Connecticut Green Bank
CEFIA Holdings LLC

PETITION OF CONNECTICUT GREEN BANK AND CEFIA HOLDINGS LLC FOR A DECLARATORY RULING THAT A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED IS NOT REQUIRED FOR THE CONSTRUCTION, OPERATION, AND MAINTENANCE OF A 1.95 MEGA WATT (AC) SOLAR PHOTOVOLTAIC POWER GENERATION FACILITY AT THE MALONEY & WEBSTER CORRECTIONAL INSTITUTION, 900 HIGHLAND AVENUE IN CHESHIRE, CONNECTICUT

May 17, 2022

Prepared for:

Connecticut Green Bank
75 Charter Oak Avenue, Suite 1-103
Hartford, CT 06106

CEFIA Holdings LLC
75 Charter Oak Avenue, Suite 1-103
Hartford, CT 06106

Project No. 2021-040:M&W

Prepared by:

J.R. Russo & Associates, LLC
Land Surveyors & Professional Engineers
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EXHIBIT LIST

I. INTRODUCTION

Pursuant to Conn. Gen. Stat.§§ 4-176(a) and 16-50k(a) and Conn. Agencies Regs.§ 16- 50j-38 *et seq.,* the Connecticut Green Bank, a Connecticut quasi-public agency (“Green Bank”) and CEFIA Holdings LLC, a Connecticut limited liability company and wholly-owned subsidiary of Green Bank (together with Green Bank being the “Petitioner”) requests that the Connecticut Siting Council ("Siting Council") approve by declaratory ruling the location, construction, operation, and maintenance of a solar photovoltaic facility capable of up to 2 MW AC, and associated equipment ("Project") consisting of approximately 7.19 acres of solar panels to beconstructed at the Maloney & Webster Correctional Institutions at 900 Highland Avenue in Cheshire, Connecticut (the "Project Site").

Conn. Gen. Stat. § 16-50k(a) provides:

> Notwithstanding the provisions of this chapter or title 16a, the council shall, in the exercise of its jurisdiction over the siting of generating facilities, approve by declaratory ruling... the construction or location of any customer-side distributed resources project or facility… with a capacity of not more than sixty-five megawatts, as long as: (i) Such project meets air and water quality standards of the Department of Energy and Environmental Protection, and (ii) the Council does not find a substantial adverse environmental effect...

As discussed in this Petition, the Petitioner's goal is to design and construct an environmentally-compatible project that produces the maximum amount of energy while avoiding and minimizing adverse environmental impacts. Based on the information presented in this Petition, the Project will meet the air and water quality standards established by the Department of Energy and Environmental Protection (“DEEP”), and will not cause any substantial adverse environmental effects to the immediate and surrounding area. Accordingly, the construction, operation, andmaintenance of the Project satisfies the criteria of Conn. Gen. Stat. § l6-50k(a).

II. PETITIONER

Green Bank is a quasi-public agency established and authorized pursuantto Conn. Gen. Stat. § l6-245n. As the nation's first full-scale green bank, it is leading the clean energy finance movement by leveraging public and private funds to scale-up renewable energy deployment and energy efficiency projects across Connecticut. CEFIA Holdings LLC is a wholly-owned subsidiary of Green Bank. The Petitioner is currentlyworking with the State of Connecticut (the "State') to facilitate solar photovoltaic ("PV") deployment at sites operated by the State's Department of Correction ("DOC").

Leading the development on behalf of the Petitioner is SunPower Corporation ("SunPower") SunPower is based in California, but is familiar with the requirements of projects in the Northeast as it has a regional office at 262 Washington St, Suite 700, Boston, MA. SunPoweris an industry leading developer and operator of solar energy facilities with over 36 years of experience with solar energy development having developed more than 1.2 GW of commercial solar projects in North America.

Please address all correspondence and/or communications regarding this Petition to:

Evan Mazzaglia
Project Manager
SunPower Corporation
262 Washington Street, Suite 700
Boston, MA 02108
Evan.Mazzaglia@sunpower.com

A copy of all such correspondence and/or communications to the Petitioner's Engineering Consultant:

Timothy Coon, P.E.
Principal Engineer
J.R. Russo & Associates, LLC
P.O. Box 938
East Windsor, CT 06088
tcoon@jrrusso.com

III. PROPOSED PROJECT

A. PROJECT BACKGROUND

In developing this Project, the Petitioner has taken into account the State's energy policy which includes: (i) having all electricity purchased and generated by the ExecutiveBranch being 100% zero carbon by 2030, and (ii) deploying an average of 10,000 kW DC of newsolar capacity annually for the next 10 years, primarily through new projects sited on state buildingsor property.[1] As a solar development, the proposed Project is considered a Class I renewable energy source under General Statutes § 16- 1(a)(26).

The Project creates a significant benefit for the State and its residents. Over the course of a 25-year Power Purchase Agreement (PPA) between the Petitioner and the State's Department of Administrative Services (DAS), the Project will produce solar power for consumption at DOC facilities while also reducing their electric bills. When the solar array is removed from the Property upon expiration of the lease, the prior agricultural use of the Property can resume, if so desired. During its lifespan, the Project will help to reduce greenhouse gas emissions and pollutants and also reduce the electric cost of the State.

B. SITE SELECTION

The Petitioner based the site selection process for the Project on a detailed evaluation of the following key criteria.

- Site suitability (size, topography, and apparent lack of biological and hydrological conflicts in initial screening);
- Site availability and mutual benefits (ability to come to suitable lease terms with landowner and offer meaningful savings under a Power Purchase Agreement); and
- Proposed cost of interconnecting to and proximity to critical infrastructure (suitable electrical grid access).

[1] See Governor Ned Lamont's Executive Order No. 21-03

After performing an initial site evaluation, the Petitioner began a preliminary design of a site layout that would best minimize negative environmental impacts. In addition, the Petitioner retained the following consultants to assist in the evaluation anddesign of the Project:

- Archaeological Consulting Services (ACS) - Archaeologist
- J.R. Russo & Associates, LLC - Civil Engineering/Surveying/Planning
- Davison Environmental - Wetland Delineation Report
- KMG Design Group - Electrical Design and Utility Interconnection

C. PROPERTY DESCRIPTION

The Project Site consists of approximately 7.19 acres of undeveloped land, part of a larger 244-acre parcel located at 900 Highland Avenue in Cheshire, Connecticut. A Vicinity Map is provided as Exhibit I. The property is owned by the State and is the current location of the Maloney & Webster Correctional Institutions operated by the DOC. The property is boundedto the north across Jarvis Street by other land of the State also utilized by the DOC; to the east across Highland Avenue by the Town Park, residential properties and Chapman Elementary School; to the southeast by the Cheshire Regional Rehab Center; and to the south and west by more residential properties. In addition, the Farmington Canal Heritage Trail is located just beyondthe property line to the west. However, the majority of western portion of the property consists ofundeveloped woodland which provide a buffer between the Project Site and the adjacent trail andresidences. The central portion of the property is improved with several buildings associated withthe Cheshire & Maloney & Webster Correctional Institutions. Exhibit II includes an aerial map

which depicts the surrounding zoning within one-half mile of the property. Exhibit III provides an overall Aerial Plan also showing the surrounding land uses within one-half mile.

The Project Site consists of a 7.19-acre array located west of the main correctional facility at 900 Highland Avenue, approximately 1,750 feet south of Jarvis Street and 1,720 feet west of Highland Avenue. The area is currently maintained as a hay field. The entirety of the Project Site is classified by the Natural Resource Conservation Service (NRCS) as Prime Farmland or Farmland of Statewide Importance (Exhibit IV).

D. PROJECT DESCRIPTION

The proposed solar array is anticipated to include 5,160 PV modules within a 7.19 acre fenced area. Construction activities will include layout and placement of foundation systems, racking, solar PV panels, and string inverters; installation of utility pads and associated electrical equipment; installation of electrical conduit, conduit supports; installation of underground transmission lines; and installation of security fencing. The array will be completely enclosed with a 7-foot chain-link security fence with gated accesselevated 8" off the ground to allow for small animal movement into and out of the array areas. Detailed Site Plans are provided in Exhibit V.

The PV panels and inverters will be mounted on a driven post racking system at a 25- degree tilt facing due south. Inverters will be mounted to the racking system, underneath the PV panels. The minimum and maximum height of the panels above grade will be two feet (2') and ten feet (10'), respectively. The aisle width between rows of panels will be 16.65 feet. A specification sheet for the anticipated PV module is included as Exhibit VI. However, the PV module is subject to change as additional optimization and market conditions may dictate.

The panels will be installed at existing grades. Thus, excavation and grading will be limited to the construction of the stormwater management basins,equipment pads and trenching for conduit installation. Minor soil disturbance will also berequired to drive the piles that will support the PV racking systems. As a result, the majority of the Prime Farmland Soils of Statewide Importance will be maintained. Construction of the project is anticipated to begin in the summer of 2022. The project construction period is estimated at 4-6 months from Notice to Proceed. Once operational, the Project will have a design life of twenty-five (25) years. The anticipated wattage of the Project is 1,950 kW AC. At the end of the operational life of the Project,the Petitioner will remove all equipment (e.g. racking system, panels, inverters, electrical collection system, etc.) from the Project Site. A Decommissioning Plan is provided as Exhibit VII. At that point, the land can be reverted back to its current as a hay field.

E. INTERCONNECTION

The Petitioner proposes interconnecting the Project to the existing25 kV switchgear located on the property. The interconnection will require the installation ofnew underground MV conduits in trench from the proposed ground mounted PV array locationalong the edge of the existing driveway to the switchgear located to the north of the main facility buildings adjacent to Jarvis Street. A 25 kV metal enclosed switch and metering compartment will be installed at the location of the existing switchgear. A pad mounted transformer will be installed at the location of the PV array to step-up the native voltage of the inverters from 480 V AC to 23 kV. The interconnection points will be behind the meter, and all power produced will be utilized by existing on-site DOC facilities.

F. LOCAL INPUT & NOTICE

The Petitioner has actively sought input and approval from the Town of Cheshire, and remains committed to providing the Town with as much information regarding the Project as possible. In support of this goal, the Petitioner submitted 50% drawings to the Town Planner in early February and attended a meeting with the Town Planner, Assistant Town Planner, Town Manager, and Public Safety Official on February 15, 2022 to present the site plan and solicit feedback. The project was well received by all parties. Final Site Plans will be provided to the Cheshire Planning Department concurrently with the submittal of this Petition to the Siting Council.

Additionally, as required by the Regulations of Connecticut State Agencies § 16-50j-40(a), the Petitioner provided notice of its intent to file this petition to all adjacent property owners and appropriate municipal and state legislative officials. Attached as Exhibit VIII is a copy of the notice, a list of those notified, and a map showing the abutting property owners.

IV. POTENTIAL ENVIRONMENTAL IMPACTS

The Petitioner and its consultants have completed a comprehensive environmental and cultural resources assessment of the Site. As part of this process, relevant agencies were consulted and environmental impacts were evaluated and mitigated as appropriate. For these reasons and those addressed further below, this Project avoids, reduces, and mitigates potential environmental impacts.

A. AIR QUALITY

The Project will have no air emissions during operation and only very minor air emissions of regulated air pollutants and greenhouse gases during construction. The Petitioner will control any temporary emissions at the Project Site during construction by enacting

appropriate mitigation measures (e.g., water for dust control; avoid mass early morning vehicle startups and excessive idling, etc.). Accordingly, any potential air effects produced by the Project's construction activities will be *de minimis*. During operation, the Project will not emit regulated air pollutants or greenhouse gases (e.g., PM, VOCs, GHG or ozone). No air permit will be required for either construction or operation of the Project. Moreover, as discussed above, the Project will provide a benefit to Air Quality by eliminating the discharge of CO_2 and other pollutants generated by fossil fuel burning energy sources that will be displaced by the Project.

B. BIOLOGICAL RESOURCES

An initial request for review of the Natural Diversity Database (NDDB) was submitted to the Connecticut Department of Energy and Environmental Protection (DEEP) during the spring of 2020. DEEP responded with a letter on July 22, 2020 (Exhibit IX). The NDDB review identified the potential existence of Eastern Box Turtle in the vicinity of the site and recommended implementation of specific Protection Strategies during construction to protect against the unintentional harm of the turtles. A copy of the Turtle Protection Strategies is includedas Exhibit X. These strategies have been incorporated in the development of the Site Plans and proposed construction sequence. As a result, the Project is not anticipated to have an adverse impact on the Eastern Box Turtle or any DEEP listed species.

C. WETLANDS

The vicinity of the Project Site was investigated for state and federal wetlands by Davison Environmental on October 7, 2021. The investigations identified no wetlands in the vicinity of the array or proposed development area. Davison's Wetland Delineation reports are provided in Exhibit XI.

D. STORMWATER MANAGEMENT

The Petitioner conducted outreach and met on February 1, 2022 with Chris Stone, Neal Williams, and Laura Gaughran of the DEEPs Stormwater section to discuss the Project's location, environmental characteristics and proposed stormwater management measures. This consultation was performed early on so that the DEEP's comments could be incorporated into the site design, particularly as they related to stormwater management and erosion and sedimentation measures.

As discussed above, the array will be installed at existing grades and maintaining existing vegetation. However, the orientation of the panels will be perpendicular to the existing contours, which could result in a tendency for the runoff from the panels to channelize along the drip line. To prevent the potential for erosion from channelized flow, curtain drains will be installed at the drip lines of the panels to collect and convey water to the stormwater management basin located west of the array. As a result of the collection and conveyance of runoff from the panels to the stormwater basins, the panel area was calculated as impervious area for the purpose of the hydrologic analysis.

The proposed fixed panel solar arrays will be installed on elevated racks that provide adequate height above the ground to promote the continued growth of the existing vegetative cover and allow for infiltration. Thus, the areas between and surrounding the panels were analyzed as pervious vegetated cover. The proposed stormwater management basin will be constructed downgradient of the array in order collect the runoff and provide treatment, groundwater recharge, and retention of the stormwater. The basin has been designed in accordance with the Connecticut Stormwater Quality Manual and the DEEP's General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities ("General Permit"). A detailed Drainage Report has been prepared by J.R. Russo & Associates, LLC (Exhibit

XII). As detailed in the report, the development of the site is anticipated to result in slightreduction of runoff from the site. Other temporary soil erosion and sedimentation control measures will include silt fencing, fiber rolls, outlet protection, and permanent seeding to stabilize disturbedsoils as soon as possible during construction. With these measures, the completed development isnot anticipated to have an adverse impact to the surrounding water and wetland resources.

Since the construction will disturb more than 1 acre of land, the Petitioner must register under the General Permit at least sixty (60) days prior to commencing construction activities. The Petitioner will prepare a Stormwater Pollution Control Plan, submit it to the DEEP for review, and register under the General Permit in accordance withthe requirements and timelines established by the General Permit.

E. FLOODPLAINS

The attached Federal Emergency Management Agency (FEMA) Flood Map (Exhibit XIII) indicates that the Project is not located within the 100-year flood zone. As a result, the proposed project is not expected to have an impact on the floodplain.

F. DRINKING WATER RESOURCES

The proposed activities associated with the Project do not involve the withdrawal of water, nor the storage or use of oil or hazardous materials (other than what is present in the construction equipment). Any water utilized during construction for dust control will be minimal. Thus, the proposed project is not anticipated to have an impact on the water quality in the vicinity of the Site.

A review of the Connecticut Aquifer Protection Area Map prepared by the CT DEEP Aquifer Protection Area Program (Exhibit XIV) indicates that the Project is not located within an area identified as an Aquifer Protection Area. The nearest Aquifer Protection Area is

located approximately 4,200 feet northwest of the Project Site. Based on the separation distance, the proposed project is not anticipated to have an impact on the Aquifer Protection Area.

G. HISTORIC RESOURCES

On January 14, 2022, a request was submitted to the Connecticut State Historic Preservation Office (SHPO) for review of the Project in relation to historic and archaeological resources. SHPO's response dated February 7, 2022 is provided as Exhibit XV. Based on the environmental characteristics of the Site, SHPO determined that the Project does have the potential to contain significant archeological resources. As a result, SHPO requested a professional archaeological assessment and reconnaissance survey be completed prior to construction.

Based on SHPO's request, Archaeological Consulting Services (ACS), was retained to conduct a Phase 1 archaeological reconnaissance survey at the Project Site. The assessment was completed during March and April 2022. An Interim Report prepared by ACS is provided as Exhibit XVI. The report concludes that no positively identified prehistoric feature contexts or artifacts were identified during the survey and recommends no further archaeological conservation effort be required. A copy of the Interim Report will be submitted to SHPO for their concurrence with the findings of the report. Based on the results of the survey, the Project is not anticipated to have a negative effect on any historical or archaeological resources.

H. SCENIC VALUES & VISUAL IMPACTS

As discussed above, the Site Property is the location of an existing State correctional facility. The majority of the land surrounding the Project Site consists of State-ownedland utilized for correctional facilities. The nearest residences are located over 460 feet southeast of the Project Site along Curve Hill Road. As shown on the Overall Site Plan (Exhibit 4), many existing trees are located between the Project Site and residences along Curve Hill Road and Contour Drive. However, as an additional measure to provide a visual

buffer, the Project will include the planting of a row of evergreens (arborvitae's) along the southern edge of the field on the State property. Other residential properties and the Farmington Canal Rail Trail to the west will be screened by approximately 475 feet of existing mature forest. The residences, park and school on the opposite side of Highland Avenue will be screened by the existing vegetation and prison structures. As a result of the existing buffers and proposed evergreen screen along the south end of the field, the Project is not anticipated to have any adverse visual impacts on nearby sensitive receptors. Furthermore, the use of low-profile Project components that will be no greater than ten (10) feet above grade (e.g., racking system, panels, inverters, etc.) also significantly reduces potential visible impact.

I. PUBLIC HEALTH AND SAFETY

Overall, the Project will meet or exceed all health and safety requirements applicable for electric power generation. Each employee working on the Project Site will:

- Receive required general and site-specific health and safety training;
- Comply with all health and safety controls as directed by local and state, requirements;
- Understand and employ the Site health and safety plan;
- Know the location of local emergency care facilities, travel times, ingress and egress routes; and
- Report all unsafe conditions to the construction manager.

During construction, heavy equipment and construction vehicles will be required to access the Project Site during normal working hours (7 a.m. to 7 p.m. Monday through Saturdays; Sundays only as required). After construction is complete and during operation, traffic to the Site will be limited to one to two light-duty vehicles on a monthly recurring basis for the standard operations and maintenance activities. There will not bea permanent staff present at the Site, and the facility will be monitored remotely by

SunPower staff or contracted third-party operations and maintenance providers. The Project will not produce significant noise during operation. During theconstruction of the Project, higher levels of noise are anticipated. However, all work willbe conducted during normal working hours and it is not anticipated that the levels of noisewill exceed State or local noise standards or limits.

Because the solar modules are designed to absorb incoming solar radiation and minimize reflectivity, only a small percentage of incidental light will be reflected off the panels. This incidental light is significantly less reflective than common building materials, such as steel, and the surface of smooth water.

Prior to beginning the Project operation, the Petitioner will meet with Town first responders to provide them information regarding response to emergencies at PV facilities, discuss industry best practices, and provide a tour of the Site. The first responders will also be provided keys to the facility gates so that, in the event of a fire or emergency requiring site access, they will have access to the sites.

J. FEDERAL AVIATION ADMINISTRATION NOTIFICATION

Pursuant to 14 CFR § 77.9 regarding the Federal Aviation Administration (FAA) Notice of Proposed Construction or Alteration, an evaluation was performed using the FAA's on-line Notice Criteria Tool. Based on the proximity to the nearby airports, the Notice Criteria Tool concluded that FAA notification is required. As a result, a Notice of Proposed Construction or Alteration – Off Airport (form 7460-1) was completed and submitted to the FAA on March 10, 2022. Subsequently, the FFA conducted an aeronautical study and concluded that the proposed structure (i.e., solar array) will not be a hazard to air navigation, and marking and lighting are not necessary for aviation safety. A copy of the FAA Determination is included as Exhibit XIV.

V. CONCLUSION

The Project will provide numerous and significant benefits to the Town, State and its citizens, and will provide a step toward the State's goal of achieving cleaner, less expensive, and more reliable sources of energy. This development of a source of green energy will produce substantial environmental benefits with minimal environmental impacts. Pursuant to CGS § 16-50k(a), the Siting Council shall approve by declaratory ruling the construction or location of a customer-side distributed resources project or facility with a capacity of not more than sixty-five (65) MW, as long as such project meets DEEP air and water quality standards and will not have a substantial adverse environmental effect. As demonstrated within this Petition, the Project meets the criteria.

Accordingly, and for the reasons stated herein, because the proposed Project will meet state air and water quality standards and will not have a substantial adverse effect on the environment, the Petitioner requests that the Siting Council approve the location and construction of the proposed Project by declaratory ruling.

[signature page follows]

Respectfully submitted,

Respectfully submitted,

Connecticut Green Bank

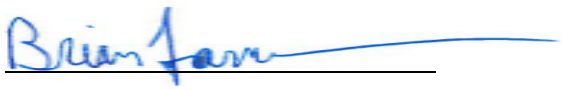
By: 

Brian Farnen
General Counsel and Chief Legal Officer

CEFIA Holdings LLC

By Connecticut Green

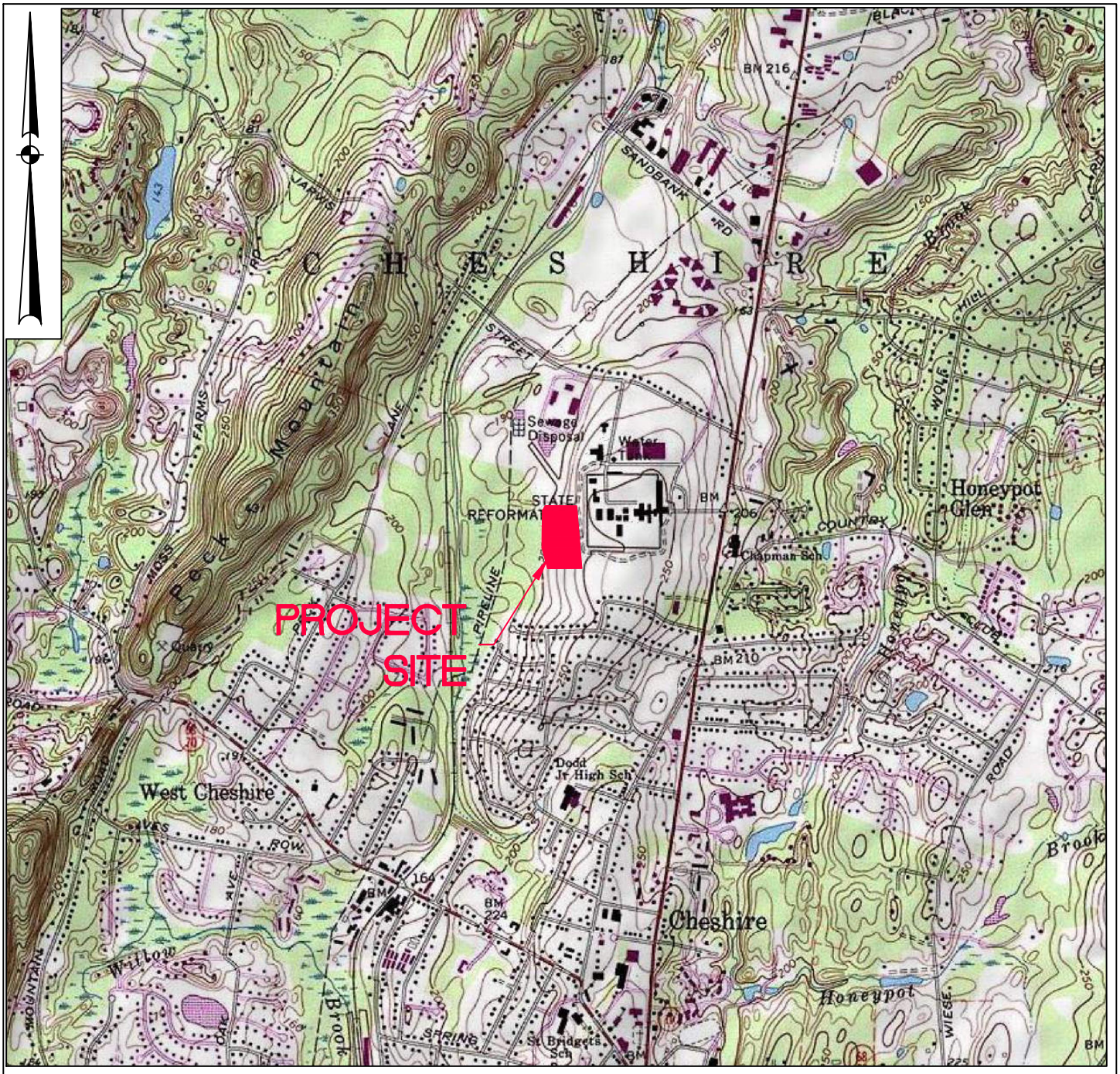
Bank, its Manager

By: 

Brian Farnen
General Counsel and Chief Legal Officer

EXHIBIT I

VICINITY MAP



SOURCE:
SOUTHINGTON, CT USGS QUADRANGLE
NATIONAL GEOGRAPHIC
REVISION DATE 1992

VICINITY MAP

CT GREEN BANK SOLAR
Cheshire Correctional Institution

900 Highland Avenue
Cheshire, Connecticut

RUSSO
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DATE	4–27–2022
SCALE	1"=2,000'
JOB NUMBER	2021–040MW
SHEET	EXHIBIT I

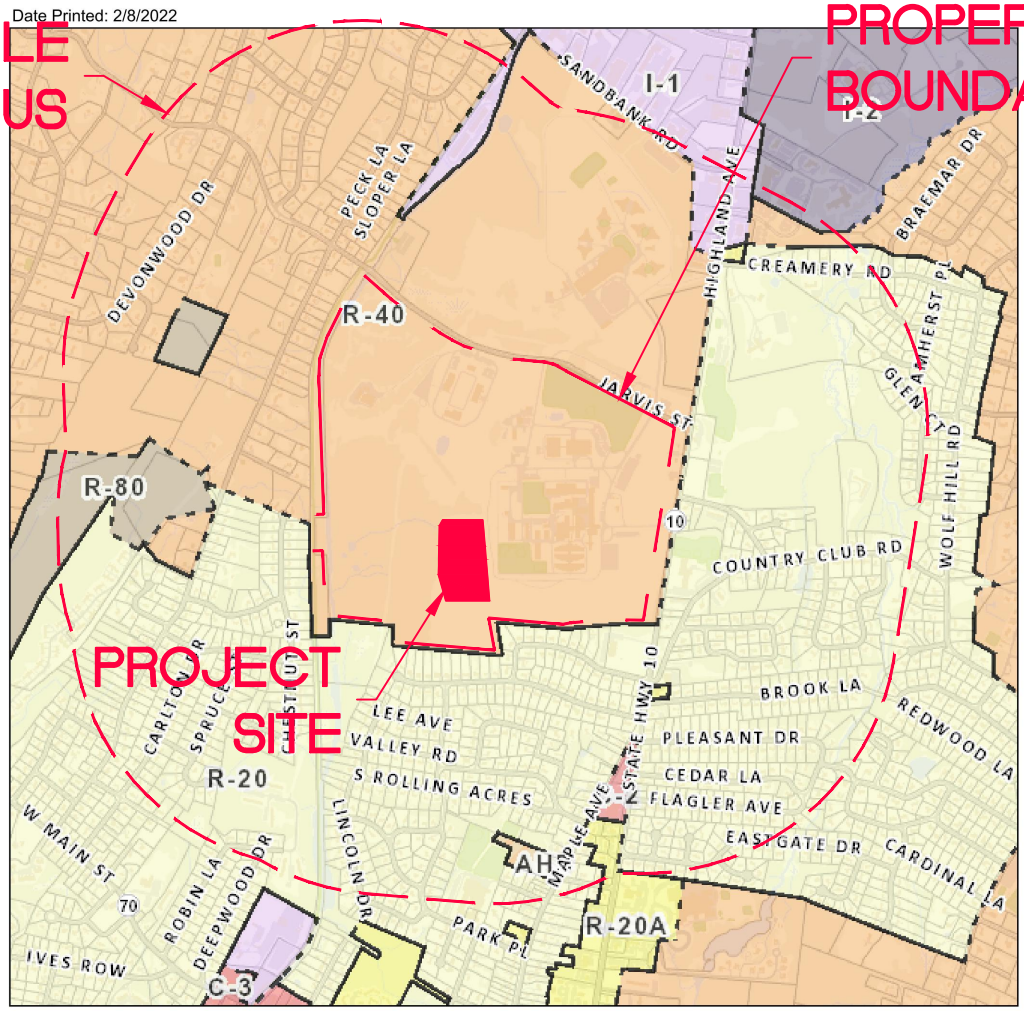
EXHIBIT II

LAND USE MAP

Town of Cheshire

Geographic Information System (GIS)

Date Printed: 2/8/2022



MAP DISCLAIMER - NOTICE OF LIABILITY

This map is for assessment purposes only. It is not for legal description or conveyances. All information is subject to verification by any user. The Town of Cheshire and its mapping contractors assume no legal responsibility for the information contained herein.

