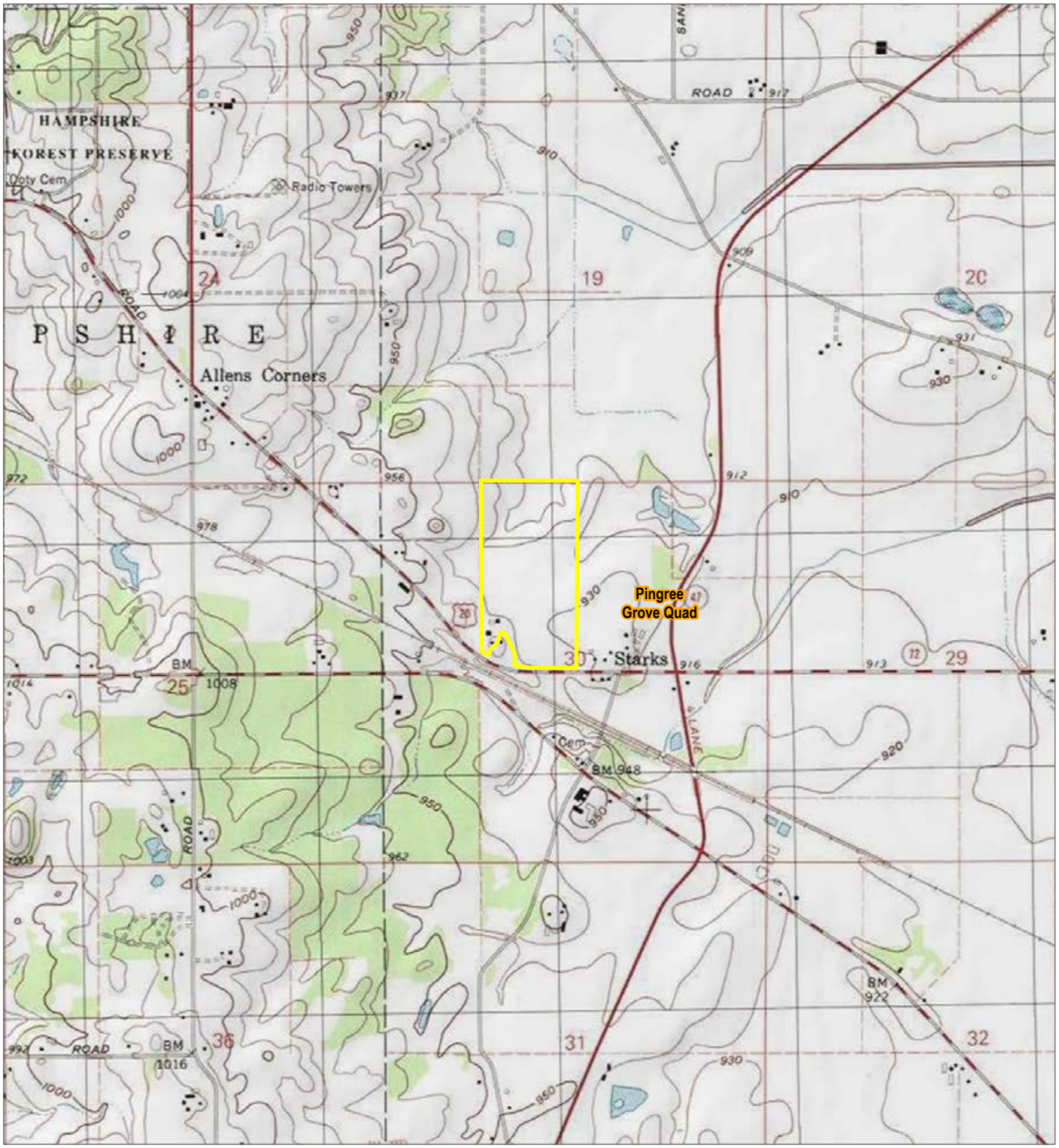
Should the proposed development plan change and areas identified as potentially suitable habitat for the northern long-eared cannot be avoided, further consultation with the USFWS is recommended to

ensure adverse effects are not anticipated. Conservation of monarch butterfly habitat is not regulated or required since it is a candidate species. However, it is recommended that suitable habitat and its primary host plant, common milkweed be conserved. The IDNR has concluded adverse effects are unlikely for the Swainson's Hawk; therefore, consultation with this agency has been terminated.

