

**Planning Board Meeting
February 25, 2020 – 7:00 PM
Town Office Conference Room**



Meeting Materials

Planning Board
Tuesday, February 25, 2020
7:00 PM – Town Office Conference Room

CALL TO ORDER

MINUTES

Public Hearing for CLUC Amendments 2020 from February 11, 2020

February 11, 2020

COMMUNICATIONS

OLD BUSINESS

NEW BUSINESS

Formal Site Plan Review – BD Solar Auburn, LLC – Northwest of Lewiston Junction Road
– Map 4 Lots 16 and 15-1

Findings of Fact and Conclusions of Law for:

Formal Shoreland Zoning Application – Mark Fiorino – 40 West Shore Drive – Map 46 Lot 11

Formal Shoreland Zoning Application – Margery Finley Camden – 36 West Shore Drive
– Map 46 Lot 10

ANY OTHER BUSINESS

ADJOURNMENT

POLAND PLANNING BOARD
MINUTES OF PUBLIC HEARING AND MEETING
February 11, 2020
Approved on _____, 2020

CALL TO ORDER – Chairperson Porter called the meeting to order at 6:30 pm with Members Cheryl Skilling, Stephanie Floyd, George Greenwood, Alternate Member Jimmy Walker, CEO Scott Neal, and Sarah Merrill present. Alternate Member Walker is a voting member for this meeting. Member Mark Weinberg is absent without notice.

PUBLIC HEARING ON CLUC AMENDMENTS 2020

Member Floyd moved to open the public hearing. Member Skilling seconded the motion.

Discussion: None Vote: 3-yes 0-no (Member Greenwood and Alternate Member Walker were absent for this vote.)

No members of the public were present at the public hearing to ask questions, raise concerns, or make comments about any of the proposed CLUC changes.

Member Floyd moved to close the public hearing at 6:35 pm. Member Skilling seconded the motion.
Discussion: None Vote: 3-yes 0-no (Member Greenwood and Alternate Member Walker were absent for this vote.)

VOTE OF CLUC AMENDEMENTS 2020

Article 4. To see if the Town will vote to adopt the 2020 Amendment to the [Poland Comprehensive Land Use Code](#) – section 506.2 “Land Use Key” sections A.1., B.1., C.1., D.1., D.2., E.1., F.1., G.1., H.1., I.1. J.1., J.2., K.1., K.2., L.1., and M.1.? *(A copy of the proposed ordinance amendment is available for inspection in the Clerk’s office, as well as on the Town’s web site at polandtownoffice.org, and will also be available at Town Meeting.)*

506.2 Land Use Key

A. Village 1

1. Permitted Uses Requiring a Permit from the Code Enforcement Officer

- | | |
|---------------------------------------|---|
| • Single Family Dwelling | • Home Day care |
| • Accessory Uses & Structures | • Signs |
| • Housing, Manufactured, Definition B | • Filling 200 cubic yards to 5,000 cubic yards |
| • Accessory Apartment | • <u>Medical Marijuana Caregiver Cultivation</u> |
| • Accessory Residential Structure | • <u>Medical Marijuana Manufacturing Facilities</u> |
| • Offsite Accessory Structure | • <u>Medical Marijuana Testing Facilities</u> |
| • Two Family/Duplex Dwelling | • <u>Adult Use Marijuana Cultivation Facilities: Tier 1</u> |
| • Home Occupation | |
| • Farm Stand | |

POLAND PLANNING BOARD
MINUTES OF PUBLIC HEARING AND MEETING
February 11, 2020
Approved on _____, 2020

B. Village 2

1. Permitted Uses Requiring a Permit from the Code Enforcement Officer
 - Single Family Dwelling
 - Accessory Uses & Structures
 - Housing, Manufactured, Definition B
 - Accessory Apartment
 - Accessory Residential Structure
 - Offsite Accessory Structure
 - Two Family/Duplex Dwelling
 - Home Occupation
 - Farm Stand
 - Home Day Care
 - Signs
 - Filling 200 cubic yards to 5,000 cubic yards
 - [Medical Marijuana Caregiver Cultivation](#)
 - [Medical Marijuana Manufacturing Facilities](#)
 - [Medical Marijuana Testing Facilities](#)
 - [Adult use Marijuana Cultivation Facilities: Tier 1](#)

C. Village 3

1. Permitted Uses Requiring a Permit from the Code Enforcement Officer
 - Single Family Dwelling
 - Accessory Uses & Structures
 - Housing, Manufactured, Definition B
 - Accessory Apartment
 - Accessory Residential Structure
 - Offsite Accessory Structure
 - Two Family/Duplex Dwelling
 - Farm Stand
 - Home Occupation
 - Home Day Care
 - Signs
 - Filling 200 cubic yards to 5,000 cubic yards
 - [Medical Marijuana Caregiver Cultivation](#)
 - [Medical Marijuana Manufacturing Facilities](#)
 - [Medical Marijuana Testing Facilities](#)
 - [Adult use Marijuana Cultivation Facilities: Tier 1](#)

POLAND PLANNING BOARD
MINUTES OF PUBLIC HEARING AND MEETING
February 11, 2020
Approved on _____, 2020

D. Village 4

1. Permitted Uses Requiring a Permit from the Code Enforcement Officer
 - Single Family Dwelling
 - Accessory Uses and Structures
 - Housing, Manufactured, Definition B
 - Accessory Apartment
 - Accessory Residential Structure
 - Offsite Accessory Structure
 - Two Family/Duplex Dwelling
 - Farm Stand
 - Home Occupation
 - Home Day Care
 - Signs
 - Filling 200 cubic yards to 5,000 cubic yards
 - [Medical Marijuana Caregiver Cultivation](#)
 - [Medical Marijuana Manufacturing Facilities](#)
 - [Medical Marijuana Testing Facilities](#)
 - [Adult Use Marijuana Cultivation Facilities: Tier 1](#)
2. Permitted Uses Requiring Planning Board Approval
 - Filling of more than 5,000 cubic yards
 - [Medical Marijuana Registered Caregiver Retail Store](#)
 - [Adult Use marijuana Cultivation Facilities: Tier 2](#)
 - [Adult Use Marijuana Products Production Facilities](#)
 - [Adult Use Marijuana Testing Facilities](#)
 - [Adult Use Marijuana Store](#)

E. Downtown

1. Permitted Uses Requiring a Permit from the Code Enforcement Officer
 - Single Family Dwelling
 - Accessory Uses & Structures
 - Housing, Manufactured Definition A, B, and C
 - Accessory Apartment
 - Accessory Residential Structure
 - Offsite Accessory Structure
 - Two Family/Duplex Dwelling
 - Home Occupation
 - Home Day Care

POLAND PLANNING BOARD
MINUTES OF PUBLIC HEARING AND MEETING
February 11, 2020
Approved on _____, 2020

- Signs
- Filling 200 cubic yards to 5,000 cubic yards
- [Medical Marijuana Caregiver Cultivation](#)
- [Medical Marijuana Manufacturing Facilities](#)
- [Medical Marijuana Testing Facilities](#)
- [Adult use Marijuana Cultivation Facilities: Tier 1](#)

F. Historic

1. Permitted Uses Requiring a Permit from the Code Enforcement Officer
 - Single Family Dwelling
 - Accessory Uses & Structures
 - Accessory Apartment
 - Offsite Accessory Structure
 - Home Occupation
 - Home Day Care
 - Farm Stand
 - Signs
 - Filling 200 cubic yards to 5,000 cubic yards
 - [Medical Marijuana Cultivation](#)
 - [Medical Marijuana Manufacturing Facilities](#)
 - [Medical Marijuana Testing Facilities](#)
 - [Adult use Marijuana Cultivation Facilities: Tier 1](#)

G. Rural Residential 1

1. Permitted Uses Requiring a Permit from the Code Enforcement Officer
 - Single Family Dwelling
 - Accessory Uses & Structures
 - Housing, Manufactured Definition A, B, and C
 - Accessory Apartment
 - Accessory Residential Structure
 - Offsite Accessory Structure
 - Two Family/Duplex Dwelling
 - Home Occupation
 - Home Day Care
 - Farm Stand
 - Signs
 - Filling 200 cubic yards to 5,000 cubic yards
 - [Medical Marijuana Caregiver Cultivation](#)
 - [Medical Marijuana Manufacturing Facilities](#)
 - [Medical Marijuana Testing Facilities](#)
 - [Adult Use Cultivation Facilities: Tier 1](#)

POLAND PLANNING BOARD
MINUTES OF PUBLIC HEARING AND MEETING
February 11, 2020
Approved on _____, 2020

H. Rural Residential 2

1. Permitted Uses Requiring a Permit from the Code Enforcement Officer
 - Single Family Dwelling
 - Accessory Uses & Structures
 - Housing, Manufactured Definition A, B, and C
 - Accessory Apartment
 - Accessory Residential Structure
 - Offsite Accessory Structure
 - Two Family/Duplex Dwelling
 - Home Occupation
 - Home Day Care
 - Farm Stand
 - Signs
 - Filling 200 cubic yards to 5,000 cubic yards
 - [Medical Marijuana Caregiver Cultivation](#)
 - [Medical Marijuana Manufacturing Facilities](#)
 - [Medical Marijuana Testing Facilities](#)
 - [Adult Use Marijuana Cultivation Facility: Tier 1](#)

I. Rural Residential 3

1. Permitted Uses Requiring a Permit from the Code Enforcement Officer
 - Single Family Dwelling
 - Accessory Uses & Structures
 - Housing, Manufactured Definition A, B, and C
 - Accessory Apartment
 - Accessory Residential Structure
 - Offsite Accessory Structure
 - Two Family/Duplex Dwelling
 - Home Occupation
 - Home Day Care
 - Farm Stand
 - Signs
 - Filling 200 cubic yards to 5,000 cubic yards
 - [Medical Marijuana Caregiver Cultivation](#)
 - [Medical Marijuana Manufacturing Facilities](#)
 - [Medical Marijuana Testing Facilities](#)
 - [Adult Use Marijuana Cultivation Facility: Tier 1](#)

J. Farm and Forest

1. Permitted Uses Requiring a Permit from the Code Enforcement Officer
 - Single Family Dwelling
 - Accessory Uses & Structures

POLAND PLANNING BOARD
MINUTES OF PUBLIC HEARING AND MEETING
February 11, 2020
Approved on _____, 2020

- Housing, Manufactured Definition A, B, and C
- Accessory Apartment
- Accessory Residential Structure
- Offsite Accessory Structure
- Two Family/Duplex Dwelling
- Home Occupation
- Home Day Care
- Farm Stand
- Signs
- Filling 200 cubic yards to 5,000 cubic yards
- [Medical Marijuana Caregiver Cultivation](#)
- [Medical Marijuana Manufacturing Facilities](#)
- [Medical Marijuana Testing Facilities](#)
- [Adult Use Marijuana Cultivation Facility: Tier 1](#)

2. Permitted Uses Requiring Planning Board Approval

- Filling of more than 5,000 cubic yards
- [Adult Use Marijuana Cultivation Facilities: Tier 2 and Tier 3](#)
- [Adult Use Marijuana Products Production Facilities](#)
- [Adult Use Marijuana Testing Facilities](#)

K. General Purpose 1

1. Permitted Uses Requiring a Permit from the Code Enforcement Officer

- Accessory Uses & Structures
- Home Occupation
- Home Day Care
- Farm Stand
- Signs
- Filling 200 cubic yards to 5,000 cubic yards
- [Medical Marijuana Caregiver Cultivation](#)
- [Medical Marijuana Manufacturing Facilities](#)
- [Medical Marijuana Testing Facilities](#)
- [Adult use Marijuana Cultivation Facilities: Tier 1](#)

2. Permitted Uses Requiring Planning Board Approval

- Filling of more than 5,000 cubic yards
- [Medical Marijuana Registered Caregiver Retail Store](#)
- [Adult Use Marijuana Cultivation Facilities: Tier 2](#)
- [Adult Use Marijuana Products Production Facilities](#)
- [Adult Use Marijuana Testing Facilities](#)
- [Adult Use Marijuana Store](#)

POLAND PLANNING BOARD
MINUTES OF PUBLIC HEARING AND MEETING
February 11, 2020
Approved on _____, 2020

L. General Purpose 2

1. Permitted Uses Requiring a Permit from the Code Enforcement Officer
 - Accessory Uses & Structures
 - Home Occupation
 - Home Day Care
 - Farm Stand
 - Signs
 - Filling 200 cubic yards to 5,000 cubic yards
 - [Medical Marijuana Caregiver Cultivation](#)
 - [Medical Marijuana Manufacturing Facilities](#)
 - [Medical Marijuana Testing Facilities](#)
 - [Adult use Marijuana Cultivation Facilities: Tier 1](#)

M. General Purpose 3

1. Permitted Uses Requiring a Permit from the Code Enforcement Officer
 - Accessory Uses & Structures
 - Home Occupation
 - Home Day Care
 - Farm Stand
 - Signs
 - Filling 200 cubic yards to 5,000 cubic yards
 - [Medical Marijuana Caregiver Cultivation](#)
 - [Medical Marijuana Manufacturing Facilities](#)
 - [Medical Marijuana Testing Facilities](#)
 - [Adult use Marijuana Cultivation Facilities: Tier 1](#)

Member Floyd moved to recommend the amendment. Member Skilling seconded the motion. Discussion: None Vote: 4-yes 0-no (Member Greenwood was absent for this vote.)

**POLAND PLANNING BOARD
MINUTES OF MEETING
January 28, 2020
Approved on _____, 2020**

Article 5. To see if the Town will vote to adopt the 2020 Amendment to the **Poland Comprehensive Land Use Code** – Chapter 14 Definitions “Structure”? *(A copy of the proposed ordinance amendment is available for inspection in the Clerk’s office, as well as on the Town’s web site at polandtownoffice.org, and will also be available at Town Meeting.)*

Chapter 14 Definitions:

Structure: Anything temporary or permanently located built, constructed or erected for the support, shelter or enclosure of persons, animals, goods or property of any kind, together with anything constructed or erected on or in the ground, exclusive. The term includes structures temporarily or permanently located including membrane structures, decks, patios, satellite dishes, and solar panels. Structure does not include fences; poles and wiring and other aerial equipment normally associated with service drops, including guy wires and guy anchors; subsurface waste water disposal systems as defined in Title 30-A, section 4201, subsection 5; geothermal heat exchange wells as defined in Title 32, section 4700-E, subsection 3-C; or wells or water wells as defined in Title 32, section 4700-E, subsection 8.

Member Floyd moved to recommend the amendment. Member Skilling seconded the motion. Discussion: None Vote: 4-yes 0-no (Member Greenwood was absent for this vote.)

**POLAND PLANNING BOARD
MINUTES OF MEETING
January 28, 2020
Approved on _____, 2020**

Article 6. To see if the Town will vote to adopt the 2020 Amendment to the **Poland Comprehensive Land Use Code**. Section 1204 “Adoption of NFPA 1 Fire Code by Reference”? *(A copy of the proposed ordinance amendment is available for inspection in the Clerk’s office, as well as on the Town’s web site at polandtownoffice.org, and will also be available at Town Meeting.)*

1204 ADOPTION OF NFPA 1 FIRE CODE BY REFERENCE

- A. That a certain document, three (3) copies of which are on file in the office of the Town of Poland Clerk of the Town with one (1) copy being in the Town Clerk’s Office, marked and designated as the NFPA Fire Code 1 – **2018** Edition as published by the National Fire Protection Association, as adopted and amended by the State of Maine and further amended by section 1204.B, be and is hereby adopted as the Fire Code of the Town of Poland

Member Floyd moved to recommend the amendment. Member Skilling seconded the motion. Discussion: None Vote: 4-yes 0-no (Member Greenwood was absent for this vote.)

Article 7. To see if the Town will vote to adopt the 2020 Amendment to the **Poland Comprehensive Land Use Code**. Section 1205 “Adoption of NFPA Life Safety 101 by Reference”? *(A copy of the proposed ordinance amendment is available for inspection in the Clerk’s office, as well as on the Town’s web site at polandtownoffice.org, and will also be available at Town Meeting.)*

1205 ADOPTION OF NFPA LIFE SAFETY 101 BY REFERENCE

- A. That a certain document, three (3) copies of which are on file in the office of the Poland Town Clerk Town, with one (1) copy being in the Town Clerk’s Office, marked and designated as the Life Safety Code 101 – **2018** Edition including Appendices A and B as published by the National Fire Protection Association, as adopted and amended by the State of Maine and amended by section 1205.B, be and is hereby adopted as the Life Safety Code of the Town of Poland for control of buildings and structures as herein provided.

Member Floyd moved to recommend the amendment. Member Skilling seconded the motion. Discussion: None Vote: 4-yes 0-no (Member Greenwood was absent for this vote.)

POLAND PLANNING BOARD
MINUTES OF MEETING
January 28, 2020
Approved on _____, 2020

Article 8. To see if the Town will vote to adopt the 2020 Amendment to the [Poland Comprehensive Land Use Code](#). Section 1511.1 “Allowed Locations”? *(A copy of the proposed ordinance amendment is available for inspection in the Clerk’s office, as well as on the Town’s web site at polandtownoffice.org, and will also be available at Town Meeting.)*

1511. 1 Allowed Locations – Adult use marijuana products manufacturing facilities shall be allowed in the following locations, subject to the requirements of this Section:

- A. Allowed in all locations where adult use [Tier 2 and Tier 3](#) cultivation is allowed and must be co-located with a cultivation facility.

Member Floyd moved to recommend the amendment. Member Skilling seconded the motion. Discussion: None Vote: 4-yes 0-no (Member Greenwood was absent for this vote.)

Article 9. To see if the Town will vote to adopt the 2020 Amendment to the [Poland Comprehensive Land Use Code](#). Section 1512.1 “Allowed Locations”? *(A copy of the proposed ordinance amendment is available for inspection in the Clerk’s office, as well as on the Town’s web site at polandtownoffice.org, and will also be available at Town Meeting.)*

1512. 1 Allowed Locations – Adult use marijuana testing facilities shall be allowed in the following locations, subject to the requirements of this Section:

- A. Allowed in all locations where adult use [Tier 2 and Tier 3](#) cultivation is allowed and must be co-located with a cultivation facility.

Member Floyd moved to recommend the amendment. Member Skilling seconded the motion. Discussion: None Vote: 4-yes 0-no (Member Greenwood was absent for this vote.)

POLAND PLANNING BOARD
MINUTES OF MEETING
January 28, 2020
Approved on _____, 2020

Article 10. To see if the Town will vote to adopt the 2020 Amendment to the **Poland Comprehensive Land Use Code**. Section 508.30.A.7. "Downtown Design Standards"? (A copy of the proposed ordinance amendment is available for inspection in the Clerk's office, as well as on the Town's web site at polandtownoffice.org, and will also be available at Town Meeting.)

508.30 Downtown Design Standards

A.7 Chain link or wire mesh fencing, including vinyl covered metal fencing, may not be used for security, access control or screening. However, chain link fencing, fence posts, rails, or mechanical features finished with a black vinyl coating, may be used for security, access control, or screening where installed behind the principle structure's rear façade. No portion of black vinyl coated fencing or mechanical features associated with the fence system may project closer to the street frontage than the line which is parallel to the buildings rear façade as measured from the principle main building corner. Small structural projections, porches, decks, and architectural projections shall not constitute the reference line of the rear façade.

Member Floyd moved to recommend the amendment. Member Skilling seconded the motion. Discussion: None Vote: 4-yes 0-no (Member Greenwood was absent for this vote.)

MINUTES – January 28, 2020 – Member Floyd moved to approve the minutes. Member Skilling seconded the motion. Discussion: None Vote: 4-yes 0-no
(Member Greenwood was absent for this vote.)