Approximate Scale: 1 inch = 1500 feet

0 1,500 Feet

N W E S

ZONING LEGEND:

AHD	AFFORDABLE HOUSING DEVELOPMENT
C-2	COMMERCIAL DISTRICT 2
I-1	INDUSTRIAL DISTRICT 1
R-20	RESIDENTIAL DISTRICT 20
R-20A	RESIDENTIAL DISTRICT 20A
R-40	RESIDENTIAL DISTRICT 40
R-80	RESIDENTIAL DISTRICT 80

SOURCE:
CHESHIRE CT GIS ZONING MAP

LAND USE MAP

CT GREEN BANK SOLAR
Cheshire Correctional Institution

900 Highland Avenue
Cheshire, Connecticut

RUSSO
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DATE	4-27-2022
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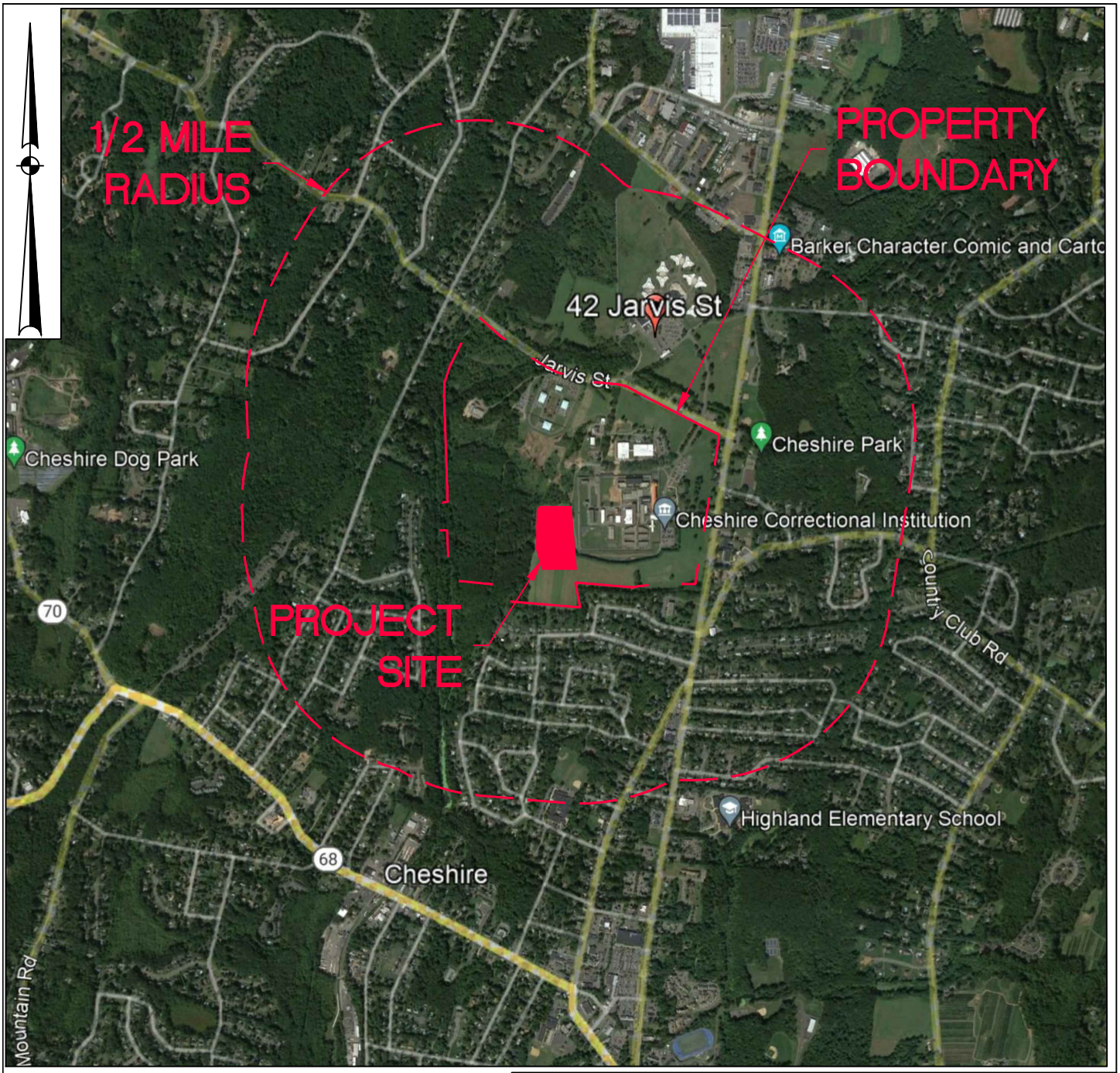
SHEET	EXHIBIT II

EXHIBIT III

OVERALL AERIAL PLAN



OVERALL AERIAL PLAN

CT GREEN BANK SOLAR
Cheshire Correctional Institution

900 Highland Avenue
Cheshire, Connecticut

SOURCE: GOOGLE EARTH

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DATE	4–27–2022
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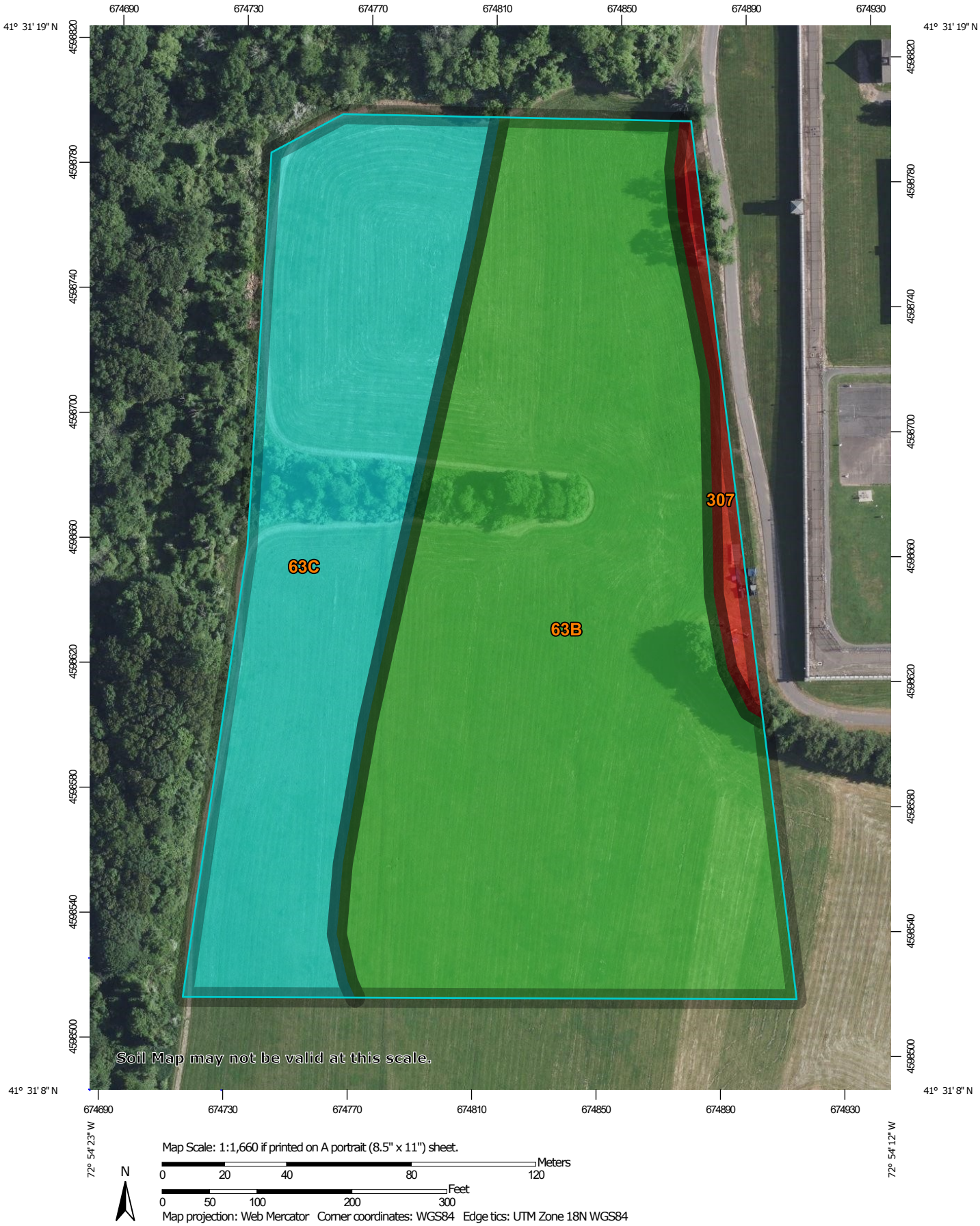
SHEET	EXHIBIT III

EXHIBIT IV

FARMLAND CLASSIFICATION

Farmland Classification—State of Connecticut
(Maloney & Webster Farmland Classification)



Map Scale: 1:1,660 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 20 40 80 120

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

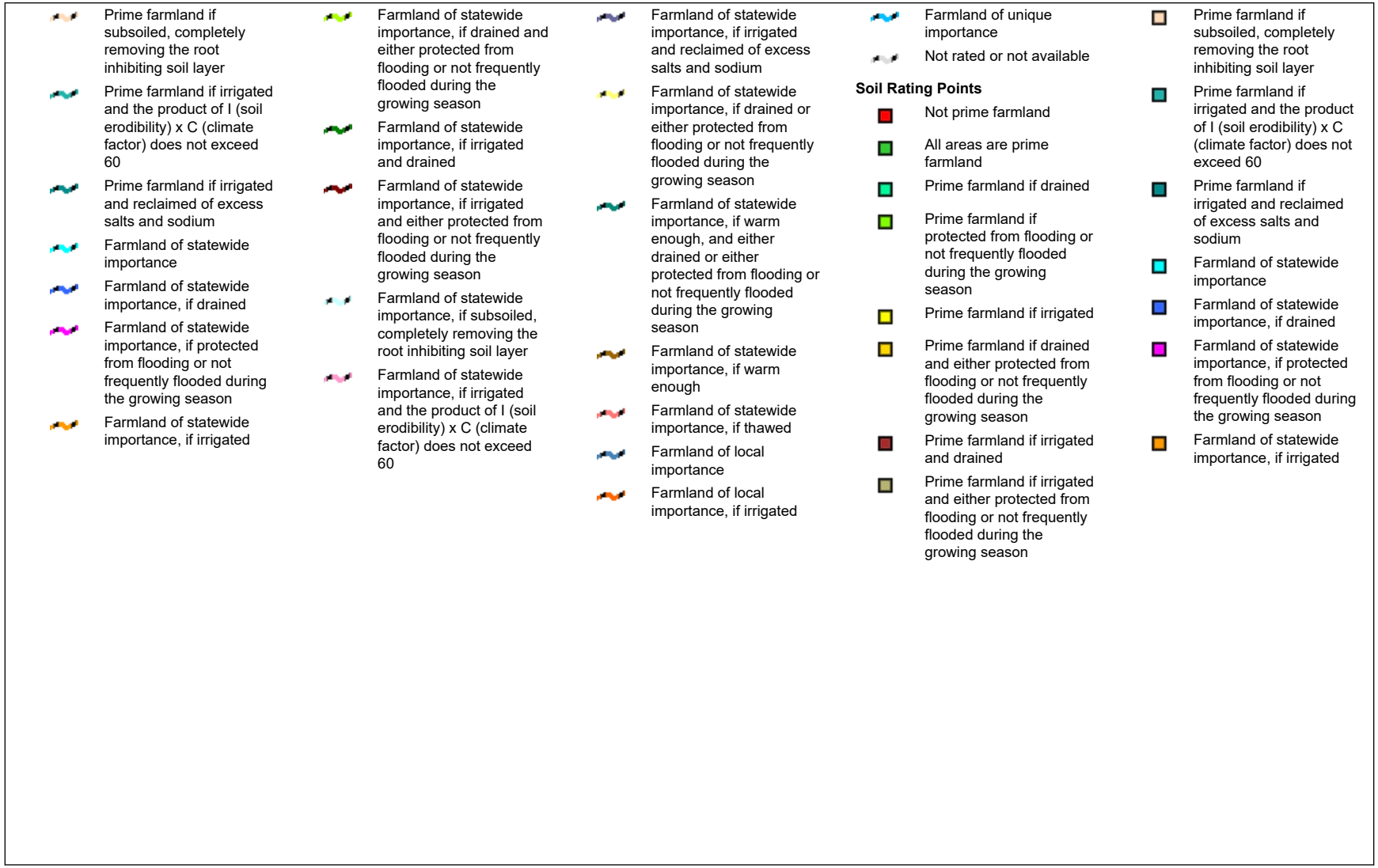
Soil Rating Polygons

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of statewide importance, if drained
- Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated
- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Soil Rating Lines

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

Farmland Classification—State of Connecticut
(Maloney & Webster Farmland Classification)



- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 21, Sep 7, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 8, 2020—Jun 12, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Farmland Classification

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
63B	Cheshire fine sandy loam, 3 to 8 percent slopes	All areas are prime farmland	7.2	63.4%
63C	Cheshire fine sandy loam, 8 to 15 percent slopes	Farmland of statewide importance	3.8	33.6%
307	Urban land	Not prime farmland	0.3	3.0%
Totals for Area of Interest			**11.4**	**100.0%**

Description

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

EXHIBIT V

SITE PLANS
(BOUND SEPARATELY)

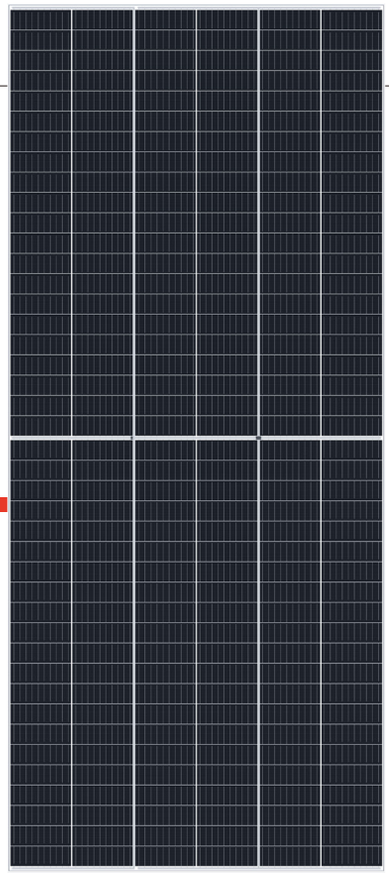
EXHIBIT VI

PV MODULE SPECIFICATIONS

THE

DUOMAX twin

BIFACIAL DUAL GLASS 252 LAYOUT MODULE



252 LAYOUT
MONOCRYSTALLINE MODULE

465-485W
POWER OUTPUT RANGE

20.6%
MAXIMUM EFFICIENCY

0~+5W
POSITIVE POWER TOLERANCE

PRODUCTS	POWER RANGE
TSM-DEG15VC.20(II)	465-485W

Founded in 1997, Trina Solar is the world's leading total solution provider for solar energy. With local presence around the globe, Trina Solar is able to provide exceptional service to each customer in each market and deliver our innovative, reliable products with the backing of Trina as a strong, bankable brand. Trina Solar now distributes its PV products to over 100 countries all over the world. We are committed to building strategic, mutually beneÿcial collaborations with installers, developers, distributors and other partners in driving smart energy together.

Comprehensive Products and System Certificates

IEC61215/IEC61730/IEC61701/IEC62716/UL61730
ISO 9001: Quality Management System
ISO 14001: Environmental Management System
ISO14064: Greenhouse Gases Emissions Verification
ISO45001: Occupation Health and Safety Management System

High power

- Up to 485W front power and 20.6% module efficiency with 1/3-cut and MBB (Multi Busbar) technology enable higher BOS savings
- Lower resistance and good reflection effect of MBB ensure higher power

High reliability

- Improved PID resistance through cell process and module material control
- Resistant to salt, acid, and ammonia
- Proven to be reliable in high temperature and humidity areas
- Mechanical performance: Up to 5400 Pa positive load and 2400 Pa negative load

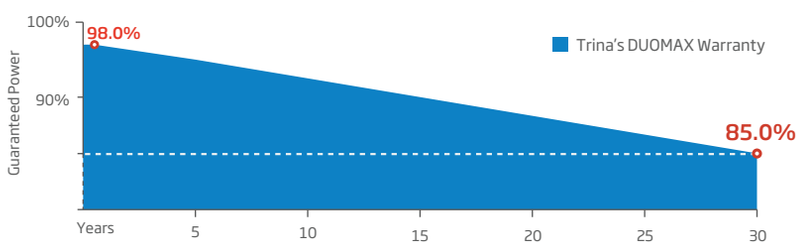
High energy generation

- Up to 25% additional power gain from back side depending on the albedo
- Excellent IAM and low light performance validated by 3rd party with cell process and module material optimization
- Better anti-shading performance and lower operating temperature

Easy to install

- Frame design makes module compatible with all racking and installation methods
- Easy to handle during transportation and install as normal framed module

Trina Solar's DUOMAX Performance Warranty

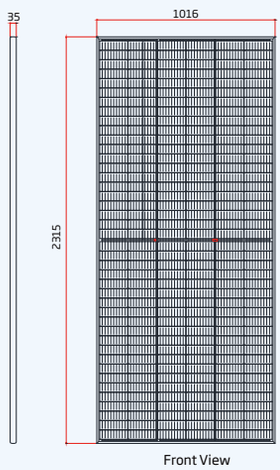


Trinasolar

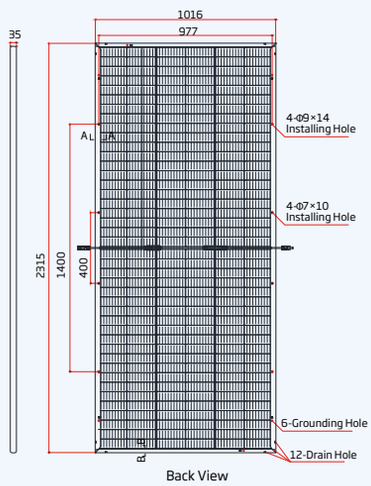
DUOMAX twin

BIFACIAL DUAL GLASS 252 LAYOUT MODULE

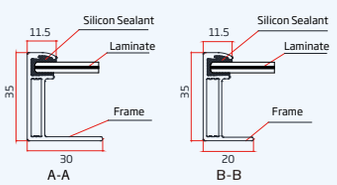
DIMENSIONS OF PV MODULE(mm)



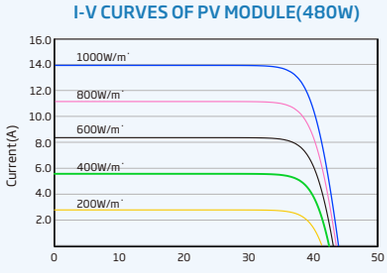
Front View



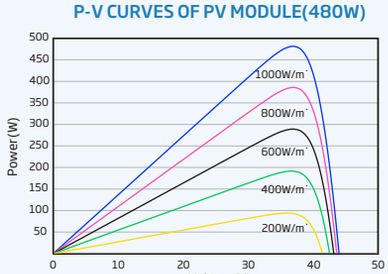
Back View



I-V CURVES OF PV MODULE(480W)



P-V CURVES OF PV MODULE(480W)



ELECTRICAL DATA (STC)

Peak Power Watts-P_{MAX} (Wp)*	465	470	475	480	485
Power Tolerance-P_{MAX} (W)			0 ~ +5		
Maximum Power Voltage-V_{MPP} (V)	35.8	35.9	36.0	36.1	36.2
Maximum Power Current-I_{MPP} (A)	12.99	13.09	13.19	13.29	13.39
Open Circuit Voltage-V_{OC} (V)	43.0	43.1	43.2	43.3	43.4
Short Circuit Current-I_{SC} (A)	13.58	13.68	13.80	13.92	13.97
Module Efficiency η_m (%)	20.0	20.0	20.2	20.4	20.6

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5. *Measuring tolerance: ±3%.

Electrical characteristics with different rear side power gain (reference to 485 Wp front)

Maximum Power-P_{MAX} (Wp)	509	534	558	582	606
Maximum Power Voltage-V_{MPP} (V)	36.2	36.2	36.2	36.2	36.2
Maximum Power Current-I_{MPP} (A)	14.06	14.73	15.40	16.07	16.74
Open Circuit Voltage-V_{OC} (V)	43.4	43.4	43.4	43.4	43.4
Short Circuit Current-I_{SC} (A)	14.67	15.37	16.07	16.76	17.46
Pmax gain	5%	10%	15%	20%	25%

Power Bifaciality: 70±5%.

ELECTRICAL DATA (NOCT)

Maximum Power-P_{MAX} (Wp)	350	354	358	361	365
Maximum Power Voltage-V_{MPP} (V)	33.6	33.7	33.8	33.8	34.1
Maximum Power Current-I_{MPP} (A)	10.41	10.49	10.59	10.68	10.69
Open Circuit Voltage-V_{OC} (V)	40.5	40.6	40.7	40.8	40.8
Short Circuit Current-I_{SC} (A)	10.94	11.02	11.12	11.22	11.26

NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s.

MECHANICAL DATA

Solar Cells	Monocrystalline PERC
Cell Orientation	252 cells (12 × 21)
Module Dimensions	2315 × 1016 × 35 mm (91.14 × 40 × 1.38 inches)
Weight	30.0 kg (66.1 lb)
Front Glass	2.0 mm (0.08 inches), High Transmission, AR Coated Heat Strengthened Glass
Encapsulant Material	POE/EVA
Back Glass	2.0 mm (0.08 inches), Heat Strengthened Glass (White Grid Glass)
Frame	35 mm (1.38 inches) Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm² (0.006 inches²), Portrait: N 450 mm/P 450 mm (17.72/17.72 inches) Landscape: N 1400/P 1400 mm (55.12/55.12 inches)
Connector	MC4 EVO2 / TS4

TEMPERATURE RATINGS

NOCT(Nominal Operating Cell Temperature)	43°C (±2°C)
Temperature Coefficient of P_{MAX}	- 0.34 %/°C
Temperature Coefficient of V_{OC}	- 0.25 %/°C
Temperature Coefficient of I_{SC}	0.04 %/°C

MAXIMUM RATINGS

Operational Temperature	-40~+85°C
Maximum SystemVoltage	1500V DC (IEC)
	1500V DC (UL)
Max Series Fuse Rating	25A

(Do not connect Fuse in Combiner Box with two or more strings in parallel connection)

WARRANTY

12 year Product Workmanship Warranty

30 year Power Warranty

(Please refer to product warranty for details)

PACKAGING CONFIGUREATION

Modules per box: 31 pieces

Modules per 40' container: 589 pieces

** Back-side power gain varies depending upon the specific project albedo

Trinasolar

CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.

Version number: TSM_DEG15VC.20(II)_2021_B

www.trinasolar.com

EXHIBIT VII

DECOMMISSIONING PLAN

SUNPOWER

Decommissioning Plan
DOC Site Solar Projects

This Decommissioning Plan (Plan) is set to establish the procedures of decommissioning activities for the permanent closures of solar sites, removal of electrical equipment, solar arrays, and structures. The Plan will be implemented at the end of the useful life at each of the DOC solar sites operated by the Connecticut Green Bank as described below. The Plan also describes the planned land-restoration activities post removal of the solar site on DOC properties.

This Plan will take place at each of the following sites:

- 289 & 391 Shaker Road, Enfield - Enfield, Robinson A&B, Willard
- 264 Bilton Road, Somers - Cybulski
- 335 Bilton Road, Somers – Osborne
- 900 Highland Avenue, Cheshire - Maloney & Webster
- 42 Jarvis Street, Cheshire - Mason Youth

Decommissioning Activities

Decommissioning will involve the removal, disposal or recycling of all project components. All materials that can be recycled will be shipped to local recycling centers. Any materials that cannot be recycled will be transported to landfills. The majority of the materials and components from the site are recyclable.

Decommissioning Preparation

Site decommissioning and removal will be scheduled at the end of the contracted useful life of the solar sites. The sites will be powered down and disassembled over the course of several months on each of the individual sights. The duration of the decommissioning and removal will vary from site to site depending on the size of the site. Materials and components will be stockpiled on site in temporary locations prior to being transported off site to recycling or transfer stations.

All power to the solar facility will be disconnected and any power required for the decommissioning will be made available though portable generators.

SUNPOWER

PV Module Removal and Recycling

During decommissioning, all solar site components will be removed from site, including all electrical equipment and cabinets, utility disconnects, all PV, racking, driven piles, inverters, above grade conductors, above grade conduit, and equipment pads.

PV modules will be stacked temporarily, prior to transport to a predetermined PV recycling center. Nearly 100% of the PV modules materials are recyclable and recoverable.

Inverter, Conductor (wire), and Conduit Removal and Recycling

Through the process of decommissioning the site will be de-energized and disconnected from the grid and facility in which it is providing electrical power to. Upon completing this at each site the conductors will be removed from all above grade conduit and all above grade conduit will be removed as well. All metal conduit removed will be recycled. This includes metal conduit at electrical equipment pads, utility pads and interconnection points, and within the solar arrays.

The inverters will be removed from the arrays and stockpiled prior to disposal. Some of the components in the invertors can be removed (specifically metals like copper and aluminum) and recycled the remainder will be properly disposed of.
All above grade conductors will be cut at existing grade level and stockpiled prior to transport to a recycling center. Wherever possible conductors may be pulled out of under ground conduit to recover the materials, stockpiled, and transported to the recycling center.

Access Roads

Roads created to access the solar arrays in and around the solar sites will be left in place until the entire solar facility is decommissioned and removed. At the time of completed decommission the access roads will be removed and returned to original site condition.

Security Fence

Security fencing will be removed and recycled. All driven fence posts will be pulled and stockpiled prior to transport to the recycling center. All fence posts placed in concrete will be cut free from concrete base, stockpiled with rest of like materials prior to transport to the recycling center.

Electrical Equipment Removal and Recycling
All electrical equipment will be removed from their respective concrete pads demolished. Concrete will be sent to landfills. Electrical equipment will be stripped of all recyclable metals and sent to the recycling center. All circuit breakers will be removed and refurbished if possible or disposed of in a landfill.

Site Reclamation

After the solar facility has been completely decommissioned and all components of the facility have been removed from site, site reclamation activities will be preformed to return the individual sites to the preconstruction condition as a hayfield.