Attachment A: Site Location Map
Attachment B: Woodland and Potential Habitat Map
Attachment C: USFWS IPaC and IDNR EcoCAT; IDNR Termination Letter
Attachment D: Representative Photographs

ATTACHMENT A

SITE LOCATION MAP



STUDY AREA

USGS QUAD

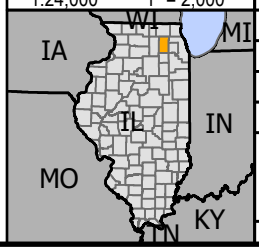
BASE MAP: USA TOPO MAPS MAP SERVICE , PINGREE GROVE QUAD
DATA SOURCES: TRC

N

0 1,000 2,000

FEET

1:24,000 1" = 2,000'



PROJECT:
RENEWABLE PROPERTIES - HIGHWAY 20
KANE COUNTY, IL

TITLE:
SITE LOCATION MAP

DRAWN BY:	M. OPEL	PROJ. NO.:	500015.0005
CHECKED BY:	A. MCMAHON		
APPROVED BY:	R. KLABACKA-WILLIAMS		**FIGURE 1**
DATE:	NOVEMBER 2022		

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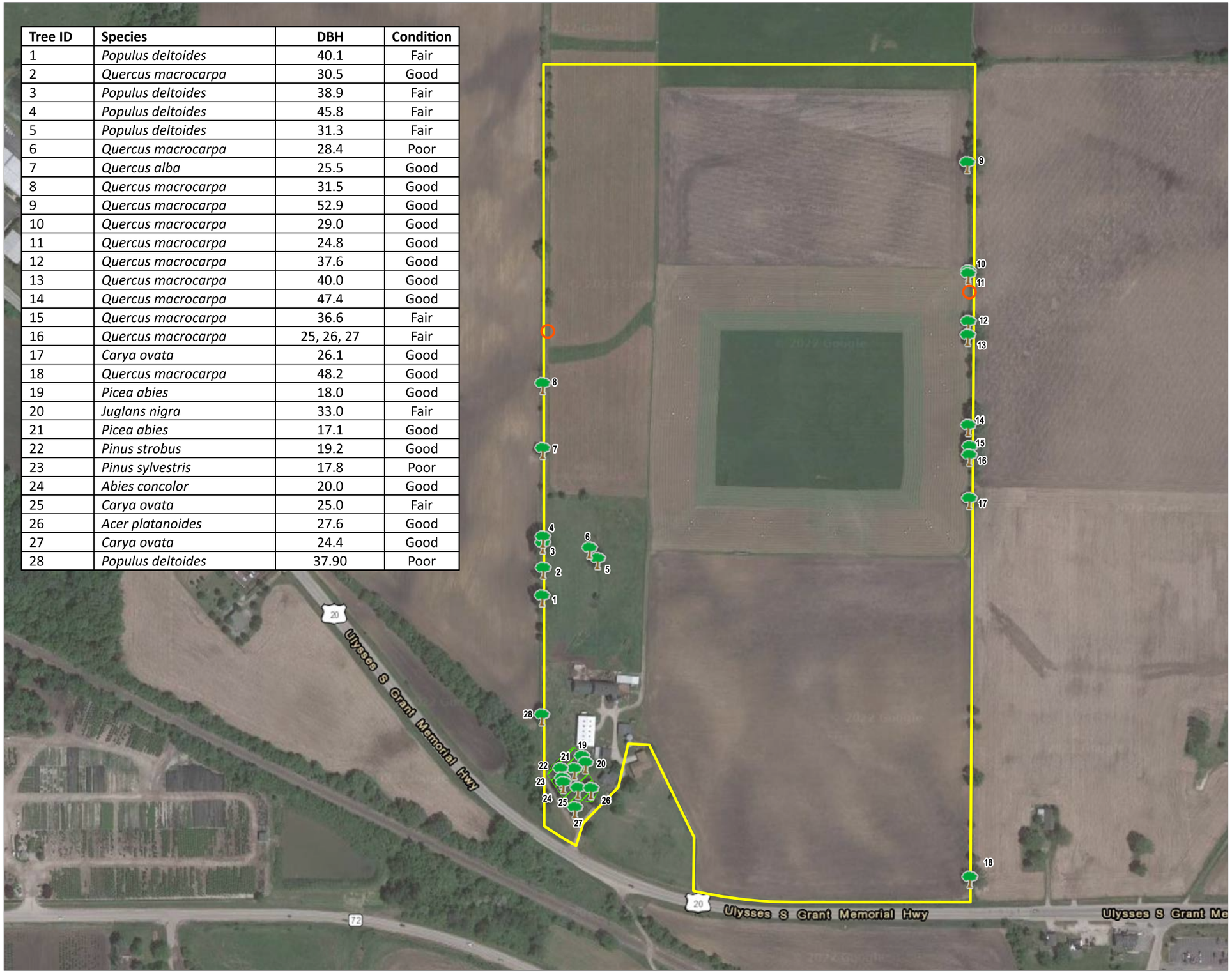
FILE: CULTURAL