COMMUNICATIONS –

Copy of Letter – Sketch Plan Application Approval for Auburn Housing Development Corporation – January 28, 2020

OLD BUSINESS –

Formal Shoreland Zoning Application – Mark Fiorino – 40 West Shore Drive
– Map 46 Lot 11

Keith Morse of JKL Land Surveying presented the project to the Board. Mr. Fiorino would like to move the camp back from the resource to the greatest possible extent.

Member Greenwood moved to approve the checklist as complete. Member Floyd seconded the motion. Discussion: None Vote: 5-yes 0-no

POLAND PLANNING BOARD
MINUTES OF MEETING
January 28, 2020
Approved on _____, 2020

Member Greenwood moved to approve the Formal Shoreland Zoning Application with the following conditions: the plans are corrected to show the current setbacks of the camp, the public hearing is waived, and the site walk is waived. Member Floyd seconded the motion. Discussion: None Vote: 5-yes 0-no

NEW BUSINESS –

Formal Shoreland Zoning Application – Margery Finley Camden – 36 West Shore Drive – Map 46 Lot 10

Stuart Davis of Davis Land Surveying presented the project to the Board. Ms. Finley Camden would like to remove the existing 16' x 12' single story section of the camp and replace it with a 22' x 19' two story addition, to be supported by concrete piers and to build a screened in porch on the existing deck.

Member Greenwood moved to approve the checklist as complete. Member Floyd seconded the motion. Discussion: None Vote: 5-yes 0-no

Member Greenwood moved to approve the Formal Shoreland Zoning Application with the following conditions: the CEO will inspect the trees and decide which trees can come down, the public hearing is waived, and the site walk is waived. Member Floyd seconded the motion. Discussion: None Vote: 5-yes 0-no

Findings of Fact and Conclusions of Law for:

Formal Site Plan Review – Adam Mocchiola – 46 Mechanic Falls Road – Map 12 Lot 16A

Member Greenwood moved to approve the Findings of Fact. Member Floyd seconded the motion. Discussion: None Vote: 5-yes 0-no

ANY OTHER BUSINESS – None

ADJOURN – Member Floyd moved to adjourn the meeting at 7:40 pm. Member Greenwood seconded the motion. Discussion: None Vote: 5-yes 0-no

Recorded by: Sarah Merrill

**POLAND PLANNING BOARD
MINUTES OF MEETING
January 28, 2020
Approved on _____, 2020**

Planning Board

James Porter, Chairperson

George Greenwood, Member

Absent without Notice

Mark Weinberg, Secretary

Stephane Floyd, Vice Chairperson

Cheryl Skilling, Member

James Walker, Alternate Member

LETTER OF TRANSMITTAL

Date: January 24, 2020 **JN:** 12186.008

To: Town of Poland **Re:** BD Solar Auburn, LLC
Attn: Planning Board Solar Farm
1231 Maine Street
Poland, ME 04274-7328

WE ARE SENDING YOU

☒ ATTACHED ☐ BY EMAIL ☐ UNDER SEPARATE COVER _____

| COPIES | DATE | DESCRIPTION |
|--------|------------|--|
| 10 | 01/24/2020 | Formal Site Plan Review Application |
| 1 | 01/24/2020 | Digital Site Plan Review Application (Thumb Drive) |
| | | |
| | | |
| | | |

THESE ARE TRANSMITTED AS CHECKED BELOW:

- | | | |
|--|---|--|
| <input checked="" type="checkbox"/> For Approval | <input type="checkbox"/> Approved as Submitted | <input type="checkbox"/> Resubmit___Copies for Approval |
| <input type="checkbox"/> For Your Use | <input type="checkbox"/> Approved as Noted | <input type="checkbox"/> Submit___Copies for Distribution |
| <input type="checkbox"/> As Requested | <input type="checkbox"/> Returned for Corrections | <input type="checkbox"/> Return___Corrected Prints |
| <input type="checkbox"/> For Review and Comment | <input type="checkbox"/> For Bids Due_____20__ | <input type="checkbox"/> Prints Returned After Loan to CES |
| <input type="checkbox"/> Other | | |

Remarks:

Application Fee is being submitted directly to the Town by BD Solar Auburn, LLC

Copy To: _____ Signed: Sean Thies, PE (gdr)



Corporate Office
465 South Main Street
PO Box 639
Brewer, Maine 04412
207.989.4824

www.cesincusa.com

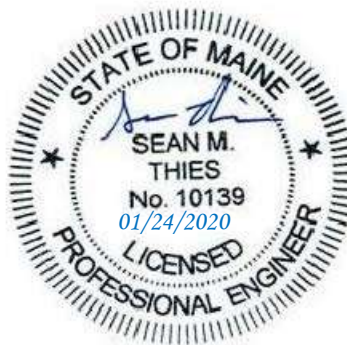


POLAND SITE PLAN REVIEW

FOR

BD SOLAR AUBURN, LLC Solar Farm Auburn & Poland, Maine

Applicant: BD Solar Auburn, LLC
Attn: Nicholas Mazuroski
P.O. Box 9729
Portland, Maine 04104



**JANUARY 2020
JN: 12186.008**

Prepared By:
CES, Inc.
465 South Main Street
P.O. Box 639
Brewer, ME 04412
207.989.482

INDEX

SITE PLAN REVIEW APPLICATION AND CHECKLIST

Agent Authorization
Narrative

APPENDIX 1 TITLE, RIGHT OR INTEREST

Purchase and Sale Agreement
Letter of Intent
Original Deeds
Tax Assessor's Information Cards

APPENDIX 2 LOCATION MAP

APPENDIX 3 SOLID WASTE CAPACITY STATEMENT

APPENDIX 4 ABUTTER LIST

APPENDIX 5 FEMA FLOOD MAP

APPENDIX 6 NOISE

Cooper Distribution Transformer Technical Data
Sungrow Correspondence and Technical Data

APPENDIX 7 STORMWATER MANAGEMENT PLAN

(As being reviewed by MDEP)
C701 Pre-development Hydrology Plan
C702 Post-development Hydrology Plan

APPENDIX 8 EROSION AND SEDIMENTATION CONTROL PLAN

APPENDIX 9 FINANCIAL AND TECHNICAL CAPACITY

Certificate of Good Standing
Statement of Financial Capacity
Technical Capacity
Resumes

APPENDIX 10 AGENCY CORRESPONDENCE

Maine Department of Inland Fish and Wildlife
Maine Historic Preservation Commission
Maine Natural Areas Program

APPENDIX 11 DRAWINGS

C101 Site Plan
C501 Details

APPLICANT or CONTACT PERSON:Applicant is: _____ Landowner _____ Contractor X Renter _____ Buyer**If landowner, write "Same" below and continue to next block below. If not the landowner, submit a letter of permission to construct on or use the land, or copy of a contract to buy from the landowner, along with the following information:**Name(s): Attn: Nicholas MazuroskiCompany BD Solar, Auburn, LLCMail Address: PO Box 9729 Main Phone: 207 - 228 - 7375Town/State/Zip Portland, ME 04104 Alternate Phone: - -**THIS APPLICATION IS FOR:** (Check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> Commercial | <input type="checkbox"/> New Development |
| <input checked="" type="checkbox"/> Industrial | <input type="checkbox"/> Change In Use |
| <input type="checkbox"/> Institutional | <input type="checkbox"/> Expansion of Use |
| <input type="checkbox"/> Governmental | <input type="checkbox"/> Expansion of Structure(s) |
| <input type="checkbox"/> Open Space | <input type="checkbox"/> Resumption of Use |

EXISTING LOT CONDITIONS:

(This page is to describe what is on your lot currently)

1. **General**

Does this lot have any development? (If No, go to "Proposed Development") _____ Yes

X Noa. Is there an existing Well _____ Yes
_____ Nob. Is there an existing Septic System _____ Yes
_____ No

i) If yes, submit a copy of a septic permit, or drawing(s) showing size & location.

c. Is there an existing Road Entry _____ Yes
_____ Noi) If yes, will there be any changes/modifications? _____ Yes
_____ No

ii) (If no, submit copy of appropriate road entry application if entrance is onto a state or town road.)

d. Any structures to be removed _____ Yes
_____ No

i) If yes, submit information about the structure to be removed and how any debris will be disposed of.

2. **Existing Land Development & Improvements NOT Including Buildings**a. Size of lawns _____ N/A _____ Sq. Ft.
or Acresb. Size of fields _____ N/A _____ Sq. Ft.
or Acres

c. Size of driveways/roads _____ N/A _____ Sq. Ft.

d. Size of other non-vegetated areas _____ N/A _____ Sq. Ft.

e. Wetlands already filled _____ N/A _____ Sq. Ft.

3. **Existing Main Structure**

a. Ground Footprint _____ N/A _____ Sq. Ft.

b. Total Gross Floor Space (exterior dimensions of all floors) _____ N/A _____ Sq. Ft.

c. Road Frontage Setback _____ N/A _____ Ft.

- | | | | |
|---------------------------|----------------------------------|-----|-----|
| d. Side Setback | | N/A | Ft. |
| e. Rear Setback | | N/A | Ft. |
| f. Distance to Great Pond | _____ Not applicable (over 250') | N/A | Ft. |
| g. Distance to Stream | _____ Not applicable (over 250') | N/A | Ft. |
| h. Distance to Wetlands | _____ Not applicable (over 250') | N/A | Ft. |
4. **Foundation Type** _____ Full Basement _____ Frost Walls _____ Slab _____ Piers
5. **Existing Accessory Structure(s)**
- | | | | |
|-------------------------------|----------------------------------|-----|---------|
| a. Total Number of Structures | | N/A | |
| b. Total Ground Footprint | | N/A | Sq. Ft. |
| c. Total Floor Space | | N/A | Sq. Ft. |
| d. Closest Road Setback | | N/A | Ft. |
| e. Closest Side Setback | | N/A | Ft. |
| f. Closest Rear Setback | | N/A | Ft. |
| g. Distance to Great Pond | _____ Not applicable (over 250') | N/A | Ft. |
| h. Distance to Streams | _____ Not applicable (over 250') | N/A | Ft. |
| i. Distance to Wetlands | _____ Not applicable (over 250') | N/A | Ft. |
6. **Total Existing Impervious Surfaces** _____ N/A Sq. Ft.
- a. $Add\ 2c + 2d + 3a + 5b$

PROPOSED DEVELOPMENT:

- | | | |
|---|---------------|---------|
| 1. Wetlands to be impacted | _____ 394,020 | Sq. Ft. |
| 2. New footprint(s) and developed area(s): | | |
| a. Changes in building footprint(s) | _____ 0 | Sq. Ft. |
| b. Changes in driveway/roadway | _____ 81,300 | Sq. Ft. |
| c. Changes in patios, walkways, etc. | _____ 2,452 | Sq. Ft. |
| d. TOTAL (2a+2b+2c) | _____ 83,752 | Sq. Ft. |
| 3. Percentage of lot covered by impervious surfaces: | _____ 1.3 | % |
| a. <i>(Equals [areas on line 6 page 2 + line 2d above] / [Total lot area measured in sq. ft.] * 100%)</i> | | |

SUBMISSIONS:

1. **Attach drawings and/or statements describing the following items, if applicable:**
- Provide a copy of deed and Tax Assessor's information card.
 - Provide a map of the general area showing land features within at least ½ mile of this lot.
 - Provide site plan(s) of your lot with existing development and its dimensions shown.
 - Provide site plan(s) of your lot with proposed development and its dimensions shown.
 - (May be combined on existing development drawing.)*
 - Provide detailed plans of proposed structural development and changes.
 - Provide statements or drawings of methods of infrastructure:
 - Water supply
 - Sewage disposal
 - Fire protection
 - Electricity
 - Solid waste disposal
 - Type, size, and location of signs.
 - Number of parking spaces.
 - Provide phosphorus loading calculation if in a great pond watershed area.
 - Anticipated date for start of construction.
 - Anticipated date for completion of construction.
 - Standard submissions requirements shall follow Section 509.8 of the Comprehensive Land Use Code. Copies of the Code are available for viewing at the Town Office and Library. Copies are available for purchase (\$25.00) in the Code Enforcement Office.
 - (Use checklist starting on page 6 for summary of usual requirements.)*
 - Other requirements unique to your project added by the Planning Board.

2. **List all state and federal approvals, permits, and licenses required, if any, for the project:**

This includes but is not limited to the following:

1. State highway entrance permit.
2. Soil disturbances involving more than one acre.
3. Impact on more than 4,300 square feet of any type wetland.
4. Soil disturbances within 100 feet of lakes, rivers or streams.
5. Activity within 75 feet, over the water, or in the water of lakes, rivers, or streams.
6. Timber harvesting.
7. Flood zones.
8. Discharges and emissions

DISCLOSURE: (READ BEFORE SIGNING)

1. I hereby acknowledge that I have read this application and pertinent sections of the ordinances, and state that the information in this document is to the best of my knowledge true and accurate. I agree to comply with all the Town of Poland's ordinances and the State of Maine's statutes regulating the activities sought in this application as well as any permit(s) approved for this application.
2. I understand that all construction of structures shall conform to or exceed the minimum requirements of the Maine Uniform Building and Energy Code, and the NFPA-101 Life Safety Code, 2009
3. I understand that any approval is valid for only the use(s) as specified in this application. The permitting authority must approve any change(s) made to the use(s) sought in the application. Any approval issued for this application is approved on the basis of truthful information provided by the applicant(s), and as allowed by the ordinances of the town.
4. I understand that it is my responsibility to assure that the lot description herein accurately describes its ownership, its boundary lines, and the setback measurements from the legal boundary lines.
5. I understand that I have the burden of proof as to the legal right to use the property, and that approval of this application in no way relieves me of this burden. Any approval issued does not constitute a resolution in favor of me or the landowner in any matters regarding the property boundaries, ownership, or similar titles.
6. I understand that all necessary **Building and Use Permits** shall be secured from the Code Enforcement Office after the Planning Board grants approval of this application.
7. I understand that a **Certificate of Occupancy or Compliance** shall be required prior to the start of any use or occupancy associated with this application unless a signed written waiver is issued with the permit. Fines and penalties may be issued if use or occupancy is started prior to the issuance of the certificate.
8. I understand that the **approval becomes invalid if** construction or use has not commenced within twelve (12) months of the Planning Board's approval date, construction is suspended for more than six (6) months and no notice for just cause is submitted prior to the end of the six (6) months, or it is found that false statements have been furnished in this application.
9. I understand that if I fail to comply with the aforementioned statements, a "STOP WORK" order may be issued for which I will immediately halt any construction and/or use(s) that are approved for this application. This failure may also require that I return the property to its natural state or as closely thereto before the use(s) was/were approved.
10. I understand that failure to follow these requirements will lead to Violation Notices and Citations that have fines and penalties. This in turn can lead to civil proceedings in District and/or Superior Court.
11. I understand that **all state and federal permits** are my responsibility as the applicant and/or owner and will secure the same prior to the start of the project.



Applicant's Signature(s)

January 24, 2020

Date

Submission CHECKLIST

The following list is a short summary of the information required in Chapter 509.8 of the Comprehensive Land Use Code for the Town of Poland, Maine. Please checkmark or place an "X" in the left-hand columns if the information has been provided, if you request a waiver from submitting the information, or you believe the information is not applicable to your application. If a waiver(s) is requested, or the information is not applicable, a written explanation is required. Columns on the right are for the Planning Board's use.

| For Applicant Use | | | | For Planning Board Use | | | |
|-------------------|----------------|----------------|---|------------------------|---------|--------|----------------|
| Provided | Waiver Request | Not Applicable | Section 509.8.A Submission requirements | Received | On File | Waived | Not Applicable |
| X | | | 1. Site Plan Drawings | | | | |
| X | | | 2. Signed copy of application | | | | |
| X | | | 3.a. Name & address of owner | | | | |
| X | | | Name of development | | | | |
| X | | | Name & address of abutters within 500' of lot for development | | | | |
| X | | | Map of general location | | | | |
| X | | | Show all contiguous properties | | | | |
| X | | | Names, Map, & lot #'s on drawings | | | | |
| X | | | Copy of deeds, agreements | | | | |
| X | | | Engineer/ designer of plans | | | | |
| X | | | Existing Conditions (Site Plan) | | | | |
| X | | | Zoning Districts on and/or abutting project's lot shown | | | | |
| X | | | Bearings & Distances shown on drawings | | | | |
| X | | | Location of utilities, culverts, drains | | | | |
| | | X | Location, name of existing r/w | | | | |
| | | X | Location, dimensions of existing structures | | | | |
| | | X | Location, dimensions of existing roads, walks, parking, loading, etc. | | | | |
| | | X | Location of intersection within 200' | | | | |
| X | | | Location of open drains, wetlands, wildlife areas, historic sites, etc. | | | | |
| X | | | Direction of surface drainage | | | | |
| X | | | 100-yr. Floodplain | | | | |
| | | X | Signs | | | | |
| | | X | Easement, covenants, restrictions | | | | |
| X | | | Proposed Development (Site Plan) | | | | |
| X | | | Location & dimensions of all new structures. New development delineated from existing development | | | | |
| X | | | Setback dimensions shown & met | | | | |
| | | X | Exterior lighting (Will meet full cutoff requirements) | | | | |
| | | X | Incineration devices | | | | |
| X | | | Noise of machinery and operations | | | | |
| | | X | Type of odors generated | | | | |
| | | X | Septic system and other soils reports | | | | |
| | | X | Water supply | | | | |
| | | X | Raw & finished materials stored outside | | | | |
| X | | | Contours shown at PB specified intervals | | | | |
| X | | | Curbs, sidewalks, drives, fences, retaining walls, parking, etc. | | | | |
| | | X | Landscaping plan | | | | |
| | | X | Easements, r/w, legal restrictions | | | | |
| X | | | Abutters' property lines, names | | | | |
| X | | | TRAFFIC DATA | | | | |

| For Applicant Use | | | | For Planning Board Use | | | |
|-------------------|----------------|----------------|--|------------------------|---------|--------|----------------|
| Provided | Waiver Request | Not Applicable | Section 509.8.A Submission requirements | Received | On File | Waived | Not Applicable |
| | | X | Peak hour traffic | | | | |
| | | X | Traffic counts | | | | |
| | | X | Traffic accident data | | | | |
| | | X | Road capacities | | | | |
| | | X | Traffic signs, signals | | | | |
| X | | | STORMWATER & EROSION | | | | |
| X | | | Method for handling stormwater shown | | | | |
| X | | | Flow direction | | | | |
| | | X | Catch basins, dry wells, ditches, etc. | | | | |
| X | | | Engineering Analysis of stormwater | | | | |
| X | | | Erosion control measures | | | | |
| | | X | Hydrologist groundwater impact | | | | |
| X | | | Utility plans for all utilities | | | | |
| X | | | Cross-section profile of roads, walks | | | | |
| | | | Construction drawings of roads, utilities | | | | |
| X | | | Cost analysis of project and financial capability demonstrated | | | | |
| | | X | Phosphorus control plan if in watershed of a great pond | | | | |
| | | X | Submission of waiver requests | | | | |
| | | X | Copies of state, federal applications, permits, &/or licenses required for this project. | | | | |
| | | | Condition A. | | | | |
| | | | Condition B. | | | | |
| | | | Condition C. | | | | |
| | | | Condition D. | | | | |
| | | | Condition E. | | | | |
| | | | | | | | |
| | | | | | | | |

This application was first looked at by the Planning Board on ___ / ___ / ___ but does not create vested rights in the initiation of the review process.