Restoration Process
The decommissioning process will remove solar structures, electrical equipment, concrete pads, and fencing as described in previous sections. After completion of this process, site reclamation activities will begin. The process will involve any necessary minor grading, replacement of topsoil, reseeding, and drainage. The goal will be to return the site to its preconstruction state matching onsite existing soils and compatible grasses.

All areas excavated as part of construction for equipment pads and roads will be backfilled and compacted to 80% of surrounding compaction with soils typical of the respective site. These areas will be replanted with seed mix to match onsite ground cover.

At the completion of decommissioning if any soils are compacted to levels unsuitable for regeneration of onsite vegetation or for new growth of applied seed mix those soils will be de-compacted to a depth suitable for targeted vegetation growth.

Original site drainage characteristics will be restored if substantially altered from preconstruction conditions. At the completion of regrading to recreate original drainage the same process of reseeding and replacement of local soils will occur.

Any bare earth created by the decommissioning process will be reseeded with the same seed mix to match the surrounding grasses.

Restoration Monitoring
The respective sites will be monitored by the contracted party after completion of the site restoration on a quarterly bases for two full growing seasons to ensure the regrowth of

existing grasses and reseeding process was successful. Any areas that failed to generate new grown of grasses (either from regeneration or reseeding) or were subject to soil erosion where decommissioning work took place will be restabilized and reseeded for the duration described above.

EXHIBIT VIII

NOTICE TO TOWN AND STATE OFFICIALS AND ABUTTERS AND ABUTTERS MAP

CERTIFICATION OF SREVICE

I hereby certify that on this 12th day of May, 2022 notice of intent to file the Connecticut Green Bank Petition for Declaratory Ruling was sent, via certified mail, to the following:

Cheshire Town Officials:
Sean Kimball, Town Manager
Town of Cheshire
84 South Main Street
Cheshire, CT 06410

Earl Kurtz, Chairman
Cheshire Inland Wetlands & Watercourses Commission
84 South Main Street
Cheshire, CT 06410

Earl Kurtz III, Chairperson
Cheshire Planning & Zoning Commission
84 South Main Street
Cheshire, CT 06410

Regional Council of Governments:
Naugatuck Valley Council of Governments (NVCOG)
49 Leavenworth Street, 3rd Floor
Waterbury, CT 06702

State Officials:
Rob Sampson
Senator – District S16
Legislative Office Building
300 Capitol Avenue, Room 4200
Hartford, CT 06106

Craig Fishbein
Representative – 90th District
Legislative Office Building
300 Capitol Avenue, Room 4200
Hartford, CT 06106

The Honorable William Tong
Attorney General
Office of the Attorney General
165 Capitol Avenue
Hartford, CT 06106

James C. Rovella, Commissioner
Department of Emergency Services and Public Protection
Emergency Management and Homeland Security Division
1111 Country Club Road
Middletown, CT 06457

Katie Dykes, Commissioner
Department of Energy & Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

Manisha Juthani, M.D, Commissioner
Department of Public Health
410 Capitol Avenue
Hartford, CT 06134

Peter B Hearn, Executive Director
Council on Environmental Quality
79 Elm Street
P.O. Box 5066
Hartford, CT 06106

Marissa Gillett, Chair
Public Utilities Regulatory Authority
Ten Franklin Square
New Britain, CT 06051

Jeffrey R. Beckham, Acting Secretary
Office of Policy and Management
450 Capitol Avenue
Hartford, CT 06106

David Lehman, Commissioner
Department of Economic and Community Development
450 Columbus Boulevard
Hartford, CT 06103

Joseph Giulietti, Commissioner
Department of Transportation
P.O. Box 317546
2800 Berlin Turnpike
Newington, CT 06131-7546

Jonathan Kinney
State Historic Preservation Officer
Department of Economic & Community Development
450 Columbus Boulevard, Suite 5
Hartford, CT 06103

Bryan P. Hurlburt, Commissioner
Department of Agriculture
450 Columbus Boulevard, Suite 701
Hartford, CT 06103

Michelle Gilman, Commissioner
Department of Administrative Services
450 Columbus Boulevard
Hartford, CT 06103

(See attached List of Abutters)

List of Abutters

Norman Wium & Vanessa Dacunto
76 Curve Hill Road
Cheshire, CT 06410

State of Connecticut
79 Elm Street
Hartford, CT 06106

Town of Cheshire
84 South Main Street
Cheshire, CT 06410

Andrew A. & Rosemary Tranquilli
390 Contour Drive
Cheshire, CT 06410

Karen Slade Hekeler
380 Contour Drive
Cheshire, CT 06410

Marsha A. & Peter A. Lowe, Jr.
366 Contour Drive
Cheshire, CT 06410

Krista M. Casso
350 Contour Drive
Cheshire, CT 06410

Karen M. & Robert G. Zeena, Jr.
332 Contour Drive
Cheshire, CT 06410

Robert & Maryellen Price
316 Contour Drive
Cheshire, CT 06410

John W. & Joanne D. Gill
300 Contour Drive
Cheshire, CT 06410

Sanaa Baroudjian
282 Contour Drive
Cheshire, CT 06410

Judson W. Moore
366 Contour Drive
Cheshire, CT 06410

Joan B. Dube Family Trust
250 Contour Drive
Cheshire, CT 06410

Tinamaire Finoia
234 Contour Drive
Cheshire, CT 06410

Property Edge LLC
P.O. Box 275
Marion, CT 06444

Charlan K. Walston
180 Curve Hill Road
Cheshire, CT 06410

Sean W. & Leslie A. Burke
172 Curve Hill Road
Cheshire, CT 06410

John M. & Janet L. O'Dell
160 Curve Hill Road
Cheshire, CT 06410

Amy K. & Frank F. Wild, Jr.
148 Curve Hill Road
Cheshire, CT 06410

Sonia Irizarry
136 Curve Hill Road
Cheshire, CT 06410

James Maxwell Peltier, Jr. Trustee
124 Curve Hill Road
Cheshire, CT 06410

Brian E. Stancavage
112 Curve Hill Road
Cheshire, CT 06410

Joselyn Montalvo Romero
100 Curve Hill Road
Cheshire, CT 06410

Norman L. & Kathleen L. Bouchard
88 Curve Hill Road
Cheshire, CT 06410

New Meditrust Company LLC
173 Bridge Plaza North
Ft. Lee, NJ 07024

Meditrust
173 Bridge Plaza North
Ft. Lee, NJ 07024

May 12, 2022

Via Certificate of Mailing

<Name & Address>

Re: Connecticut Green Bank – Notice of Intent to File a Petition for Declaratory Ruling for the Construction, Operation and Maintenance of a 1.95 MW(ac) Solar Photovoltaic Electric Generating Facility at the State of Connecticut Department of Corrections Maloney & Webster Correctional Institution located at 900 Highland Avenue in Cheshire, Connecticut

Dear <Salutation>:

Pursuant to the provisions of §16-50j-40(a) of the Regulations of Connecticut State Agencies, this letter serves as notice that the Connecticut Green Bank intends to file a Petition for Declaratory Ruling (Petition) with the Connecticut Siting Council (Council) on or about May 12, 2022, seeking approval of the construction, operation and maintenance of a 1.95 megawatt (MW)(ac) solar power generating facility, including all associated equipment, related site improvements, and interconnection (the Project).

The Project is located on property of the State of Connecticut which is currently occupied by the Cheshire and Maloney & Webster Correctional Institutions operated by the Department of Corrections (DOC). The Project will include an approximate 7.19 acre solar array to the west of the Cheshire Correctional Institution building. The Project shall provide power behind the meter to serve the on-site DOC facilities. The Project will consist of the installation of ground-mounted photovoltaic panels, centralized inverters and transformers, electrical lines, electrical transformers and a perimeter fence. For details regarding the location and layout of the Project, please see the attached reduced sized copy of the Overall Site Plan.

Pursuant to the provisions of the Connecticut General Statutes §16-50g et seq., the location of certain project features may change as this Petition proceeds through the Council's regulatory review process.

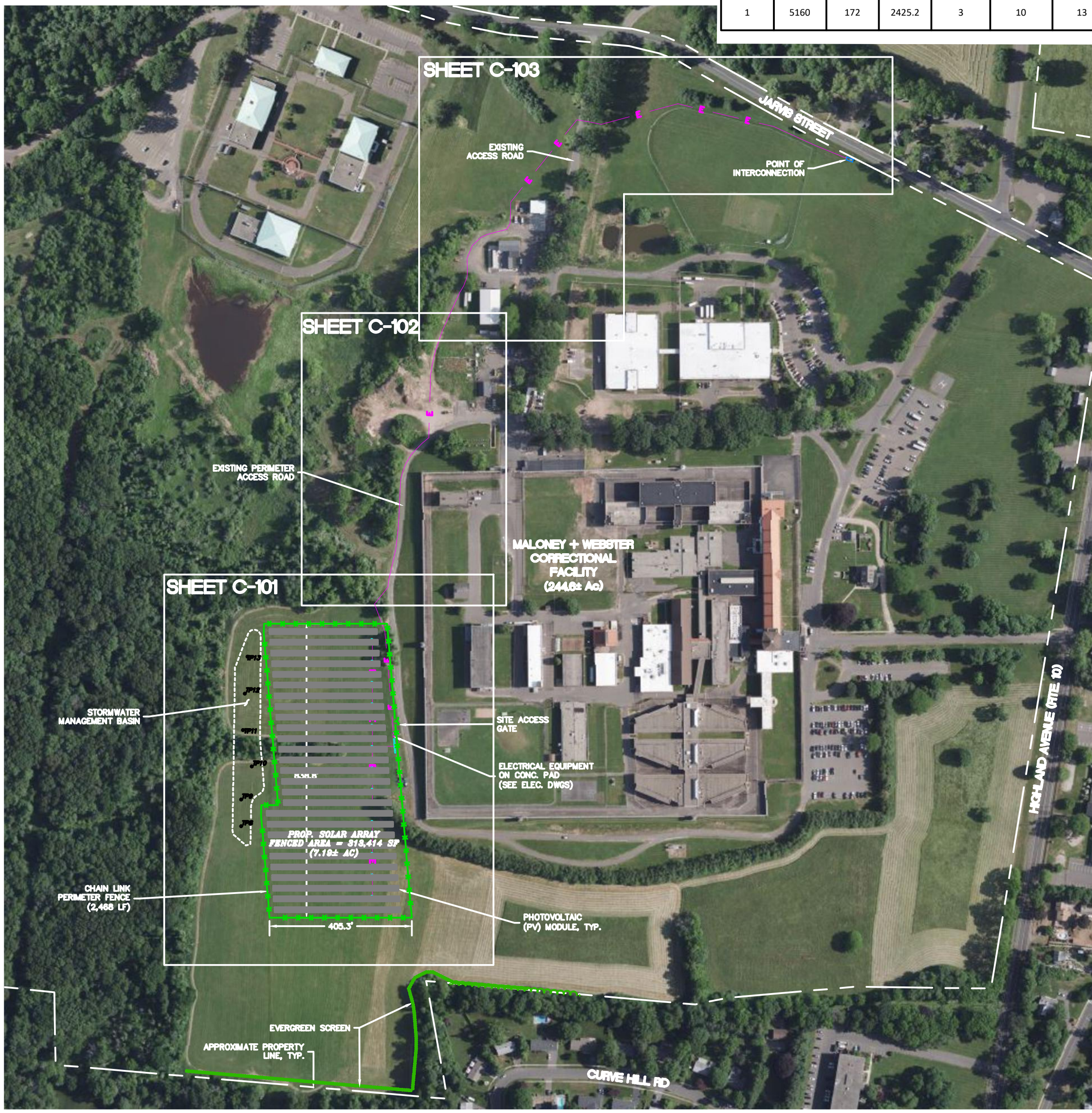
If you have any questions, please feel free to contact me. My contact information is provided below.

Respectfully,

Timothy A. Coon, P.E.
J.R. Russo & Associates, LLC

Attachment (Overall Plan)

BLOCK	# MODULE	#STRING	KW (DC)	18 INPUT CB (W/ 14STR)	18 INPUT CB (W/ 13STR)	SMA PEAK 3 SHP 150-US	KW (AC)	GCR	TILT (°)	CSI AZIMUTH (°)	SPWR AZIMUTH (°)	DC RUN (CB-INV)
1	5160	172	2425.2	3	10	13	1950	0.50	25	180	0	370, 310, 280, 250, 190, 125, 185, 245, 335, 365, 425, 485, 545



GRAPHIC SCALE

(IN FEET)
1 inch = 150 ft.

RUSSO
SURVEYORS·ENGINEERS
SERVING CT & MA
J.R. Russo & Associates, LLC
1 Shoham Rd East Windsor, CT 06088 • CT 860.623.0569 • MA 413.785.1158
www.jrrusso.com • info@jrrusso.com

Alternative Power Generation Inc.

SUNPOWER®
1414 HARBOUR WAY SOUTH
RICHMOND, CA 94804 USA
(510) 540-0550

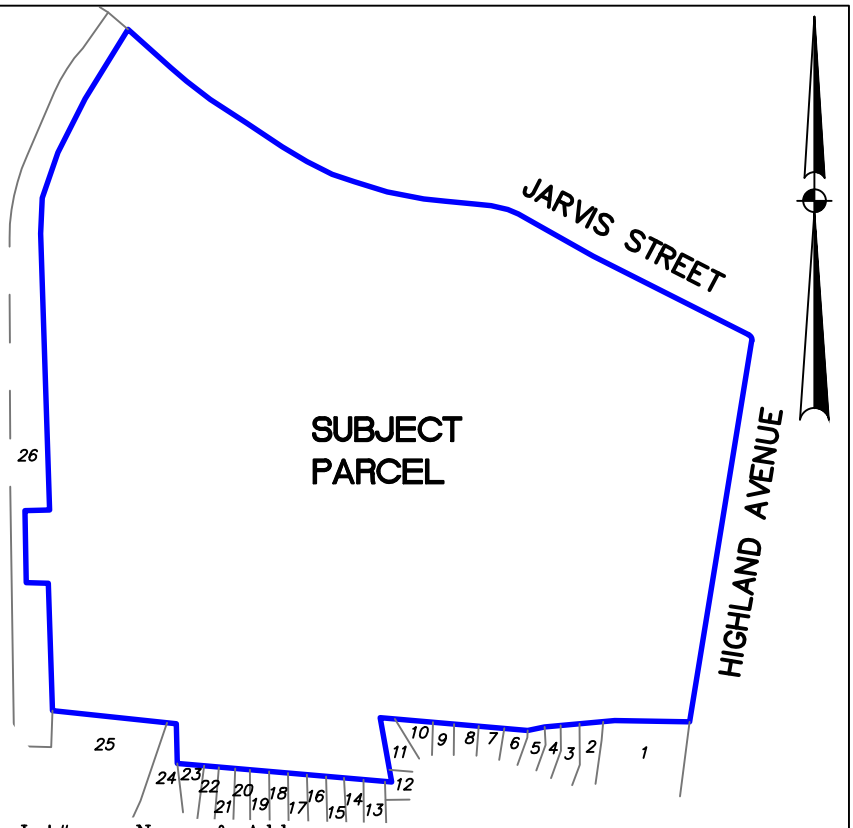
REVISIONS

BY: LF/TAC | CHK: JEU

Connecticut Green Bank
Maloney & Webster
(Cheshire Correctional)
900 Highland Avenue
Cheshire, Connecticut

Overall Site Plan

DATE
4-26-22
SCALE
1"=150'
JOB NUMBER
2021-040
SHEET
C-100



Lot#	Name & Address
1	New Meditrust Company LLC 173 Bridge Plaza North Ft. Lee, NJ 07024
2	Meditrust 173 Bridge Plaza North Ft. Lee, NJ 07024
3	Norman Wium & Vanessa Dacunto 76 Curve Hill Road Cheshire, CT 06410
4	Norman L. & Kathleen L. Bouchard 88 Curve Hill Road Cheshire, CT 06410
5	Joselyn Montalvo Romero 100 Curve Hill Road Cheshire, CT 06410
6	Brain E. Stancavage 112 Curve Hill Road Cheshire, CT 06410
7	James Maxwell Peltier, Jr. Trustee 124 Curve Hill Road Cheshire, CT 06410
8	Sonia Irizarry 136 Curve Hill Road Cheshire, CT 06410
9	Amy K. & Frank F. Wild, Jr. 148 Curve Hill Road Cheshire, CT 06410
10	John M. & Janet L. O'Dell 160 Curve Hill Road Cheshire, CT 06410
11	Sean W. & Leslie A. Burke 172 Curve Hill Road Cheshire, CT 06410
12	Charlan K. Walston 180 Curve Hill Road Cheshire, CT 06410
13	Property Edge LLC P.O. Box 275 Marion, CT 06444
14	Tinamarie Finoia 234 Contour Drive Cheshire, CT 06410
15	Joan B. Dube Family Trust 250 Contour Drive Cheshire, CT 06410
16	Judson W. Moore 366 Contour Drive Cheshire, CT 06410
17	Sanaa Baroudjian 282 Contour Drive Cheshire, CT 06410
18	John W. & Joanne D. Gill 300 Contour Drive Cheshire, CT 06410
19	Robert & Maryellen Price 316 Contour Drive Cheshire, CT 06410
20	Karen M. & Robert G. Zeena, Jr. 332 Contour Drive Cheshire, CT 06410
21	Krista M. Casso 350 Contour Drive Cheshire, CT 06410
22	Marsha A. & Peter A. Lowe, Jr. 366 Contour Drive Cheshire, CT 06410
23	Karen Slade Hekeler 380 Contour Drive Cheshire, CT 06410
24	Andrew A. & Rosemary Tranquilli 390 Contour Drive Cheshire, CT 06410
25	Town of Cheshire 84 South Main Street Cheshire, CT 06410
26	State of Connecticut 79 Elm Street Hartford, CT 06106

SOURCE:
CHESHIRE GIS

ABUTTERS MAP

CT GREEN BANK SOLAR

Maloney & Webster Correctional Institution

900 Highland Avenue
Cheshire, Connecticut

RUSSO
SURVEYORS • ENGINEERS
SERVING CT & MA

J.R. Russo & Associates, LLC
1 Shoham Rd East Windsor, CT 06088 • CT 860.623.0569 • MA 413.785.1158
www.jrrusso.com • info@jrrusso.com

DATE	2-8-2022
SCALE	1"=1,000'
JOB NUMBER	2021-040MW
SHEET	EXHIBIT

EXHIBIT IX

NDDB PRELIMINARY REVIEW RESPONSE

Connecticut Department of

ENERGY & ENVIRONMENTAL PROTECTION

July 22, 2020

Mr. Dean Gustafson
All-Points Technology Corporation, P.C.
567 Vauxhall Street Extension – Suite 311
Waterford, CT 06385
dgustafson@allpointstech.com

Project: CT Green Bank Sun Power Corporation Solar Installation at Department of Correction Maloney & Webster Correctional Institution (Cheshire Correctional Facility) in Cheshire, Connecticut
NDDB Determination No.: 202008060

Dear Dean Gustafson,

I have re-reviewed Natural Diversity Data Base maps and files regarding the area delineated on the map you provided for the proposed CT Green Bank Sun Power Corporation Solar Installation at Department of Correction Maloney & Webster Correctional Institution (Cheshire Correctional Facility) in Cheshire, Connecticut. According to our records we have known extant populations of State Special Concern *Terrapene carolina carolina* (eastern box turtle) in the vicinity of the project site. I have included recommended protection strategies and best management practices for these state special concern turtles.

Eastern Box Turtle: Eastern box turtles inhabit old fields and deciduous forests, which can include power lines and logged woodlands. They are often found near small streams and ponds. The adults are completely terrestrial but the young may be semiaquatic, and hibernate on land by digging down in the soil from October to April. They have an extremely small home range and can usually be found in the same area year after year. Eastern box turtles have been negatively impacted by the loss of suitable habitat. Some turtles may be killed directly by construction activities, but many more are lost when important habitat areas for shelter, feeding, hibernation, or nesting are destroyed. As remaining habitat is fragmented into smaller pieces, turtle populations can become small and isolated. Reducing the frequency that motorized vehicles that enter box turtle habit**a**t would be beneficial in minimizing direct mortality of adults.

Recommended Protection Strategies for Turtles:

A qualified herpetologist should be hired to work on site with your construction crew during the project construction period to be sure that turtles will not be unintentionally killed during the moving of heavy equipment and tree clearing. This is especially important in May, June and July when turtles are choosing nest sites.

Work normally should occur when these turtles are active (April 1st to October 30th). Conducting work while the turtle is active will allow the animal to move out of harm's way and minimize mortality to hibernating individuals. I recommend the additional following protection strategies in order to protect these turtles:

- Exclusionary practices will be required to prevent any turtle access into construction areas. These measures will need to be installed at the limits of disturbance.
- Exclusionary fencing must be at least 20 in tall and must be secured to and remain in contact with the ground and be regularly maintained (at least bi-weekly and after major weather events) to secure any gaps or openings at ground level that may let animal pass through. Do not use plastic or netted silt-fence.
- All staging and storage areas, outside of previously paved locations, regardless of the duration of time they will be utilized, must be reviewed to remove individuals and exclude them from re-entry.

- All construction personnel working within the turtle habitat must be apprised of the species description and the possible presence of a listed species, and instructed to relocate turtles found inside work areas or notify the appropriate authorities to relocate individuals.
- Any turtles encountered within the immediate work area shall be carefully moved to an adjacent area outside of the excluded area and fencing should be inspected to identify and remove access point.
- In areas where silt fence is used for exclusion, it shall be removed as soon as the area is stable to allow for reptile and amphibian passage to resume.
- No heavy machinery or vehicles may be parked in any turtle habitat.
- Special precautions must be taken to avoid degradation of wetland habitats including any wet meadows and seasonal pools.
- The Contractor and consulting biologist must search the work area each morning prior to any work being done.
- Avoid and limit any equipment use within 50 feet of streams and brooks.
- If you must remove trees, please cut them to fall away from the waterway and do not drag trees across the waterway or remove stumps from banks.

- Any confirmed sightings of box, wood or spotted turtles should be reported and documented with the NDDB (nddbrequestdep@ct.gov) on the appropriate special animal form found at (http://www.ct.gov/deep/cwp/view.asp?a=2702&q=323460&depNav_GID=1641)

This determination is good for two years. Please re-submit an NDDB Request for Review if the scope of work changes or if work has not begun on this project by July 22, 2022.

Natural Diversity Data Base information includes all information regarding critical biological resources available to us at the time of the request. This information is a compilation of data collected over the years by the Department of Energy and Environmental Protection's Natural History Survey and cooperating units of DEEP, private conservation groups and the scientific community. This information is not necessarily the result of comprehensive or site-specific field investigations. Consultations with the Data Base should not be substitutes for on-site surveys required for environmental assessments. Current research projects and new contributors continue to identify additional populations of species and locations of habitats of concern, as well as, enhance existing data. Such new information is incorporated into the Data Base as it becomes available.

Please contact me if you have further questions at (860) 424-3592, or dawn.mckay@ct.gov . Thank you for consulting the Natural Diversity Data Base. Also be advised that this is a preliminary review and not a final determination. A more detailed review may be conducted as part of any subsequent environmental permit applications submitted to DEEP for the proposed site.

Sincerely,

Dawn M. McKay

Dawn M. McKay
Environmental Analyst 3

EXHIBIT X

TURTLE PROTECTION STRATEGIES

CT DEEP Recommended Protection Strategies for Turtles

A qualified herpetologist should be hired to work on site with your construction crew during the project construction period to be sure that turtles will not be unintentionally killed during the moving of heavy equipment and tree clearing. This is especially important in May, June and July when turtles are choosing nest sites.

Work normally should occur when these turtles are active (April 1st to October 30th). Conducting work while the turtle is active will allow the animal to move out of harm's way and minimize mortality to hibernating individuals. I recommend the additional following protection strategies in order to protect these turtles:

- Exclusionary practices will be required to prevent any turtle access into construction areas. These measures will need to be installed at the limits of disturbance.
- Exclusionary fencing must be at least 20 in tall and must be secured to and remain in contact with the ground and be regularly maintained (at least bi-weekly and after major weather events) to secure any gaps or openings at ground level that may let animal pass through. Do not use plastic or netted silt-fence.
- All staging and storage areas, outside of previously paved locations, regardless of the duration of time they will be utilized, must be reviewed to remove individuals and exclude them from re-entry.
- All construction personnel working within the turtle habitat must be apprised of the species description and the possible presence of a listed species, and instructed to relocate turtles found inside work areas or notify the appropriate authorities to relocate individuals.
- Any turtles encountered within the immediate work area shall be carefully moved to an adjacent area outside of the excluded area and fencing should be inspected to identify and remove access point.
- In areas where silt fence is used for exclusion, it shall be removed as soon as the area is stable to allow for reptile and amphibian passage to resume.
- No heavy machinery or vehicles may be parked in any turtle habitat.
- Special precautions must be taken to avoid degradation of wetland habitats including any wet meadows and seasonal pools.
- The Contractor and consulting biologist must search the work area each morning prior to any work being done.
- Avoid and limit any equipment use within 50 feet of streams and brooks.
- If you must remove trees, please cut them to fall away from the waterway and do not drag trees across the waterway or remove stumps from banks.
- Any confirmed sightings of box, wood or spotted turtles should be reported and documented with the NDDB (nddbrequestdep@ct.gov) on the appropriate special animal form found at (http://www.ct.gov/deep/cwp/view.asp?a=2702&q=323460&depNav_GID=1641)

EXHIBIT XI

WETLAND REPORT

DAVISON ENVIRONMENTAL

10 Maple Street
Chester, CT 06412
860-803-0938
www.davisonenvironmental.com

Biodiversity Studies • Wetland Delineation & Assessment • Habitat Management • GIS Mapping • Permitting • Forestry

WETLANDS / WATERCOURSES DELINEATION REPORT

Date of Work: *10/7/2021*

Project Location: *Maloney and Webster*
900 Highland Ave, Cheshire

Client:
Tim Coon
J.R. Russ and Associates, LLC
1 Shoham Road
East Windsor, CT 06088

IDENTIFICATION OF WETLANDS AND WATERCOURSES RESOURCES

Wetlands and watercourses present on property? Yes ☐ No ☒

Wetlands:		Watercourses:		Identification Method:	
Inland Wetlands	☐	Perennial Streams	☐	Auger and Spade	☒
Tidal Wetlands	☐	Intermittent Watercourses	☐	Backhoe Pits	☐

Numbering Sequences:

No wetlands present

Wetland Plant Communities Present:

Forest ☐
Sapling/Shrub ☐
Wet Meadow ☐
Marsh ☐
Upland/Streamside ☐

Definitions and methodology for identification of state regulated wetlands & watercourses

Wetlands and watercourses are regulated in the State of Connecticut General Statutes, Chapter 440, sections 22a-28 to 22a-45. The Statutes are divided into the Inland Wetlands and Watercourses Act (sections 22a-36 to 22a-45) and the Tidal Wetlands Act (sections 22a-28 to 22a-35). Inland Wetlands "means land, including submerged land, not regulated pursuant to sections 22a-28 to 22a-35, inclusive, which consists of any of the soil types designated as poorly drained, very poorly drained, alluvial, and floodplain by the National Cooperative Soils Survey, as may be amended from time to time, of the National Resources Conservation Service (NRCS) of the United States Department of Agriculture" section 22a-38(15). Watercourses "means rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs and all other bodies of water, natural or artificial, vernal or intermittent, public or private which are contained within, flow through or border upon this state or any portion thereof, not regulated pursuant to sections 22a-28 to 22a-35, inclusive. Intermittent watercourses shall be delineated by a defined permanent channel and bank and the occurrence of two or more of the following characteristics: (A) Evidence of scour or deposits of recent alluvium or detritus, (B) the presence of standing or flowing water for a duration longer than a particular storm incident, and (C) the presence of hydrophytic vegetation" section 22a-38(16). Tidal Wetlands are defined as "those areas which border on or lie beneath tidal waters, such as, but not limited to banks, bogs, salt marsh, swamps, meadows, flats, or other low lands subject to tidal action, including those areas now or formerly connected to tidal waters, and whose surface is at or below an elevation of one foot above local extreme high water; and upon which may grow or be capable of growing some, but not necessarily all of the following" (includes plant list) section 22a-29(2).