ATTACHMENT B

WOODLAND AND POTENTIAL HABITAT MAP

Tree ID	Species	DBH	Condition
1	*Populus deltoides*	40.1	Fair
2	*Quercus macrocarpa*	30.5	Good
3	*Populus deltoides*	38.9	Fair
4	*Populus deltoides*	45.8	Fair
5	*Populus deltoides*	31.3	Fair
6	*Quercus macrocarpa*	28.4	Poor
7	*Quercus alba*	25.5	Good
8	*Quercus macrocarpa*	31.5	Good
9	*Quercus macrocarpa*	52.9	Good
10	*Quercus macrocarpa*	29.0	Good
11	*Quercus macrocarpa*	24.8	Good
12	*Quercus macrocarpa*	37.6	Good
13	*Quercus macrocarpa*	40.0	Good
14	*Quercus macrocarpa*	47.4	Good
15	*Quercus macrocarpa*	36.6	Fair
16	*Quercus macrocarpa*	25, 26, 27	Fair
17	*Carya ovata*	26.1	Good
18	*Quercus macrocarpa*	48.2	Good
19	*Picea abies*	18.0	Good
20	*Juglans nigra*	33.0	Fair
21	*Picea abies*	17.1	Good
22	*Pinus strobus*	19.2	Good
23	*Pinus sylvestris*	17.8	Poor
24	*Abies concolor*	20.0	Good
25	*Carya ovata*	25.0	Fair
26	*Acer platanoides*	27.6	Good
27	*Carya ovata*	24.4	Good
28	*Populus deltoides*	37.90	Poor



STUDY AREA

GROVE AND BAT ROOSTING HABITAT

HERITAGE/SIGNIFICANT TREE

MONARCH BUTTERFLY HABITAT

NOTES:
1. BASE MAP IMAGERY FROM GOOGLE, MAY 2021.