By vote of the Board this application requires an on-site inspection: _____ Yes _____ No

If yes, an onsite inspection is scheduled for ___ / ___ / ___ at ___ : ___ ___ AM ___ PM

By vote of the Board this application requires a public hearing: _____ Yes _____ No

If yes, public hearing is scheduled for ___ / ___ / ___ at ___ : ___ ___ AM ___ PM

Conditions of Approval for Formal Site Review: _____

Planning Board Chair

___ / ___ / ___
Date

Site Review and Shoreland Zoning Review Fees:

| <u>Type of fee</u> | <u>Fee</u> | <u>Units or Comments</u> |
|--|-------------------------------------|---|
| Application – sketch plans, Rough design | \$75.00 | Each application (no other fees) |
| Application – formal | \$150.00 | Each application + fees below |
| Notification of Abutters | \$0.75 per | All abutters within 500 ft. of the property must be notified. |
| Approval extension, Planning Board Approval only | \$50.00 | One extension only (no other fees) |
| Escrow, minimum amount | \$700.00 | When required by Planning Board |
| Extension of approval | \$100.00 | Before approval expires |
| Auto graveyards, recycle business | \$5.00 | Per vehicle storage slot (parking space) |
| Junkyard, Storage Lots | \$1.50 | Per ft of outside storage |
| Residential Towers | \$20.00 + \$5.00 per \$1,000.00 | Based on Cost of Work |
| Commercial Towers | \$20.00 + \$10.00 per \$1,000.00 | Based on Cost of Work |
| Notifications | \$.75 | Each Notification, First Class Mail sent by Town |

1. Building and Structures may include up to five times the footprint area of the building for grounds improvements, exclusive of the building footprint, as part of the building review fee.

2. Building and Grounds Improvement Fees. The sum of these two fees may be limited to \$2,500.00 per application at the discretion of the Planning Board. (Junkyards, auto graveyards, recycling business, and towers excluded.

3. Reduced Fees: The Planning Board may, upon application therefore, allow a reduced total site review fees to \$50.00 in any case which it determines that the work for which the permit is sought will be performed within the Shoreland Zone. The project shall be intended solely for the purpose of protecting a Great Pond, Stream, River, or other Natural Resources through the implementation of Conservation, Best Management Practices, or other environmental safeguards. Also, the project shall not result in the enlargement of any building or structure or an intensification of the existing use of the property.

4. Review Escrow Funds may be used by the Town to pay for professional reviews an advice requested by the Planning Board or Code Enforcement Officer related to the applicant's proposed development. Review escrow funds deposited by the applicant not spent during the course of the Town's review shall be returned to the developer within sixty days after the Planning Board's decision on the application is final. If Professional review and advice fees exceed the amount deposited, the developer shall pay the amount outstanding before final approval or any permit is granted.

Town of Poland, Maine
PLANNING BOARD AGENDA REQUEST

Date of meeting you are requesting to be scheduled for: 2 / 25 / 2020 Meetings are normally
conducted from 7:00 to 10:00 PM in the Municipal Conference Room at the Town Office
Map 4 Lot 16 & 15-1 Sub-lot

Applicant's Name: BD Solar, Auburn, LLC Attn: Nicholas Mazuroski
Mailing Address: PO Box 9729
Town, State, Zip: Portland, ME 04104
Home Phone: Hours:
Work Phone: 207 - 228 - 7375 Hours:

Type of application: Sketch Plan ☒ Site Review Shoreland Subdivision Informational
Road location for project: Accessed from Lewiston Junction Road
Zoning: General Purpose 3 Lake Watershed: No Nature of
business to be discussed (Brief description): Solar Farm

IMPORTANT - READ CAREFULLY:

This Office must receive the original application, plus nine (9) copies, a digital PDF copy (on either cd or usb), and appropriate fees by Friday at 1:00 p.m., eleven (11) days before the stated meeting to be put on the upcoming agenda.

- New business is scheduled on the agenda in the order this office receives this form.
- If you want your application reviewed for contents prior to the meeting, it must be in this office 14 days before the meeting.
- Should the Board choose to adjourn before all business is addressed, all remaining business will be tabled until the next available meeting.
- Unfinished business is conducted before new business is addressed.

Applicant's Signature:  Date: / /

OFFICE USE ONLY:

Request Taken By: Date: / / Time: : a.m. p.m.

October 24, 2018

To Whom It May Concern:

Please be advised that CES, Inc. is hereby authorized to act on behalf of Dirigo Solar in regards to the State, Federal, and local permitting for our proposed solar projects throughout the State of Maine.

Robert Cleaves
Printed Name and Title


Signature

10/24/2018
Date

SITE PLAN REVIEW NARRATIVE

PROJECT DESCRIPTION

BD Solar Auburn, LLC (BD Solar) is proposing to develop a solar energy farm in the municipalities of Auburn and Poland in Androscoggin County, Maine. A solar array consists of photovoltaic panels that transform sunlight into usable energy. The facility will have approximately 36,072 individual panels transforming sunlight each day into energy that is fed into the regional electric grid. This application has been prepared in correspondence with the Town of Poland Code of Ordinances.

The project consists of a 14.6 Megawatt ("MW") solar array to generate power that will be sold under a power purchase agreement to Central Maine Power (CMP) pursuant to its long-term contract award by the Maine Public Utilities Commission (MPUC) (Docket No. 2015-00026). Based on its authority under 35-A M.R.S. §3210-C, the MPUC evaluated and selected BD Solar's project following a public solicitation and highlighted in its analysis that BD Solar's projects will save Maine ratepayers between \$3 and \$26 million over the life of the system, while also contributing to the State's climate goals to reduce carbon emissions in the power sector. This project is one of several BD Solar projects that will be constructed to fulfill the 75 MW production agreement with CMP and MPUC.

The property currently consists primarily of wooded area, wetlands, and some open meadow surfaces. The area that will not be within the limits of the solar array will be left to remain in its existing land cover except for vegetation management to avoid shading of the panels. The overall topography of the site is generally flat and drains to the southeast. The ground slopes from 0 to 8 percent. The topography will not be significantly altered after development.

Construction will entail the placement of solar panels within an approximately 45.0-acre area. In the proposed location of the solar array, wooded areas will be turned to meadow, which will be maintained to the standards of Maine Department of Environmental Protection meadow buffers. In summary, they will be mowed no more than twice per year and have motorized vehicle traffic limited to maintenance of the panels, as specified in the deed restrictions for meadow buffers. The direction of all stormwater will continue along existing flow paths. The project will create approximately 1.92 acres of new impervious area from the access road, concrete equipment pads, and panel piles.

SITE PLAN REVIEW REQUIREMENTS

The information hereafter is numbered in correspondence with the Town of Poland Formal Site Plan Review submission requirements. Submission criteria is written in *italics*, followed by a description of how the criteria was addressed.

- a. *Provide a copy of deed and Tax Assessor's information card.*
Please see the attached deeds.

- b. *Provide a map of the general area showing land features within at least ½ mile of this lot.*
Please see the attached Location Map.
- c. *Provide site plan(s) of your lot with existing development and its dimensions shown.*
Existing conditions are depicted in the attached Site Plan and Pre-Development Hydrology Plan.
- d. *Provide site plan(s) of your lot with proposed development and its dimensions shown.*
Proposed conditions are shown in the attached Site Plan.
- e. *Provide detailed plans of proposed structural development and changes.*
Details of the proposed roadway, solar panels and more are shown on C501 Details.
- f. *Provide statements or drawings of methods of infrastructure:*
 - a. *Water Supply*
The solar array will be an unmanned operation and will not require a water supply.
 - b. *Sewage Disposal*
Similarly, a wastewater disposal system will not be required for the development.
 - c. *Fire Protection*
The solar array will be enclosed by a chain link fence. The local fire department will have access to the solar array by use of a Knox Box to be installed at the entrance gate.
 - d. *Electricity*
Please refer to the enclosed Site Plan for the solar panel layout and the point of interconnection to the electric grid on Lewiston Junction Road in Auburn.
 - e. *Solid Waste Disposal*
Once operational, the development will not produce Municipal Solid Waste (MSW).
- g. *Type, size, and location of signs.*
Signage will be limited to required safety related signage fixed to the solar array boundary fence.
- h. *Number of parking spaces.*
Parking spaces are not being proposed as a part of this development.
- i. *Provide phosphorus loading calculation if in a great pond watershed area.*
The development is in the Little Androscoggin River watershed and is not within the watershed of a great pond. This requirement does not apply.

j and k. Anticipated date for start and completion of construction.

| Description | Date (time frame) |
|----------------------------------|-------------------|
| Establishing Erosion Control | Summer 2020 |
| Panel Support Posts Installation | Summer 2020 |
| Access Road Construction | Summer 2020 |
| Panel Support Posts Installation | Summer 2020 |
| Racking/Panel Installation | Summer 2020 |
| Inverter Installation | Summer/Fall 2020 |
| Seed Land Cover | Summer/Fall 2020 |
| Project Completion | Fall 2020 |

k. Standard submissions requirements shall follow Section 509.8 of the Comprehensive Land Use Code.

The proposed development complies with Section 509.8 of the Comprehensive Land Use Code.

l. Other requirements unique to your project added by the Planning Board.

There are no other known requirements unique to the proposed development.

m. List all state and federal approvals, permits, and licenses required, if any, for the project.

BD Solar Auburn has submitted a SLODA application to the Maine Department of Environmental Protection as well as a Natural Resource Protection Application to the U.S. Army Corps of Engineers. Permits will be forwarded to the Town of Poland upon issuance.

GENERAL REVIEW STANDARDS

The following information is numbered in correspondence with Town of Poland Code of Ordinances Section 509.9.

A. Preservation of Landscape

The proposed project utilizes the existing landscape to the greatest extent possible. For example, the solar panels will be mounted on pilings, which are screwed into the earth, causing minimal disturbance. The existing topography will be generally unchanged, as the site will require little to no grading for panel installation. Furthermore, clearing will be limited to the limits of the solar array and for shade management of the panels. Areas outside of these extents will remain in its existing land cover. A representative from CES, Inc. (CES) visited the project site to delineate wetlands, which are shown on the Site Plan in **Appendix 11**.

Please refer to the enclosed correspondence (**Appendix 10**) with the Maine Department of Inland Fisheries and Wildlife, the Maine Natural Areas Program, and the Maine Historic Preservation Commission.

There are no known scenic impacts nearby that will be impacted by the project. The site is surrounded by woodland, which will provide a visual buffer for the solar array.

B. Relation of Proposed Buildings to the Environment

The project will not involve the construction of a building and thus, this section does not apply.

C. Compatibility with Residential Areas

The proposed project is not expected to increase traffic, create odors, or cause glares that will adversely affect residential areas. As previously stated, the solar array will be visually buffered by the surrounding woodland. Please refer to **Section S** of this narrative for more information on noise levels.

D. Vehicular Access

The site will be accessed by a 24-foot-wide gravel road from an existing driveway off Lewiston Junction Road. There are several spurs to be used as turnarounds if necessary. This access road does not extend into the lots in Poland. The access road will generally be used for inspection and maintenance purposes, expected to occur no more than once per week. The traffic from these visits is not expected to impact adjacent street traffic on Lewiston Junction Road.

E. Vehicular Access on Routes 11, 26, 121, and 122

The site will not be access from Routes 11, 26, 121, or 122. This section does not apply.

F. Surface Water

Contours are shown on the Site Plan. Additionally, a location map with USGS topographic information is enclosed. The project will not result in undue surface water pollution. Overall drainage patterns will remain the same in pre- and post-development conditions, as the project requires minimal grading.

G. Conservation, Erosion and Sediment Control

Please refer to the enclosed Erosion and Sedimentation Control Pan in **Appendix 8**.

H. Phosphorus Export

The development is in the Little Androscoggin River watershed and is not within the watershed of a great pond. This requirement does not apply.

I. Site Conditions

The site will be maintained and left each day in a safe and sanitary manner throughout construction, as described in **509.9.I General Review Standards**.

J. Signs

Signs, other than the required safety and warning signage, are not being proposed as a part of this development. This section does not apply.

K. *Special Features*

As shown on the Site Plan, the project complies with all required setbacks. Furthermore, the project is surrounded by forest to limit visual impacts to surrounding properties.

L. *Exterior Lighting*

Exterior lighting is not being proposed for this development.

M. *Emergency Vehicle Access*

The solar array will be accessible to emergency personnel through use of a Knox Box at the gate. Once installed, the Applicant will coordinate accessibility with local emergency personnel.

N. *Municipal Services*

The internal access road will be maintained by the Applicant. The project is not expected to have any adverse impacts on other municipal services.

O. *Water Supply*

A water supply is not required for this project. This section does not apply.

P. *Ground Water*

The project is not expected to impact ground water quality, or quantity. The storage of fuels, hazardous substances, chemicals, industrial wastes, and flammable or combustible liquids or other potentially harmful raw materials will not occur.

Q. *Air Emissions*

The proposed project will have no point or non-point source air emissions. The access way is gravel, but vehicular traffic associated with the project is minimal and associated with inspection and maintenance of the development.

R. *Odor Control*

There will be no odor generation on the site.

S. *Noise*

The Town of Poland limits noise to 65 dBA between 7:00 a.m. and 10:00 p.m. and 55 dBA between 10:00 p.m. and 7:00 a.m. Noise generated from this project includes noise produced from the inverters and converters, located several hundred feet away from the property lines. Please see the enclosed correspondence from the Sungrow manufacturer's representative, confirming that noise generated from these inverters is less than 80 decibels (dBA) at one meter away. At the nearest property line, the sound level will be approximately 45 dBA as calculated by the inverse square law, which does not exceed the Town's limitation of 55 dBA. The transformers generate up to 68 dBA depending on the size, as shown in the enclosed Cooper Distribution Transformers 21012 specifications. At the nearest property line, the transformers are anticipated to generate approximately 37 dBA, also within Town regulations.

T. Sewage Disposal

Sewage disposal is not required as the solar array will be an unmanned operation.

U. Waste Disposal

There is no generation of solid waste associated with the operation of a solar farm. Once the panels are installed, this will be an unmanned operation.

V. Buffer Areas

The site will be visually buffered by the existing woodland. Please refer to **Appendix 7** for more information on vegetative buffers proposed for stormwater management.

W. Financial and Technical Capacity

Please refer to **Appendix 9** for supporting documents for financial and technical capacity.

X. Conformance with Comprehensive Plan

The solar facility has been designed in conformance with the Town of Poland Comprehensive Plan.

APPENDIX 1

TITLE, RIGHT OR INTEREST

Purchase and Sale Agreement
Letter of Intent
Original Deeds
Tax Assessor's Information Cards

PURCHASE AND SALE AGREEMENT

This Purchase and Sale Agreement (the "Agreement") is dated effective as of April 25, 2019 (the "Effective Date"), by and between **Port of Auburn, LLC**, a Maine limited liability company, with a mailing address of 54 Bartol Island Road, Freeport, Maine 04032 ("Seller") and **DIRIGO SOLAR, LLC**, a Maine limited liability company with a mailing address of Attn: Robert E. Cleaves, 100 Middle Street, West Tower, 6th Floor, Portland, Maine 04101 ("Buyer").

RECITALS:

- A. Seller owns certain real property consisting of approximately 131.04+/- acres located along Lewiston Junction Road in the Towns of Auburn and Poland, County of Androscoggin, and State of Maine, more specifically described in two deeds recorded in Androscoggin County's Registry of Deeds in Book 6421 at Pages 120 and 135, (but excluding the premises conveyed out in Book 7839, Page 28), including all right, title and interest of Seller in and to any rights of way, privileges and appurtenances pertaining thereto, including, without limitation, any street adjoining any portion of the land and any air and development rights related to the land (the "Property") (reference is made to a plan entitled "Port of Auburn - PUD I, Lewiston Junction Road - Auburn, ME, Overall Boundary Plan" prepared by Planit Mapping and recorded in Androscoggin County Registry of Deeds in Plan Book 48, Pages 2 and 3); and
- "The Property" however does not include the strip of land on Lewiston Junction Rd. shown in green on Exhibit A, attached hereto.*
- B. Seller wishes to sell to Buyer, and Buyer wishes to purchase from Seller, upon the terms and conditions of this Agreement, the Property.

NOW, THEREFORE, in consideration of the mutual covenants and conditions contained herein, Seller and Buyer hereby agree as follows:

1. AGREEMENT OF PURCHASE AND SALE: PURCHASE PRICE

- 1.1 **Agreement of Purchase and Sale.** In accordance with and subject to the terms and conditions of this Agreement, Seller agrees to sell and convey the Property to Buyer and Buyer agrees to purchase and accept the Property from Seller. Seller agrees to execute a Quitclaim with Covenant Deed and other necessary documentation to convey fee simple title to Buyer as set forth herein.
- 1.2 **Purchase Price.** The purchase price (the "Purchase Price") for the Property shall be [REDACTED] subject to credits, prorations and other adjustments as provided elsewhere in this Agreement.
- 1.3 **Payment of the Purchase Price.** Buyer will pay to Seller the sum of [REDACTED] as its initial Earnest Money Deposit upon full execution hereof. Buyer shall further pay to Seller the sum [REDACTED] each quarter (on January 1, April 1, July 1, and October 1 of each year during the term of this Agreement) following the Effective Date as additional Earnest Money Deposits, and shall pay [REDACTED] to Seller within ten (10) days of receipt of Buyer's requisite permits from the US Army Corp of Engineers and the Maine Department of

Environmental Protection (the Initial Earnest Money Deposit and subsequent additional Earnest Money Deposits, as made, the "Earnest Money Deposits"). Buyer shall pay the Purchase Price to Seller in immediately available funds via federal wire transfer to the Seller's designated account on the Closing Date (as defined below), subject to the credits and prorations set forth in this Agreement. For the avoidance of doubt, the Earnest Money Deposits become non-refundable on the date that is Ninety (90) days from the Effective Date.

2. **CONDITIONS OF TITLE**

- 2.1 **Permitted Exceptions.** Buyer agrees to accept title to the Property subject only to those matters approved by Buyer pursuant to Section 2.2 below (collectively, the "Permitted Exceptions").
- 2.2 **Approval of Title.** No later than Ninety (90) days after the Effective Date, Buyer shall obtain from a title insurance company of its choice (the "Title Company") a title commitment for an ALTA Form 2006 Owner's Policy of Title Insurance, together with full copies of all documents shown as exceptions therein (the "Title Commitment"). Within Thirty (30) days after the Effective Date, Seller shall provide Buyer with copies of any title policies, commitments or certifications in the possession or control of Seller about which it has actual knowledge. Buyer shall have Thirty (30) days after the date it receives the Title Commitment to disapprove, by written notice delivered to Seller, any of the exceptions to title shown therein and the form and content of the Title Commitment. If Buyer does not so disapprove the Title Commitment within Thirty (30) days after its receipt thereof, then Buyer shall be deemed to have approved such exceptions and such Title Commitment. Seller shall have the right, but not the obligation, to commit to remove all of the exceptions disapproved by Buyer and to cure all of Buyer's title objections pursuant to this Section 2.2 by delivering written notice of such commitment to Buyer within ten (10) days after receipt by Seller of Buyer's notice of disapproval, in which case Seller shall be obligated to use its reasonable efforts to remove such exceptions and to cure all of Buyer's title objections no later than sixty (60) days from delivery of Seller's notice that it shall attempt to remove such exceptions. If Seller fails to remove or cure the same as and when required hereby, then Buyer may, at Buyer's sole option: (1) terminate this Agreement, in which event the provisions of Section 3.2 below shall apply, or (ii) waive the disapproval of such exception, in which case such exceptions shall be deemed approved, in either case by giving written notice of such election to Seller within fifteen (15) days thereafter. Notwithstanding the foregoing, Seller shall remove, by the Closing Date (utilizing proceeds received from Buyer at Closing, if it so elects), all monetary encumbrances on the Property (other than liens for current real property taxes which are not yet due and payable) and such monetary encumbrances shall not be Permitted Exceptions under any circumstances.
- 2.3 **Survey.** Buyer may arrange for the preparation of a survey of the Property (the "Survey"), which may be certified to Buyer and the Title Company. Buyer shall pay the cost of the Survey. Seller shall at no additional cost to Seller cooperate with Buyer and the surveyor to enable the surveyor to prepare the Survey, including, without limitation, providing the surveyor and Buyer with any and all

surveys of the Property in the possession or control of Seller about which it has actual knowledge and permitting the surveyor to have access to the Property. Buyer shall have five (5) days after receipt of the Survey (should it elect to obtain such survey) to approve or disapprove of any objections to the form and content of the survey or any survey related exceptions and any exceptions that the Title Company indicates will appear on the Title Policy because of the Survey. Any such exceptions or survey matters not disapproved by Buyer in writing within said five (5) day period shall be deemed approved. Seller shall have the right, but not the obligation, to commit to remove any such exceptions disapproved by Buyer or objections to the Survey pursuant to this Section 2.3 within ten (10) days after receipt by Seller of Buyer's notice of disapproval, in which case Seller shall be obligated to use its reasonable efforts to remove such exceptions no later than sixty (60) days from the Seller's notice it shall attempt to remove such exception(s). If Seller fails or refuses to commit to remove a disapproved exception within such sixty (60) day period or fails to remove such objections or exceptions as and when required hereby, Buyer may, at Buyer's sole option: (i) terminate this Agreement, in which event the provisions of Sections 3.2 shall apply, or (ii) waive the disapproval of such exception, in which case such exception or objections shall be deemed approved, in either case by giving written notice of such election to Seller within five (5) days thereafter. If Buyer fails to provide written notice of termination, then Buyer shall be deemed to have elected to waive the disapproval of such exception.