Wetland Soils

No wetland soils present.

Non-Wetland Soils

The non-wetland soils consist of the Cheshire series as well as Udorthents. The Cheshire series consists of very deep, well drained loamy soils formed in supraglacial till on uplands. They are nearly level to very steep soils on till plains and hills. The soils formed in acid glacial till derived mostly from reddish sandstone, shale, and conglomerate with some basalt.

Udorthents is a miscellaneous land type used to denote moderately well to excessively drained earthen material which has been so disturbed by cutting, filling, or grading that the original soil profile can no longer be discerned.

SUMMARY of FINDINGS

No wetlands are present on the site. The site is a west-facing sloping field, with some discrete low swale like features, all of which had well drained soils. Additionally, there is a topographically depressed area located within the hedgerow that bisects the project area. This feature did not meet the watercourse criteria and had well-drained (non-wetland) soils. It does appear to convey occasional surface flow based on its landscape position but lack any significant indicators of regular flow conveyance.

If you have any questions regarding my findings, please feel free to contact me.

Eric Davison
Certified Professional Wetland Scientist
Registered Soil Scientist

EXHIBIT XII

DRAINAGE REPORT

DRAINAGE REPORT
CT Green Bank
Department of Corrections Solar
Maloney & Webster Correctional Institution
900 Highland Avenue
Cheshire, CT

March 25, 2022

Prepared for:

CT Green Bank
75 Charter Oak Avenue, Suite 1-103
Hartford, CT 06106

Owner:

Connecticut State Reformatory
900 Highland Avenue
Cheshire, CT 06410

Project No. 2021-040:M&W

Prepared by:

J.R. Russo & Associates
Land Surveyors & Professional Engineers
P.O. Box 938
East Windsor, CT 06088
(860) 623-0569

I. INTRODUCTION

A. Project Description

The applicant is proposing to construct a solar array behind the meters to supplement the power supply at the nearby correctional facilities at 900 Highland Avenue in Cheshire. The proposed project includes a fenced area of approximately 7.19 acres containing 5,160 solar panel modules. The array's transmission line will be installed to an interconnection point at an existing transformer on Jarvis Street. The development will include a stormwater management basin designed to provide groundwater recharge and retention of stormwater to ensure no environmental or flooding impacts downstream. The development and stormwater management system have been designed in accordance with the CT Stormwater Quality Manual and Department of Energy & Environmental Protection's (DEEP's) Stormwater General Permit.

B. Existing Conditions

The project site consists of an existing field located west of the Cheshire Correctional Institution at 900 Highland Avenue in Cheshire. The site is located on the west side of Highland Avenue approximately 1,000 feet south of the intersection with Jarvis Street. The field slopes westerly from the wall of the correctional facility towards the woods. Runoff from the field sheet flows west into the woods.

Based on a review of the USDA Soil Survey, the soil in the area of the proposed development is classified as Cheshire fine sandy loam (See Soils Map in Appendix 1). The USDA Soil Survey defines groups of soils into Hydrologic Soil Groups (HSG) according to their runoff-producing characteristics. Soils are assigned to four groups (A, B, C, and D Groups). In group A, are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They typically are deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a hardpan or clay layer at or near the surface, have a permanent high-water table, or are shallow over nearly impervious bedrock or other nearly impervious material. The HSG classification of Cheshire fine sandy loam is HSG B.

On February 9, 2022, a series of 6 test pits (TP8-TP13) were performed in the area of the proposed stormwater management basins to confirm the existing soil conditions. Test pits were in the vicinity of the stormwater management basin. Test pits were excavated to a depth of 96 inches. Soils encountered included 10-12 inches of sandy loam topsoil over light brown fine sandy loam subsoils, overlying red-brown loamy sand with gravel. No groundwater was found and possible soil mottling indicative of the seasonal high water table was encountered at depths greater than 62 inches. Test pit logs are provided on the Site Plans.

Soil samples were collected from all test pits from the fine loamy sand material that will remain beneath the elevation of the stormwater basin bottoms. These samples were submitted to New England Materials Testing Lab, LLC for permeability testing by ASTM D2434. Calculated permeabilities ranged from 0.721 in/hr for the sample collected in TP13 to 22.64 in/hr for the sample collected in TP8. As a conservative measure, the slowest permeability rate of 0.721 in/hr was used as the basis for the design infiltration rate. This rate was further reduced by 50% to account for potential clogging resulting in a final design infiltration rate for the infiltration basin of 0.361 inches/hour. Permeability test results are provided in Appendix 4 and summarized on the Site Plans.

II. STORMWATER RUNOFF ANALYSIS

A. Methodology

Peak runoff flow rates were determined for pre- and post-development conditions using Applied Microcomputer System's HydroCAD™ Stormwater Modeling System. This computer software employs the SCS Technical Release 55 and 20 (TR-55 & TR-20) methodology. The potential stormwater impacts downstream were evaluated for the 2-yr, 10-yr, 25-yr, and 100-yr; 24-hour storm events. The rainfall for these storm events was taken from NOAA Atlas 14 provided in Appendix 2.

Based on the present drainage patterns, all runoff from the proposed development area sheet flows west towards the woods. As a result, the western treeline was selected as the design point.

B. Pre-Development Hydrology

The pre-development site was set as a single subcatchments as shown on the pre-development drainage area map in Appendix 3. Subcatchment PRE includes all of the field and driveway that sheet flows through the proposed development area and into the woods. The pre-development runoff characteristics of the contributing area is provided on the HydroCAD data sheets in Appendix 5. The pre-development discharge rates from the site during the design storms are summarized in Table 1.

C. Post-Development Hydrology

The proposed solar array will be installed at existing grades within the field. The existing vegetation within the proposed array area will be maintained throughout the project to provide a stabilization of the underlying soils and prevent erosion and sedimentation. The proposed fixed panel solar arrays will be installed on elevated racks that provide adequate height above the ground to promote the continued growth of the existing vegetative cover

and allow for infiltration. The proposed solar array will be installed perpendicular to existing grades, resulting in runoff tending to channelize at the drip lines. To prevent this, curtain drains will be installed along the drip lines of the panels. The curtain drains will pipe the runoff directly to the stormwater management basins. Although beneath the solar arrays will be maintained as pervious vegetated groundcover, the areas containing the solar arrays were considered impervious groundcover for the hydrologic analysis due to the curtain drains directly collecting the runoff from the panels.

In accordance with Appendix I of the DEEP's General Permit, the hydrologic analysis is required to account for the compaction of soils that result from extensive machinery traffic over the course of the construction of the array. To account for this, the runoff curve number must be increased by one full HSG category where grading within the array exceeds a 2-foot difference between existing and proposed grades and one half the difference between the on-site HSG and the next higher HSG for the remainder of the array. As discussed above, the proposed array at our site will utilize existing grades. Thus, to meet this requirement, the post construction runoff curve number for the area within the proposed fence was increased from the pre-development category of Meadow, HSG B (58) soils to Meadow, HSG B/C soils (65).

The post-development site was divided into 4 subcatchments as shown on the post-development drainage area map in Appendix 3. Subcatchment 1 includes the area within the solar array and around the basin that sheet flows into the basin or curtains drains. Subcatchment 1P includes specifically the panels to model their shorter time of concentration caused by the curtains drains collecting the runoff. Subcatchment 2 includes the area farther uphill to the east that sheet flows down the hill into the basin or curtain drains. The post development subcatchment characteristics are summarized in the attached HydroCAD data sheets in Appendix 6.

The stormwater management basin will be equipped with a 18" flared end and a multi-stage outlet structure constructed from standard Type CL catch basin. The outlet structure will have a primary outlet consisting of a 6" orifice and a secondary outlet consisting of the frame and grate. The outlet structure will discharge via a 18" outlet pipe. Additionally, the basin will have two 20-feet wide earthen berm spillway. For outlet protection, both the 18" flared end outlet and the outlet structure's 18" outlet pipe will discharge using 20-feet wide level spreaders. Also, the individual curtain drains into the bottom of the basin will discharge onto stone splash pads. Outlet protection for the basins' spillways will consist of 12" thick modified riprap slopes extended 5 feet beyond the toe of the slope.

Using the characteristics described above, the Post Development peak flow rates for the site were calculated for the 2, 25, 50, and 100-year 24-hour rainfall design storms. Refer to Appendices 5 and 6 for pre-development and post-development HydroCAD data sheets. Tables 1-4 compare the pre-development peak flows with the post-development peak flows

at the design points. The resulting post-development peak flows are less than the pre-development peak flows.

TABLE 1 – COMPARISON OF PRE- & POST-DEVELOPMENT DISCHARGE RATES (CFS) TO DESIGN POINT

	2-year	25-year	50-year	100-year
Pre-Development	3.54	24.02	31.25	39.61
Post Development	1.52	17.64	24.50	26.62

D. Stormwater Treatment

Appendix I of the DEEP Stormwater General Permit requires that all solar panels in the array be considered effective impervious cover for the purposes of calculating Water Quality Volume if the proposed post-construction slopes at a site are 15% or more or if slopes less than 15% do not meet the four listed conditions:

a) The vegetated area receiving runoff between rows of solar panels is equal to or greater than the average width of the row of solar panels draining to the vegetated area;
b) Overall site conditions and solar panel configuration within the array are designed so stormwater runoff remains as sheet flows across the entire site towards the intended stormwater management controls;
c) The following conditions are satisfied regarding the design of the post-construction slope of the site:
    i. Slopes less than or equal to 5%:
        Appropriate vegetation shall be established that will ensure sheet flow conditions and that will provide sufficient ground cover throughout the site.
    ii. Slopes between 5% and 10%:
        Practices such as level spreaders, terraces, or berms shall be used to ensure long term sheet flow conditions.
    iii. Slopes greater than or equal to 10% and less than 15%:
        The plan must include specific engineered stormwater control measures with detailed specifications that are designed to provide permanent stabilization and non-erosive conveyance of runoff downgradient from the site.
    iv. Slopes greater than or equal to 8%:
        Erosion control blankets, stump grindings, erosion control mix mulch, or hydroseed with tackifier shall be applied within 72 hours of final grading, or when a rainfall of 0.5 inches or greater is predicted within 24 hours of final grading, whichever time period is less.
d) The solar panels shall be designed as to allow the growth of native vegetation beneath and between the panels.

The existing slope at the site ranges between 5 to 10% in the steepest areas, which requires that conditions (a)-(d) be met in order to avoid treating the panels as impervious area. To

satisfy condition (a), the proposed row spacing of 16.65' will exceed the 13.85' width of the panels. To satisfy condition (b), the solar panels will be constructed utilizing the existing grades while maintaining the existing vegetation and sheet flow drainage patterns. At the driplines where sheet flow would not be maintained, curtain drains will collect the runoff and pipe it to the basin directly. For condition (c), as discussed and agreed upon with personnel from DEEP's Stormwater section, because the existing vegetation will be maintained throughout construction, the need for additional erosion control measures to provide stabilization of the slopes are not necessary, and this condition is considered to be met. Finally, to satisfy condition (d), the proposed fixed panel solar arrays will be installed on elevated racks that provide adequate height above the ground to promote the continued growth of the existing vegetative cover and allow for infiltration.

As a result of satisfying the conditions above, the panels need not be considered as impervious coverage for the calculation of the WQV. Thus, the only proposed surfaces required to be included in the calculation of the WQV, are the access road and equipment pads. These surfaces total 690 square feet. The resulting WQVs is 2,451 cubic feet (see Appendix 7). The volume below the outlet in the stormwater management basin is 6,363 cubic feet, which exceeds the required WQV.

E. Summary of Results

The proposed design and analysis indicates that the proposed development will not result in negative flooding impacts downstream. In addition, the maintenance of existing grades, vegetation and sheet flow drainage patterns during and after construction will prevent any negative impacts downstream resulting from erosion or sedimentation.

Appendix 1:
SOILS INFORMATION

United States Department of Agriculture

NRCS

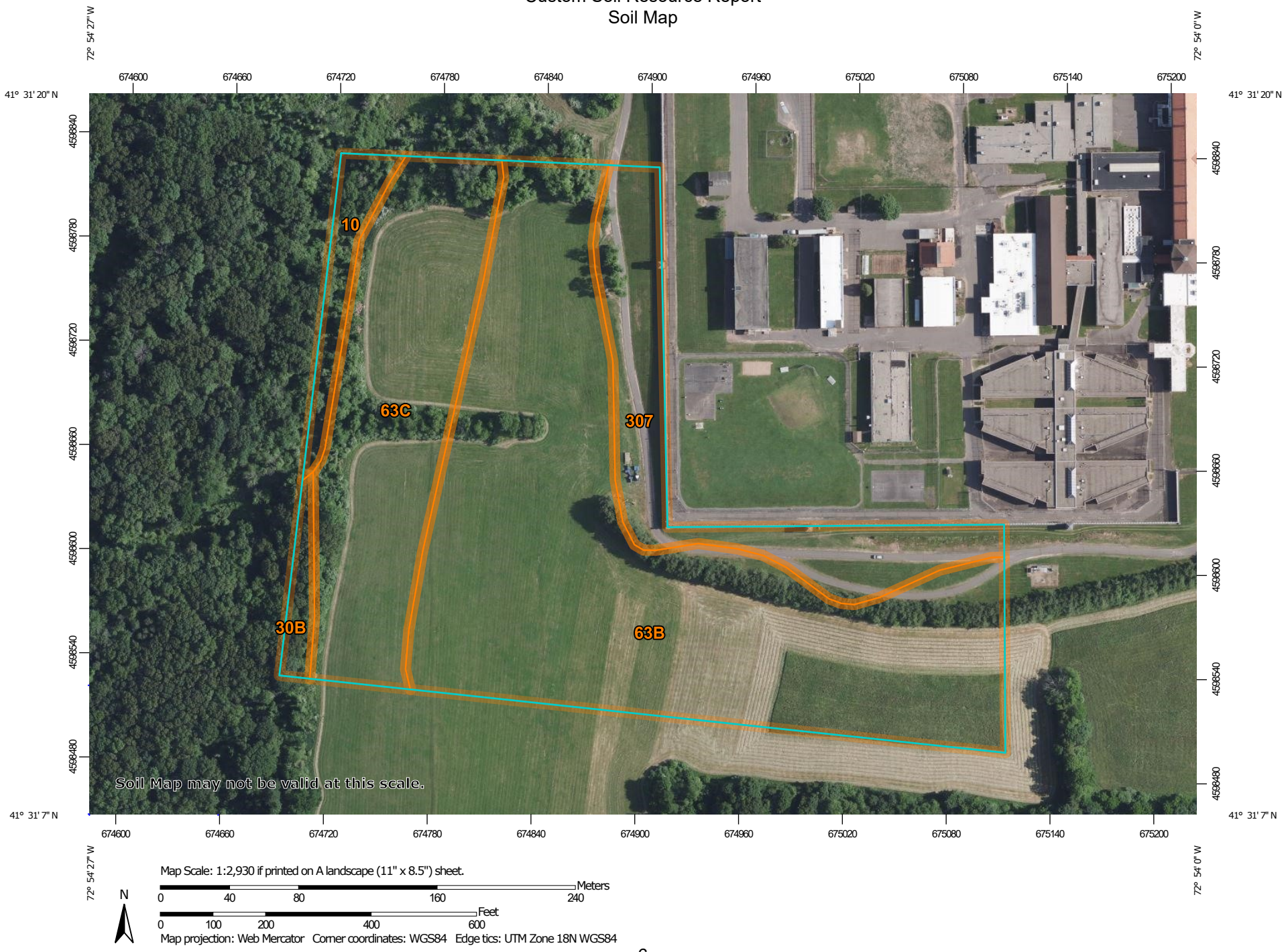
Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for State of Connecticut

February 9, 2022

Custom Soil Resource Report
Soil Map



Map Scale: 1:2,930 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 40 80 160 240

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
10	Raynham silt loam	0.8	3.5%
30B	Branford silt loam, 3 to 8 percent slopes	0.4	1.7%
63B	Cheshire fine sandy loam, 3 to 8 percent slopes	12.4	57.4%
63C	Cheshire fine sandy loam, 8 to 15 percent slopes	5.1	23.5%
307	Urban land	3.0	13.8%
Totals for Area of Interest		**21.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

Hartford

Percent of map unit: 2 percent
Landform: Terraces, outwash plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

63B—Cheshire fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9lpw
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Cheshire and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cheshire

Setting

Landform: Till plains, hills
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-loamy melt-out till derived from basalt and/or sandstone and shale

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 16 inches: fine sandy loam
Bw2 - 16 to 26 inches: fine sandy loam
C - 26 to 65 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F145XY013CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Wilbraham

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Yalesville

Percent of map unit: 3 percent
Landform: Ridges, hills
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Wethersfield

Percent of map unit: 3 percent
Landform: Hills, drumlins
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Watchaug

Percent of map unit: 3 percent
Landform: Till plains, hills
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Menlo

Percent of map unit: 2 percent
Landform: Drainageways, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Unnamed, brown subsoil

Percent of map unit: 2 percent
Hydric soil rating: No

Unnamed, less sloping

Percent of map unit: 2 percent
Hydric soil rating: No

63C—Cheshire fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9lpx
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Cheshire and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cheshire

Setting

Landform: Till plains, hills
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-loamy melt-out till derived from basalt and/or sandstone and shale

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 16 inches: fine sandy loam
Bw2 - 16 to 26 inches: fine sandy loam
C - 26 to 65 inches: gravelly sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: F145XY013CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Yalesville
Percent of map unit: 5 percent
Landform: Ridges, hills
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Wilbraham
Percent of map unit: 5 percent
Landform: Drainageways, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Wethersfield
Percent of map unit: 5 percent
Landform: Hills, drumlins
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Watchaug
Percent of map unit: 3 percent
Landform: Till plains, hills
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Menlo
Percent of map unit: 2 percent
Landform: Drainageways, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

307—Urban land

Map Unit Setting
National map unit symbol: 9lmh
Elevation: 0 to 2,000 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 120 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition
Urban land: 80 percent
Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Typical profile

H - 0 to 6 inches: material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Unranked

Minor Components

Udorthents, wet substratum

Percent of map unit: 10 percent
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Unnamed, undisturbed soils

Percent of map unit: 10 percent
Hydric soil rating: No

Appendix 2:
RAINFALL DATA

NOAA Atlas 14, Volume 10, Version 3
Location name: Cheshire, Connecticut, USA*
Latitude: 41.5207°, Longitude: -72.9055°
Elevation: 207.53 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.342** (0.268-0.430)	**0.413** (0.323-0.520)	**0.529** (0.412-0.668)	**0.625** (0.483-0.794)	**0.758** (0.568-1.01)	**0.858** (0.630-1.17)	**0.963** (0.685-1.37)	**1.08** (0.728-1.58)	**1.25** (0.808-1.89)	**1.38** (0.875-2.14)
10-min	**0.484** (0.379-0.609)	**0.585** (0.457-0.736)	**0.750** (0.584-0.947)	**0.886** (0.686-1.13)	**1.07** (0.805-1.43)	**1.22** (0.892-1.66)	**1.36** (0.971-1.94)	**1.53** (1.03-2.23)	**1.77** (1.15-2.68)	**1.96** (1.24-3.04)
15-min	**0.570** (0.446-0.716)	**0.688** (0.538-0.866)	**0.882** (0.687-1.11)	**1.04** (0.807-1.33)	**1.26** (0.947-1.69)	**1.43** (1.05-1.95)	**1.60** (1.14-2.28)	**1.80** (1.21-2.63)	**2.08** (1.35-3.15)	**2.30** (1.46-3.57)
30-min	**0.786** (0.615-0.988)	**0.946** (0.739-1.19)	**1.21** (0.940-1.53)	**1.42** (1.10-1.81)	**1.72** (1.29-2.30)	**1.95** (1.43-2.66)	**2.18** (1.55-3.10)	**2.45** (1.65-3.57)	**2.83** (1.83-4.29)	**3.14** (1.99-4.86)
60-min	**1.00** (0.785-1.26)	**1.20** (0.941-1.51)	**1.53** (1.19-1.94)	**1.81** (1.40-2.29)	**2.18** (1.63-2.91)	**2.46** (1.81-3.36)	**2.76** (1.97-3.93)	**3.09** (2.09-4.51)	**3.58** (2.32-5.42)	**3.97** (2.51-6.16)
2-hr	**1.32** (1.04-1.65)	**1.57** (1.24-1.97)	**1.99** (1.56-2.49)	**2.33** (1.82-2.95)	**2.81** (2.12-3.72)	**3.17** (2.34-4.29)	**3.54** (2.53-5.00)	**3.96** (2.68-5.74)	**4.56** (2.97-6.88)	**5.06** (3.21-7.79)
3-hr	**1.53** (1.21-1.91)	**1.83** (1.44-2.28)	**2.31** (1.82-2.89)	**2.71** (2.12-3.41)	**3.26** (2.47-4.30)	**3.67** (2.72-4.96)	**4.11** (2.95-5.78)	**4.60** (3.12-6.64)	**5.30** (3.46-7.96)	**5.88** (3.74-9.03)
6-hr	**1.95** (1.55-2.40)	**2.33** (1.85-2.89)	**2.96** (2.35-3.68)	**3.49** (2.75-4.36)	**4.21** (3.21-5.53)	**4.75** (3.54-6.39)	**5.32** (3.85-7.47)	**5.98** (4.07-8.59)	**6.95** (4.54-10.4)	**7.75** (4.94-11.8)
12-hr	**2.40** (1.93-2.95)	**2.91** (2.33-3.58)	**3.75** (2.99-4.62)	**4.44** (3.52-5.51)	**5.40** (4.14-7.06)	**6.10** (4.58-8.19)	**6.87** (5.01-9.63)	**7.77** (5.31-11.1)	**9.14** (5.99-13.6)	**10.3** (6.59-15.6)
24-hr	**2.83** (2.28-3.45)	**3.48** (2.80-4.25)	**4.56** (3.66-5.58)	**5.45** (4.34-6.71)	**6.67** (5.15-8.70)	**7.57** (5.74-10.1)	**8.56** (6.32-12.0)	**9.78** (6.71-13.9)	**11.7** (7.68-17.2)	**13.3** (8.56-20.1)
2-day	**3.19** (2.59-3.86)	**4.00** (3.24-4.85)	**5.32** (4.29-6.47)	**6.41** (5.14-7.85)	**7.91** (6.16-10.3)	**9.01** (6.88-12.0)	**10.2** (7.63-14.4)	**11.8** (8.12-16.7)	**14.3** (9.44-21.0)	**16.5** (10.6-24.8)
3-day	**3.47** (2.82-4.18)	**4.35** (3.54-5.26)	**5.81** (4.71-7.04)	**7.01** (5.65-8.55)	**8.67** (6.78-11.2)	**9.88** (7.58-13.2)	**11.2** (8.41-15.8)	**13.0** (8.94-18.3)	**15.8** (10.4-23.1)	**18.3** (11.8-27.3)
4-day	**3.72** (3.04-4.47)	**4.66** (3.81-5.61)	**6.21** (5.05-7.50)	**7.49** (6.05-9.11)	**9.25** (7.25-12.0)	**10.5** (8.10-14.0)	**12.0** (8.99-16.8)	**13.8** (9.55-19.4)	**16.8** (11.1-24.5)	**19.5** (12.6-29.0)
7-day	**4.43** (3.64-5.30)	**5.48** (4.50-6.56)	**7.20** (5.89-8.65)	**8.63** (7.01-10.4)	**10.6** (8.33-13.6)	**12.0** (9.27-15.9)	**13.6** (10.2-18.9)	**15.6** (10.8-21.8)	**18.9** (12.5-27.3)	**21.7** (14.0-32.1)
10-day	**5.14** (4.24-6.13)	**6.25** (5.15-7.46)	**8.07** (6.62-9.66)	**9.57** (7.80-11.5)	**11.6** (9.17-14.8)	**13.2** (10.2-17.2)	**14.8** (11.1-20.4)	**16.9** (11.8-23.5)	**20.1** (13.4-29.1)	**22.9** (14.9-33.8)
20-day	**7.37** (6.12-8.72)	**8.55** (7.09-10.1)	**10.5** (8.66-12.5)	**12.1** (9.92-14.5)	**14.3** (11.3-18.0)	**16.0** (12.3-20.5)	**17.7** (13.2-23.8)	**19.7** (13.8-27.2)	**22.7** (15.2-32.4)	**25.1** (16.3-36.7)
30-day	**9.23** (7.69-10.9)	**10.5** (8.70-12.3)	**12.4** (10.3-14.7)	**14.1** (11.6-16.8)	**16.4** (13.0-20.4)	**18.1** (14.0-23.1)	**19.9** (14.8-26.3)	**21.8** (15.3-29.8)	**24.4** (16.4-34.8)	**26.5** (17.3-38.7)
45-day	**11.5** (9.65-13.5)	**12.8** (10.7-15.0)	**14.9** (12.4-17.5)	**16.6** (13.7-19.7)	**18.9** (15.0-23.4)	**20.7** (16.0-26.2)	**22.5** (16.7-29.5)	**24.3** (17.2-33.1)	**26.7** (18.0-37.8)	**28.5** (18.6-41.3)
60-day	**13.4** (11.3-15.7)	**14.7** (12.4-17.3)	**16.9** (14.1-19.8)	**18.6** (15.4-22.0)	**21.0** (16.7-25.9)	**22.9** (17.7-28.8)	**24.8** (18.3-32.2)	**26.5** (18.7-36.0)	**28.7** (19.4-40.5)	**30.2** (19.8-43.8)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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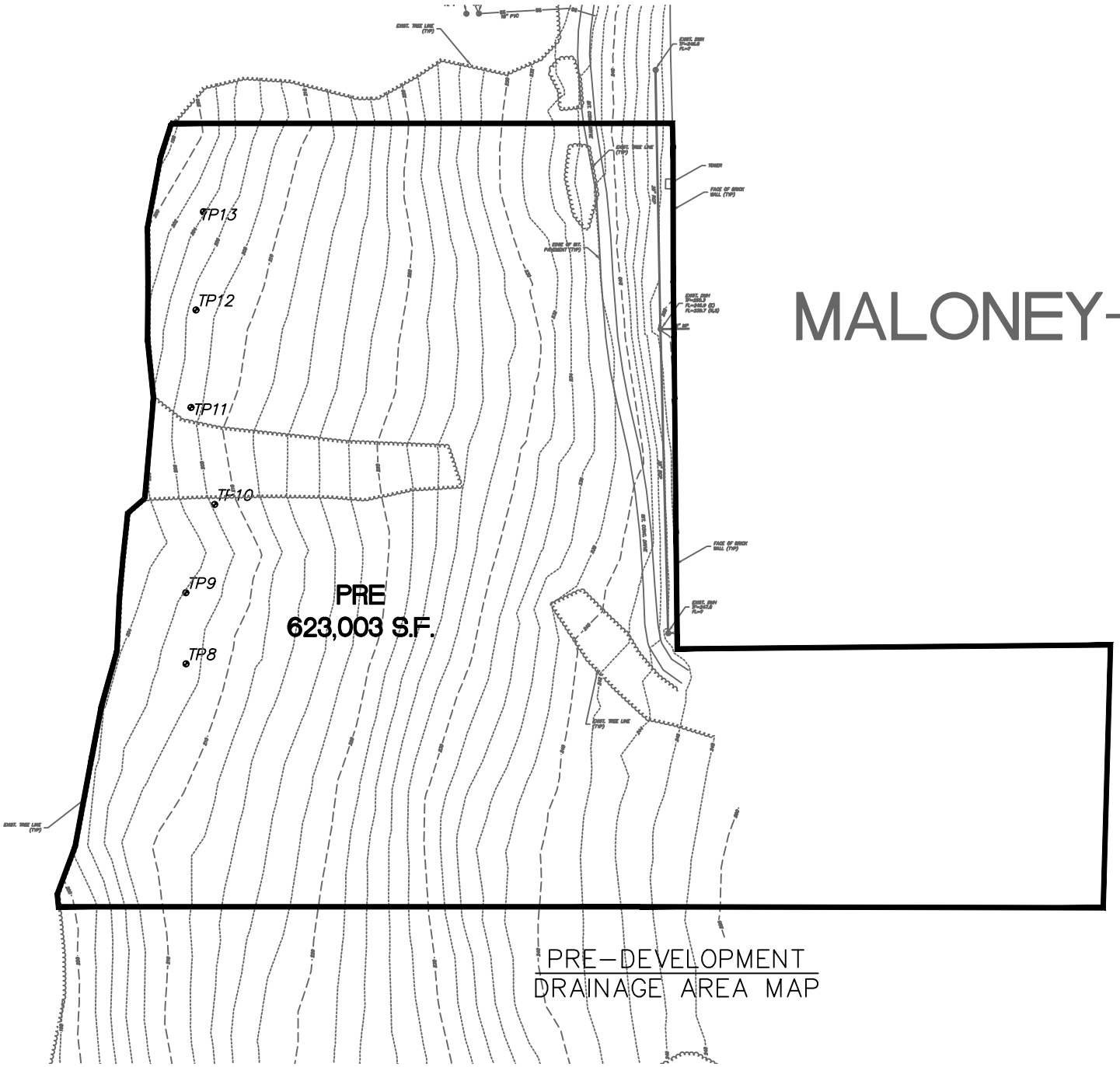
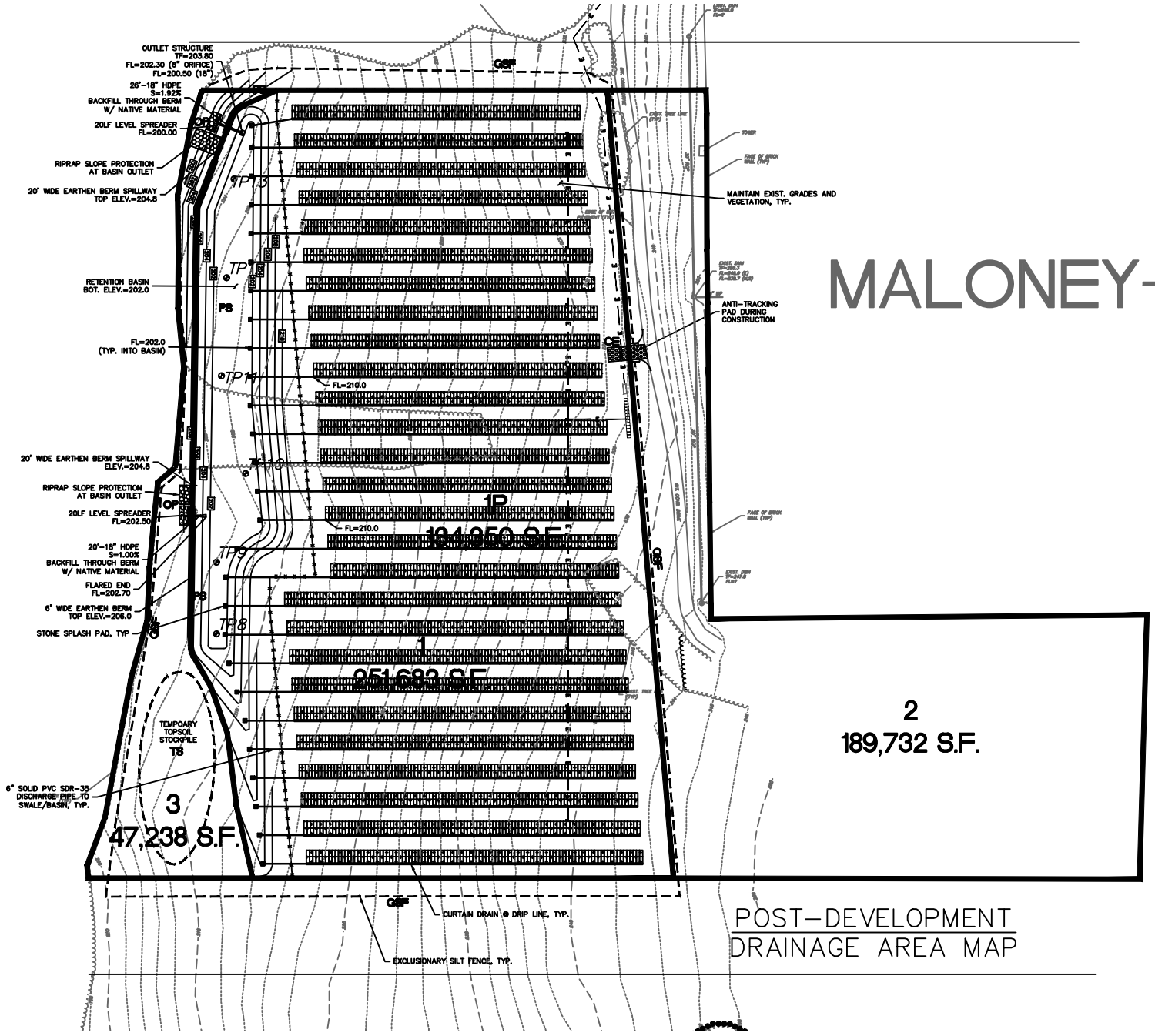
PF graphical