1:3,600
1" = 300'

0 250 500 FEET

PROJECT:
RENEWABLE PROPERTIES - HIGHWAY 20
KANE COUNTY, IL

TITLE:
WOODLANDS AND POTENTIAL HABITAT MAP

DRAWN BY:	A. FOJTIK	PROJ. NO.:	500015.0005
CHECKED BY:	L. GIESE		
APPROVED BY:	L. GIESE		**FIGURE 2**
DATE:	JANUARY 2023		

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FILE: T_E_Figures.aprx

Coordinate System: NAD 1983 StatePlane Illinois East FIPS 1201 Feet; Map Rotation: 0
Saved By: AFOJTIK on 1/6/2023 12:35:53 PM; File Path: T:\1-PROJECTS\Renewable_Properties_LLC\500015_0005_Highway20\2-APRXT_E_Figures.aprx; Layout Name: Fig02_SigTrees

ATTACHMENT C

USFWS IPaC, IDNR EcoCAT
IDNR TERMINATION of CONSULTATION LETTER

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Kane County, Illinois

Local office

Chicago Ecological Service Field Office

(312) 485-9337

U.s. Fish And Wildlife Service Chicago Ecological Services Office
230 South Dearborn St., Suite 2938

Chicago, IL 60604-1507

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Northern Long-eared Bat Myotis septentrionalis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9045	Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Flowering Plants

NAME	STATUS
Eastern Prairie Fringed Orchid Platanthera leucophaea Wherever found This species only needs to be considered if the following condition applies: • Follow the guidance provided at https://www.fws.gov/midwest/endangered/section7/s7process/plants/epfos7guide.html No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/601	Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Golden-plover Pluvialis dominica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds elsewhere

Bald Eagle Haliaeetus leucocephalus — Breeds Oct 15 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

Black-billed Cuckoo Coccyzus erythropthalmus — Breeds May 15 to Oct 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9399

Bobolink Dolichonyx oryzivorus — Breeds May 20 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Chimney Swift Chaetura pelagica — Breeds Mar 15 to Aug 25
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Henslow's Sparrow Ammodramus henslowii — Breeds May 1 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3941

Lesser Yellowlegs Tringa flavipes — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9679

Red-headed Woodpecker Melanerpes erythrocephalus — Breeds May 10 to Sep 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Rusty Blackbird Euphagus carolinus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Short-billed Dowitcher Limnodromus griseus — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

Wood Thrush *Hylocichla mustelina* Breeds May 10 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (▪)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