- 2.4 **Supplements.** Notwithstanding anything to the contrary contained herein, within five (5) business days following receipt by Buyer of any supplement to the Title Commitment or any supplement to the Survey, Buyer may approve or disapprove by written notice delivered to Seller any exceptions or items shown on such supplement to the Title Commitment or supplement to the Survey. Any such exceptions not disapproved by Buyer in writing within said five (5) business day period shall be deemed approved. Seller shall have the right, but not the obligation, to commit to remove any such objections disapproved by Buyer within five (5) days after receipt by Seller of Buyer's notice of disapproval, in which case Seller shall be obligated to use its best efforts to remove such exception no later than five (5) business days prior to the Closing Date. If Seller fails or refuses to commit to remove any such disapproved exception or fails to remove such objection within the time required herein, Buyer may, at Buyer's sole option: (i) terminate this Agreement, in which event the provisions of Section 3.2 shall apply, or (ii) waive the disapproval of such exception or objection, in which case such exception or objection shall be deemed approved, in either case by giving written notice of such election to Seller within ten (10) days thereafter. If Buyer fails to waive, in writing, any such exception or objection as provided above, then Buyer shall be deemed to have elected to terminate this Agreement.

- 2.5 **Title Policy.** An ALTA Owner's, and a Lender's Title Insurance Policy should Buyer elect to finance its purchase, (the "Title Policy") shall be issued by the Title Company at the closing. The cost of the Owner's Title Policy and Lender's Title Policy (if applicable) shall be paid by Buyer. The Owner's Title Policy shall be in the amount of Five Hundred Thousand Dollars (\$500,000.00) for the protection of Buyer as fee owner of the Property subject only to the Permitted

Exceptions. The title policy shall be acceptable to Buyer's lender if applicable. Such Title Policy shall include the following endorsements (or their local equivalents):

- (1) In the event Buyer obtains the Survey and furnishes it to the Title Company, an endorsement deleting the standard exceptions including exceptions for survey matters, and providing extended coverage;
- (2) Any other endorsements which are offered by Seller and accepted by Buyer as the cure for any other title matter which is not a Permitted Exception; and
- (3) At Buyer's expense, such further endorsements as may be available and requested by Buyer at least ten (10) days prior to the Closing Date.

3. APPROVALS AND CONDITIONS

3.1 Conditions. The obligations of Buyer under this Agreement shall be subject to and contingent upon the satisfaction of the following conditions within the time periods specified below.

- (1) Approval of Title. Buyer shall have approved the condition of title pursuant to Sections 2.2 through 2.5 above;
- (2) Title Policy. Buyer and Buyer's lender (if applicable) shall have received the title insurance described in Section 2.5 above;
- (3) Inspection of Property and Operations. Buyer shall have approved, in Buyer's sole, absolute and subjective discretion, the physical condition and suitability of the Property for Buyer's specific purposes (collectively the "Due Diligence Items"), and satisfied itself, in its sole, absolute and subjective discretion, as to the feasibility of acquiring, owning and operating the Property, on or before 5:00 P.M., Eastern Time, on the date Ninety (90) days from the Effective Date (the "Inspection Period"), unless extended by mutual written agreement. During such Inspection Period, Buyer shall have access to the Property for the purpose of making inspections, investigations, and tests thereof. Within ten (10) days after the Effective Date, Seller shall provide Buyer with copies of any geologic, wetlands, environmental or other property conditions reports in the possession or control of Seller about which it has actual knowledge. Buyer shall comply with all applicable laws, rules and regulations in connection with its inspections and/or investigations of the Property and all matters related thereto. Any and all costs and expenses arising out of or connected with Buyer's inspection/investigation of the Property and all matters related thereto shall be borne by Buyer. Buyer shall restore the Property, as nearly as practicable, to its original condition subsequent to the completion of all of Buyer's investigations or inspections of the Property or upon the conclusion of the Inspection Period, whichever shall first

occur. Buyer shall indemnify and hold Seller harmless against any and all liability, including without limitation, damage to the Property, liability for mechanic's liens or personal injury, arising out of or in connection with Buyer's inspections and investigations of the Property and all matters related thereto and the work of its agents, representatives or consultants in connection therewith, which indemnity shall also include the payment of reasonable attorneys' fees. It is expressly agreed that the foregoing indemnity shall be deemed to survive the closing or the termination of this Agreement.

If Buyer fails to deliver written approval of the Property inspection to Seller prior to the end of the Inspection Period, then Buyer shall be deemed to have disapproved the findings of such inspections and investigations and the condition of the Property, in which event Section 3.2 below shall apply.

- (4) Buyer shall have obtained a mortgage commitment to assist in the financing of its purchase of the Property, subject to such terms and conditions as are acceptable to Buyer in its discretion. Buyer shall be deemed to have waived this condition unless it notifies Seller in writing not later than three (3) months from the Effective Date unless extended by mutual agreement;
- (5) At Closing, Seller shall deliver full possession of the Property to Buyer, free of all tenants, parties in possession by lease or otherwise. At such Closing, the Property shall not be in violation of any applicable law or regulation of any governmental authority. The physical condition of the Property at such closing shall be in substantially similar condition as compared to such condition as of the close of the Inspection Period. The effect of this subparagraph shall be limited to creating a condition for Buyer's obligation to close. All due diligence investigations shall be performed by Buyer at the expense of and to the satisfaction of Buyer, and Buyer shall solely rely on its investigations. This subparagraph shall not constitute any type of representation or warranty on behalf of Seller.

3.2 **Consequences of Termination of this Agreement.** If this Agreement is terminated by Buyer pursuant to Sections 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 6.7 or any other section specifically referring to this Section 3.2, then the following shall occur: (i) Buyer shall return to Seller all documents delivered by Seller to Buyer pursuant to this Agreement; (ii) Buyer shall deliver to Seller copies of all studies, tests, surveys and engineering reports conducted on the Property; and (iii) if this Agreement has been terminated within ninety (90) days from the Effective Date, Seller shall promptly cause the return of the Earnest Money Deposit to Buyer. Upon completion of all of the foregoing, this Agreement shall be deemed terminated and neither party shall have any further rights against nor obligations to the other hereunder or in connection herewith, except to the extent that any provision of this Agreement specifically states its survives termination. Notwithstanding anything to the contrary, the Earnest Money Deposits become non-refundable on the date that is Ninety (90) days from the Effective Date.

4. **WARRANTIES.**

4.1 **Representations and Warranties of Buyer.** Buyer represents and warrants for the benefit of Seller that the following facts are true and correct as of the execution of this Agreement and shall be true and correct as of the Closing Date.

- (1) **Binding Effect of Documents.** This Agreement and the other documents to be executed by Buyer hereunder, upon execution and delivery thereof by Buyer, will have been duly entered into by Buyer, and will constitute legal, valid and binding obligations of Buyer, enforceable against Buyer in accordance with their terms. Neither this Agreement nor anything provided to be done under this Agreement violates or shall violate any contract, document, understanding, agreement or instrument to which Buyer is a party or by which it is bound.

All warranties and representations of Buyer set forth in this Agreement shall survive the Closing Date.

4.2 **Representations and Warranties of Seller.** Seller represents and warrants for the benefit of Buyer and Buyer's successors and assigns that the following facts are true and correct as of the execution of this Agreement and shall be true and correct as of the Closing Date and shall survive the Closing Date.

- (1) **Organization.** Seller is a limited liability company duly organized and validly existing under the laws of the State of Maine with full power to enter into this Agreement;
- (2) **Authority.** The execution and delivery of this Agreement and the consummation of the transactions contemplated hereby have been duly authorized and approved by all requisite action of Seller, and no other authorizations or approvals, whether of governmental bodies or otherwise, are necessary in order to enable Seller to enter into or to comply with the terms of this Agreement;
- (3) **Binding Effect of Documents.** This Agreement and the other documents to be executed by Seller hereunder, upon execution and delivery thereof by Seller, will have been duly entered into by Seller, and will constitute legal, valid and binding obligations of Seller, enforceable against Seller in accordance with their terms;
- (4) **Condemnation Proceedings.** Seller has received no written notice of any condemnation proceedings, eminent domain proceedings or similar actions or proceedings against the Property; and
- (5) **Foreign Person.** Seller is not a foreign person and is a "United States Person" as defined in Section 7701(a)(30) of the Internal Revenue Code, as amended.

All warranties and representations of Seller set forth in this Agreement shall survive the Closing Date.

- 4.3 **No Warranties or Representations.** Except as expressly stated in this Agreement, Buyer agrees that the Property is being conveyed to Buyer in "As-Is, Where-Is" condition, and that Seller has not made, does not make and specifically negates and disclaims any representations, warranties, promises, covenants, or agreements of any kind or character, whether express or implied, oral or written, past, present or future, of, as to, concerning or with respect to the value, nature, quality or condition of the Property, including but not limited to any environmental conditions and the suitability of the Property for any and all activities and uses which Buyer may conduct thereon. This Section 4.3 shall expressly survive the Closing.
- 4.4 **Documents Provided by Seller.** Buyer agrees that any information, documentation, studies, permits and/or analysis which are in Seller's possession that pertain to the Property, including but not limited to, those items referred to in Sections 2.2, 2.3 and 3.1(3) which Seller makes available to Buyer are provided for Buyer's convenience only and Seller makes no representation or warranty whatsoever as to the accuracy or the completeness thereof or information contained therein or as to the condition of the Property or any rights related to the possible development of the Property.
- 4.5 **Confidentiality.** Buyer agrees that all written materials obtained by Buyer from Seller with respect to the Property and all information obtained by Buyer from sources other than Seller with respect to the Property that is not already public information or that is obtained pursuant to any agreement of confidentiality shall be held in strict confidence and shall not be disclosed to any third party except in connection with the transaction specifically contemplated by this Agreement (and then only to the extent necessary to accomplish the transaction set forth herein) to Buyer's employees, agents, contractors, subcontractors, consultants, attorneys, appraisers and other representatives in which event Buyer shall direct such recipient of such information to maintain the confidentiality of such information. Further Buyer shall be permitted to disclose such information to the extent required by law or court order provided that Buyer shall notify Seller prior to any such disclosure to allow Seller to obtain a protective order or similar protection.

5. ADDITIONAL AGREEMENTS OF BUYER AND SELLER

- 5.1 **Right of Entry.** Buyer and its representatives, employees, contractors, agents and designees shall have the right to enter upon the Property upon twenty-four (24) hours' advance notice, at Buyer's sole cost and expense, prior to the Closing Date, in order to inspect and investigate the Property or its environmental condition and, subject to Section 3.1(3) hereinbefore, to conduct any and all tests and studies Buyer deems necessary or convenient. Buyer shall indemnify Seller against and hold Seller and the Property free and harmless from any loss or damage to the Property or third persons arising out of any such entry, testing, and investigation by Buyer or its representatives, employees, agents, contractors, or designees. Should Buyer conduct or cause environmental studies to be

conducted, Buyer shall cause all residue or product relating thereto to be disposed of in full compliance with applicable law. Buyer shall restore the Property, as nearly as practical, to its original condition subsequent to the completion of all of Buyer's investigations or inspections of the Property or upon the conclusion of the Inspection Period, whichever shall first occur.

- 5.2 **Representations and Warranties.** Neither Buyer nor Seller will cause any action to be taken that would cause any of the representations or warranties made by such party in this Agreement to be false as of the Closing Date. Each party shall promptly notify the other party in writing of the occurrence of any event or condition which occurs prior to the Closing Date which causes a change in the facts related to the truth of any of the representations or warranties made in Article 4 of this Agreement.

6. **CLOSING DATE.**

- 6.1 **Closing.** The date of closing ("**Closing Date**") shall be no later than twenty four (24) months from the Effective Date.

- 6.2 **Buyer's Obligations.** On or before the Closing Date, Buyer shall deliver to Seller:

- (1) The balance of the Purchase Price in immediately available funds;
- (2) All costs and fees required to be paid by Buyer pursuant to Section 6.5 below;
- (3) Such other documents and instruments as may be reasonably requested by the Seller in order to consummate this transaction; and
- (4) An executed Closing Statement.

- 6.3 **Seller's Obligations.** On or before the Closing Date, Seller shall deliver to Buyer all of the following:

- (1) quitclaim with covenant deed, in form and substance acceptable to Buyer's counsel, executed and acknowledged by Seller, conveying the Property to Buyer, in its AS-IS condition, free of all liens and encumbrances except as are approved or deemed approved by Buyer under this Agreement;
- (2) An executed Maine Real Estate Transfer Tax Form;
- (3) A copy of the resolution of the Members and Managers of Seller authorizing the execution, delivery and performance by Seller of this Agreement, and designating one or more officers or representatives to execute documents in Seller's name in connection herewith, certified as correct and complete by the Secretary of the Seller or Registered Agent of Seller, together with an incumbency certificate for each person executing documents on behalf of Seller (or other evidence of authority acceptable to

Buyer's counsel and Title Company and, if applicable, lender,) a good standing certificate for each entity making up Seller, certified by the Maine Secretary of State, a Certificate of Formation or Articles of Organization, as applicable, for each entity making up Seller, certified by the Maine Secretary of State, and a true copy of the Operating Agreement or Limited Liability Agreement, as applicable, of each entity making up Seller;

- (4) A Non-Foreign Affidavit executed by Seller in the standard form;
- (5) A standard Seller's Affidavit or other affidavit required by the Title Company to issue a title policy to Buyer and Buyer's lender, if applicable, without exception as to parties in possession and as to liens;
- (6) An affidavit certifying that Seller is a Maine "resident" for purposes of Maine's Real Estate Withholding Tax; and
- (7) Such other documents and instruments as may be required herein or by the Buyer in order to consummate this transaction and issue the Title Policy to Buyer, including a 1099 Form and W-9 Form.

6.4 **Prorations and Adjustments.** Seller shall be responsible for and pay all accrued expenses with respect to the Property accruing up to 11:59 P.M. on the day prior to the Closing Date (the "**Adjustment Date**") and shall be entitled to receive and retain all revenue from the Property accruing up to such time. On the Closing Date, the following adjustments and apportionments shall be made in cash as of the Closing Date;

- i. Any applicable business park fees or assessments shall be provided; and
- ii. Real Estate Taxes shall be prorated. *Buyer acknowledges that all or some of the Property is enrolled in the Tree Growth Tax Program and Buyer assumes any and all risk of penalty for any withdrawal from said tax program by Buyer.*

6.5 **Closing Costs.**

- (1) Seller shall pay:
 - i. Preparation charges for Seller's documents;
 - ii. The cost of any Seller's other obligations under this Agreement;
 - iii. Seller's share (50%) of the transfer tax due to the State of Maine; and
 - iv. Recording costs relating to discharging any liens of record.

- (2) Buyer shall pay:
- i. Recording costs for the deed;
 - ii. The premium for its requested Title Insurance Policy, including that of its lender, if applicable, together with any title search fee;
 - iii. The cost of any of Buyer's other obligations under this Agreement; and
 - iv. Buyer's share (50%) of the transfer tax due to the State of Maine.
- (c) Withholding: Seller acknowledges it has been informed that Maine law requires a two and one-half percent (2.50%) real estate tax withholding as to non-resident sellers as defined in such law. In the event Seller fails to submit an affidavit stating that it qualifies as a "resident" for the purposes of such law, or otherwise obtains an exemption from the State Tax Assessor, Buyer shall withhold two and one-half percent (2.50%) of the Purchase Price and cause such amount to be remitted to the State Tax Assessor as required by law.

6.6 **Additional Conditions to Buyer's Obligation to Purchase the Property.** In addition to the conditions set forth in Section 3.1, Buyer's obligation to purchase the Property from Seller pursuant to this Agreement is subject to and conditioned upon the fulfillment of each and all of the following conditions precedent, unless waived in writing by Buyer, in Buyer's sole and absolute discretion:

- (1) Each and every representation and warranty of Seller contained in this Agreement shall be true and correct in all material respects on the Closing Date; and
- (2) The Title Company shall be unconditionally obligated and committed to issuing the Title Policy to Buyer in the full amount of the Purchase Price, and to Buyer's Lender for its loan amount, if applicable, showing fee title vested as Buyer may instruct, and for Lender's policy, if applicable, showing the first priority mortgage, subject only to the Permitted Exceptions.

6.7 **Additional Conditions to Seller's Obligation to Convey the Property.** Seller's obligation to convey the Property to Buyer pursuant to this Agreement is subject to and conditioned upon the fulfillment of each and all of the following conditions precedent, unless waived in writing by Seller: (a) each and every representation and warranty of Buyer contained in this Agreement shall be true and correct in all material respects on the Closing Date; and (b) Buyer shall have performed the requirements and delivered the documents described in Section 6.2 hereof on or prior to the Closing Date.

7. **REMEDIES**

- 7.1 **Remedies.** If Seller defaults on a material term under this Agreement, then Buyer may, at Buyer's option, terminate the Agreement and receive a return of its Earnest Money Deposit or pursue a claim for specific performance of this Agreement. If Buyer defaults under this Agreement, Seller's sole and exclusive remedy shall be as provided in Section 7.2.

Notwithstanding the foregoing, the Earnest Money Deposits are non-refundable unless (i) Buyer terminates this Agreement within Ninety (90) days from the Effective Date or (ii) Buyer is not in default under this Agreement, Buyer is willing and able to perform all of Buyer's obligations, and Seller refuses to convey title by Quitclaim with Covenant Deed to Buyer in accordance with the terms of this Agreement.

- 7.2 **Liquidated Damages.** BUYER AND SELLER ACKNOWLEDGE AND AGREE THAT: (a) IT WOULD BE IMPRACTICAL OR EXTREMELY DIFFICULT TO DETERMINE SELLER'S ACTUAL DAMAGES IN THE EVENT OF BUYER'S DEFAULT UNDER THIS AGREEMENT, AND (b) TAKING INTO ACCOUNT ALL OF THE CIRCUMSTANCES EXISTING ON THE DATE OF THIS AGREEMENT, THE AMOUNT OF THE EARNEST MONEY DEPOSIT IS A REASONABLE ESTIMATE OF SELLER'S ACTUAL DAMAGES IN SUCH EVENT. CONSEQUENTLY, IN THE EVENT OF BUYER'S DEFAULT UNDER THIS AGREEMENT, SELLER'S SOLE AND EXCLUSIVE REMEDY SHALL BE TO TERMINATE THIS AGREEMENT AND RETAIN THE EARNEST MONEY DEPOSIT. Notwithstanding the foregoing, Seller shall also have the right to recover its attorney's fees and costs as set forth in Section 10.4 below.