Appendix 3:
DRAINAGE AREA MAPS



PRE-DEVELOPMENT
DRAINAGE AREA MAP



MALONEY-

POST-DEVELOPMENT
DRAINAGE AREA MAP

Appendix 4:
TEST PIT LAB RESULTS

GRAIN SIZE DISTRIBUTION TEST DATA

2/24/2022

Client: JR Russo Surveyors & Engineers. Date: 02/24/2022

Project: Maloney & Webster Correctional Institution, Cheshire, CT.

Location: Onsite(Maloney & Webster Correctional Institution, 900 Highland Ave. Cheshire, CT.

Depth: 42" - 46" **Sample Number:** 109-22 (M+W, TP8)

Material Description: Reddish br. fine to medium sand, little gravel.

Liquid Limit: N/A **Plastic Limit:** N/A

USCS Classification: SP

Testing Remarks: ASTM C136, C117, Client id# M+W, TP8

Tested by: SZ **Checked by:** ZA

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 2131.50
Tare Wt. = 0.00
Minus #200 from wash = 1.7%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer	Percent Retained
2167.30	0.00	0.00	1 1/2"	0.00	100	0
			1"	64.60	97	3
			3/4"	92.00	96	4
			1/4"	267.20	88	12
			#4	313.80	86	14
			#10	456.80	79	21
			#40	1503.20	31	69
			#100	2088.10	4	96
			#200	2131.20	2	98

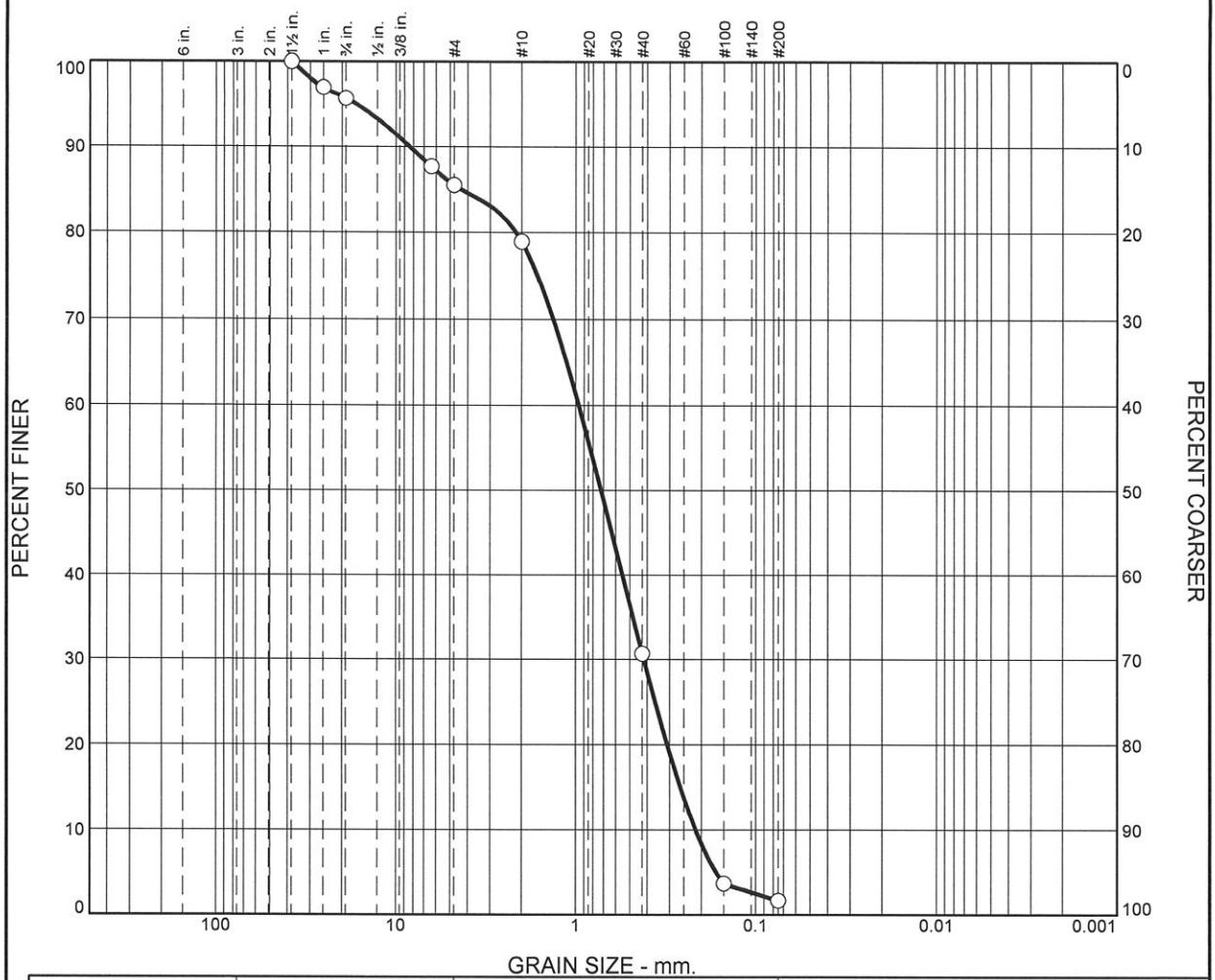
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	4	10	14	7	48	29	84			2

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.1660	0.2152	0.2616	0.3096	0.4174	0.5501	0.7224	0.9614	2.1536	4.3328	8.3908	16.4485

Fineness Modulus	C_u	C_c
3.14	4.47	0.84

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0	4	10	7	48	29	2	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	N/A	N/A	4.3328	0.9614	0.7224	0.4174	0.2616	0.2152	0.84	4.47

Material Description	USCS	AASHTO
○ Reddish br. fine to medium sand, little gravel.	SP	

Project No. **Client:** JR Russo Surveyors & Engineers.

Project: Maloney & Webster Correctional Institution, Cheshire, CT.

○ **Source:** Onsite(Maloney & Webster Correctional Institution, 900 Highland Ave. Cheshire, CT.

Remarks:

○ ASTM C136, C117, Client id# M+W, TP8

F.M.=3.14

Figure

Tested By: SZ **Checked By:** ZA

NEW ENGLAND MATERIALS TESTING LAB, LLC.
NEW ENGLAND REGIONAL OFFICE
72 Bissell Street Manchester, CT 06040 • Tel: 860-783-5830 • Fax: 860-783-5832

Client: JR Russo Surveyors & Engineers
P. O Box 938
East Windsor, CT. 06088

Report #: 008-22

Lab ID: 109-22

Project: Maloney & Webster Correctional Institution
900 Highland Avenue Cheshire, CT.

Client ID: M+W, TP-8

Technician: Z. A

Date: 02/24/2022

LAB PERMEABILITY TEST

Sample description: Reddish br. fine to medium sand, little gavel.

Location: Onsite (Maloney & Webster Correctional Institution
990 Highland Avenue Cheshire, CT.).

Sample depth: 42" – 46"

Method: Permeability by ASTM D2434 (Constant Head Method)

$k = QL/ath$

Where k = coefficient of permeability,

Q = quantity of water discharged,	Q =	1000 cm^3
L = length of sample in centimeters	L =	15.24 cm
A = cross sectional area of specimen,	A =	43.10 cm^2
t = total time for discharge, in seconds	t =	360.0 sec
h = difference in head manometers,	h =	61.5 cm

k = 0.015970925cm/sec.

k = 22.64 inch/hour

Reported To: JR Russo Surveyors & Engineers

Submitted By: New England Materials Testing Lab, LLC.

GRAIN SIZE DISTRIBUTION TEST DATA

Client: JR Russo Surveyors & Engineers. Date: 02/24/2022

Project: Maloney & Webster Correctional Institution, Cheshire, CT.

Location: Onsite(Maloney & Webster Correctional Institution, 900 Highland Ave. Cheshire, CT.

Depth: 44" - 48" **Sample Number:** 110-22 (M+W, TP9)

Material Description: Reddish br. medium to fine sand, little fines, little gravel.

Liquid Limit: N/A **Plastic Limit:** N/A

Testing Remarks: ASTM C136, C117, Client id# M+W, TP9

Tested by: SZ **Checked by:** ZA

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 1899.30
Tare Wt. = 0.00
Minus #200 from wash = 16.9%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer	Percent Retained
2285.80	0.00	0.00	1 1/2"	0.00	100	0
			1"	44.80	98	2
			3/4"	62.60	97	3
			1/4"	232.70	90	10
			#4	288.90	87	13
			#10	487.80	79	21
			#40	1148.20	50	50
			#100	1769.50	23	77
			#200	1896.90	17	83

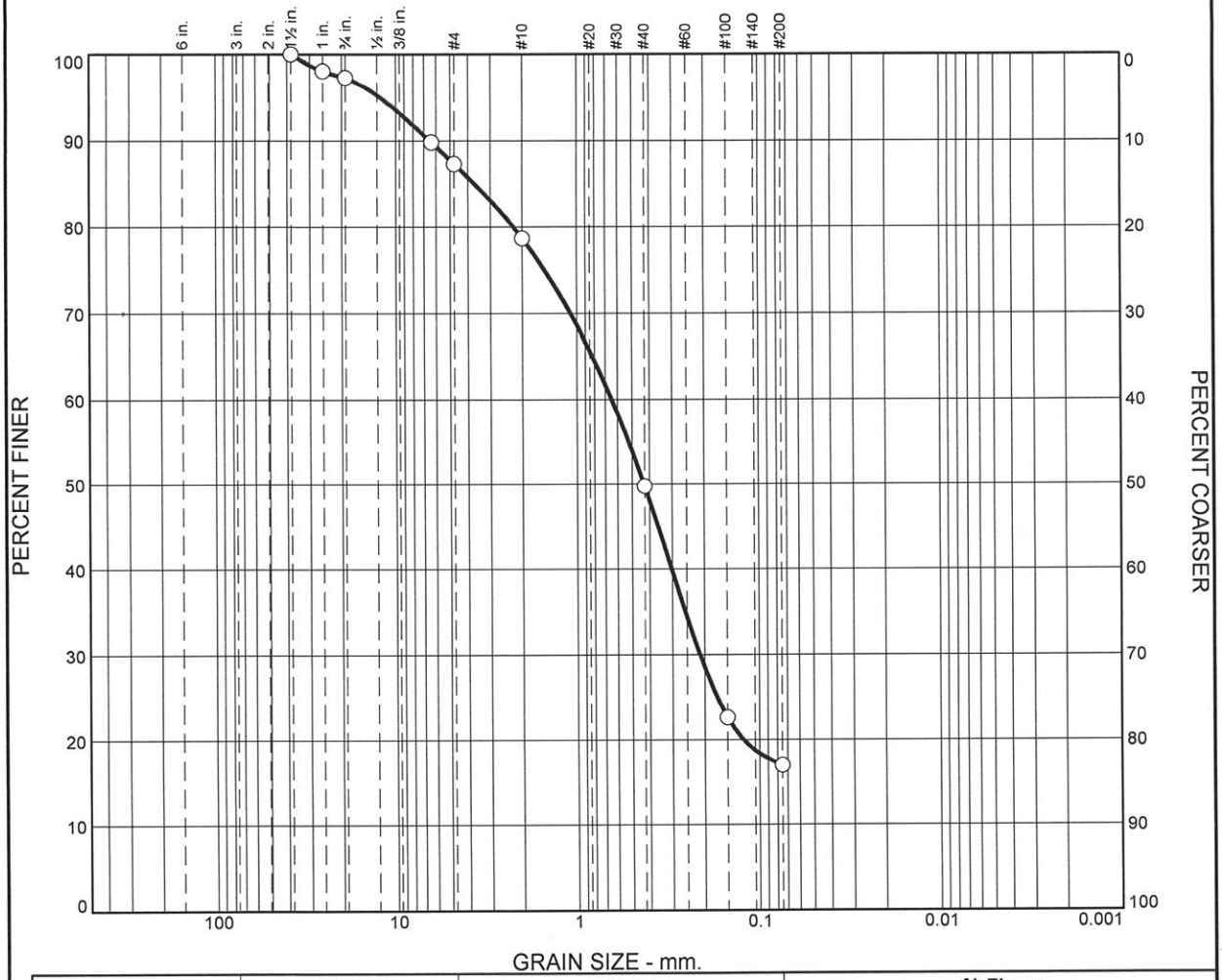
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	3	10	13	8	29	33	70			17

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.1230	0.2120	0.3029	0.4286	0.6439	2.2426	3.6490	6.4872	12.2143

Fineness Modulus
2.50

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0	3	10	8	29	33	17	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	N/A	N/A	3.6490	0.6439	0.4286	0.2120				

Material Description	USCS	AASHTO
○ Reddish br. medium to fine sand, little fines, little gravel.		

Project No. **Client:** JR Russo Surveyors & Engineers.

Project: Maloney & Webster Correctional Institution, Cheshire, CT.

○ **Source:** Onsite(Maloney & Webster Correctional Institution, 900 Highland Ave. Cheshire, CT.

Remarks:

○ ASTM C136, C117, Client id# M+W, TP9

F.M.=2.50

Figure

Tested By: SZ **Checked By:** ZA

NEW ENGLAND MATERIALS TESTING LAB, LLC.
NEW ENGLAND REGIONAL OFFICE
72 Bissell Street Manchester, CT 06040 • Tel: 860-783-5830 • Fax: 860-783-5832

Client: JR Russo Surveyors & Engineers
P. O Box 938
East Windsor, CT. 06088

Report #: 009-22

Lab ID: 110-22

Project: Maloney & Webster Correctional Institution
900 Highland Avenue Cheshire, CT.

Client ID: M+W, TP-9

Technician: Z. A

Date: 02/24/2022

LAB PERMEABILITY TEST

Sample description: Reddish br. medium to fine sand, little fines, little gavel.

Location: Onsite (Maloney & Webster Correctional Institution
990 Highland Avenue Cheshire, CT.).

Sample depth: 44" – 48"

Method: Permeability by ASTM D2434 (Constant Head Method)

k = QL/ath

Where k = coefficient of permeability,

Q = quantity of water discharged,	Q =	1000 cm^3
L = length of sample in centimeters	L =	15.24 cm
A = cross sectional area of specimen,	A =	43.10 cm^2
t = total time for discharge, in seconds	t =	1740 sec
h = difference in head manometers,	h =	61.4 cm

k = 0.003309711 cm/sec.

k = 4.691 inch/hour

Reported To: JR Russo Surveyors & Engineers

Submitted By: New England Materials Testing Lab, LLC.

GRAIN SIZE DISTRIBUTION TEST DATA

2/24/2022

Client: JR Russo Surveyors & Engineers. Date: 02/24/2022

Project: Maloney & Webster Correctional Institution, Cheshire, CT.

Location: Onsite(Maloney & Webster Correctional Institution, 900 Highland Ave. Cheshire, CT.

Depth: 40" - 44" **Sample Number:** 111-22 (M+W, TP10)

Material Description: Reddish br. medium to fine sand, some fines, little gravel.

Liquid Limit: N/A **Plastic Limit:** N/A

Testing Remarks: ASTM C136, C117, Client id# M+W, TP10

Tested by: SZ **Checked by:** ZA

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 1390.30
Tare Wt. = 0.00
Minus #200 from wash = 27.4%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer	Percent Retained
1915.20	0.00	0.00	1 1/2"	0.00	100	0
			1"	93.30	95	5
			3/4"	134.60	93	7
			1/4"	255.70	87	13
			#4	284.60	85	15
			#10	375.60	80	20
			#40	809.40	58	42
			#100	1285.30	33	67
			#200	1386.20	28	72

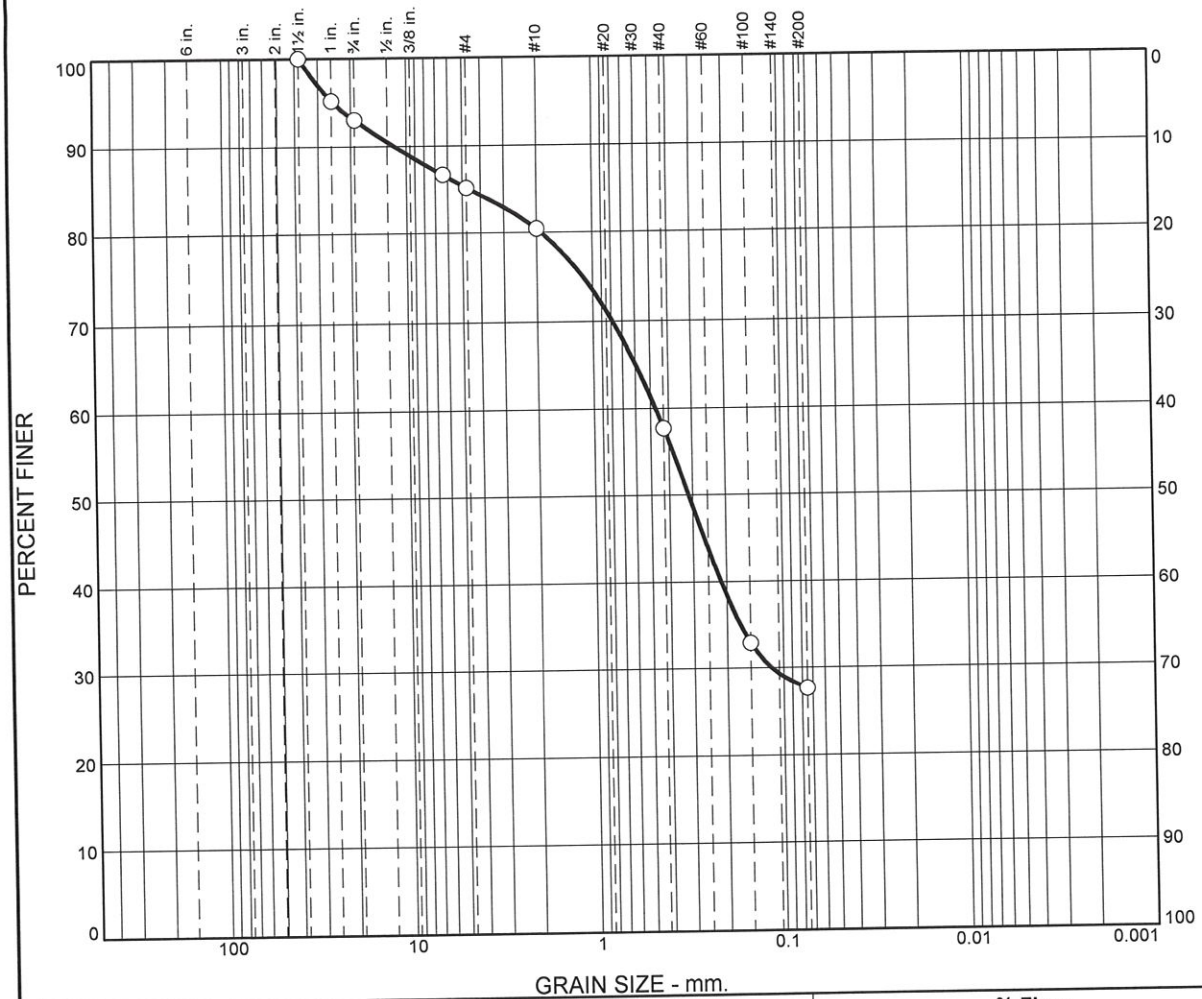
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	7	8	15	5	22	30	57			28

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.1168	0.2140	0.3150	0.4679	1.8974	4.6187	11.6724	25.0511

Fineness Modulus
2.29

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0	7	8	5	22	30	28	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	N/A	N/A	4.6187	0.4679	0.3150	0.1168				

Material Description	USCS	AASHTO
○ Reddish br. medium to fine sand, some fines, little gravel.		

Project No. **Client:** JR Russo Surveyors & Engineers.

Project: Maloney & Webster Correctional Institution, Cheshire, CT.

○ **Source:** Onsite(Maloney & Webster Correctional Institution, 900 Highland Ave. Cheshire, CT.

Remarks:

○ ASTM C136, C117, Client id# M+W, TP10

F.M.=2.29

Figure

Tested By: SZ **Checked By:** ZA

NEW ENGLAND MATERIALS TESTING LAB, LLC.
NEW ENGLAND REGIONAL OFFICE
72 Bissell Street Manchester, CT 06040 • Tel: 860-783-5830 • Fax: 860-783-5832

Client: JR Russo Surveyors & Engineers
P. O Box 938
East Windsor, CT. 06088

Report #: 010-22

Lab ID: 111-22

Project: Maloney & Webster Correctional Institution
900 Highland Avenue Cheshire, CT.

Client ID: M+W, TP-10

Technician: Z. A

Date: 02/24/2022

LAB PERMEABILITY TEST

Sample description: Reddish br. medium to fine sand, some fines, little gavel.

Location: Onsite (Maloney & Webster Correctional Institution
990 Highland Avenue Cheshire, CT.).

Sample depth: 40" – 44"

Method: Permeability by ASTM D2434 (Constant Head Method)

$k = QL/ath$

Where k = coefficient of permeability,

Q = quantity of water discharged,	Q =	700.0 cm^3
L = length of sample in centimeters	L =	15.24 cm
A = cross sectional area of specimen,	A =	43.10 cm^2
t = total time for discharge, in seconds	t =	4560 sec
h = difference in head manometers,	h =	61.5 cm

k = 0.000882604cm/sec.

k = 1.251 inch/hour

Reported To: JR Russo Surveyors & Engineers

Submitted By: New England Materials Testing Lab, LLC.

GRAIN SIZE DISTRIBUTION TEST DATA

2/24/2022

Client: JR Russo Surveyors & Engineers. Date: 02/24/2022

Project: Maloney & Webster Correctional Institution, Cheshire, CT.

Location: Onsite(Maloney & Webster Correctional Institution, 900 Highland Ave. Cheshire, CT.

Depth: 44" - 48" **Sample Number:** 112-22 (M+W, TP11)

Material Description: Reddish br. medium to fine sand, some fines, little gravel.