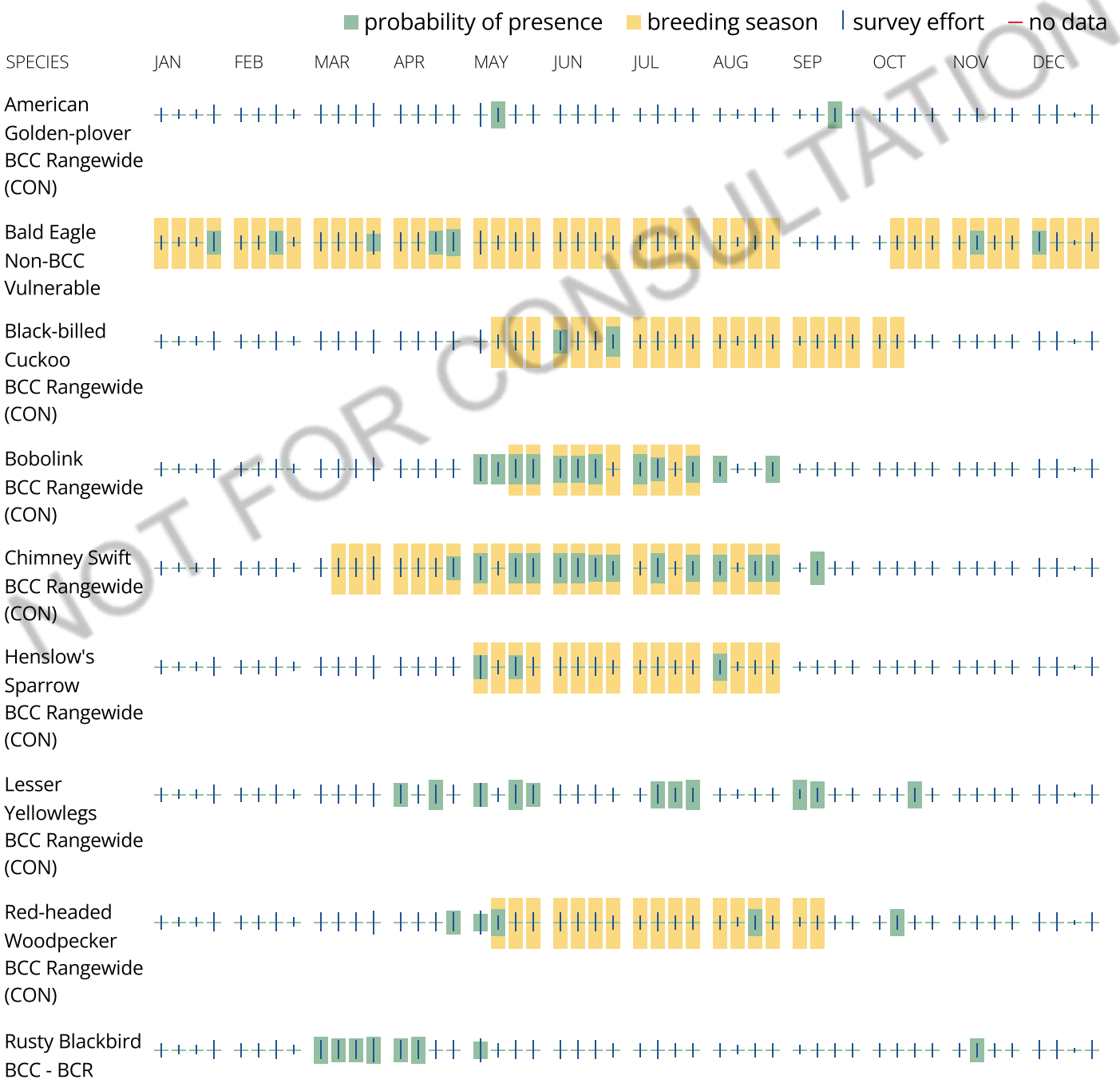
Survey Effort (|)

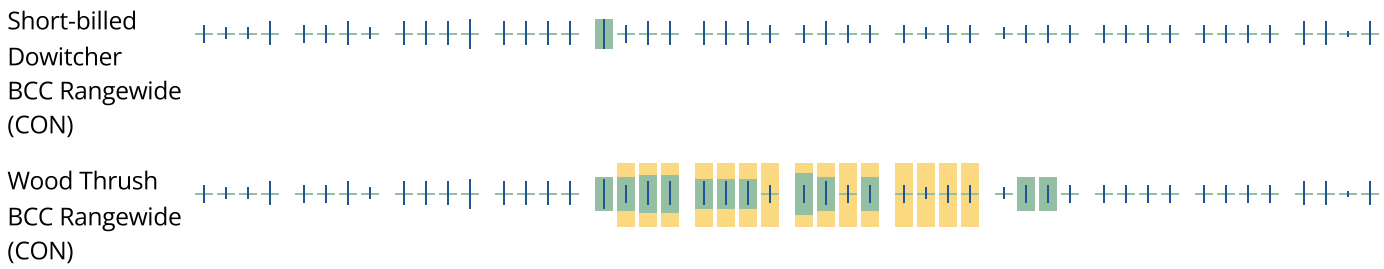
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.





Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory

birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Coastal Barrier Resources System

Projects within the John H. Chafee Coastal Barrier Resources System (CBRS) may be subject to the restrictions on Federal expenditures and financial assistance and the consultation requirements of the Coastal Barrier Resources Act (CBRA) (16 U.S.C. 3501 et seq.). For more information, please contact the local Ecological Services Field Office or visit the CBRA Consultations website. The CBRA website provides tools such as a flow chart to help determine whether consultation is required and a template to facilitate the consultation process.

There are no known coastal barriers at this location.