8. **EMINENT DOMAIN**

- 8.1 **Election to Terminate.** If on or before the Closing Date either: (a) all or a material part of the Property is taken or threatened to be taken by condemnation or other power of eminent domain, Buyer may, by written notice given to Seller within thirty (30) days after Buyer shall have notice of such taking or threatened taking (and the Closing Date shall be extended if necessary to allow Buyer said thirty (30) day period) elect, in Buyer's sole and absolute discretion, to terminate this Agreement or proceed with the transaction contemplated hereby in accordance with the terms and conditions set forth herein. If Buyer fails to deliver written notice to Seller of its election to terminate this Agreement, then Buyer shall be deemed to have elected to proceed with this Agreement, whereupon Section 8.2 below shall apply.

8.2 **Election Not to Terminate.**

- (1) If on or before the Closing Date any part of the Property is taken or threatened to be taken by condemnation or other power of eminent domain but this Agreement is not terminated by Buyer pursuant to Section 8.1 above, then the Purchase Price shall be reduced by an amount equal to the sum, if any, that was paid to Seller for such taking and Seller shall assign, transfer and set over to Buyer all of Seller's right, title and interest in and

to any awards that may in the future be made for such taking or threatened taking.

9. **INDEMNIFICATION.**

- 9.1 **Breach of Warranty and Representation.** Each party shall hold harmless, indemnify, protect and defend the other from and against any and all claims, liability and losses, and expenses related thereto (including reasonable attorneys' fees), which the indemnified party incurs by reason of a breach of any of the warranties, representations or covenants of the indemnifying party contained in Sections 4.1 and 4.2.

10. **MISCELLANEOUS PROVISIONS.**

- 10.1 **Brokerage Commissions.** Seller hereby represents and warrants to Buyer that Seller has made no statement or representation nor entered into any agreement with a broker, salesman or finder in connection with the transactions contemplated by this Agreement, except with NAI the Dunham Group, agreed to by Seller. Buyer hereby represents and warrants to Seller that Buyer has made no statement or representation nor entered into any agreement with a broker, salesman or finder in connection with the transactions contemplated by this Agreement. In the event of a claim for any brokers' or finders' fees or commissions in connection with the negotiation or execution of this Agreement or the transactions contemplated hereby, Seller shall indemnify, hold harmless and defend Buyer from and against such claim if such claim shall be based upon any statement or representation or agreement alleged to have been made by Seller, and Buyer shall indemnify, hold harmless and defend Seller from and against such claim if such claim shall be based upon any statement, representation or agreement alleged to have been made by Buyer.

- 10.2 **Notices.** Any notice, demand, approval, consent or other communication required or desired to be given under this Agreement in writing shall be directed to the party involved at the address indicated below:

Seller: Port of Auburn, LLC
Attn: Ford S. Reiche, Manager
54 Bartol Island Road
Freeport, Maine 04032

Copy to: Charles Katz-Leavy, Esq.
Jensen Baird Gardner & Henry
10 Free Street
Portland, Maine 04101

Buyer: Dirigo Solar, LLC
Attn: Robert E. Cleaves, IV
100 Middle Street
P.O. Box 9729
Portland, Maine 04104-5029

With copy to: Thomas G. Leahy, Esq.
Monaghan Leahy, LLP
95 Exchange Street
P.O. Box 7046
Portland, Maine 04112-7046

Any notice, demand, approval, consent or other communication may be given by personal service, fax (with hard copy to follow immediately), recognized overnight air courier or by mail. Any notice, demand, approval, consent or other communication given (a) personally shall be deemed delivered upon receipt, (b) by fax shall be deemed delivered upon being transmitted and received on the facsimile machine of the addressee, provided a "hard copy" has been deposited in the U.S. mail within twenty-four (24) hours of transmission by fax, (c) by recognized air courier, freight prepaid, shall be deemed delivered on the next business day, and (d) by mail shall be deemed to have been given when two (2) business days have elapsed from the date it was deposited in the United States mail, certified and postage prepaid, addressed to the party to be served at said address or at such other address of which that party may have given notice under the provisions of this Section 10.2.

- 10.3 **Modification.** This Agreement may not be modified or amended except by a written agreement executed by Seller and Buyer, and only to the extent set forth therein.
- 10.4 **Attorneys' Fees.** If any party to this Agreement shall bring any action or proceeding for any relief against the other, declaratory or otherwise, arising out of this Agreement, the losing party shall pay to the prevailing party a reasonable sum for attorneys' fees and costs incurred in bringing or defending such action or proceeding and/or enforcing any judgment granted therein, all of which shall be deemed to have accrued upon the commencement of such action or proceeding and shall be paid whether or not such action or proceeding is prosecuted to final judgment. Any judgment or order entered in such action or proceeding shall contain a specific provision providing for the recovery of attorneys' fees and costs, separate from the judgment, incurred in enforcing such judgment. The prevailing party shall be determined by the trier of fact based upon an assessment of which party's major arguments or positions taken in the proceedings could fairly be said to have prevailed over the other party's major arguments or positions on major disputed issues.
- 10.5 **Form of Documents.** All instruments and documents to be executed and delivered under this Agreement by any party to any other party shall be in form reasonably satisfactory to the other party.

- 10.6 **Successors and Assigns.** This Agreement shall be binding upon, and shall inure to the benefit of, the successors and assigns of the parties. Buyer may not assign its rights or duties under this Agreement without the prior written consent of Seller; provided however, the Buyer may assign its rights and duties under this Agreement to any corporation, limited liability company, or entity, in which Buyer owns a majority interest, without any consent required from Seller.
- 10.7 **Duplicate Counterparts.** This Agreement may be executed in duplicate counterparts, all of which together shall constitute a single instrument, and each of which shall be deemed an original of this Agreement for all purposes, notwithstanding that less than all signatures appear on any one counterpart.
- 10.8 **Section Headings.** The various section headings in this Agreement are inserted for convenience of reference only, and shall not affect the meaning or interpretation of this Agreement or any provision hereof.
- 10.9 **Exhibits.** All Exhibits attached to, and to which reference is made in, this Agreement are incorporated into, and shall be deemed a part of, this Agreement.
- 10.10 **Entire Agreement.** This Agreement is the entire agreement of Seller and Buyer with respect to the Property and the transaction contemplated hereby, containing all of the terms and conditions to which Seller and Buyer have agreed. This Agreement supersedes and replaces entirely all previous oral and written understandings, if any, of Seller and Buyer respecting the Property and the transaction contemplated hereby.
- 10.11 **Time.** Time is of the essence in this Agreement and each and every provision of this Agreement.
- 10.12 **Governing Law.** This Agreement shall be governed by the laws of the State of Maine.
- 10.13 **Severability.** If any paragraph, section, sentence, clause or phrase contained in this Agreement becomes or is held by any court of competent jurisdiction to be illegal, null or void or against public policy, the remaining paragraphs, sections, sentences, clauses or phrases contained in this Agreement shall not be affected thereby.
- 10.14 **Ambiguities Not to be Construed Against Drafting Party.** The doctrine that any ambiguity contained in a contract shall be construed against the party whose counsel has drafted the contract is expressly waived by each of the parties hereto with respect to this Agreement.
- 10.15 **Signers' Warranty.** Each individual executing and delivering this Agreement on behalf of a corporate party hereby warrants and represents to the other party that he or she has been duly authorized and empowered to do so.


- 10.16 **Facsimile Signatures.** The parties agree that facsimile signatures hereto will be accepted as original signatures hereto.
- 10.17 **I.R.C. Section 1031 Exchange.** Seller or Buyer may, at Closing, elect to effectuate a like-kind exchange of the Property, with respect to all or a portion of the Purchase Price, with a view toward such exchange qualifying for tax deferred treatment under Section 1031 of the Internal Revenue Code, as amended (the "Code") (the "1031 Election"), by notifying Buyer (or Seller, as the case may be) in writing, at or prior to the Closing, that it is making the 1031 Election. In the event of a 1031 Election, Seller (or Buyer, as the case may be) may, in accordance with the Treasury Department regulations, assign this Agreement to a qualified exchange intermediary ("Qualified Intermediary") of Seller's (or Buyer's, as the case may be) choice to effectuate the exchange. Seller and Buyer agree to cooperate with each other in qualifying for such like-kind exchange and in accordance with and subject to the terms, provisions, and limitations of this Agreement, including, but not limited to, the terms, provisions and limitations of this Section 10.17; provided, however, the party being asked to cooperation shall not have any responsibility, obligation or liability with respect to any such transaction or the effectiveness of the same; and provided, further, the exchange does not delay or postpone the Closing Date. The parties agree to execute such documents and instruments as are reasonably necessary to implement such an exchange, provided such documents and instruments are in form and substance reasonably acceptable to the party executing the same. In no event, however, shall Buyer's (or Seller's, as the case may be) obligations under any other provision of this Agreement be diminished as a result of the 1031 Election or the effectuation of the like-kind exchange contemplated thereby. Similarly, Buyer's (or Seller's, as the case may be) rights under any other provision of this Agreement shall not be diminished nor shall Buyer's (or Seller's, as the case may be) obligations under this Agreement be increased as a result of such election of the effectuation of the like-kind exchange contemplated thereby. Buyer's (or Seller's, as the case may be) sole obligation as to the like-kind exchange shall be to cooperate in good faith with Seller's (or Buyer's as the case may be) efforts to effectuate such an exchange in accordance with and subject to the terms, provisions and limitations of this Section 10.17 and at no cost or expense to Buyer (or Seller, as the case may be).
- 10.18 **Risk of Loss.** All risk of loss with respect to the Property shall remain with Seller pending closing.

[NO FURTHER TEXT ON THIS PAGE]

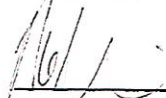
IN WITNESS WHEREOF, this Agreement is executed by the parties on the dates set next to their signatures below, and the Effective Date of this Agreement shall be the last date signed by a party as set forth below.

WITNESS:


SELLER:
PORT OF AUBURN, LLC _____


By: Ford S. Reiche
Its: Manager
Date signed: 4/25/19

WITNESS:


NICHOLAS MAZUROSKI

BUYER:
DIRIGO SOLAR, LLC


By: Robert E. Cleaves, IV
Its: Manager
Date signed:

Lewiston and Auburn Railroad Company
P.O. Box 501
Auburn, ME 04212-0501

December 17, 2019

Robert Cleaves
Dirigo Solar
622 Congress Street, Suite 202
Portland, ME 04101

Re: Letter of Intent

Dear Bob:

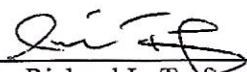
I am pleased to provide this "letter of intent" to Dirigo Solar indicating Lewiston and Auburn Railroad Company's (LARR) intention to lease to Dirigo Solar or its assignee ten (10) acres, more or less, southerly of the intersection of its Rangeley Branch right of way with the St. Lawrence & Atlantic Railroad right of way in the Town of Poland, Maine. I understand that the lease term will be for an initial thirty (30) year term with two (2) separate options to extend for an additional ten (10) years each. The rent has been discussed at [REDACTED] per year with [REDACTED] inflation adjustment. LARR will require a modest increase to that proposed rent. The lease agreement will provide that the tenant shall be responsible for real estate taxes assessed against this parcel.

I understand that you will provide both a draft lease agreement for our review as well as a detailed site plan showing your development's setback from our right of way. Once I have reviewed these items I am confident that we can reach final agreement in this matter.

Thanks for meeting with LARR's Board of Directors in Auburn this morning.

Very truly yours,

Lewiston and Auburn Railroad Company


By: Richard L. Trafton, its President


SHORT FORM QUITCLAIM WITH COVENANT DEED

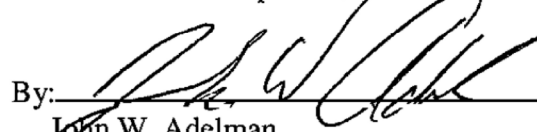
MB Investment Properties, LLC, a Maine limited liability company ("Grantor") FOR CONSIDERATION PAID, grants to **Lewiston and Auburn Railroad Company**, a Maine corporation with a mailing address of 415 Lisbon Street, Suite 400, Lewiston, Maine 04240 ("Grantee"), with Quitclaim Covenant, certain real property, together with any improvements thereon, located in the Town of Poland, Androscoggin County, Maine and more particularly described on Exhibit A attached hereto and made a part hereof. The property is conveyed subject to all easements, covenants, restrictions, agreements of record, and real estate taxes not yet due and payable, all as of the date hereof and to the extent applicable.

IN WITNESS WHEREOF, MB Investment Properties, LLC has caused this instrument to be executed by John W. Adelman, its duly authorized Sole Manager as of the 24th day of October, 2012.

WITNESS:

MB Investment Properties, LLC

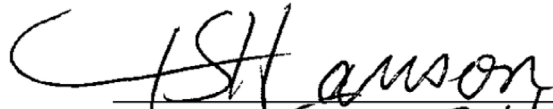

Tom S. Hanson

By: 
John W. Adelman
Its Sole Manager

State of Maine
County of Cumberland

October 24, 2012

PERSONALLY APPEARED before me the above-named John W. Adelman, Sole Manager of MB Investment Properties, LLC as aforesaid, and acknowledged the foregoing instrument to be his free act and deed in said capacity and the free act and deed of said limited liability company.


Print Name: Tom S. Hanson
~~Notary Public~~ Attorney N/A
Notary Commission Expires: N/A

MAINE REAL ESTATE
TRANSFER TAX PAID

Exhibit A

A certain lot or parcel of land situated on the northeasterly side of the Saint Lawrence and Atlantic Railroad and northerly of the former Rangeley Branch of the Portland and Rumford Falls Railroad formerly owned by Maine Central Railroad Company and now owned by the Lewiston and Auburn Railroad Company, in the Town of Poland, County of Androscoggin and State of Maine, being a triangular shaped parcel more particularly bounded and described as follows:

Beginning at a point where the northerly bound of land now or formerly owned by the Lewiston & Auburn Railroad Company (Grantee herein) by deed of MB Investment Properties, LLC (Grantor herein) dated December 8, 2011 and recorded at the Androscoggin Registry of Deeds in Book 8297, Page 127, being Parcel 1 within said deed, intersects with the northeasterly bound of the Saint Lawrence and Atlantic Railroad;

Thence N 39°24'53" W by and along the northeasterly bound of the Saint Lawrence and Atlantic Railroad, a distance of 450.00 feet to a point;

Thence S 56°03'47" E passing through land of MB Investment Properties, LLC by deed of Benjamin Hawkes and Timothy Morse, Trustees of Dancing Bear Realty Trust dated February 17, 2006 and recorded at said Registry in Book 6674, Page 64 and continuing on the same course through other land of MB Investment Properties, LLC by deed of No. 224, LLC dated February 17, 2006 and recorded at said Registry in Book 6674, Page 60, a total distance of 584.04 feet to a point 5.44 feet easterly of a 5/8" iron rebar found 12 inches high with cap #1278, said point being on the northerly bound of said land of the Lewiston & Auburn Railroad Company;

Thence S 83°48'01" W by and along land of the Lewiston & Auburn Railroad Company a distance of 200.00 feet to the point of beginning.

The above described parcel containing 37,648 square feet or 0.86 acres, more or less. Bearings are based on Grid North NAD 1983 datum.

ANDROSCOGGIN COUNTY
TINA M CHOUINARD
REGISTER OF DEEDS

NOT QUITCLAIM DEED NOT
AN (with covenant) AN
OFFICIAL OFFICIAL
COPY COPY

BAYSHORE CONCRETE PRODUCTS/MAINE, INC., a Maine corporation with a

principal place of business in Auburn, County of Androscoggin and State of Maine, for
consideration paid, grants to PORT OF AUBURN, LLC, a Maine limited liability company with
a principal place of business in Auburn, County of Androscoggin and State of Maine, with
QUITCLAIM COVENANTS, that certain lot or parcel of land with the buildings and improvements
thereon, situated in the City of Auburn and Town of Poland, Androscoggin County, Maine being
more particularly bounded and described in Schedule A attached hereto and incorporated herein.

IN WITNESS WHEREOF, Bayshore Concrete Products/Maine, Inc. has caused this
instrument to be signed in its name by John E. Dobbs, its President, thereunto duly authorized this
22nd day of July, 2005.

WITNESS:

BAYSHORE CONCRETE PRODUCTS/MAINE, INC.

By:

John E. Dobbs
John E. Dobbs
Its President

STATE OF VIRGINIA

City of Northampton, SS

JULY 22, 2005

Personally appeared the above-named John E. Dobbs and acknowledged the foregoing
instrument to be his free act and deed, in his said capacity, and the free act and deed of said
Bayshore Concrete Products/Maine, Inc.

Before me,

Charles E. Aigner
Notary Public/Attorney at Law

Print name CHARLES E. AIGNER III
NOTARY PUBLIC

N O T Schedule A N O T
 A N (Port of Auburn, LLC) A N
 O F F I C I A L O F F I C I A L

A certain lot or Parcel of land with the buildings, improvements and fixtures thereon, situated in the City of Auburn and Town of Poland, Androscoggin County, Maine bounded and described as follows: N O T N O T

A N A N

Beginning At An Iron rod set with surveyor's cap #2250 on the apparent northwesterly sideline of the Lewiston & Auburn Railroad, said iron rod set being North 04° 17' 09" East seventy-one and thirty-four hundredths (71.34) feet, as measured across said railroad right-of-way, from an iron rod found with surveyor's cap #1206, located at the northwesterly corner of land now or formerly of Dead River Company evidenced by deed recorded in the Androscoggin County Registry of Deeds in Book 2933, Page 211; thence South 71° 58' 33" West along the apparent northwesterly sideline of said Lewiston & Auburn Railroad one thousand four hundred fifty-six and sixty-one hundredths (1,456.61) feet to an iron rod set; thence southwesterly continuing along said apparent northwesterly sideline of said Lewiston & Auburn Railroad by a tangent one thousand one hundred seventy-eight and ninety-two hundredths (1,178.92) foot radius curve to the left an arc length of two hundred thirty-three and twelve hundredths (233.12) feet to an iron rod set; thence southwesterly continuing along the apparent northwesterly sideline of said Lewiston & Auburn Railroad by a tangent seven hundred eighty-six and two hundredths (786.02) foot radius curve to the right an arc length of seven hundred seventy-two and five hundredths (772.05) feet to an iron rod found on the northeasterly line of land now or formerly of Lewiston & Auburn Railroad Company; thence North 34° 56' 12" West along said northeasterly line of land now or formerly of Lewiston & Auburn Railroad Company seven hundred forty-one and sixty hundredths (741.60) feet to an iron rod found on the apparent northeasterly sideline of land of St. Lawrence & Atlantic Railroad Company evidenced by deed recorded in said Registry in Book 2409, Page 130; thence North 19° 38' 12" West along said apparent northeasterly sideline of land of St. Lawrence & Atlantic Railroad Company one thousand six hundred forty-six and one hundredth (1,646.01) feet to an iron rod found at the southerly corner of land now or formerly of No. 224, LLC, described as Parcel 2 evidenced by deed recorded in said Registry in Book 4156, Page 28; thence North 56° 06' 46" East along the southeasterly line of said No. 224, LLC land nine hundred forty-nine and fifty hundredths (949.50) feet to an iron rod found; thence continuing North 56° 06' 46" East along other land now or formerly of No. 224, LLC, evidenced by deed recorded in said Registry in Book 3813, Page 1 thirty-three and fifty-seven hundredths (33.57) feet to an iron rod set; thence South 76° 23' 38" East along the southerly line of said other land of No. 224, LLC one thousand one hundred fifty-five and fifty-four hundredths (1,155.54) feet to an iron rod found; thence continuing South 76° 23' 38" East along the southerly line of land formerly of the Portland and Rumford Falls Railroad seven hundred eighty-one and ten hundredths (781.10) feet to the southwesterly line of land now or formerly of Benjamin P. Hawkins and Timothy Morse described as Parcel Two in a certain deed recorded in said Registry in Book 3813, Page 13; thence South 15° 43' 56" East along said southwesterly line of Hawkins and Morse land nine

hundred sixty-one and seven hundredths (961.07) feet to a stone monument found at the southerly corner of said Hawkins/Morse land; thence South $23^{\circ} 00' 38''$ East along the southwesterly line of land of the City of Auburn Intermodal Facility evidenced by deed recorded in said Registry in Book 4047, Page 146 two hundred fifty-four and twenty-nine hundredths (254.29) feet to an iron rod set; thence North $70^{\circ} 03' 38''$ East along the southeasterly line of said City of Auburn land three hundred thirty-four and eighty-one hundredths (334.81) feet to an iron rod found; thence South $04^{\circ} 56' 08''$ West along the southwesterly line of said City of Auburn land six hundred forty-eight and twenty-nine hundredths (648.29) feet to the point of beginning. C O P Y

Said parcel contains 142.74 acres.