Liquid Limit: N/A **Plastic Limit:** N/A

Testing Remarks: ASTM C136, C117, Client id# M+W, TP11

Tested by: SZ **Checked by:** ZA

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 2201.30
Tare Wt. = 0.00
Minus #200 from wash = 20.6%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer	Percent Retained
2774.10	0.00	0.00	2"	0.00	100	0
			1 1/2"	89.30	97	3
			1"	146.70	95	5
			3/4"	187.80	93	7
			1/4"	391.60	86	14
			#4	456.30	84	16
			#10	643.30	77	23
			#40	1396.60	50	50
			#100	2071.70	25	75
			#200	2197.40	21	79

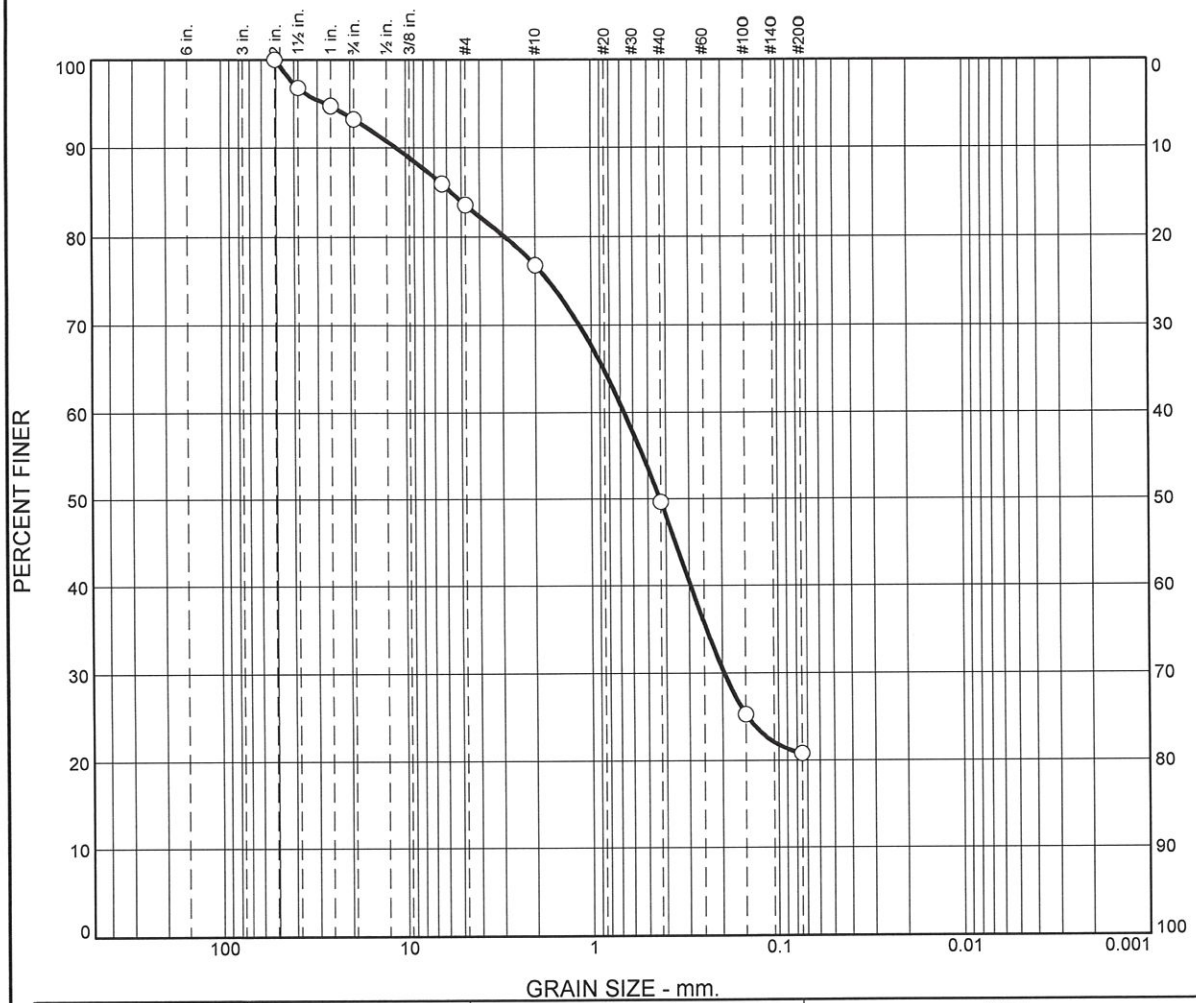
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	7	9	16	7	27	29	63			21

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
				0.1952	0.2946	0.4308	0.6657	2.9130	5.6924	11.2124	27.2653

Fineness Modulus
2.65

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0	7	9	7	27	29	21	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	N/A	N/A	5.6924	0.6657	0.4308	0.1952				

Material Description	USCS	AASHTO
○ Reddish br. medium to fine sand, some fines, little gravel.		

Project No. **Client:** JR Russo Surveyors & Engineers.

Project: Maloney & Webster Correctional Institution, Cheshire, CT.

○ **Source:** Onsite(Maloney & Webster Correctional Institution, 900 Highland Ave. Cheshire, CT.

Remarks:

○ ASTM C136, C117, Client id# M+W, TP11

F.M.=2.65

Figure

Tested By: SZ **Checked By:** ZA

NEW ENGLAND MATERIALS TESTING LAB, LLC.
NEW ENGLAND REGIONAL OFFICE
72 Bissell Street Manchester, CT 06040 • Tel: 860-783-5830 • Fax: 860-783-5832

Client: JR Russo Surveyors & Engineers
P. O Box 938
East Windsor, CT. 06088

Report #: 011-22

Lab ID: 112-22

Project: Maloney & Webster Correctional Institution
900 Highland Avenue Cheshire, CT.

Client ID: M+W, TP-11

Technician: Z. A

Date: 02/24/2022

LAB PERMEABILITY TEST

Sample description: Reddish br. medium to fine sand, some fines, little gavel.

Location: Onsite (Maloney & Webster Correctional Institution
990 Highland Avenue Cheshire, CT.).

Sample depth: 44" – 48"

Method: Permeability by ASTM D2434 (Constant Head Method)

$k = QL/ath$

Where k = coefficient of permeability,

Q = quantity of water discharged,	Q =	900.0 cm^3
L = length of sample in centimeters	L =	15.24 cm
A = cross sectional area of specimen,	A =	43.10 cm^2
t = total time for discharge, in seconds	t =	3180 sec
h = difference in head manometers,	h =	61.5 cm

k = 0.001627226 cm/sec.

k = 2.31 inch/hour

Reported To: JR Russo Surveyors & Engineers

Submitted By: New England Materials Testing Lab, LLC.

GRAIN SIZE DISTRIBUTION TEST DATA

2/24/2022

Client: JR Russo Surveyors & Engineers. Date: 02/24/2022

Project: Maloney & Webster Correctional Institution, Cheshire, CT.

Location: Onsite(Maloney & Webster Correctional Institution, 900 Highland Ave. Cheshire, CT.

Depth: 44" - 48" **Sample Number:** 113-22 (M+W, TP12)

Material Description: Reddish br. medium to fine sand, little fines, little gravel.

Liquid Limit: N/A **Plastic Limit:** N/A

Testing Remarks: ASTM C136, C117, Client id# M+W, TP12

Tested by: SZ **Checked by:** ZA

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 1699.80
Tare Wt. = 0.00
Minus #200 from wash = 17.1%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer	Percent Retained
2050.20	0.00	0.00	2"	0.00	100	0
			1 1/2"	106.50	95	5
			1"	142.00	93	7
			3/4"	203.00	90	10
			1/4"	363.20	82	18
			#4	390.60	81	19
			#10	493.80	76	24
			#40	968.40	53	47
			#100	1578.10	23	77
			#200	1696.40	17	83

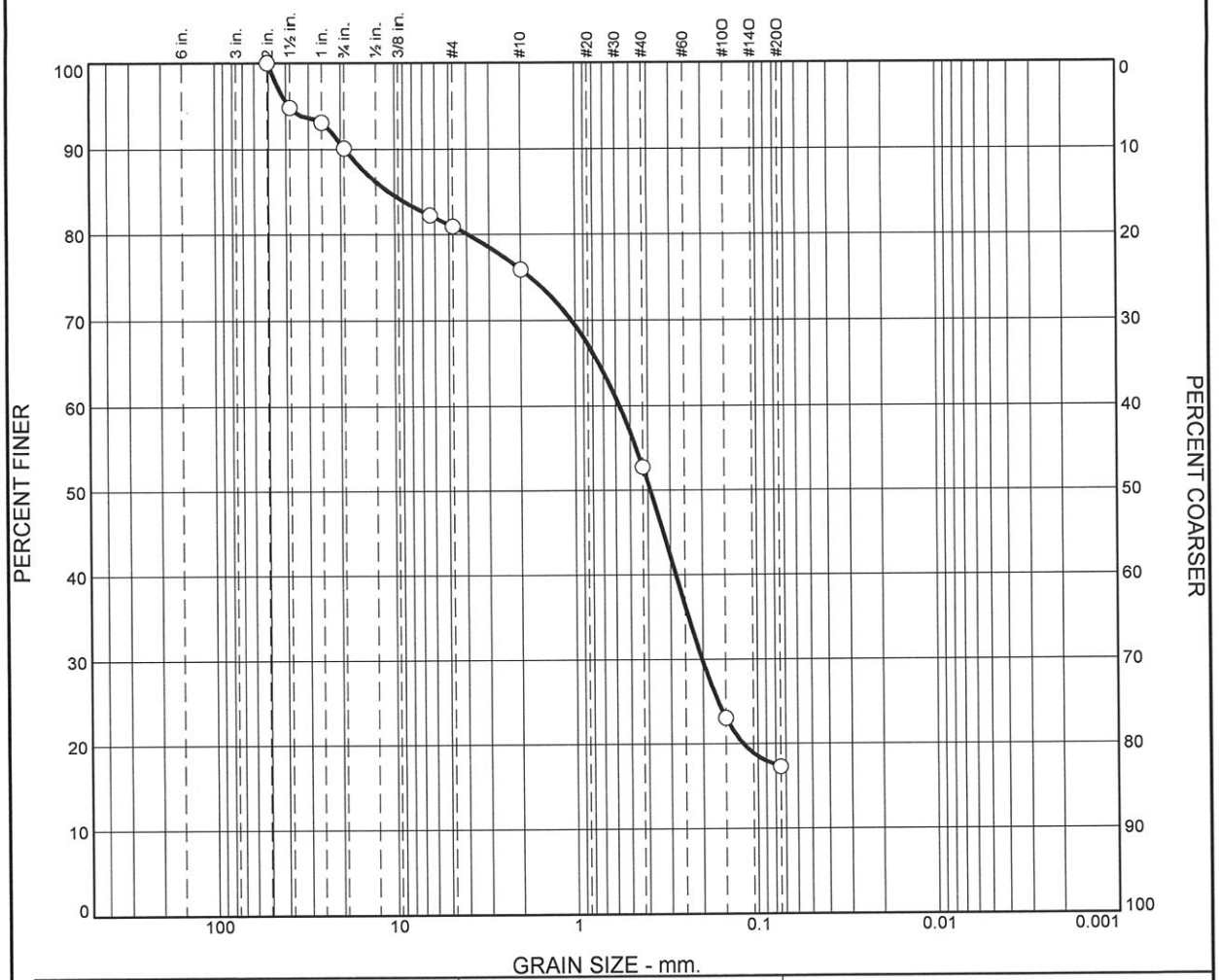
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	10	9	19	5	23	36	64			17

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
			0.1207	0.2022	0.2808	0.3861	0.5704	3.9209	10.6218	18.8886	38.7483

Fineness Modulus
2.75

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0	10	9	5	23	36	17	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	N/A	N/A	10.6218	0.5704	0.3861	0.2022				

Material Description	USCS	AASHTO
○ Reddish br. medium to fine sand, little fines, little gravel.		

Project No. **Client:** JR Russo Surveyors & Engineers.

Project: Maloney & Webster Correctional Institution, Cheshire, CT.

○ **Source:** Onsite(Maloney & Webster Correctional Institution, 900 Highland Ave. Cheshire, CT.

Remarks:

○ ASTM C136, C117, Client id# M+W, TP12

F.M.=2.75

Figure

Tested By: SZ **Checked By:** ZA

NEW ENGLAND MATERIALS TESTING LAB, LLC.
NEW ENGLAND REGIONAL OFFICE
72 Bissell Street Manchester, CT 06040 • Tel: 860-783-5830 • Fax: 860-783-5832

Client: JR Russo Surveyors & Engineers
P. O Box 938
East Windsor, CT. 06088

Report #: 012-22

Lab ID: 113-22

Project: Maloney & Webster Correctional Institution
900 Highland Avenue Cheshire, CT.

Client ID: M+W, TP-12

Technician: Z. A

Date: 02/24/2022

LAB PERMEABILITY TEST

Sample description: Reddish br. medium to fine sand, little fines, little gavel.

Location: Onsite (Maloney & Webster Correctional Institution
990 Highland Avenue Cheshire, CT.).

Sample depth: 44" – 48"

Method: Permeability by ASTM D2434 (Constant Head Method)

$k = QL/ath$

Where k = coefficient of permeability,

Q = quantity of water discharged,	Q =	1000 cm^3
L = length of sample in centimeters	L =	15.24 cm
A = cross sectional area of specimen,	A =	43.10 cm^2
t = total time for discharge, in seconds	t =	2160 sec
h = difference in head manometers,	h =	61.7 cm

k = 0.002653193 cm/sec.

k = 3.761 inch/hour

Reported To: JR Russo Surveyors & Engineers

Submitted By: New England Materials Testing Lab, LLC.

GRAIN SIZE DISTRIBUTION TEST DATA

2/24/2022

Client: JR Russo Surveyors & Engineers. Date: 02/24/2022

Project: Maloney & Webster Correctional Institution, Cheshire, CT.

Location: Onsite(Maloney & Webster Correctional Institution, 900 Highland Ave. Cheshire, CT.

Depth: 44" - 48" **Sample Number:** 114-22 (M+W, TP13)

Material Description: Reddish br. silty clayey medium to fine sand, mixed trace recycled aggregate.

Liquid Limit: N/A **Plastic Limit:** N/A

Testing Remarks: ASTM C136, C117, Client id# M+W, TP13

Tested by: SZ **Checked by:** ZA

Sieve Test Data

Post #200 Wash Test Weights (grams): **Dry Sample and Tare =** 1278.30
Tare Wt. = 0.00
Minus #200 from wash = 35.0%

Dry Sample and Tare (grams)	Tare (grams)	Cumulative Pan Tare Weight (grams)	Sieve Opening Size	Cumulative Weight Retained (grams)	Percent Finer	Percent Retained
1967.50	0.00	0.00	1"	0.00	100	0
			3/4"	33.40	98	2
			1/4"	64.40	97	3
			#4	185.10	91	9
			#10	278.60	86	14
			#40	749.40	62	38
			#100	1257.30	36	64
			#200	1274.10	35	65

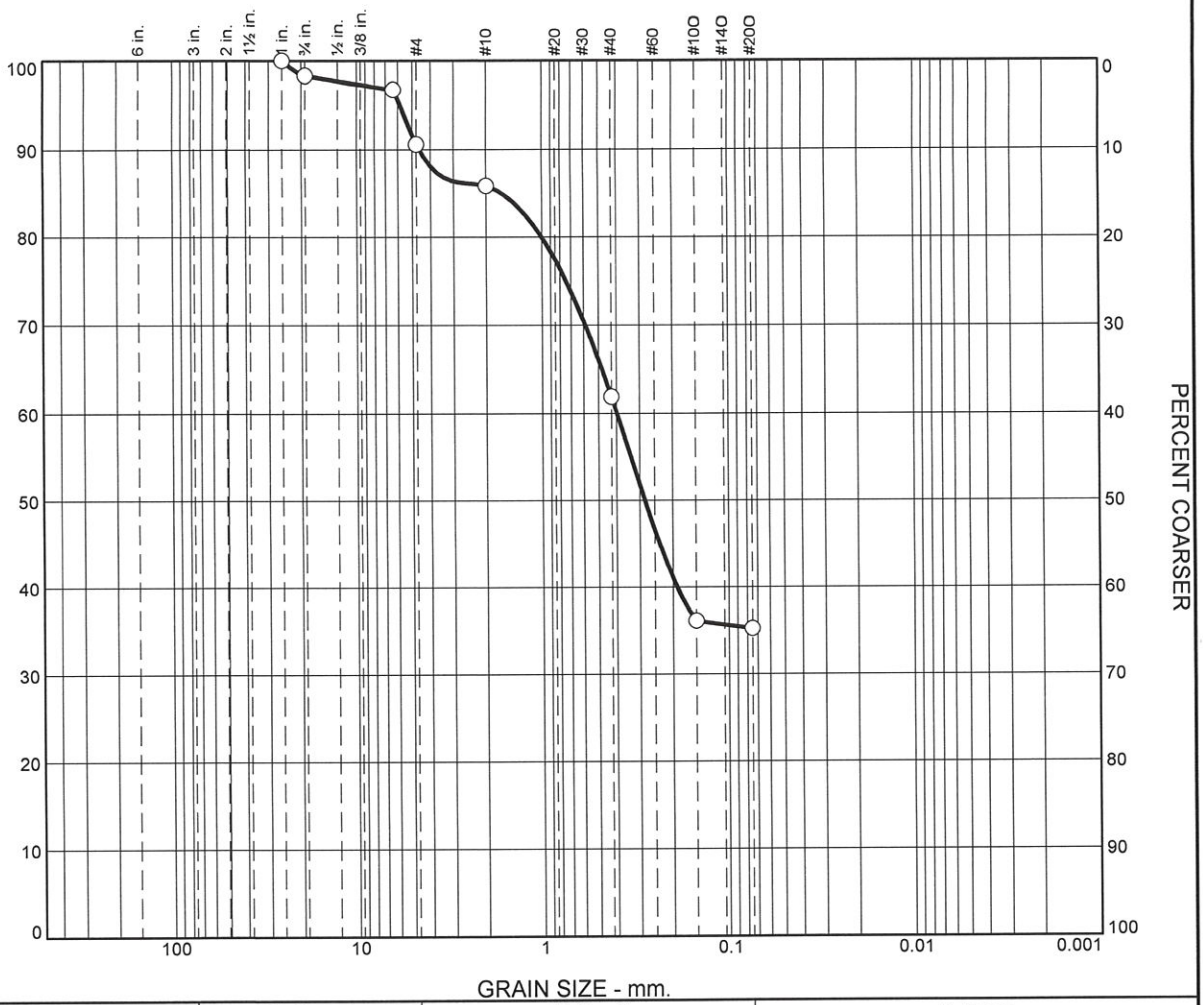
Fractional Components

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0	2	7	9	5	24	27	56			35

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
					0.1901	0.2816	0.3970	1.0060	1.6464	4.5956	5.8242

Fineness Modulus
1.87

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0	2	7	5	24	27	35	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	N/A	N/A	1.6464	0.3970	0.2816					

Material Description	USCS	AASHTO
○ Reddish br. silty clayey medium to fine sand, mixed trace recycled aggregate.		

Project No. **Client:** JR Russo Surveyors & Engineers.

Project: Maloney & Webster Correctional Institution, Cheshire, CT.

○ **Source:** Onsite(Maloney & Webster Correctional Institution, 900 Highland Ave. Cheshire, CT.

Remarks:

○ ASTM C136, C117, Client id# M+W, TP13

F.M.=1.87

Figure

Tested By: SZ **Checked By:** ZA

NEW ENGLAND MATERIALS TESTING LAB, LLC.
NEW ENGLAND REGIONAL OFFICE
72 Bissell Street Manchester, CT 06040 • Tel: 860-783-5830 • Fax: 860-783-5832

Client: JR Russo Surveyors & Engineers
P. O Box 938
East Windsor, CT. 06088

Report #: 013-22

Lab ID: 114-22

Project: Maloney & Webster Correctional Institution
900 Highland Avenue Cheshire, CT.

Client ID: M+W, TP-13

Technician: Z. A

Date: 02/24/2022

LAB PERMEABILITY TEST

Sample description: Reddish br. silty clayey medium to fine sand, mixed trace recycled aggregate.

Location: Onsite (Maloney & Webster Correctional Institution
990 Highland Avenue Cheshire, CT.).

Sample depth: 44" – 48"

Method: Permeability by ASTM D2434 (Constant Head Method)

$k = QL/ath$

Where k = coefficient of permeability,

Q = quantity of water discharged,	Q =	600	cm^3
L = length of sample in centimeters	L =	15.24	cm
A = cross sectional area of specimen,	A =	43.10	cm^2
t = total time for discharge, in seconds	t =	6780	sec
h = difference in head manometers,	h =	61.5	cm

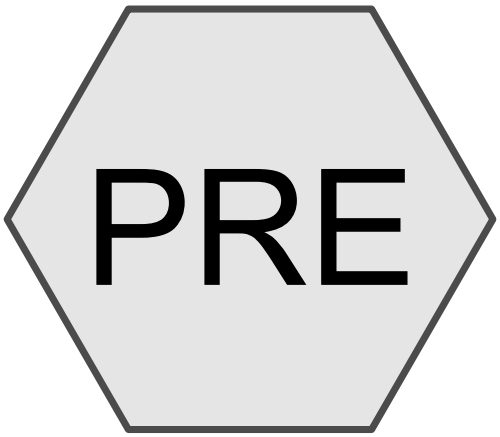
k = 0.000508808cm/sec.

k = 0.721inch/hour

Reported To: JR Russo Surveyors & Engineers

Submitted By: New England Materials Testing Lab, LLC.

Appendix 5:
PRE-DEVELOPMENT ANALYSIS



Pre-Development Area

Subcat Reach Pond Link

Routing Diagram for 2021-040 M&W
Prepared by J.R. Russo & Associates LLC, Printed 3/28/2022

Summary for Subcatchment PRE: Pre-Development Area

Runoff = 39.61 cfs @ 12.30 hrs, Volume= 4.340 af, Depth= 3.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.56"

	Area (sf)	CN	Description
*	18,423	98	Impervious
	50,999	55	Woods, Good, HSG B
	553,581	58	Meadow, non-grazed, HSG B
	623,003	59	Weighted Average
	604,580		97.04% Pervious Area
	18,423		2.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0300	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.48"
9.3	989	0.0639	1.77		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
20.9	1,089	Total			

Time span=1.00-72.00 hrs, dt=0.05 hrs, 1421 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment PRE: Pre-Development Area Runoff Area=623,003 sf 2.96% Impervious Runoff Depth=0.48"
Flow Length=1,089' Tc=20.9 min CN=59 Runoff=3.54 cfs 0.576 af

Total Runoff Area = 14.302 ac Runoff Volume = 0.576 af Average Runoff Depth = 0.48"
97.04% Pervious = 13.879 ac 2.96% Impervious = 0.423 ac

Time span=1.00-72.00 hrs, dt=0.05 hrs, 1421 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

SubcatchmentPRE: Pre-DevelopmentArea Runoff Area=623,003 sf 2.96% Impervious Runoff Depth=2.28"
Flow Length=1,089' Tc=20.9 min CN=59 Runoff=24.02 cfs 2.717 af

Total Runoff Area = 14.302 ac Runoff Volume = 2.717 af Average Runoff Depth = 2.28"
97.04% Pervious = 13.879 ac 2.96% Impervious = 0.423 ac

Time span=1.00-72.00 hrs, dt=0.05 hrs, 1421 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment PRE: Pre-Development Area Runoff Area=623,003 sf 2.96% Impervious Runoff Depth=2.91"
Flow Length=1,089' Tc=20.9 min CN=59 Runoff=31.25 cfs 3.467 af

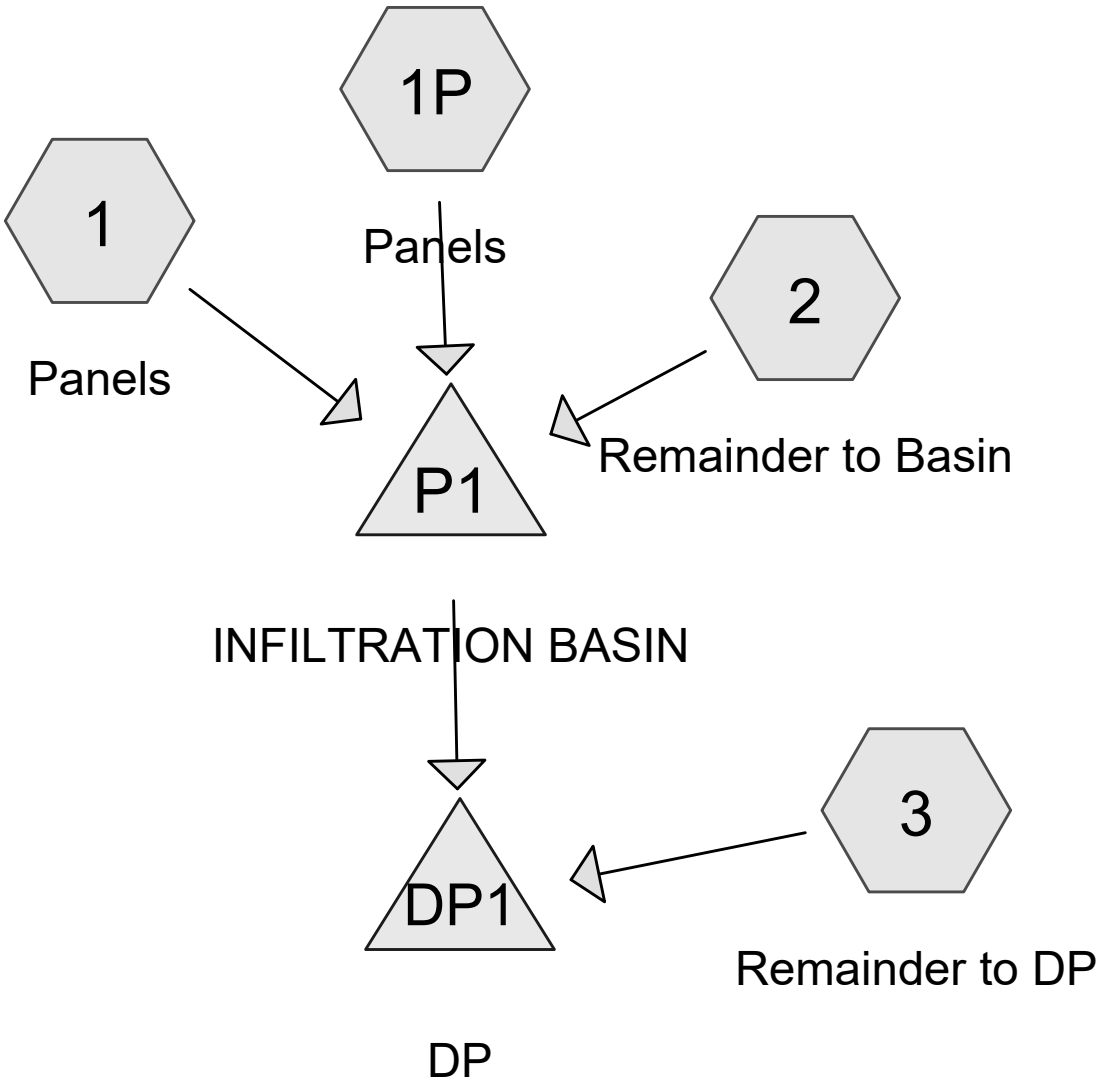
Total Runoff Area = 14.302 ac Runoff Volume = 3.467 af Average Runoff Depth = 2.91"
97.04% Pervious = 13.879 ac 2.96% Impervious = 0.423 ac

Time span=1.00-72.00 hrs, dt=0.05 hrs, 1421 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

SubcatchmentPRE: Pre-DevelopmentArea Runoff Area=623,003 sf 2.96% Impervious Runoff Depth=3.64"
Flow Length=1,089' Tc=20.9 min CN=59 Runoff=39.61 cfs 4.340 af

Total Runoff Area = 14.302 ac Runoff Volume = 4.340 af Average Runoff Depth = 3.64"
97.04% Pervious = 13.879 ac 2.96% Impervious = 0.423 ac