Data limitations

The CBRS boundaries used in IPaC are representations of the controlling boundaries, which are depicted on the official CBRS maps. The boundaries depicted in this layer are not to be considered authoritative for in/out determinations close to a CBRS boundary (i.e., within the "CBRS Buffer Zone" that appears as a hatched area on either side of the boundary). For projects that are very close to a CBRS boundary but do not clearly intersect a unit, you may contact the Service for an official determination by following the instructions here: https://www.fws.gov/service/coastal-barrier-resources-system-property-documentation

Data exclusions

CBRS units extend seaward out to either the 20- or 30-foot bathymetric contour (depending on the location of the unit). The true seaward extent of the units is not shown in the CBRS data, therefore projects in the offshore areas of units (e.g., dredging, breakwaters, offshore wind energy or oil and gas projects) may be subject to CBRA even if they do not intersect the CBRS data. For additional information, please contact CBRA@fws.gov.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

EcoCAT
Ecological Compliance Assessment Tool

Applicant: TRC
Contact: Gio Del Rivero
Address: 230 Monroe Street
Suite 1840
Chicago, IL 60606

IDNR Project Number: 2306854
Date: 11/21/2022

Project: Highway 20
Address: 43W708 U.S. Highway 20, Hampshire

Description: Proposed solar energy project with plans to generate 5MW (AC) of clean, reliable solar energy and connect to ComEd's electrical distribution system that's located onsite.

Natural Resource Review Results

Consultation for Endangered Species Protection and Natural Areas Preservation (Part 1075)

The Illinois Natural Heritage Database shows the following protected resources may be in the vicinity of the project location:

Swainson's Hawk *(Buteo swainsoni)*

An IDNR staff member will evaluate this information and contact you to request additional information or to terminate consultation if adverse effects are unlikely.

Location

The applicant is responsible for the accuracy of the location submitted for the project.

County: Kane

Township, Range, Section:
42N, 7E, 19
42N, 7E, 30

IL Department of Natural Resources Contact
Adam Rawe
217-785-5500
Division of Ecosystems & Environment

Government Jurisdiction
IL Environmental Protection Agency
Division of Water Pollution Control
P.O. Box 19276
Springfield, Illinois 62794

Disclaimer

The Illinois Natural Heritage Database cannot provide a conclusive statement on the presence, absence, or condition of natural resources in Illinois. This review reflects the information existing in the Database at the time of this inquiry, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, compliance with applicable statutes and regulations is required.

Terms of Use

By using this website, you acknowledge that you have read and agree to these terms. These terms may be revised by IDNR as necessary. If you continue to use the EcoCAT application after we post changes to these terms, it will mean that you accept such changes. If at any time you do not accept the Terms of Use, you may not continue to use the website.

1. The IDNR EcoCAT website was developed so that units of local government, state agencies and the public could request information or begin natural resource consultations on-line for the Illinois Endangered Species Protection Act, Illinois Natural Areas Preservation Act, and Illinois Interagency Wetland Policy Act. EcoCAT uses databases, Geographic Information System mapping, and a set of programmed decision rules to determine if proposed actions are in the vicinity of protected natural resources. By indicating your agreement to the Terms of Use for this application, you warrant that you will not use this web site for any other purpose.

2. Unauthorized attempts to upload, download, or change information on this website are strictly prohibited and may be punishable under the Computer Fraud and Abuse Act of 1986 and/or the National Information Infrastructure Protection Act.

3. IDNR reserves the right to enhance, modify, alter, or suspend the website at any time without notice, or to terminate or restrict access.

Security

EcoCAT operates on a state of Illinois computer system. We may use software to monitor traffic and to identify unauthorized attempts to upload, download, or change information, to cause harm or otherwise to damage this site. Unauthorized attempts to upload, download, or change information on this server is strictly prohibited by law.

Unauthorized use, tampering with or modification of this system, including supporting hardware or software, may subject the violator to criminal and civil penalties. In the event of unauthorized intrusion, all relevant information regarding possible violation of law may be provided to law enforcement officials.