All iron rods set are 5/8 inch diameter with surveyor's identification cap #2250.

All bearings refer to Magnetic North (1993) as shown on a plan entitled "Standard Boundary Survey, Intermodal Facility" dated November 1993 with revised date through December 21, 1993, prepared by BH2M, on file at the City of Auburn Engineering Department.

The above described parcel is identified as Lot 2 as shown on a plan entitled "Land Title Survey - Precast Structures, Inc. Facilities" prepared for Bayshore Concrete Products Corporation by Technical Services, Inc., dated July 2000, with revised date through September 21, 2000 recorded in said Registry, Plan Book 41, Page 76.

Being the same premises conveyed to Bayshore Concrete Products/Maine, Inc. by the following deeds: (a) deed from P-Con, Ltd. dated October 5, 2000 and recorded at Book 4521, Page 261 of said Registry; (b) deed from Nellie F. Bennett dated August 22, 2000 and recorded at Book 4521, Page 248 of said Registry; (c) deed from Peter Fleischhacker dated October 22, 2000 and recorded at Book 4521, Page 246 of said Registry; (d) deed from Raymond A. Crowley dated October 5, 2000 and recorded at Book 4521, Page 267 of said Registry; and (e) deed from Gracia Crowley dated October 5, 2000 and recorded at Book 4521, Page 264 of said Registry.

The above-described premises are conveyed subject to the following, to the extent the same affect the premises:

1. Easements from the Cities of Auburn and Lewiston to Central Maine Power Company dated and recorded as follows: (A) August 7, 1961, recorded at Book 863, Page 165 of the Androscoggin County Registry of Deeds; (B) October 19, 1966, recorded at Book 966, Page 290 of said Registry; and (C) August 7, 1969, recorded at Book 1010, Page 760 of said Registry;

2. Restrictions^{N O T} as contained in a deed from^{N O T} Samuel L. Sargent, Trustee in Bankruptcy of the Estate of^{A N} Structural Concrete Corporation^{A N} of Maine to Raymond Crowley and Nelly F. Fleischacker^{O F F L C I A L} dated September 7, 1971^{O F F L C I A L} and recorded at Book 1041, Page 180 of said Registry;^{C O P Y}

3. Exceptions,^{N O T} reservations, restrictions and covenants^{N O T} set forth in the Deed of Release from the United States^{A N} of America to the City of Auburn and the City of Lewiston dated July 25, 1988^{A N} and recorded in Book 2362, Page 48 of said Registry^{A N} and Avigation rights and easements reserved^{C O P Y} in a deed from the City of Auburn and the City of Lewiston to M.A. Crowley Trucking, Inc. dated October 31, 1988 and recorded at Book 2360, Page 23 of said Registry, as corrected by a deed from the City of Auburn and the City of Lewiston to M.A. Crowley Trucking, Inc. dated September 27, 2000 and recorded at Book 4521, Page 255 of said Registry, as further corrected and confirmed by a Confirmatory Deed from the City of Auburn and the City of Lewiston to Bayshore Concrete Products/Maine, Inc. dated October 25, 2000 and recorded at Book 4534, Page 48 of said Registry;

4. State of facts as disclosed by the above-referenced survey plan recorded at Plan Book 41, Page 76 of said Registry;

5. Terms and conditions of an Easement Deed and Crossing Agreement between St. Lawrence & Atlantic Railroad Company and Port of Auburn, LLC dated July 5, 2005 and to be recorded in said Registry;

6. Terms and conditions of an Easement Deed from Lewiston and Auburn Railroad Company to Bayshore Concrete Products/Maine, Inc. dated October 2, 2000 and recorded at Book 4521, Page 270 of said Registry, as amended by an instrument dated July 22, 2005 and to be recorded in said Registry.

K:\DENISE\Files\Closings\Bayshore Concrete\Schedule A Port of Auburn.doc

10/10/05
Tina R. Charnock
10/10/05
Tina R. Charnock
10/10/05
Tina R. Charnock

ANDROSCOGGIN COUNTY
Tina R. Charnock
REGISTER OF DEEDS



Town of Poland, Maine

[Home](#) [Contact](#)[Admin](#)

Last Updated 10/02/2019

[Back to List](#)

Map/Lot 0004-0015-0001
Book 8524
Page 318
Account 265
Location BARK MULCH DR.
Owner LEWISTON AND AUBURN RAILROAD CO.
PO BOX 501
AUBURN ME 04212

Assessment

| | |
|-----------------|--------|
| Land | 24,600 |
| Building | 0 |
| Taxable | 24,600 |

Property Information

| | |
|---------------------|-------------|
| Type | Residential |
| Acreage | 16.40 |
| Zone | Residential |
| Neighborhood | Table 3 |
| Street Type | None |
| Topography | Rolling |
| Topography | Rough |
| Utilities | None |

Land

| Description | Type | Units | Value |
|--------------------|-------------|--------------|--------------|
| Rear Land 2 | Acres | 16.40 | 24,600 |
| | | 16.40 | 24,600 |

Tax Detail as of 10/02/2019

| Year | Mil Rate | Original | Remaining |
|-------------|-----------------|-----------------|------------------|
| 2020 | 14.98 | 368.51 | 184.25 |



Town of Poland, Maine

[Home](#) [Contact](#)[Admin](#)

Last Updated 10/02/2019

[Back to List](#)

Map/Lot 0004-0016
Book 6421
Page 120
Account 266
Location OFF HARDSCRABBLE RD.
Owner PORT OF AUBURN, LLC
54 BARTOL ISLAND RD
FREEPORT ME 04032

Assessment

| | |
|-----------------|--------|
| Land | 13,500 |
| Building | 0 |
| Taxable | 13,500 |

Property Information

| | |
|---------------------|-------------|
| Type | Residential |
| Acreage | 30.00 |
| Zone | Residential |
| Neighborhood | Table 3 |
| Street Type | None |
| Topography | Rolling |
| Topography | Rough |
| Utilities | None |

Land

| Description | Type | Units | Value |
|--------------------|-------------|--------------|--------------|
| Mixed Wood TG | Acres | 30.00 | 13,530 |
| | | 30.00 | 13,500 |

Tax Detail as of 10/02/2019

| Year | Mil Rate | Original | Remaining |
|-------------|-----------------|-----------------|------------------|
| 2020 | 14.98 | 202.23 | 101.11 |

APPENDIX 2
LOCATION MAP



SOURCE:
BING MAPS

SCALE: 1:2000



BD SOLAR AUBURN, LLC
AUBURN, MAINE
LOCATION MAP

2019-04-26
12186.008

APPENDIX 3

SOLID WASTE CAPACITY STATEMENT



CES, Inc
465 South Main Street
Brewer, ME 04412

October 14, 2019

RE: Ability to Serve for Auburn and Poland, Maine, North of Lewiston Junction Road
and the Auburn Air Port

Dear Justine,

This letter is to confirm that Pine Tree Waste Inc. located in Naples, Maine, has the capabilities to pick up, and dispose of annual volumes of (CDD) construction demolition debris as well as CDD material generated by proposed construction, and carboard at the Solar array site north of Lewiston Junction Road and the Airport in Poland and Auburn, Maine. The end site for this material will be:

Casella Recycling
River Road
Lewiston, ME 04240

This letter is not a quote for service. It is a statement of capabilities. The sole purpose of this letter is to communicate the willingness and capabilities that Pine Tree Waste Inc. has towards providing this service as requested. If you have any questions or concerns, please do not hesitate to give me a call.

Sincerely,

Bill Bennett
Pine Tree Waste Inc.
87 Pleasant Hill Road
Scarborough, ME 04074
Office: 883-9777
Fax: 883-1954
William.bennett@casella.com

APPENDIX 4
ABUTTER LIST

**BD SOLAR AUBURN, LLC
SOLAR FARM, AUBURN, MAINE**

ABUTTER LIST (POLAND, MAINE)

| MAP | LOT | NAME & MAILING ADDRESS |
|--------|------------|---|
| 3 | 3 | Stephen Dick, II 34 Torrey Road Poland, ME 04274 |
| 3 | 9 | Dennis Ferland 193 Hardscrabble Road Poland, ME 04274 |
| 3 | 9A | Thompson Rolec Enterprises, LLC P.O. Box 1911 Lewiston, ME 04241 |
| 4 4 | 15-2 17 | MB Investment Properties, LLC 100 Bark Mulch Drive Auburn, ME 04210 |

ABUTTER LIST (AUBURN, MAINE)

| MAP | LOT | NAME & MAILING ADDRESS |
|-------------------|---------------|---|
| 130 | 1 | Blue Water Marina, LLC 209 Sandbar Road Windham, ME 04062 |
| 142 | 1-1 | Duke Energy Field Services c/o Gas Supply Resources 370 17 th Street, Suite 2500 Denver, CO 80202 |
| 142 | 4 | James Vamvakian 18 Bayside Lane Falmouth, ME 04105 |
| 142 155 167 | 5 1 4-1 | Lewiston Auburn Railroad Company c/o Jerry Berube 415 Lisbon Street Lewiston, ME 04240 |
| 142 142 | 5-2 3 | St. Lawrence Atlantic Railroad 225 First Flight Drive, Ste. 201 Auburn, ME 04210 |
| 142 142 | 2 6 | Joseph Walsh 334 Highland Avenue South Portland, ME 04106 |
| 143 | 2 | K&R Realty Associates, LLC PO Box 10109 Portland, ME 04104 |
| 143 | 3 | Globe Holdings Company, LLC PO Box 128 Pittsfield, NH 03263 |
| 143 | 4 | Otis South, LLC c/o Karen & Ford Reiche 54 Bartol Island Rd, Freeport, ME 04032 |
| 143 147 | 5-1 7-1 | Savage Services Corporation 901 W. Legacy Center Way Midvale UT 84047 |

| MAP | LOT | NAME & MAILING ADDRESS |
|------------|-------------------|--|
| 143 | 4-1 5-2 7-2 | Port of Auburn, LLC c/o Karen & Ford Reiche 54 Bartol Island Road Freeport ME 04032 |
| 143 | | |
| 142 | | |
| 142 155 | 2 | City of Auburn 60 Court Street Auburn, ME 04210 |
| 167 | 1-1 | MB Investment Properties 70 Pleasant Hill Road Scarborough, ME 04074 |
| 167 | 4 | George Field 116 West Hardscrabble Road Auburn, ME 04210 |

APPENDIX 5
FEMA FLOOD MAP

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 19. The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NNGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>.

Base map information shown on this FIRM was derived from the Maine Office of Geographic Information Systems (MEGIS) at a scale of 1:4,800 or better from photography dated 2001 or later.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations** and **floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables for multiple streams in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on the map. Also, the road to floodplain relationships for unimproved streams may differ from what is shown on previous maps.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

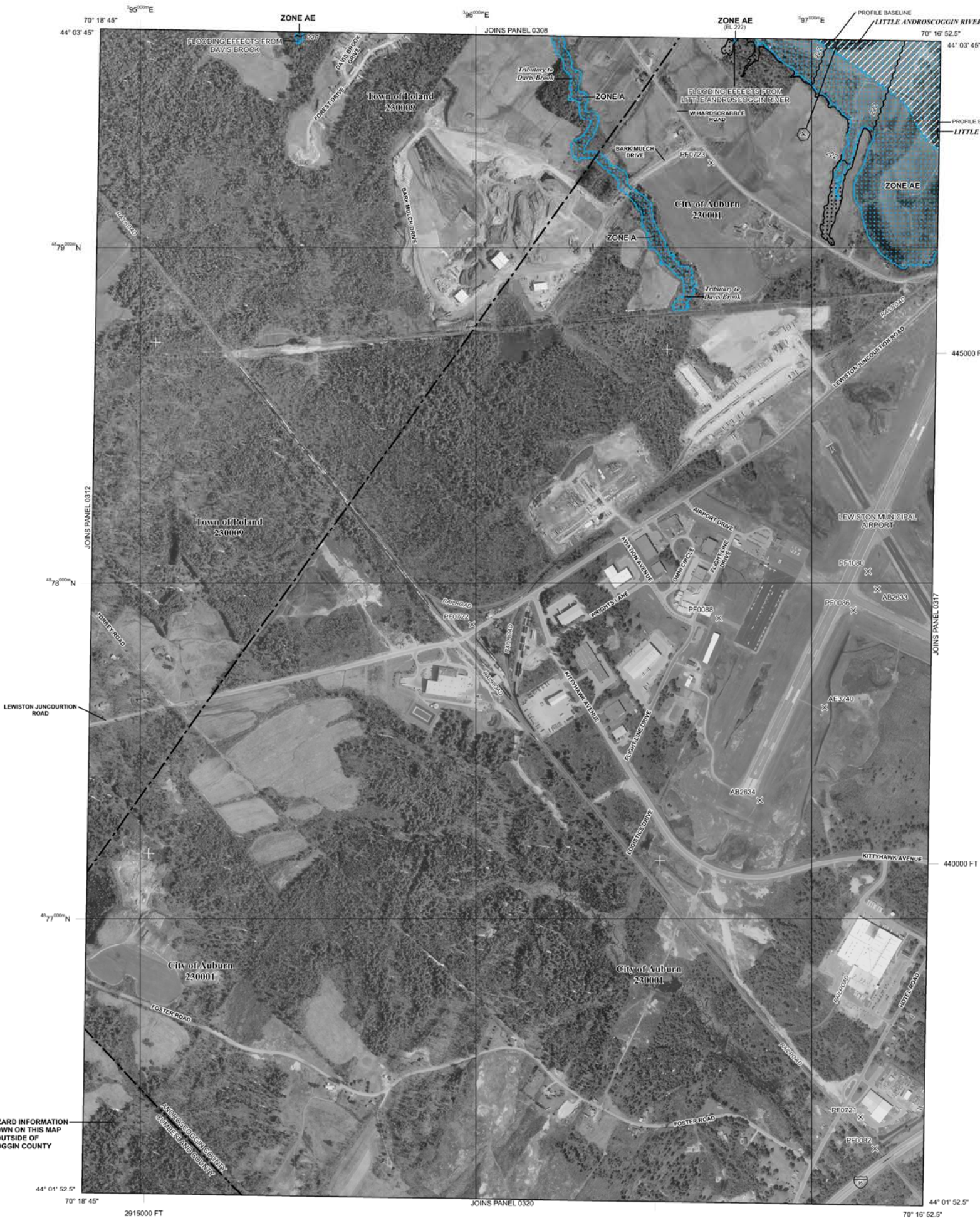
Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at <http://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map**, how to order products, or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange (FMIX)** at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/business/fmip>.

State of Maine Floodway Note: Under the Maine Revised Statutes Annotated (M.R.S.A.) Title 38 § 439-A, 7C where the floodway is not designated on the Flood Insurance Rate Map, the floodway is considered to be the channel of a river or other water course and the adjacent land areas to a distance of one-half the width of the floodplain, as measured from the normal high water mark to the upland limit of the floodplain, unless a technical evaluation certified by a registered professional engineer is provided demonstrating the actual floodway based upon approved FEMA modeling methods.

FLOOD HAZARD INFORMATION IS NOT SHOWN ON THIS MAP IN AREAS OUTSIDE OF ANDROSCOGGIN COUNTY



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD
The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually short flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently determined. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal Flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood, areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

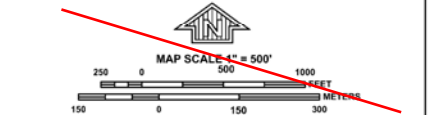
- 1% Annual Chance Floodplain Boundary
- 0.2% Annual Chance Floodplain Boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.
- Base Flood Elevation line and value; elevation in feet*
- Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- Cross section line
- Traverse line
- Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
- 5000-foot ticks: Maine State Plane West Zone (FIPS Zone 1802), Transverse Mercator projection
- 1000-meter Universal Transverse Mercator grid values, zone 19
- Bench mark (see explanation in Notes to Users section of this FIRM panel)
- MAP REPOSITORIES
- Refer to Map Repositories list on Map Index
- EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
- July 8, 2013
- EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

NOT TO SCALE

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.
To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-636-6620.



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0316E

FIRM

FLOOD INSURANCE RATE MAP
ANDROSCOGGIN
COUNTY, MAINE
(ALL JURISDICTIONS)

PANEL 316 OF 470
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

| COMMUNITY | NUMBER | PANEL | SUFFIX |
|-----------------|--------|-------|--------|
| AUBURN, CITY OF | 230001 | 0316 | E |
| POLAND, TOWN OF | 230009 | 0316 | E |

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.



MAP NUMBER
23001C0316E
EFFECTIVE DATE
JULY 8, 2013
Federal Emergency Management Agency

APPENDIX 6

NOISE

Cooper Distribution Transformer Technical Data
Sungrow Correspondence and Technical Data

Distribution Transformers

Three-Phase Pad-Mounted Compartmental Type Transformer

GENERAL

At Cooper Power Systems, we are constantly striving to introduce new innovations to the transformer industry, bringing you the highest quality, most reliable transformers. Cooper Power Systems Transformer Products are ISO 9001 compliant, emphasizing process improvement in all phases of design, manufacture, and testing. In order to drive this innovation, we have invested both time and money in the Thomas A. Edison Technical Center, our premier research facility in Franksville, Wisconsin. Headquarters for the Systems Engineering Group of Cooper Power Systems, such revolutionary products as distribution-class UltraSIL™ Polymer-Housed Evolution™ surge arresters and Envirotemp™ FR3™ fluid have been developed at our Franksville lab.

With transformer sizes ranging from 45 kVA to 12 MVA and high voltages ranging from 2400 V to 46 kV, Cooper Power Systems has you covered. From fabrication of the tanks and cabinets to winding of the cores and coils, to production of arresters, switches, tap changers, expulsion fuses, current limit fuses, bushings (live and dead) and molded rubber goods, Cooper Power Systems does it all. Cooper Power Systems transformers are available with electrical grade mineral oil or Envirotemp™ FR3™ fluid, a less-flammable and bio-degradable fluid. Electrical codes recognize the advantages of using Envirotemp™ FR3™ fluid both indoors and outdoors for fire sensitive applications. The bio-based fluid meets Occupational Safety and Health Administration (OSHA) and Section 450.23 NEC Requirements.



Figure 1.
Three-phase pad-mounted transformer.