Appendix 6:
POST-DEVELOPMENT ANALYSIS



Subcat Reach Pond Link

Routing Diagram for 2021-040 M&W
Prepared by J.R. Russo & Associates LLC, Printed 3/28/2022

Summary for Subcatchment 1: Panels

Runoff = 19.19 cfs @ 12.26 hrs, Volume= 1.981 af, Depth= 4.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.56"

	Area (sf)	CN	Description
*	179,064	65	Meadow (adjusted CN)
	72,619	58	Meadow, non-grazed, HSG B
	251,683	63	Weighted Average
	251,683		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0300	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.48"
6.1	570	0.0500	1.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.9	405	0.0520	7.70	1.51	**Pipe Channel,** 6.0" Round Area= 0.2 sf Perim= 1.6' r= 0.13' n= 0.011
18.6	1,075	Total			

Summary for Subcatchment 1P: Panels

[49] Hint: Tc<2dt may require smaller dt

Runoff = 26.10 cfs @ 12.07 hrs, Volume= 2.137 af, Depth> 8.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.56"

	Area (sf)	CN	Description
*	134,350	98	Panels (Impervious)
	134,350		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Subcatchment 2: Remainder to Basin

Runoff = 13.61 cfs @ 12.28 hrs, Volume= 1.450 af, Depth= 4.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.56"

	Area (sf)	CN	Description
*	18,423	98	Impervious
	22,368	55	Woods, Good, HSG B
	148,941	58	Meadow, non-grazed, HSG B
	189,732	62	Weighted Average
	171,309		90.29% Pervious Area
	18,423		9.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0300	0.14		**Sheet Flow,** Grass: Dense n= 0.240 P2= 3.48"
8.1	869	0.0656	1.79		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	33	0.2500	3.50		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
19.9	1,002	Total			

Summary for Subcatchment 3: Remainder to DP

[49] Hint: Tc<2dt may require smaller dt

Runoff = 4.42 cfs @ 12.08 hrs, Volume= 0.318 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.56"

Area (sf)	CN	Description
47,238	58	Meadow, non-grazed, HSG B
47,238		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Summary for Pond DP1: DP

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 14.302 ac, 24.52% Impervious, Inflow Depth = 4.07" for 100-Year event
Inflow = 26.62 cfs @ 12.47 hrs, Volume= 4.849 af
Primary = 26.62 cfs @ 12.52 hrs, Volume= 4.849 af, Atten= 0%, Lag= 3.0 min

Routing by Sim-Route method, Time Span= 1.00-72.00 hrs, dt= 0.05 hrs

Summary for Pond P1: INFILTRATION BASIN

[82] Warning: Early inflow requires earlier time span
[86] Warning: Oscillations may require smaller dt (severity=2)

Inflow Area = 13.218 ac, 26.53% Impervious, Inflow Depth > 5.06" for 100-Year event
Inflow = 44.37 cfs @ 12.12 hrs, Volume= 5.568 af
Outflow = 26.49 cfs @ 12.54 hrs, Volume= 5.569 af, Atten= 40%, Lag= 25.5 min
Discarded = 0.86 cfs @ 12.54 hrs, Volume= 1.038 af
Primary = 25.62 cfs @ 12.54 hrs, Volume= 4.530 af

Routing by Sim-Route method, Time Span= 1.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 204.81' @ 12.54 hrs Surf.Area= 34,619 sf Storage= 77,117 cf
Flood Elev= 206.00' Surf.Area= 40,901 sf Storage= 122,062 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 145.5 min (952.9 - 807.3)

Volume	Invert	Avail.Storage	Storage Description
#1	202.00'	122,062 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
202.00	20,469	0	0
204.00	30,346	50,815	50,815
206.00	40,901	71,247	122,062

Device	Routing	Invert	Outlet Devices
#1	Discarded	202.00'	**0.361 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 201.00'
#2	Primary	200.50'	**18.0" Round Culvert** L= 26.0' Ke= 0.500 Inlet / Outlet Invert= 200.50' / 200.00' S= 0.0192 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#3	Device 2	202.30'	**6.0" Vert. Orifice/Grate** C= 0.600
#4	Device 2	203.80'	**16.0" x 32.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Primary	204.80'	**20.0' long x 12.4' breadth Broad-Crested Rectangular Weir X 2.00** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.58 2.63 2.70 2.67 2.66 2.67 2.66 2.64
#6	Primary	202.70'	**18.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 202.70' / 202.50' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Discarded OutFlow Max=0.86 cfs @ 12.54 hrs HW=204.81' (Free Discharge)
└─**1=Exfiltration** (Controls 0.86 cfs)

Primary OutFlow Max=25.60 cfs @ 12.54 hrs HW=204.81' TW=0.00' (Dynamic Tailwater)
├─**2=Culvert** (Inlet Controls 16.05 cfs @ 9.08 fps)
│ ├─**3=Orifice/Grate** (Passes < 1.42 cfs potential flow)
│ └─**4=Orifice/Grate** (Passes < 17.19 cfs potential flow)
├─**5=Broad-Crested Rectangular Weir**(Weir Controls 0.08 cfs @ 0.23 fps)
└─**6=Culvert** (Barrel Controls 9.47 cfs @ 5.36 fps)

Time span=1.00-72.00 hrs, dt=0.05 hrs, 1421 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment1: Panels Runoff Area=251,683 sf 0.00% Impervious Runoff Depth=0.65"
Flow Length=1,075' Tc=18.6 min CN=63 Runoff=2.37 cfs 0.313 af

Subcatchment1P: Panels Runoff Area=134,350 sf 100.00% Impervious Runoff Depth=3.25"
Tc=5.0 min CN=98 Runoff=10.51 cfs 0.834 af

Subcatchment2: Remainder to Basin Runoff Area=189,732 sf 9.71% Impervious Runoff Depth=0.61"
Flow Length=1,002' Tc=19.9 min CN=62 Runoff=1.57 cfs 0.220 af

Subcatchment3: Remainder to DP Runoff Area=47,238 sf 0.00% Impervious Runoff Depth=0.45"
Tc=5.0 min CN=58 Runoff=0.34 cfs 0.040 af

Pond DP1: DP Inflow=1.52 cfs 0.689 af
Primary=1.52 cfs 0.689 af

Pond P1: INFILTRATIONBASIN Peak Elev=203.11' Storage=25,645 cf Inflow=11.35 cfs 1.367 af
Discarded=0.42 cfs 0.732 af Primary=1.45 cfs 0.649 af Outflow=1.87 cfs 1.380 af

Total Runoff Area = 14.302 ac Runoff Volume = 1.408 af Average Runoff Depth = 1.18"
75.48% Pervious = 10.795 ac 24.52% Impervious = 3.507 ac

Time span=1.00-72.00 hrs, dt=0.05 hrs, 1421 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment1: Panels Runoff Area=251,683 sf 0.00% Impervious Runoff Depth=2.66"
Flow Length=1,075' Tc=18.6 min CN=63 Runoff=12.15 cfs 1.279 af

Subcatchment1P: Panels Runoff Area=134,350 sf 100.00% Impervious Runoff Depth>6.43"
Tc=5.0 min CN=98 Runoff=20.31 cfs 1.653 af

Subcatchment2: Remainder to Basin Runoff Area=189,732 sf 9.71% Impervious Runoff Depth=2.56"
Flow Length=1,002' Tc=19.9 min CN=62 Runoff=8.54 cfs 0.930 af

Subcatchment3: Remainder to DP Runoff Area=47,238 sf 0.00% Impervious Runoff Depth=2.19"
Tc=5.0 min CN=58 Runoff=2.66 cfs 0.198 af

Pond DP1: DP Inflow=17.64 cfs 3.105 af
Primary=17.64 cfs 3.105 af

Pond P1: INFILTRATIONBASIN Peak Elev=204.28' Storage=59,593 cf Inflow=30.85 cfs 3.861 af
Discarded=0.72 cfs 0.956 af Primary=17.05 cfs 2.908 af Outflow=17.77 cfs 3.864 af

Total Runoff Area = 14.302 ac Runoff Volume = 4.059 af Average Runoff Depth = 3.41"
75.48% Pervious = 10.795 ac 24.52% Impervious = 3.507 ac

Time span=1.00-72.00 hrs, dt=0.05 hrs, 1421 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment1: Panels Runoff Area=251,683 sf 0.00% Impervious Runoff Depth=3.33"
Flow Length=1,075' Tc=18.6 min CN=63 Runoff=15.44 cfs 1.605 af

Subcatchment1P: Panels Runoff Area=134,350 sf 100.00% Impervious Runoff Depth>7.33"
Tc=5.0 min CN=98 Runoff=23.07 cfs 1.883 af

Subcatchment2: Remainder to Basin Runoff Area=189,732 sf 9.71% Impervious Runoff Depth=3.23"
Flow Length=1,002' Tc=19.9 min CN=62 Runoff=10.90 cfs 1.171 af

Subcatchment3: Remainder to DP Runoff Area=47,238 sf 0.00% Impervious Runoff Depth=2.80"
Tc=5.0 min CN=58 Runoff=3.48 cfs 0.253 af

Pond DP1: DP Inflow=24.50 cfs 3.918 af
Primary=24.50 cfs 3.918 af

Pond P1: INFILTRATIONBASIN Peak Elev=204.49' Storage=66,379 cf Inflow=37.17 cfs 4.660 af
Discarded=0.78 cfs 0.996 af Primary=23.48 cfs 3.665 af Outflow=24.26 cfs 4.661 af

Total Runoff Area = 14.302 ac Runoff Volume = 4.913 af Average Runoff Depth = 4.12"
75.48% Pervious = 10.795 ac 24.52% Impervious = 3.507 ac

Time span=1.00-72.00 hrs, dt=0.05 hrs, 1421 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment1: Panels Runoff Area=251,683 sf 0.00% Impervious Runoff Depth=4.11"
Flow Length=1,075' Tc=18.6 min CN=63 Runoff=19.19 cfs 1.981 af

Subcatchment1P: Panels Runoff Area=134,350 sf 100.00% Impervious Runoff Depth>8.31"
Tc=5.0 min CN=98 Runoff=26.10 cfs 2.137 af

Subcatchment2: Remainder to Basin Runoff Area=189,732 sf 9.71% Impervious Runoff Depth=4.00"
Flow Length=1,002' Tc=19.9 min CN=62 Runoff=13.61 cfs 1.450 af

Subcatchment3: Remainder to DP Runoff Area=47,238 sf 0.00% Impervious Runoff Depth=3.52"
Tc=5.0 min CN=58 Runoff=4.42 cfs 0.318 af

Pond DP1: DP Inflow=26.62 cfs 4.849 af
Primary=26.62 cfs 4.849 af

Pond P1: INFILTRATIONBASIN Peak Elev=204.81' Storage=77,117 cf Inflow=44.37 cfs 5.568 af
Discarded=0.86 cfs 1.038 af Primary=25.62 cfs 4.530 af Outflow=26.49 cfs 5.569 af

Total Runoff Area = 14.302 ac Runoff Volume = 5.886 af Average Runoff Depth = 4.94"
75.48% Pervious = 10.795 ac 24.52% Impervious = 3.507 ac

Appendix 7:
MISCELLANEOUS CALCULATIONS

J.R. RUSSO & ASSOCIATES, LLC
Professional Engineers & Surveyors
SERVING CONNECTICUT & MASSACHUSETTS
1 Shoham Rd. • East Windsor, CT 06088
CONN (860) 623-0569 • MASS (413) 785-1158
www.jrrusso.com

JOB 2021-040 Maloney & Webster
SHEET NO. 1 OF 1
CALCULATED BY CJC DATE 3-25-2022
CHECKED BY _____ DATE _____
SCALE _____

Water Quality Volume (WQV) Calculations

$WQV = (1")\,RA/12$

$R = 0.05 + 0.009I$

I= percent impervious coverage
R= volumetric runoff coefficient
A= contributing area

$A = 575{,}765$ s.f.

$I = \frac{690 \text{ s.f. impervious}}{575{,}765 \text{ s.f. total}} = 0.12\%$

$R = 0.05 + 0.009(0.12) = 0.051$

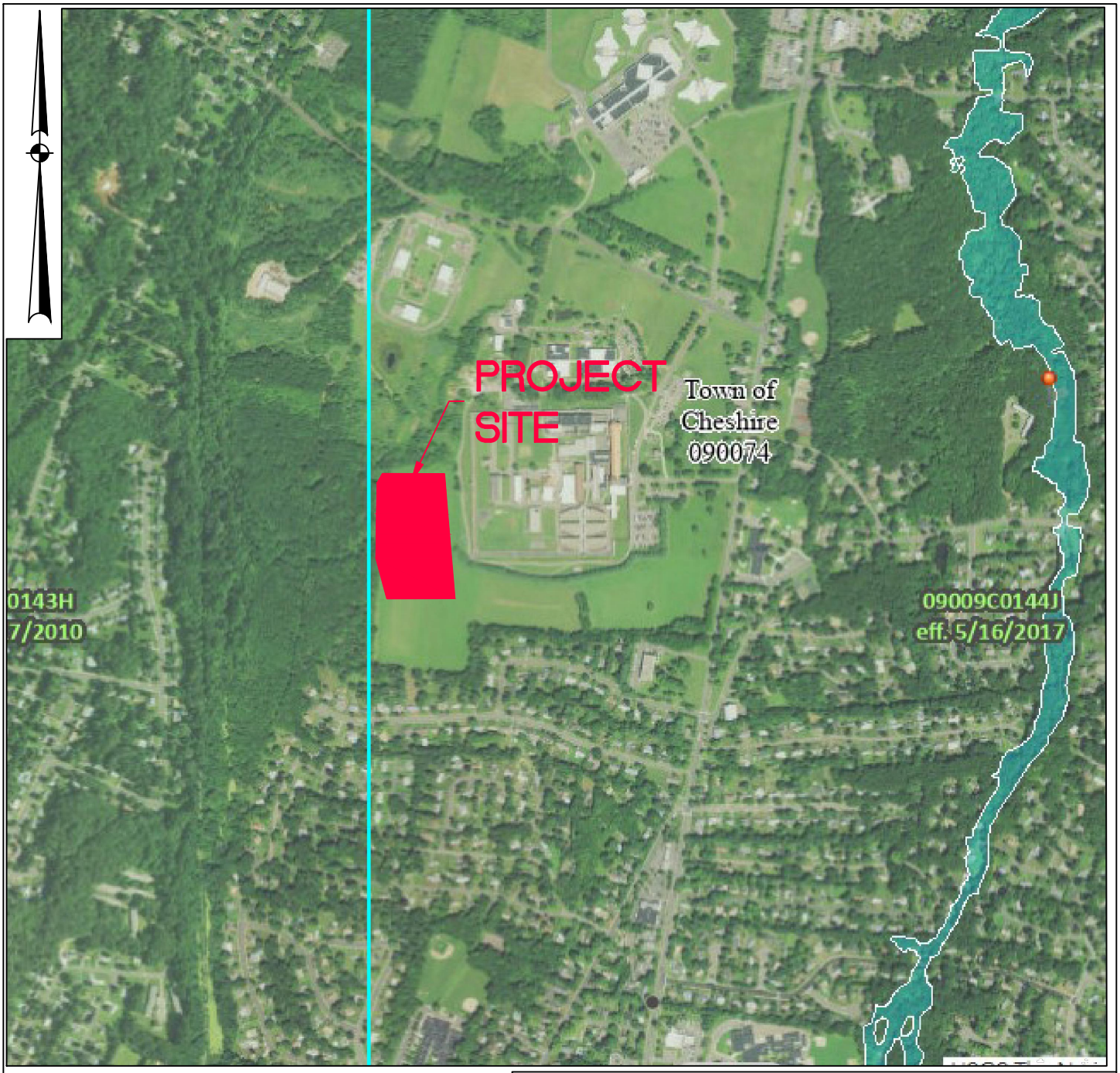
$WQV = (1")(0.051)(575{,}765)/12 = \boxed{2{,}451 \text{ c.f.}}$

WQV Check:

Basin volume below outlet= 6,363 c.f.

EXHIBIT XIII

FEMA FLOOD MAP



SOURCE:
FEMA MAP W/ NATIONAL
FLOOD HAZARD LAYER

FLOOD MAP

CT GREEN BANK SOLAR
Cheshire Correctional Institution

900 Highland Avenue
Cheshire, Connecticut

RUSSO
SURVEYORS · ENGINEERS
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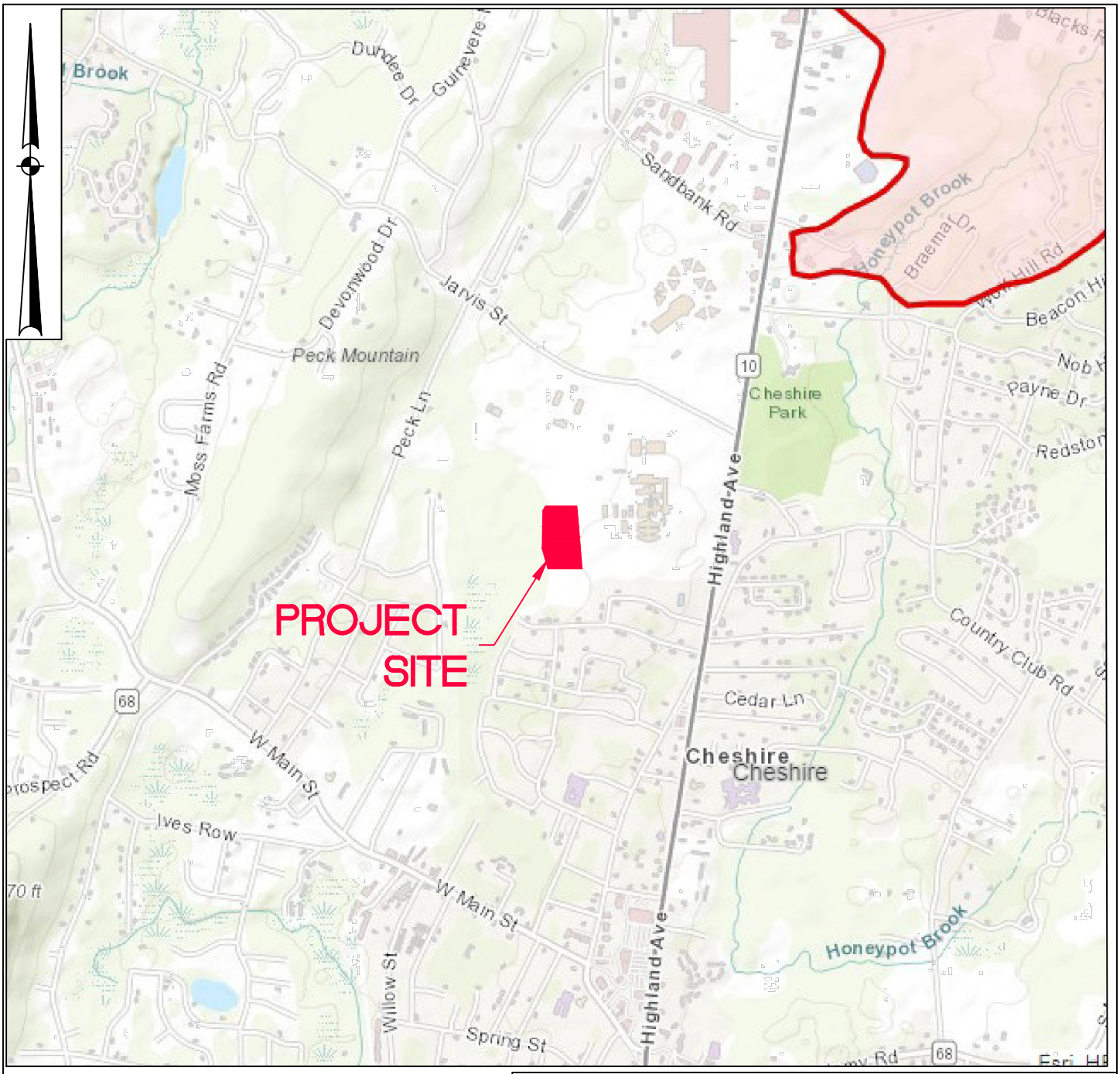
J.R. Russo & Associates, LLC
1 Shoham Rd East Windsor, CT 06088 · CT 860.623.0569 · MA 413.785.1158
www.jrrusso.com · info@jrrusso.com

DATE	4–27–2022
SCALE	1"=1000'
JOB NUMBER	2021–040MW
SHEET	EXHIBIT XIII

EXHIBIT XIV

AQUIFER PROTECTION MAP



Final Adopted Aquifer Protection

SOURCE:
CT DEEP AQUIFER PROTECTION AREAS MAP

AQUIFER MAP

CT GREEN BANK SOLAR
Cheshire Correctional Institution

900 Highland Avenue
Cheshire, Connecticut

RUSSO
SURVEYORS · ENGINEERS
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www.jrrusso.com · info@jrrusso.com

DATE	4–27–2022
SCALE	1"=2000'
JOB NUMBER	2021–040MW
SHEET	EXHIBIT XIV

EXHIBIT XV

STATE HISTORIC PRESERVATION OFFICE RESPONSE

February 7, 2022

Timothy Coon, P.E.
J.R. Russo & Associates, LLC
P.O. Box 938
East Windsor, CT 06088
(sent via email only to tcoon@jrrusso.com)

Subject: Department of Corrections Solar Projects
900 Highland Avenue in Cheshire, Connecticut
42 Jarvis Street in Cheshire, Connecticut
289 & 391 Shaker Road in Enfield, Connecticut
335 Bilton Road in Somers, Connecticut

Dear Mr. Coon:

The State Historic Preservation Office (SHPO) has reviewed the potential effects of the referenced projects on historic properties. SHPO understands that Connecticut Greenbank and the Connecticut Department of Corrections are working jointly to construct four ground-mounted solar facilities at the following locations:

- approximately 9.2 acres of undeveloped land located west of the Cheshire Correctional Institution at 900 Highland Avenue
- approximately 9.8 acres of total undeveloped land at two locations to the south and west of the Manson Youth Correctional Institution at 42 Jarvis Street
- approximately 6.5 acres of undeveloped land south of the Enfield Correctional Institution 289 & 391 Shaker Road
- approximately 8 acres of undeveloped land northwest of the Osborn Correctional Institution at 335 Bilton Road

As projects subject to review by the Connecticut Siting Council, they are subject to the provisions of the Connecticut Environmental Policy Act and a review by this office. In addition, the proposed projects will require a Stormwater Discharge permit issued by the Department of Energy and Environmental Protection through the authority of the Environmental Protection Agency; therefore, they are subject to review by this office pursuant to Section 106 of the National Historic Preservation Act.

The Enfield Shakers historic district, a property listed on the National Registers of Historic Places (NRHP) is situated adjacent to the proposed solar facility at the Enfield Correctional Institution, but there are no previously reported properties listed within or adjacent to the other three project locations. All of the proposed installations are located on gently sloping terrain with soils classified as sandy loams or loamy sands in proximity to sources of water. A review of readily available historic maps and aerials suggests that there have been some prior disturbances, but their

extent is not considered extensive. Based on the environmental characteristics of the project sites, it is SHPO's opinion that each of the proposed solar facilities has the potential to contain significant archaeological resources. Therefore, SHPO is requesting that a professional archaeological assessment and reconnaissance survey be completed prior to construction. Areas that will not be developed do not need to be tested. All work should be done in compliance with our *Environmental Review Primer for Connecticut's Archaeological Resources* and no construction or other project-related ground disturbance should be initiated until SHPO has had an opportunity to review and comment upon the requested survey. A list of qualified consultants is attached for your convenience.

SHPO appreciates the opportunity to comment upon this project and we look forward to continuing consultation. Do not hesitate to contact Catherine Labadia, Staff Archaeologist and Environmental Reviewer, for additional information at (860) 500-2329 or catherine.labadia@ct.gov.

Sincerely,

Jonathan Kinney
State Historic Preservation Officer

cc: Pustilnik, APG

EXHIBIT XVI

FAA DETERMINATION

Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2022-ANE-1594-OE

Issued Date: 03/23/2022

Evan Mazzaglia
Sunpower Corporation
262 Washintong Street, Suite 700
Boston, MA 02108

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Solar Panel Solar Array
Location:	Cheshire, CT
Latitude:	41-31-16.00N NAD 83
Longitude:	72-54-17.00W
Heights:	224 feet site elevation (SE)
	12 feet above ground level (AGL)
	236 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/ lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 M.

This determination expires on 09/23/2023 unless:

(a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
(b) extended, revised, or terminated by the issuing office.
(c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA.This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (816) 329-2525, or natalie.schmalbeck@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2022-ANE-1594-OE.

Signature Control No: 517044116-519605751 (DNE)
Natalie Schmalbeck
Technician

Attachment(s)
Map(s)

Verified Map for ASN 2022-ANE-1594-OE

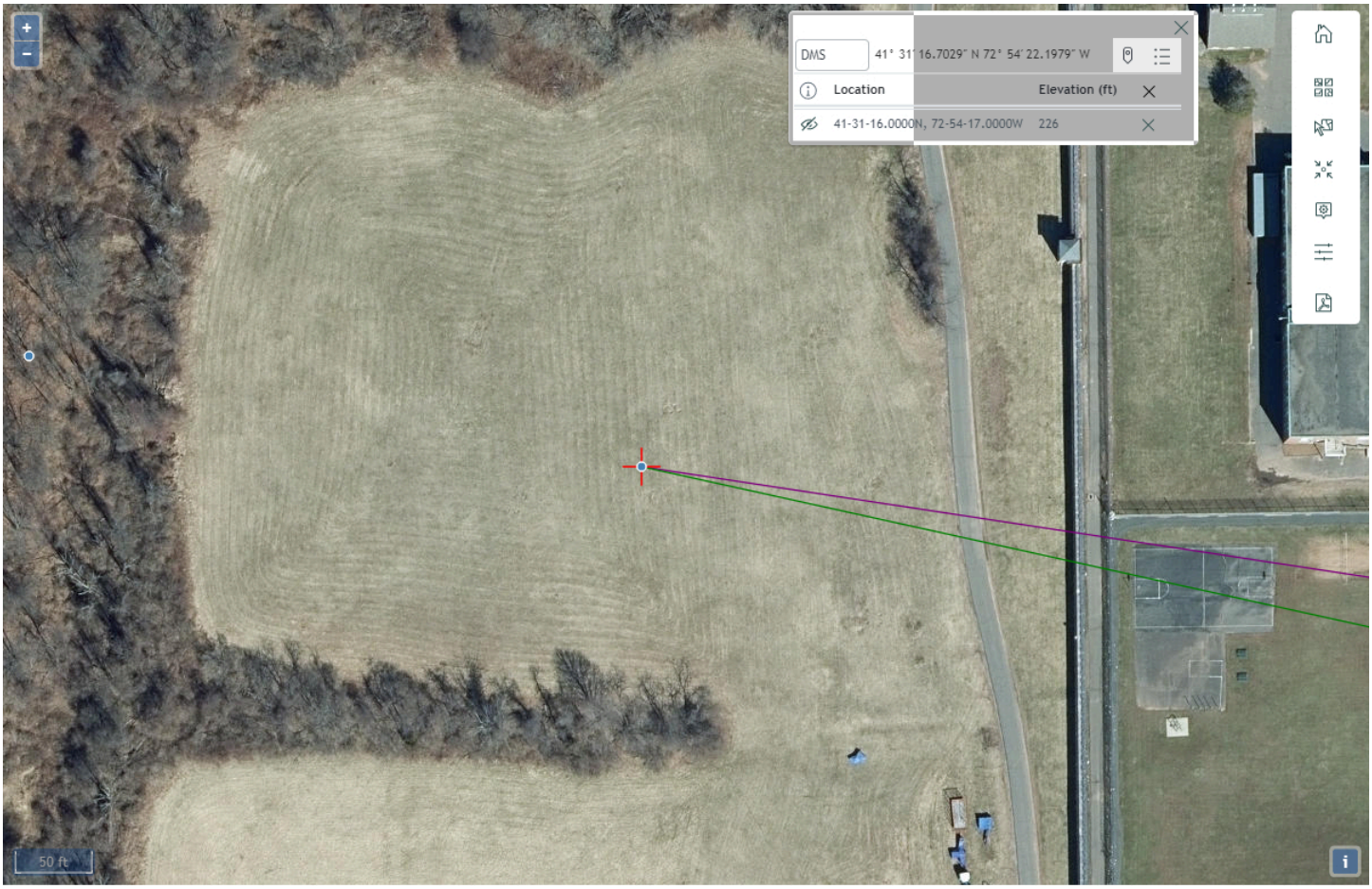


EXHIBIT XVII

ACS ARCHAEOLOGICAL RECONNAISSANCE SURVEY INTERIM REPORT

Phase I Archaeological Reconnaissance Survey
Connecticut Department of Corrections Solar Projects
Towns of Cheshire, Enfield, and Somers, Connecticut

Interim Report

by

ACS

♦ ***Archaeological Consulting Services*** ♦
118 Whitfield Street
Guilford, Connecticut 06437
(203) 458-0550
www.acsarchaeology.com
acsinfo@yahoo.com

May 6, 2022

Introduction and Project Description

This interim report provides the preliminary results of a Phase I archaeological reconnaissance survey conducted on four Connecticut Department of Corrections properties in Cheshire, Enfield, and Somers. The project areas bear the addresses: 900 Highland Avenue, Cheshire; 42 Jarvis Street, Cheshire; 289-391 Shaker Road, Enfield; and 335 Bilton Road, Somers. The project areas are predominantly within sections of the properties that contain open, maintained grass lawns. The properties in Cheshire are located adjacent to each other on either side of Jarvis Street on the west side of Route 10 in central Cheshire, while the other two properties are also located close to each other on either side of Bilton Road and the town line in northeast Enfield and northwest Somers. Concept plans and survey maps drafted by J.R. Russo & Associates of East Windsor, Connecticut show the distribution of proposed solar panels and associated infrastructure at the sites.