Privacy

EcoCAT generates a public record subject to disclosure under the Freedom of Information Act. Otherwise, IDNR uses the information submitted to EcoCAT solely for internal tracking purposes.

Illinois Department of
Natural Resources

One Natural Resources Way Springfield, Illinois 62702-1271
http://dnr.state.il.us

JB Pritzker, Governor
Colleen Callahan, Director

November 22, 2022

Gio Del Rivero
TRC
230 Monroe Street
Suite 1840
Chicago, IL 60606

RE: Highway 20
Project Number(s): 2306854
County: Kane

Dear Applicant:

This letter is in reference to the project you recently submitted for consultation. The natural resource review provided by EcoCAT identified protected resources that may be in the vicinity of the proposed action. The Department has evaluated this information and concluded that adverse effects are unlikely. Therefore, consultation under 17 Ill. Adm. Code Part 1075 is terminated.

This consultation is valid for two years unless new information becomes available that was not previously considered; the proposed action is modified; or additional species, essential habitat, or Natural Areas are identified in the vicinity. If the project has not been implemented within two years of the date of this letter, or any of the above listed conditions develop, a new consultation is necessary.

The natural resource review reflects the information existing in the Illinois Natural Heritage Database at the time of the project submittal, and should not be regarded as a final statement on the site being considered, nor should it be a substitute for detailed site surveys or field surveys required for environmental assessments. If additional protected resources are encountered during the project's implementation, you must comply with the applicable statutes and regulations. Also, note that termination does not imply IDNR's authorization or endorsement of the proposed action.

Please contact me if you have questions regarding this review.

Adam Rawe
Division of Ecosystems and Environment
217-785-5500

ATTACHMENT D

REPRESENTATIVE PHOTOGRAPHS

Site Photographs

Project Name	Site Location	Project No.
Hwy 20 Solar	US Hwy 20, Hampshire, Kane County, IL	500015.0000.0005

Photo No.	Date
1	Nov. 2022

Description

Overview of the agricultural field from the south-central portion of the Project Area..

Facing north.

Photo No.	Date
2	Nov. 2022

Description

Overview of the agricultural field from the north-western corner of the Project Area..

Facing southeast.

Site Photographs

Project Name	Site Location	Project No.
Hwy 20 Solar	US Hwy 20, Hampshire, Kane County, IL	500015.0000.0005

Photo No.	Date
3	Nov. 2022

Description

Overview of the agricultural field from the northeastern portion of the Project Area..

Facing southwest.

Photo No.	Date
4	Nov. 2022

Description

Overview of the agricultural field from the eastcentral portion of the Project Area..

Facing west/southwest.

Site Photographs

Project Name	Site Location	Project No.
Hwy 20 Solar	US Hwy 20, Hampshire, Kane County, IL	500015.0000.0005

Photo No.	Date
5	Nov. 2022

Description

View of the bovine pasture and barn near the southwestern portion of the Project Area.

Facing south.

Photo No.	Date
6	Nov. 2022

Description

Typical fence line with natural vegetation where common milkweed was occasionally observed.

Facing south.

Site Photographs

Project Name	Site Location	Project No.
Hwy 20 Solar	US Hwy 20, Hampshire, Kane County, IL	500015.0000.0005

Photo No.	Date
7	Nov. 2022

Description

Grove of mixed hard-wood and planted orna-mental coniferous trees located in the southwest-ern portion of the Project Area.

Facing northwest.

Photo No.	Date
8	Nov. 2022

Description

Small pocket of eastern red cedar trees in the southwestern portion of the Project Area.

Facing north/northwest.