PRODUCT SCOPE

| | |
|-------------------|---|
| Type | Three Phase, 50 or 60 Hz, 65 °C Rise (55 °C, 55 °C/65 °C) |
| Fluid Type | Mineral oil or Envirotemp™ FR3™ fluid |
| Size | 45 – 12,000 kVA |
| Primary Voltage | 2,400 – 46,000 V |
| Secondary Voltage | 208Y/120 V to 14,400 V |
| Specialty Designs | Inverter/Rectifier Bridge |
| | K-Factor (up to K-19) |
| | Vacuum Fault Interrupter (VFI) |
| | UL Listed & Labeled and Classified |
| | Factory Mutual (FM) Approved |
| | Solar/Wind Designs |
| | Differential Protection |
| | Seismic Applications (including OSHPD) |

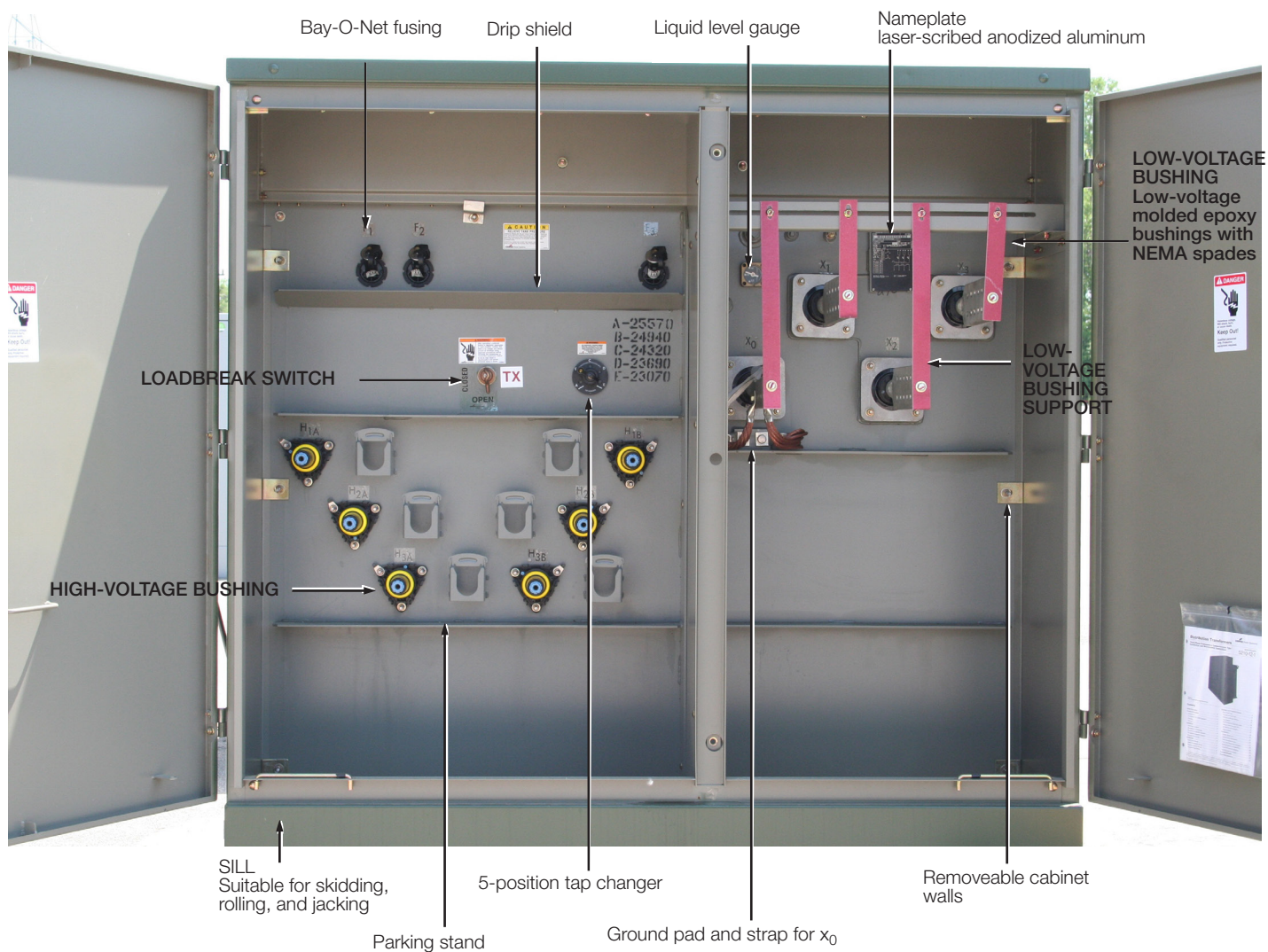


Figure 2.
Three-phase pad-mounted compartmental type transformer.

TABLE 1
Three-Phase Ratings

| Three-Phase 50 or 60 Hz |
|---|
| kVA Available ¹ : 45, 75, 112.5, 150, 225, 300, 500, 750, 1000, 1500, 2000, 2500, 3000, 3750, 5000, 7500, 10000, 120000 |

¹Transformers are available in the standard ratings and configurations shown or can be customized to meet specific needs.

TABLE 2
Audible Sound Levels

| Self-Cooled, Two Winding kVA Rating | NEMA TR-1 Average |
|-------------------------------------|-------------------|
| | Decibels (dB) |
| 45-500 | 56 |
| 501-700 | 57 |
| 701-1000 | 58 |
| 1001-1500 | 60 |
| 1501-2000 | 61 |
| 2001-2500 | 62 |
| 2501-3000 | 63 |
| 3001-4000 | 64 |
| 4001-5000 | 65 |
| 5001-6000 | 66 |
| 6001-7500 | 67 |
| 7501-12000 | 68 |

TABLE 3
Insulation Test Levels

| KV Class | Induced Test 180 or 400 Hz 7200 Cycle | kV BIL | Applied Test 60 Hz (kV) |
|-------------------|--|--------------|-------------------------|
| | | Distribution | |
| 1.2 | TWICE RATED VOLTAGE | 30 | 10 |
| 2.5 | | 45 | 15 |
| 5 | | 60 | 19 |
| 8.7 | | 75 | 26 |
| 15 | | 95 | 34 |
| 25 (grd Y Only) | | 125 | 40 |
| 25 | | 150 | 50 |
| 34.5 (grd Y Only) | | 125 | 40 |
| 34.5 | | 150 | 70 |
| 46 | | 200 | 95 |

TABLE 4
Temperature Rise Ratings 0-3300 Feet (0-1000 meters)

| | Standard | Optional |
|--|----------|-----------------|
| Unit Rating (Temperature Rise Winding) | 65 °C | 55 °C, 55/65 °C |
| Ambient Temperature Max | 40 °C | 50 °C |
| Ambient Temperature 24 Hour Average | 30 °C | 40 °C |
| Temperature Rise Hotspot | 80 °C | 65 °C |

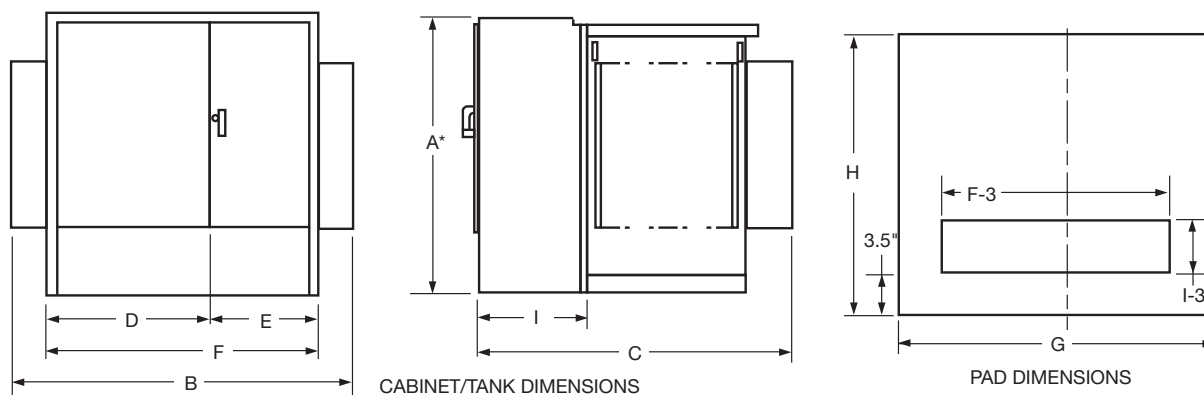


Figure 3.
Transformer and pad dimensions.

* Add 9" for Bay-O-Net fusing.

TABLE 5
Fluid-filled—aluminum windings 55/65 °C Rise¹

| 65° Rise | DEAD-FRONT—LOOP OR RADIAL FEED—BAY-O-NET FUSING OIL FILLED—ALUMINUM WINDINGS | | | | | | | | | | |
|------------|--|-----|-----|----|----|-----|-----|-----|----|------------------|-----------------------------|
| kVA Rating | OUTLINE DIMENSIONS (in.) | | | | | | | | | Gallons of Fluid | Approx. Total Weight (lbs.) |
| | A* | B | C | D | E | F | G | H | I | | |
| 45 | 50 | 68 | 39 | 42 | 26 | 68 | 72 | 43 | 20 | 110 | 2,100 |
| 75 | 50 | 68 | 39 | 42 | 26 | 68 | 72 | 43 | 20 | 115 | 2,250 |
| 112.5 | 50 | 68 | 49 | 42 | 26 | 68 | 72 | 53 | 20 | 120 | 2,350 |
| 150 | 50 | 68 | 49 | 42 | 26 | 68 | 72 | 53 | 20 | 125 | 2,700 |
| 225 | 50 | 72 | 51 | 42 | 30 | 72 | 76 | 55 | 20 | 140 | 3,150 |
| 300 | 50 | 72 | 51 | 42 | 30 | 72 | 76 | 55 | 20 | 160 | 3,650 |
| 500 | 50 | 89 | 53 | 42 | 30 | 72 | 93 | 57 | 20 | 190 | 4,650 |
| 750 | 64 | 89 | 57 | 42 | 30 | 72 | 93 | 61 | 20 | 270 | 6,500 |
| 1000 | 64 | 89 | 59 | 42 | 30 | 72 | 93 | 63 | 20 | 350 | 8,200 |
| 1500 | 73 | 89 | 86 | 42 | 30 | 72 | 93 | 90 | 24 | 410 | 10,300 |
| 2000 | 73 | 72 | 87 | 42 | 30 | 72 | 76 | 91 | 24 | 490 | 12,500 |
| 2500 | 73 | 72 | 99 | 42 | 30 | 72 | 76 | 103 | 24 | 530 | 14,500 |
| 3000 | 73 | 84 | 99 | 46 | 37 | 84 | 88 | 103 | 24 | 620 | 16,700 |
| 3750 | 84 | 85 | 108 | 47 | 38 | 85 | 88 | 112 | 24 | 660 | 19,300 |
| 5000 | 84 | 96 | 108 | 48 | 48 | 96 | 100 | 112 | 24 | 930 | 25,000 |
| 7500 | 94 | 102 | 122 | 54 | 48 | 102 | 100 | 126 | 24 | 1,580 | 41,900 |

¹ Weights, gallons of fluid, and dimensions are for reference only and not for construction. Please contact Cooper Power Systems for exact dimensions.

* Add 9" for Bay-O-Net fusing.

TABLE 6
Fluid-Filled—Copper Windings 55/65 °C Rise¹

| 65° Rise | DEAD-FRONT—LOOP OR RADIAL FEED—BAY-O-NET FUSING OIL FILLED—COPPER WINDINGS | | | | | | | | | | |
|------------|--|-----|-----|----|----|-----|-----|-----|----|------------------|-----------------------------|
| kVA Rating | OUTLINE DIMENSIONS (in.) | | | | | | | | | Gallons of Fluid | Approx. Total Weight (lbs.) |
| | A* | B | C | D | E | F | G | H | I | | |
| 45 | 50 | 64 | 39 | 34 | 30 | 64 | 69 | 43 | 20 | 110 | 2,100 |
| 75 | 50 | 64 | 39 | 34 | 30 | 64 | 69 | 43 | 20 | 115 | 2,350 |
| 112.5 | 50 | 64 | 49 | 34 | 30 | 64 | 69 | 53 | 20 | 115 | 2,500 |
| 150 | 50 | 64 | 49 | 34 | 30 | 64 | 69 | 53 | 20 | 120 | 2,700 |
| 225 | 50 | 64 | 51 | 34 | 30 | 64 | 73 | 55 | 20 | 140 | 3,250 |
| 300 | 50 | 64 | 51 | 34 | 30 | 64 | 75 | 55 | 20 | 160 | 3,800 |
| 500 | 50 | 81 | 53 | 34 | 30 | 64 | 85 | 57 | 20 | 200 | 4,800 |
| 750 | 64 | 89 | 57 | 42 | 30 | 72 | 93 | 61 | 20 | 255 | 6,500 |
| 1000 | 64 | 89 | 59 | 42 | 30 | 72 | 93 | 63 | 20 | 300 | 7,800 |
| 1500 | 73 | 89 | 86 | 42 | 30 | 72 | 93 | 90 | 24 | 410 | 10,300 |
| 2000 | 73 | 72 | 87 | 42 | 30 | 72 | 76 | 91 | 24 | 420 | 11,600 |
| 2500 | 73 | 72 | 99 | 42 | 30 | 72 | 76 | 103 | 24 | 500 | 14,000 |
| 3000 | 73 | 84 | 99 | 46 | 37 | 84 | 88 | 103 | 24 | 720 | 18,700 |
| 3750 | 84 | 85 | 108 | 47 | 38 | 85 | 88 | 112 | 24 | 800 | 20,500 |
| 5000 | 84 | 96 | 108 | 48 | 48 | 96 | 100 | 112 | 24 | 850 | 25,000 |
| 7500 | 94 | 102 | 122 | 54 | 48 | 102 | 100 | 126 | 24 | 1,620 | 46,900 |

¹ Weights, gallons of fluid, and dimensions are for reference only and not for construction. Please contact Cooper Power Systems for exact dimensions.

* Add 9" for Bay-O-Net fusing.

STANDARD FEATURES

Connections and Neutral Configurations

- Delta - Wye: Low voltage neutral shall be a fully insulated XO bushing with removable ground strap.
- Grounded Wye-Wye: High voltage neutral shall be internally tied to the low voltage neutral and brought out as the HOXO bushing in the secondary compartment with a removable ground strap.
- Delta-Delta: Transformer shall be provided without a neutral bushing.
- Wye-Wye: High voltage neutral shall be brought out as the HO bushing in the primary compartment and the low voltage neutral shall be brought as the XO-bushing in the secondary compartment.
- Wye-Delta: High voltage neutral shall be brought out as the HO bushing in the primary compartment. No ground strap shall be provided (line to line rated fusing is required).

High and Low Voltage Bushings

- 200 A bushing wells (15, 25, 35 kV)
- 200 A, 35 kV Large Interface
- 600 A (15, 25, 35 kV) Integral bushings (dead-front)
- Electrical-grade wet-process porcelain bushings (live-front)

Tank/Cabinet Features

- Bolted cover for tank access (45-1750 kVA)
- Welded cover with hand hole (2000-12,000 kVA)
- Three-point latching door for security
- Removable sill for easy installation
- Lifting lugs (4)
- Stainless steel cabinet hinges and mounting studs
- Steel divider between HV and LV compartment
- 20" Deep cabinet (45-1000 kVA)
- 24" Deep cabinet (1500-7500 kVA)
- 30" Deep cabinet (34.5/19.92 kV)
- Pentahead Captive Bolt
- Stainless steel 1-hole ground pads (45-500 kVA)
- Stainless steel 2-hole ground pads (750-10,000 kVA)
- Parking Stands

Valves/Plugs

- One-inch upper filling plug
- One-inch drain plug (45-500 kVA)
- One-inch combination drain valve with sampling device in low voltage compartment (750-12,000 kVA)
- Automatic pressure relief valve

Nameplate

- Laser-scribed anodized aluminum Nameplate



Figure 4.
Drain valve with sampler.



Figure 5.
Automatic Pressure relief valve.



Figure 6.
Liquid level gauge.

OPTIONAL FEATURES

High and Low Voltage Bushings

- 200 A (15, 25 kV) bushing inserts
- 200 A (15, 25 kV) feed thru inserts
- 200 A (15, 25 kV) (HTN) bushing wells with removable studs
- High-voltage 600 A (15, 25, 35 kV) deadbreak one-piece bushings
- Low voltage 6-, 8-holes spade
- Low voltage 12-, 16-, 20-holes spade (750-2500 kVA)
- Low voltage bushing supports

Tank/Cabinet Features

- Stainless steel tank base and cabinet
- Stainless steel tank base, cabinet sides and sill
- 100% Stainless Steel Unit
- Service entrance (2 inch) in sill or cabinet side
- Touch-up paint (domestic)
- Copper Ground Bus Bar
- Kirk-Key Provisions
- Nitrogen Blanket
- Bus duct cutout

Special Designs

- Factory Mutual (FM)
- UL Classified
- Triplex
- High altitude
- K-Factors
- Step-up
- Critical Application
- Modulation Transformers
- Seismic Applications (including OSHPD)

Switches

- One, two, or three On/Off loadbreak switches
- 4-position loadbreak V-blade switch or T-blade switch
- Delta-wye switch
- 3-Position V-Blade selector switch
- 100 A, 150 A, 300 A Tap Changers
- Dual voltage switch

Gauges and Devices

- Liquid level gauge (Optional Contacts)
- Pressure vacuum gauge (Optional Contacts and Bleeder)
- Dial-type thermometer (Optional Alarm Contacts)
- Cover mounted pressure relief device
- Ground connectors
- Hexhead captive bolt
- Breaker mounting provisions

Overcurrent Protection

- Bay-O-Net fusing (Current sensing, dual sensing, dual element, high amperage overload)
- Bay-O-Net expulsion fuse in series with a partial range under-oil ELSP current limiting fuse (below 23 kV)
- Cartridge fusing in series with a partial range under-oil ELSP current limiting fuse (above 23 kV)
- MagneX™ Interrupter with ELSP current limiting fuse
- Vacuum Fault Interrupter (VFI)
- Visible Break Window
- Fuse/switch interlock

Valves/Plugs

- Drain/sampling valve in high-voltage compartment
- Globe type upper fill valve

Overvoltage Protection

- Distribution-, Intermediate-, or Station-class surge arresters
- Elbow arresters (for dead-front connections)

Metering/Fan/Control

- Full metering package
- Current Transformers (CTs)
- Metering Socket
- NEMA 4 Control Box (Optional Stainless Steel)
- NEMA 7 Control Box (Explosion Proof)
- Fan Packages

Testing

- Customer Test Witness
- Customer Final Inspection
- Zero Sequence Impedance Test
- Heat Run Test
- ANSI Impulse Test
- Audible Sound Level Test
- RIV (Corona) Test
- Dissolved Gas Analysis (DGA) Test
- 8- or 24-Hour Leak Test

Coatings (Paint)

- ANSI Bell Green
- ANSI #61 Light Gray
- ANSI #70 Sky Gray
- Special paint available per request

Nameplate

- Stainless Steel Nameplate

Decals and Labels

- High voltage warning signs
- Mr. Ouch
- Bi-lingual Warning
- DOE Compliant
- Customer stock code
- Customer stenciling
- Shock and Arc Flash Warning Decal
- Non-PCB Decal

CONSTRUCTION

Core

The three-legged, step-lap mitered core construction is manufactured using a high-quality cutting machine. For maximum efficiency, cores are precisely stacked, virtually eliminating gaps in the corner joints.

Five-legged wound core or shell-type triplex designs are used for wye-wye connected transformers, and other special transformer designs.

Cores are manufactured with precision cut, burr-free, grain-oriented silicon steel. Many grades of core steel are available for optimizing core loss efficiency.

Coils

Pad-mounted transformers feature a rectangular coil configuration with wire-wound, high-voltage primaries and sheet-wound secondaries. The design minimizes axial stress developed by short circuits and provides for magnetic balancing of tap connections.