In an initial review letter of the projects dated February 7, 2022, the Connecticut State Historic Preservation Office (SHPO) indicated,

...SHPO has reviewed the potential effects of the referenced projects on historic properties. SHPO understands that Connecticut Greenbank and the Connecticut Department of Corrections are working jointly to construct four ground-mounted solar facilities at the following locations:

Approximately 9.2 acres of undeveloped land located west of the Cheshire Correctional Institution at 900 Highland Avenue

Approximately 9.8 acres of total undeveloped land at two locations to the south and west of the Manson Youth Correction Institution at 42 Jarvis Street

Approximately 6.5 acres of undeveloped land south of the Enfield Correctional Institution, 289 & 391 Shaker Road

Approximately 8 acres of undeveloped land northwest of the Osborn Correctional Institution at 335 Bilton Road

As projects subject to review by the Connecticut Siting Council, they are subject to the provisions of the Connecticut Environmental Policy Act and a review by this office. In addition, the projects will require a Stormwater Discharge permit issued by the Department of Energy and Environmental Protection through the authority of the Environmental Protection Agency; therefore, they are subject to the review by this office pursuant to Section 106 of the National Historic Preservation Act.

The Enfield Shakers historic district, a property listed on the National Register of Historic Places (NRHP) is situated adjacent to the proposed solar facility at the Enfield Correctional Institution, but there are no previously reported properties listed within or adjacent to the other three project locations. All of the proposed installations are located on gently sloping terrain with soils classified as sandy loams or loamy sands in proximity to sources of water. A review of readily available historic maps and aerials suggests that there have been some prior disturbances, but their extent is not considered extensive. Based on the environmental characteristics of the project area, it is SHPO's opinion that each of the proposed solar facilities has the potential to contain significant archaeological resources. Therefore, SHPO is requesting that a professional archaeological assessment and reconnaissance survey be completed prior to construction…

Based on statistical prehistoric sensitivity for archaeological resources, but also because of variable subsurface conditions, ACS conducted a highly saturated, stratified-systematic subsurface testing strategy, in conjunction with a thorough background research effort and pedestrian surface survey to identify any and all prehistoric and/or historic cultural resources located within the four project areas. The surveys were performed in compliance with the *Environmental Review Primer for Connecticut's Archaeological Resources,* containing guidelines issued by SHPO for conducting cultural resource management surveys in Connecticut. ACS submitted the proposed research design to SHPO for its approval in advance of any fieldwork, with SHPO to serve as review agency for the final report.

Background

The Cheshire project areas lie within the South-Central Lowlands (IV-B) ecoregion of Connecticut. Underlying bedrock consists of New Haven Arkose (Trnh), a Triassic formation on the order of 250 to 215 million years old. The project areas include both hillslope landforms and surrounding stacked glacial meltwater sediments of sand and gravel overlying sand (sg/s). The dominant soils of the properties include well drained Cheshire fine sandy loam and excessively drained Manchester gravelly sandy loam, the latter particularly present at the northern Jarvis Street facility. Elevations vary at the gently sloping properties, at approximately 200 to 240 feet above mean sea level at Highland, and at 180 to 220 feet above mean sea level at Jarvis. No wetlands are to be impacted by the projects, with both areas lying within the Ten Mile River (#5202) drainage basin and just east of an unnamed tributary stream. Both are mostly maintained grass lawns, although the southern end of the western array at the Jarvis impact area is wooded.

The Enfield / Somers project areas lie within the North-Central Lowlands (III-B) ecoregion of Connecticut. Underlying bedrock consists of Portland Arkose (Jp), a Jurassic formation on the order of 215 to 145 million years old. Both are on glacial moraines with thick till deposits. Well drained Narragansett silt loam dominates the Enfield project area, while well drained Cheshire fine sandy loam occupies to the Somers project area. These properties are also gently sloping, at 260 to 290 feet above mean sea level at Enfield, and at about 270 to 310 feet above mean sea level at Somers. These project arrays also avoid wetlands, lying within the Scantic River (#4200) drainage basin and close to tributary streams. As with the Cheshire project areas, these sites also lie on undeveloped land with maintained grass lawns.

A statistical prehistoric landscape sensitivity model developed and utilized by ACS indicates that there is a range of likelihood for prehistoric sites being present across the project areas, with a high score of 34.1 out of a possible 100.0 at the Jarvis site in Cheshire, to a low of 11.2 out of a possible 100.0 at the Enfield site. For the Cheshire sites, there was an advantage for potential settlement in the presence of stacked glacial meltwater sediments of sand and gravel over sand at or adjacent to the project impact areas, while the Enfield and Somers sites were located on gentle hill slopes of moraine deposits. The latter sites held the advantage of being located within the higher stream rank of the Scantic River as compared with the lower stream rank of the Ten Mile River for the Cheshire sites, although the distance to nearest water source is relatively great for the Enfield site compared with the others. Site files of the Connecticut State Historic Preservation Office (SHPO) do not reveal any previously recorded prehistoric archaeological sites within one mile of the project areas, with the exception of the Jarvis Street Precontact Site (25-12), an undesignated site where quartzite and chert debitage was recorded several hundred feet west of the Jarvis project area closer to the nearest stream during a professional archaeological survey of a portion of the corrections department property proposed for use as a parking lot for the Farmington Canal Greenway project.

SHPO also revealed no previously recorded significant historic cultural resources within one mile of the Somers or Enfield sites, with the exception of the Enfield Shakers Historic District that lies just west of the Enfield facility along Taylor and Shaker Roads, where there are mid-19th century wood frame and brick agricultural buildings, a saw mill, and meetinghouse. Site 49-2 on the south side of Shaker Road at the western end of the district reportedly contains standing ruins of the Shaker district. At the northern end of the Enfield facility, a Shaker period dam (49-13) probably served to create an impoundment for milling, and later an ice pond. Historic maps show no developments in the direct vicinity of the project areas, with the possible exception of a Shaker house or outbuilding near the northwest corner of the Somers site outside the project impact area or slightly to the north, with historic homes concentrated along the roads fronting all four project sites.

Field Results

The four project areas were designated four-letter codes to identify each in all field and lab documentation: CRMS for the Jarvis Street (Manson) site; CRHA for the Highland Avenue site; EFSR for the Enfield site; and SMBR for the Somers site. Each project site contained one succinct project area, with the exception of Jarvis Street where there were two distinct project impact areas. Fieldwork for the projects was conducted in March and April, 2022, with no snow cover.

CRMS West

The test area consisted of a gently sloping, grass-covered field, with a slope down to the west towards a natural gas pipeline that formed the western border of the testing area. The remainder of the testing area was defined by an access road to the north, a parking lot associated with the prison's K-9 facility to the east, and woods to the south. The 0N/0E point was a lightpost along the western fenceline of the prison at the bend of the access road. Shovel tests were spaced 50' apart on a grid pattern, with testing extending a maximum of 400' northeast to

southwest and 200' southeast to northwest. Dump piles were encountered at the southern end of the testing area in a wooded portion, and no further testing was conducted in this direction.

A total of 39 shovel tests were excavated with one main soil profile being encountered. The profile consisted of an average of 9-12" of dark brown (7.5YR3/2) gravelly sandy loam A / plowzone that overlaid 3-8" of reddish brown (5YR4/3) loamy sand B horizon that was absent in some tests (presumably having been incorporated into the plowzone). The B horizon in turn overlaid a reddish brown (5YR4/4) loamy sand C horizon that terminated between 22 and 32" below surface. These soils were consistent with the expected profile for Manchester series soils.

Five historic artifacts, probably reflecting recent refuse disposal activities at the site, were recovered from four shovel tests. These consisted of two pieces of clear machine-made bottle glass, an iron nut, a quahog shell fragment, and a machine-cut nail.

CRMS East

The test area consisted of a gently sloping, grass-covered field, with a slope down to the northwest towards the prison's physical plant at the northern border of the testing area. The remainder was defined by an access road to the east and fields to the south and west. The 0N/0E point was the southeastern corner of the chain-link fence surrounding the physical plant. Testing began 200' south of the 0N/0E point and extended to the south and west. Shovel tests were spaced 50' apart on a grid pattern, with testing extending a maximum of 200' south and 200' west. The area was covered with grass, and no modern disturbance was observed.

A total of 16 shovel tests were excavated, with one main soil profile being encountered. The profile consisted of an average of 10-13" of dark brown (7.5YR3/2) gravelly sandy loam A /plowzone that overlaid 9-12" of reddish brown (5YR4/3) loamy sand B horizon. The B horizon in turn overlaid a reddish brown (5YR4/4) loamy sand C horizon that terminated between 24 and 39" below surface. These soils were consistent with a profile for Manchester series soils, although the soil maps indicated that this area should include Cheshire soil series.

Two historic artifacts, probably reflecting recent refuse disposal activities at the site, were recovered from two shovel tests. These consisted of two pieces of quahog shell.

CRHA

The test area consisted of a gently sloping, grass-covered field, with a slope down to the west towards the woods that formed the western border of the testing area. The remainder of the testing area was defined by an access road to the east, woods to the north, and open fields to the south. The 0N/0E point was at the eastern end of a strip of woods serving as a windbreak that separated the northern and southern portions of the testing area. Shovel tests were spaced 50' apart on a grid pattern, with testing extending a maximum of 800' north to south and 200' east to west. A linear feature that represented either a wide plowing berm or erosion control terracing was present in the western half of the southern field.

A total of 80 shovel tests were excavated, with one main soil profile being encountered. The profile consisted of an average of 10-18" of brown (7.5YR4/2) fine sandy loam A /plowzone that overlaid 6-12" of reddish brown (5YR4/4) fine sandy loam B horizon that was absent in some tests (presumably having been incorporated into the plowzone). The B horizon in turn overlaid a reddish brown (2.55YR4/4) gravelly sandy loam C horizon that terminated between 21 and 38" below surface. These soils were consistent with the expected profile for Cheshire series soils.

Seven historic artifacts, probably reflecting recent refuse disposal activities at the site, were recovered from seven shovel tests. These consisted of two pieces of clear modern flat glass, a wire nail, a single piece of modern undecorated whiteware, and a single piece each of concrete, sewer pipe, and slag.

EFSR

The test area consisted of a grass-covered field with a slope down to the south towards Shaker Road, which formed the southern border of the testing area. The remainder of the testing area was defined by an access road to the east, a parking lot associated with the prison to the north, and open fields to the south and west. The 0N/0E point was a tree along the access road to the prison at a point 650' north of the intersection of the access road and Shaker Road. Shovel tests were spaced 50' apart on a grid pattern with testing extending a maximum of 500' east to west and 200' north to south. A series of east to west running terraces, presumably for erosion control along the hill slope, were located in the field.

A total of 36 shovel tests were excavated with one dominant and two subordinate soil profiles being encountered. The dominant profile consisted of an average of 10-14" of dark brown (10YR3/3) silty loam A / plowzone that overlaid 5-9" of dark yellowish brown (10YR4/6) silty loam B1 horizon that was absent in some tests (presumably having been incorporated into the plowzone). The B1 horizon in turn overlaid a reddish brown (10YR5/6) silty loam B2 horizon that averaged 10" deep before encountering a reddish brown (5YR4/4) gravelly silty loam C horizon that terminated at between 26 and 36" below surface. These soils were consistent with the expected profile for Narragansett series soils. This profile was capped by two layers of silty loam fill in test 0N-8W, the upper layer being dark brown (10YR3/3) and extending to 5", with the next layer being reddish brown (5YR5/6) and extending to 13". The profile beneath these fill layers was consistent with the dominant soil profile previously described. Three other tests contained profiles that were anomalous to the dominant profile. Test 2S-6W contained 11" of a dark brown (10YR3/3) silty loam A / plowzone over 5" of a strong brown (7.5YR4/6) silty loam B1 horizon. The strong brown B1 horizon overlaid 4" of brown (7.5YR4/4) silty loam B2 horizon, which was over the reddish brown (5YR4/4) sandy loam C1 horizon. The C1 horizon was terminated at 36" below surface. The other anomalous profile was present in tests 1S-9W and 1S-10W. In these tests a dark grayish brown (2.5Y4/2) silty loam A / plowzone extended to between 10 and 13" and overlaid an olive yellow (2.5Y6/6) silty loam B horizon to between 16 and 17", at which point water was encountered. A grayish brown (2.5Y5/2) silty loam C horizon extended below the water line. All layers contained little gravel and appear to represent wetland soils.

Six historic artifacts, probably reflecting recent refuse disposal activities at the site, were recovered from two shovel tests. The artifacts consisted of one wire nail from one test and two fragments of charcoal, a piece of rusted iron, and two pieces of caulking from the second test.

SMBR

The test area consisted of a grass-covered field with a slope down to the west towards Bilton Road that formed the western border of the testing area. The remainder of the testing area was defined by an access road to the north and east and woods to the south. The 0N/0E point was at the southeast corner of a landscaped fieldstone box containing the entrance sign at northwest corner of the test area. Shovel tests were spaced 50' apart on a grid pattern, with testing extending a maximum of 750' north to south and 300' east to west. A series of north to

south running terraces, presumably for erosion control along the hill slope, were located in the field. Two buried utility lines and a surficial pump head extending above the field were present in the testing area as well.

A total of 74 shovel tests were excavated, with one main soil profile being encountered. The profile consisted of an average of 8-12" of dark brown (7.5YR3/2) fine sandy loam A / plowzone that overlaid 4-7" of reddish brown (5YR5/4) fine sandy loam B horizon that was absent in some tests (presumably having been incorporated into the plowzone). The B horizon in turn overlaid a reddish brown (5YR4/4) gravelly sandy loam C horizon that terminated between 12 and 36" below surface. These soils were consistent with the expected profile for Cheshire series soils.

Eight historic artifacts, probably reflecting recent refuse disposal activities at the site, were recovered from six shovel tests. These consisted of six pieces of plastic plant labels, 1 wire nail, 1 machine-cut nail, and a piece of willow pattern transfer-print decorated whiteware.

Recommendations

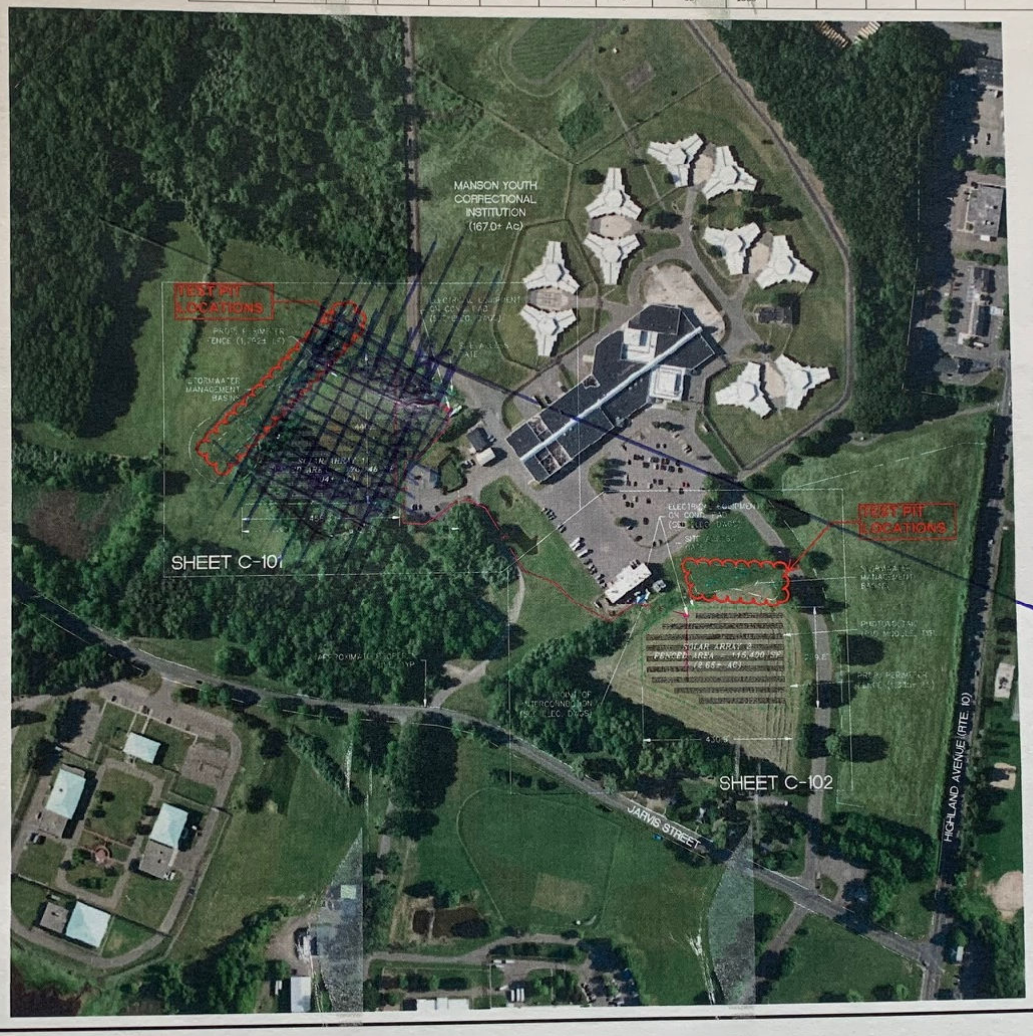
ACS recommends no further archaeological conservation efforts for any of the project areas as currently defined. There were no positively identified prehistoric feature contexts or artifacts identified during the survey. Historic artifacts were mostly limited to modern incidental trash and debris likely scattered through late historic agricultural efforts and/or landscaping associated with the construction and maintenance of the correctional facilities. One piece of transfer-printed whiteware recovered at the Somers property may be associated with a Shaker house or outbuilding formerly located on the east side of Bilton Road, although there were no associated concentrations of feature contexts or historic artifacts. Similarly, the several fragments of quahog shell recovered from the Jarvis Street project areas in Cheshire could be associated with site 25-12 located several hundred feet of the western project area, possibly introduced into the project area by historic farming or correctional facility construction or landscaping efforts. In turn, should site plans change to include impacts closer to Jarvis Street or 25-12 at the Cheshire sites, or closer to Shaker or Taylor Roads at the Enfield facility, further archaeological evaluation may be necessary as determined by the Connecticut State Historic Preservation Office (SHPO).

Gregory F. Walwer, Ph.D
ACS Director and Principal Investigator

May 6, 2022

42 JARVIS ST, CHESHIRE MANSON (CRMS)

SOLAR SWITCHBOARD	BLOCK	# MODULE	#STRING	KW (DC)	18 INPUT CB (14 STR)	18 INPUT CB (13 STR)	18 INPUT CB (12 STR)	SHP_150_US_20	KW (AC)	TILT (°)	GCR	CSI AZIMUTH (°)	SPWR AZIMUTH (°)	DC RUN (CB-INV)
SSB01	1	2820	94	1325.4	5		2	7	1050	25	0.50	180	0	175, 205, 260, 345, 400, 485, 540
	2	2010	67	944.7	3	1	1	5	750					125, 180, 180, 765, 320
	TOTAL	4830	161	2270.1	8	1	3	12	1800					



GRAPHIC SCALE
(IN FEET)
1 inch = 150

50% PROGRESS PRINT 1-19-22

RUSSO SURVEYORS ENGINEERS
J.R. Russo & Associates, LLC

Alternative Power Generation Inc.

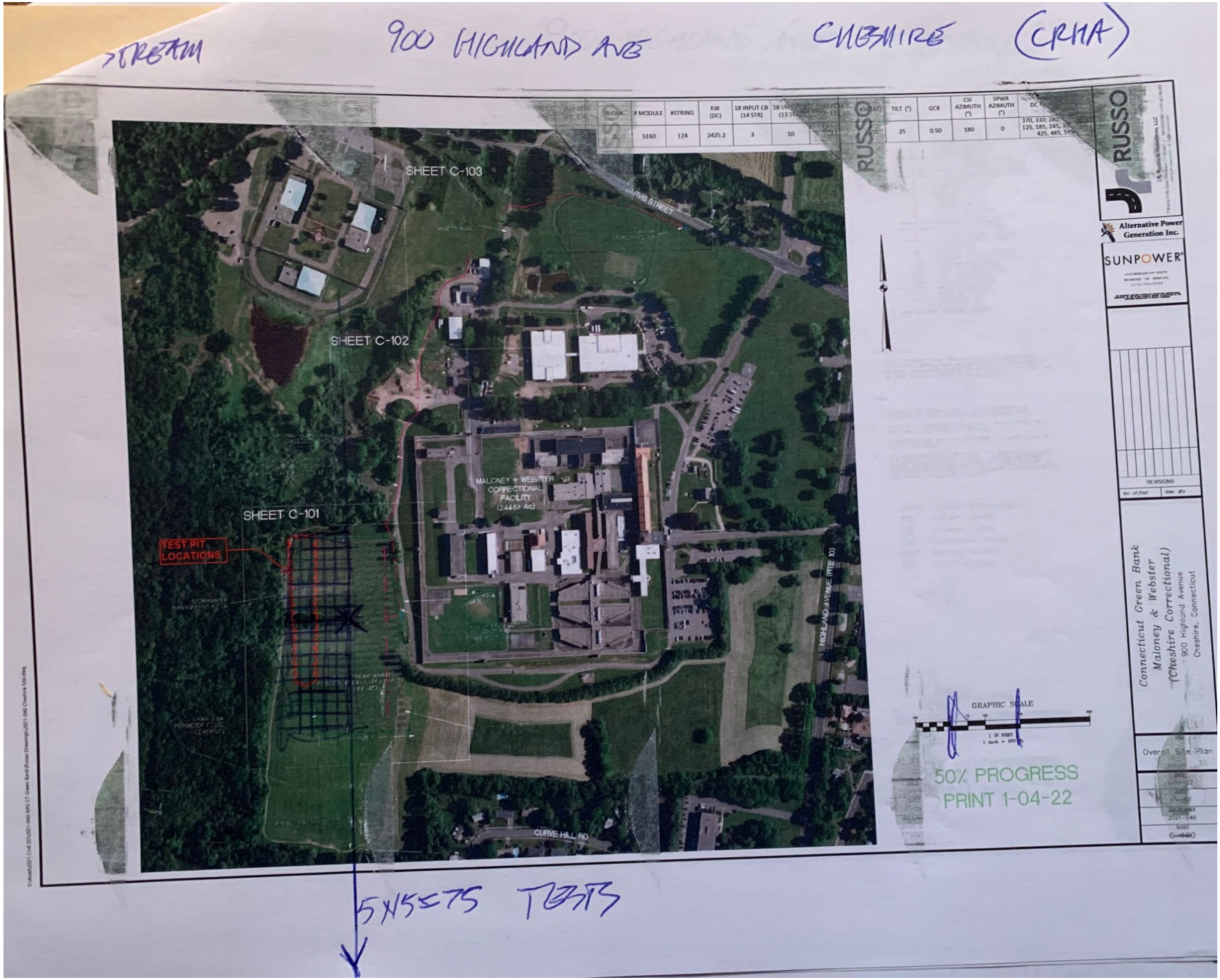
SUNPOWER

REVISIONS

Connecticut Green Bank
Manson Youth Correctional Institute
42 Jarvis Street
Cheshire, Connecticut

Overall Plan

DATE: XX-XX-22
SCALE: 1"=150'
JOB NUMBER: 2021-040
SHEET: C-100


STREAM
900 HIGHLAND AVE
CHESHIRE
(CRMA)
SHEET C-103
SHEET C-102
SHEET C-101
TEST PIT LOCATIONS
MALONEY + WEBSTER CORRECTIONAL FACILITY (244.6± AC)
CURVE HILL RD
HIGHLAND AVENUE (RTE 10)
GRAPHIC SCALE
50% PROGRESS
PRINT 1-04-22
RUSSO
Alternative Power Generation Inc.
SUNPOWER
REVISIONS
Connecticut Green Bank
Maloney & Webster
(Cheshire Correctional)
900 Highland Avenue
Cheshire, Connecticut
Overall Site Plan
5 SHEETS TOTAL

BLOCK	# MODULE	#STRING	KW (DC)	M27_121 (6 STR)	M60_121 (11 STR)	M36_121 (5 STR)	KW (AC)	TILT (°)	GCR	CSI AZIMUTH (°)	SPWR AZIMUTH (°)	AC BLIN (INV-SPB)
RA	240	12	112.8	2			92	25	0.50	180	0	30, 30
RB	560	28	263.2			1	212	25	0.50	180	0	30, 35, 100
E	540	27	253.8			1	205.6	25	0.50	180	0	30, 65, 105
W	240	12	112.8	2			92	25	0.50	180	0	30,30

60+4]

335 BILTON RD, SOMERS, OSBORN

DATUM @ NW SIGN, 0° BEARING SOUTH + PARALLEL TO ROAD

GATE

STREAM

STEEP

64 PETS

GRAPHIC SCALE
(IN FEET)
1 inch = 100

SOLAR SWITCHBOARD	BLOCK	# MODULE	#STRING	KW (DC)	18 INPUT CB (14 STR)	18 INPUT CB (13 STR)	18 INPUT CB (12 STR)	SHP_150_US_20	KW (AC)	TILT (°)	GCR	CSI AZIMUTH (°)	SPWR AZIMUTH (°)	DC RUN (CB-INV)
SSB01	1	2820	94	1325.4	5		2	7	1050	25	0.50	180	0	175, 205, 260, 345, 400, 485, 540
	2	2010	67	944.7	3	1	1	5	750					125, 180, 180, 265, 320
	TOTAL	4830	161	2270.1	8	1	3	12	1800					

PROGRESS PRINT xx-xx-xx

RUSSO SURVEYORS-ENGINEERS
J.R. Russo & Associates, LLC

Alternative Power Generation Inc.

SUNPOWER®

REVISIONS

Prepared for
CT Green Bank
335 Bilton Road
Somers, Connecticut

Overall Plan

DATE 10-12-2021
SCALE 1"=100'
JOB NUMBER 2021-040
SHEET C-100