230 W. Monroe Street, Suite 1840
Chicago, IL 60606

T 630.370.0017
TRCcompanies.com

AIMA Application

Del Rivero, Giovani

From: Del Rivero, Giovani
Sent: Thursday, June 15, 2023 5:42 PM
To: AGR.AIMA@illinois.gov
Cc: Jeremy Price
Subject: Request for Agricultural Site Review for Solar Project Highway 20
Attachments: AIMA Application.pdf

Good afternoon,
Please see attached Solar Agricultural Site Review Form for our Highway 20 project in Kane County. Please let me know if you have any questions or require addition information during the review process.
Thank you,

Gio Del Rivero
Project Manager – Planning, Permitting, & Licensing

TRC
230 W. Monroe Street, Suite 1840, Chicago, IL 60606
T 773.828.6788 | **C** 630.370.0017 | gdelrivero@trccompanies.com
LinkedIn | Twitter | TRCcompanies.com

Illinois Department of Agriculture
AGRICULTURAL SITE - REVIEW INFORMATION
For **Solar Projects** Requesting Agricultural Impact Mitigation Agreements

Return to: **Illinois Department of Agriculture**
Bureau of Land and Water Resources
Phone 217-782-6297
Email AGR.AIMA@illinois.gov

Complete this Agricultural Site Review Information sheet and attach to each Solar Agricultural Impact Mitigation Agreement being submitted. Be sure to **include an aerial location map** delineating the site in relation to the city/village's corporate boundaries. **Email** all information to AGR.AIMA@illinois.gov

Date Submitted 6/15/2023

APPLICANT RPIL Solar 5, LLC **County** Kane

Contact Person Jeremy Price **Phone** (978) 382-1751

Email jprice@renewprop.com

List the project's contact person in the event that additional information is required. It is preferable to list the project's consultant and/or engineer since they usually possess the more detailed information needed to complete our review. The IDOA has a 30-day review period in which to provide comments to the applicant once all pertinent information has been received.

Address 43W708W U.S. Highway 20

City Hampshire **ZIP** 60140

1. Number of acres in the site 25 TWP 42N Range 7E Section 30
2. Will the site me converted from an agricultural to a non-agricultural use? ☒ Yes ☐ No
3. Site is located within municipality's corporate boundaries ☐ Yes ☒ No
4. Distance of site to nearest incorporated municipal boundaries adjacent miles
   (specify to nearest tenth-mile)

LAND USE

5. List the number of acres for each land use.
   Cropland 25 ac Pasture ____ ac Forest ____ ac Other ____ ac
   If ***Other,*** specify land use and land cover ____
6. County Permit issued? ☐ Yes ☒ No
7. Will other state or federal funds be used for this project? ☐ Yes ☒ No
   If **YES**, list the name(s) of participating agencies:

	state $	*federal $*
1) - ____	☐	☐
2) - ____	☐	☐

Submit by Email

ZONING MAPS
of
KANE COUNTY, ILLINOIS

MAP NO. RU-30

MAP SCALE
0 100 200 300 400 500
FEET

SECTION 30
RUTLAND TOWNSHIP

0 200 400 600 800
Feet

Revisions		
2/13 - BRB		
11/14 - BRB		
10/15 - BRB		

Digital Zoning Maps created September 9, 2003 (TMV, TJM)

Base data current as of February 28, 2019.

N

RU-30 ZONING

Kane County, Illinois

Building and Zoning Division

Mark D. Vankerkhoff, AIA
Zoning Enforcing Officer

Kane County
Government Center
719 S. Batavia Ave.
Bldg. A, 4th Floor
Geneva, IL 60134

Phone: 630.232.3492

ZONING LEGEND

FARMING DISTRICT
- F
- F-1
- F-2

RESIDENTIAL DISTRICT
- E-1
- E-2
- E-2A
- E-3
- R-1
- R-2
- R-3
- R-4
- R-5
- R-6
- R-7
- R-8
- R-9

BUSINESS DISTRICT
- RB
- B-1
- B-2
- B-3
- B-4
- B-5
- B-6

INDUSTRIAL DISTRICT
- LI
- I

SPECIAL DISTRICT
- PUD

AIRPORT DISTRICT
- A-1
- A-2

OTHER
- SU
- Incorporated
- Forest Preserve