Coils are wound using the highest quality winding machines providing exacting tension control and conductor placement for superior short-circuit strength and maximum efficiency.

Extra mechanical strength is provided by diamond pattern, epoxy-coated paper insulation, used throughout the coil, with additional epoxy at heavy stress points. The diamond pattern distribution of the epoxy and carefully arranged ducts, provide a network of passages through which cooling fluid can freely circulate.

Coil assemblies are heat-cured under calculated hydraulic pressure to ensure performance against short-circuit forces.

Core and Coil Assemblies

Pad-mounted transformer core and coil assemblies are braced with heavy steel ends to prevent the rectangular coil from distorting under short-circuit conditions. Plates are clamped in place using presses, and welded or bolted to form a solid core and coil assembly. Core and coil assemblies exceed ANSI/IEEE requirements for short-circuit performance. Due to the rigidity of the design, impedance shift after short-circuit is comparable to that of circular wound assemblies.

Tanks

Transformer tanks are designed for high strength and ease of handling, installation, and maintenance. Tanks are welded using precision-cut, hot rolled, pickled and oiled steel. They are sealed to protect the insulating fluid and other internal components.

Transformer tanks are pressure-tested to withstand 7 psig without permanent distortion and 15 psig without rupture.

Tank Finish

An advanced multi-stage finishing process exceeds IEEE Std C57.12.28™ standards. The eight-stage pre-treatment process assures coating adhesion and retards corrosion. It converts tank surfaces to a nonmetallic, water insoluble iron phosphate coating.

The paint method consists of two distinct layers of paint. The first is an epoxy primer (E-coat) layer which provides a barrier against moisture, salt and corrosives. The two-component urethane final coat seals and adds ultraviolet protection.

Vacuum Processing

Transformers are dried and filled with filtered insulating fluid under vacuum, while secondary windings are energized. Coils are heated to drive out moisture, ensuring maximum penetration of fluid into the coil insulation system.

Insulating Fluid

Transformers from Cooper Power Systems are available with electrical-grade mineral insulating oil or Envirotemp™ FR3™ fluid. The highly refined fluids are tested and degassed to assure a chemically inert product with minimal acid ions. Special additives minimize oxygen absorption and inhibit oxidation. To ensure high dielectric strength, the fluid is re-tested for dryness and dielectric strength, refiltered, heated, dried, and stored under vacuum before being added to the completed transformer.

Cooper Power Systems transformers filled with Envirotemp™ FR3™ fluid enjoy unique fire safety, environmental, electrical, and chemical advantages, including insulation life extending properties.

A bio-based, sustainable, natural ester dielectric coolant, Envirotemp™ FR3™ fluid quickly and thoroughly biodegrades in the environment and is non-toxic per acute aquatic and oral toxicity tests.

Building for Environmental and Economic Sustainability (BEES) total life cycle assessment software, utilized by the US Dept. of Commerce, reports its overall environmental performance impact score at 1/4th that reported for mineral oil. Envirotemp™ FR3™ fluid has also earned the EPA Environmental Technology Verification of transformer materials.

With a fire point of 360 °C, Envirotemp™ FR3™ fluid is FM Approved and Underwriters Laboratories Classified “Less-Flammable” per NEC Article 450-23, fitting the definition of a Listed Product per NEC.

Pad-Mounted VFI Transformer



Figure 7.
VFI transformer with visible break.

The VFI transformer combines a conventional distribution transformer from Cooper Power Systems with the proven Vacuum Fault Interrupter (VFI). This combination provides both voltage transformation and transformer over current protection in one space saving and money saving package. The pad-mounted VFI transformer protects the transformer and provides proper coordination with upstream protective devices. When a transformer fault or overload condition occurs, the VFI breaker trips and isolates the transformer.

The three-phase VFI breaker has independent single-phase initiation, but is three-phase mechanically gang-tripped. A trip signal on any phase will open all three phases. This feature eliminates single-phasing of three phase loads. It also enables the VFI breaker to be used as a three-phase load break switch.

Due to the resettable characteristics of the VFI breaker, restoring three-phase service is faster and easier.

The sealed visible break window and switch is an option that can be installed to provide visible break contact. This feature provides enhanced safety and allows an operator to see if the loadbreak switch contacts are in an open or closed position before performing maintenance.

Envirotran™ FM Approved Special Protection Transformer

The Envirotran™ transformer from Cooper Power Systems is FM Approved and suitable for indoor locations. Factory Mutual Research Corporation's (FMRC) approval of the Envirotran transformer line makes it easy to comply with and verify compliance with Section 450.23, 2008 NEC, Less-Flammable Liquid-Filled Transformer Requirements for both indoor and outdoor locations.

Envirotran FM Approved transformers offer the user the benefit of a transformer that can be easily specified to comply with NEC, and makes FM Safety Data Sheet compliance simpler, while also providing maximum safety and flexibility for both indoor and outdoor installations.

Because the "FM Approved" logo is readily visible on the transformer and its nameplate, NEC compliance is now easily verifiable by the inspector.

Envirotran FM Approved transformers are manufactured under strict compliance with FMRC Standard 3990 and are filled with FM Approved Envirotemp™ FR3™ fluid, a fire-resistant dielectric coolant.

SPECIAL APPLICATION TRANSFORMERS

Data Center Transformer

With focus rapidly shifting from simply maximizing uptime and supporting demand to improving energy utilization, the data center industry is continually looking for methods to increase its energy efficiency and reliability. Utilizing cutting edge technology, Cooper Power Systems Hardened Data Center (HDC) transformers are the solution. Designed with special attention given to surge protection, HDC liquid-filled transformers provide superior performance under the harshest electrical environments. Contrary to traditional dry-type units, HDC transformers provide unsurpassed reliability, overloadability, operational life, efficiency, thermal loading and installed footprint. These Cooper Power Systems units have reliably served more than 750 MW of critical data center capacity for a total of more than 4,000,000 hours without an hour of downtime.

The top priority in data center operations is uninterrupted service. Envirotran HDC transformers from Cooper Power Systems, having substantially higher levels of insulation, are less susceptible to voltage surges. Cooper Power Systems has experienced zero failures due to switching transients. The ANSI/IEEE standard impulse withstand ratings are higher for liquid-filled transformers, making them less susceptible to insulation failure. The Envirotran HDC transformer provides ultimate protection by increasing the BIL rating one level higher than standard liquid-filled transformer ratings. The cooling system of liquid-filled transformers provides better protection from severe overloads—overloads that can lead to significant loss of life or failure.

Data center design typically includes multiple layers of redundancy, ensuring maximum uptime for the critical IT load. When best in class transformer manufacturing lead times are typically weeks, not days, an unexpected transformer failure will adversely affect the facility's reliability and profitability. Therefore, the ability to determine the electrical and mechanical health of a transformer can reduce the probability of costly, unplanned downtime. Routine diagnostic tests, including key fluid properties and dissolved gas analysis (DGA), can help determine the health of a liquid-filled transformer. Although sampling is not required for safe operation, it will provide the user

with valuable information, leading to scheduled repair or replacement, and minimizing the duration and expense of an outage. With a dry-type transformer, there is no reliable way to measure the health or likelihood of an impending failure.

Solar Transformer

As a result of the increasing number of states that are adopting aggressive Renewable & Alternative Energy Portfolio Standards, the solar energy market is growing—nearly doubling year over year. Cooper Power Systems, a key innovator and supplier in this expanding market, is proud to offer Envirotran transformers specifically designed for Solar Photovoltaic medium-voltage applications. Cooper Power Systems is working with top solar photovoltaic developers, integrators and inverter manufacturers to evolve the industry and change the way we distribute power.

In accordance with this progressive stance, every Cooper Power Systems Envirotran Solar transformer is filled with non-toxic, biodegradable Envirotemp™ FR3™ dielectric fluid, made from renewable seed oils. On top of its biodegradability, Envirotemp™ FR3™ fluid substantially extends the life of the transformer insulation, saving valuable resources. What better way to distribute green power than to use a green transformer. In fact, delaying conversion to Envirotran transformers places the burden of today's environmental issues onto tomorrow's generations. Cooper Power Systems can help you create a customized transformer, based on site specific characteristics including: temperature profile, site altitude, solar profile and required system life. Some of the benefits gained from this custom rating include:

- Reduction in core losses
- Improved payback on investment
- Reduction in footprint
- Improved fire safety
- Reduced environmental impact

For the solar photovoltaic industry, Cooper Power Systems is offering standard step up transformers and dual secondary designs.

Wind Transformer

Cooper Power Systems is offering custom designs for renewable energy power generation. Cooper Power Systems manufactures Generator Step-Up (GSU) transformers for installation at the base of every wind turbine. Additionally, grounding transformers are available for wind power generation.

DOE Efficiency

The United States Department of Energy (DOE) has mandated efficiency values for most liquid type, medium voltage transformers. As a result, all applicable Cooper Power Systems transformers are designed to meet or exceed the standard efficiency values per DOE 2010; Final Ruling, 10 CFR Part 431.

Underwriters Laboratories® (UL®) Listed and Labeled/Classified

The Envirotran transformer from Cooper Power Systems can be specified as UL Listed & Labeled, and/or UL Classified. Underwriters Laboratories (UL) listing is a verification of the design and construction of the transformer to the ANSI/IEEE standards. UL listing generally is the most efficient, cost-effective solution for complying with relevant state and local electrical codes. UL Combination Classification/Listing is another way in which to comply with Section 450.23, 2008 NEC requirements. This combines the UL listed transformer with a UL Classified Less-Flammable Liquid and complies with the use restrictions found within the liquid Classification.

K-Factor Transformer

With a drastic increase in the use of ferromagnetic devices, arcing devices, and electric power converters, higher frequency loads have increased significantly. This harmonic loading has the potential to generate higher heat levels within a transformer's windings and leads by as much as 300%. Harmonic loading has the potential to induce premature failure in standard-design distribution transformers.

In addition to standard UL "K-Factor" ratings, transformers can be designed to customer-provided specifications detailing precise loading scenarios. Onsite measurements of magnitude and frequency, alongside harmonic analysis of the connected load can be performed by Cooper Power Systems engineers or a third party consultant. These field measurements are used to determine exact customer needs and outline the transformer specifications.

Cooper Power Systems will design harmonic-resistant transformers that will be subjected to the unique harmonic loads. These units are designed to maintain normal temperature rise under harmonic, full-load conditions. Standard UL "K-Factor" designs can result in unnecessary costs when the "next-highest" K-Factor must be selected for a calculated design factor. To save the customer these unnecessary costs, Cooper Power Systems can design the transformer to the specific harmonic spectrum used in the application. K-factor transformers from Cooper Power Systems are filled with mineral oil or Envirotemp™ FR3™ fluid and enjoy the added benefits of dielectric cooling such as higher efficiencies than dry-type transformers.

Modulation Transformer

Bundled with an Outboard Modulation Unit (OMU) and a Control and Receiving Unit (CRU), a Modulation Transformer Unit (MTU) is designed to remotely achieve two way communication.

The use of an MTU reduces travel time and expense versus traditional meter reading performed by high voltage electricians. Additionally, with MTU it is possible to manage and evaluate energy consumption data, providing reduced metering costs and fewer tenant complaints.

An MTU utilizes existing utility infrastructure, therefore eliminating the need to engineer and construct a dedicated communication network.



Figure 8.
Modular transformer.

Inverter/Rectifier Bridge

Cooper Power Systems complements its range of applications for transformers by offering dual winding designs. These designs are intended for connection to 12-pulse rectifier bridges.

PRODUCT ATTRIBUTES

To set us apart from other transformer manufacturers, Cooper Power Systems includes the following guarantees with every three-phase pad-mounted transformer.

Engineered to Order (ETO)

Providing the customer with a well developed, cost-effective solution is the number one priority at Cooper Power Systems. Using customer specifications, Cooper Power Systems will work with the customer from the beginning to the end to develop a solution to fit their needs. Whether it is application specific, site specific, or a uniquely specified unit, Cooper Power Systems will provide transformers with the best in class value and performance, saving the customer time and money.

Made in the U.S.A.

Cooper Power Systems three-phase pad-mounted transformers are produced right here in the United States of America. Our manufacturing facilities are positioned strategically for rapid shipment of products. Furthermore, should the need arise, Cooper Power Systems has a broad network of authorized service repair shops throughout the United States.

Superior Paint Performance

Protecting transformers from nature's elements worldwide, Cooper Power Systems E-coat system provides unrivaled transformer paint life, and exceeds ANSI standards C57.12.28 and C57.12.29. In addition to the outside of the unit, each transformer receives a gray E-coat covering in the interior of the tank and cabinet, providing superior rust resistance and greater visibility during service.

If the wide range of standard paint selections does not suit the customer's needs, Cooper Power Systems will customize the paint color to meet their requirements.

Rectangular Coil Design

Cooper Power Systems utilizes a rectangular coil design. This winding technique results in a smaller overall unit footprint as well as reducing the transformer weight. The smaller unit size does not hinder the transformer performance in the least. Units have proven short circuit withstand capabilities up to 12 MVA.

TESTING

Cooper Power Systems performs routing testing on each transformer manufactured including the following tests:

- **Insulation Power Factor:** This test verifies that vacuum processing has thoroughly dried the insulation system to required limits.
- **Ratio, Polarity, and Phase Relation:** Assures correct winding ratios and tap voltages; checks insulation of HV and LV circuits. Checks entire insulation system to verify all live-to-ground clearances.
- **Resistance:** This test verifies the integrity of internal high-voltage and low-voltage connections; provides data for loss upgrade calculations.
- **Applied Potential:** Applied to both high-voltage and low-voltage windings, this test stresses the entire insulation system to verify all live-to-ground clearances.
- **Induced Potential:** 3.46 times normal plus 1000 volts for reduced neutral designs.
- **Loss Test:** These design verification tests are conducted to assure that guaranteed loss values are met and that test values are within design tolerances. Tests include no-load loss and excitation current along with impedance voltage and load loss.
- **Leak Test:** Pressurizing the tank to 7 psig assures a complete seal, with no weld or gasket leaks, to eliminate the possibility of moisture infiltration or fluid oxidation.

Design Performance Tests

The design performance tests include the following:

- **Temperature Rise:** Our automated heat run facility ensures that any design changes meet ANSI/IEEE temperature rise criteria.
- **Audible Sound Level:** Ensures compliance with NEMA requirements.
- **Lightning Impulse:** To assure superior dielectric performance, this test consists of one reduced wave, two chopped waves and one full wave in sequence, precisely simulating the harshest conditions.

THOMAS A EDISON RESEARCH AND TEST FACILITY

We are constantly striving to introduce new innovations to the transformer industry, bringing you the highest quality transformer for the lowest cost. Cooper Power Systems Transformer Products are ISO 9001 compliant, emphasizing process improvement in all phases of design, manufacture, and testing. We have invested millions of dollars in the Thomas A. Edison Technical Center, our premier research facility in Franksville, Wisconsin affirming our dedication to introducing new innovations and technologies to the transformer industry. Headquarters for the Systems Engineering group of Cooper Power Systems, this research facility is fully available for use by our customers to utilize our advanced electrical and chemical testing labs.



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One Cooper | www.cooperpower.com | Online



2300 Badger Drive
Waukesha, WI 53188

SG125HV

String Inverter for 1500 Vdc System



High Yield

- Patented five-level topology, max. efficiency 98.9 %, European efficiency 98.7 %, CEC efficiency 98.5 %
- Full power operation without derating at 50 °C
- Patented anti-PID function optional



Easy O&M

- Virtual central solution, easy for O&M
- Compact design and light weight for easy installation



Saved Investment

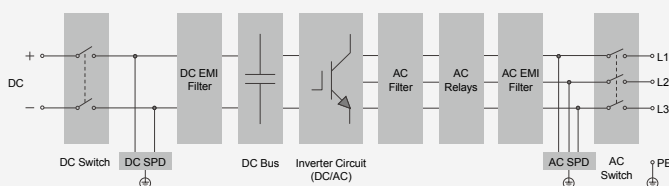
- DC 1500V, AC 600V, low system initial investment
- 1 to 5MW power block design for lower AC transformer and labor cost
- Max.DC/AC ratio up to 1.5



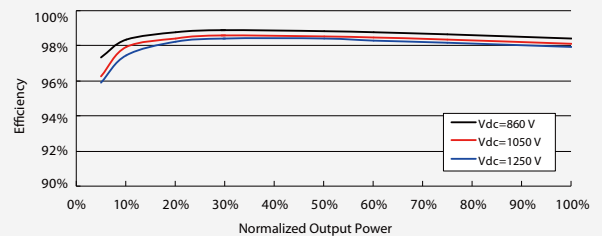
Grid Support

- Compliance with both IEC and UL safety, EMC and grid support regulations
- Low/High voltage ride through (L/HVRT)
- Active & reactive power control and power ramp rate control

Circuit Diagram



Efficiency Curve



Input (DC)**SG125HV**

| | |
|--|---------------|
| Max. PV input voltage | 1500 V |
| Min. PV input voltage / Start-up input voltage | 860 V / 920 V |
| Nominal PV input voltage | 1050 V |
| MPP voltage range | 860 – 1450 V |
| MPP voltage range for nominal power | 860 – 1250 V |
| No. of independent MPP inputs | 1 |
| No. of DC inputs | 1 |
| Max. PV input current | 148 A |
| Max. DC short-circuit current | 240 A |

Output (AC)

| | |
|---|--|
| AC output power | 125000 VA @ 50 °C |
| Max. AC output current | 120 A |
| Nominal AC voltage | 3 / PE, 600 V |
| AC voltage range | 480 – 690 V |
| Nominal grid frequency / Grid frequency range | 50 Hz / 45 – 55 Hz, 60 Hz / 55 – 65 Hz |
| THD | < 3 % (at nominal power) |
| DC current injection | < 0.5 % I _n |
| Power factor at nominal power / Adjustable power factor | > 0.99 / 0.8 leading - 0.8 lagging |
| Feed-in phases / connection phases | 3 / 3 |

Efficiency

| | |
|---------------------------------------|---------------|
| Max. efficiency / European efficiency | 98.9% / 98.7% |
| CEC efficiency | 98.5% |

Protection

| | |
|----------------------------------|-------------------------|
| DC reverse connection protection | Yes |
| AC short-circuit protection | Yes |
| Leakage current protection | Yes |
| Grid monitoring | Yes |
| DC switch / AC switch | Yes / Yes |
| Night SVG function | No |
| Anti-PID function | Yes |
| Overvoltage protection | DC Type II / AC Type II |

General Data

| | |
|--|--|
| Dimensions (W*H*D) | 670*902*296 mm 26.4"*35.5"*11.7" |
| Weight | 76 kg 167.5 lb |
| Isolation method | Transformerless |
| Degree of protection | IP 65 NEMA 4X |
| Night power consumption | < 4 W |
| Operating ambient temperature range | -25 to 60 °C (> 50 °C derating) -13 to 140 °F (> 122 °F derating) |
| Allowable relative humidity range (non-condensing) | 0 – 100 % |
| Cooling method | Smart forced air cooling |
| Max. operating altitude | 4000 m (> 3000 m derating) 13123 ft (> 9843 ft derating) |
| Display / Communication | LED, Bluetooth+APP / RS485 |
| DC connection type | OT or DT terminal (Max. 185 mm ² 350 Kcmil) |
| AC connection type | OT or DT terminal (Max. 185 mm ² 350 Kcmil) |
| Compliance | UL1741, UL1741SA, IEEE1547, IEEE1547.1, CSA C22.2 107.1-01-2001, FCC Part15 Sub-part B Class A Limits, California Rule 21, IEC 62109-1/-2, IEC 61000-6-2/-4, IEC 61727, IEC62116, BDEW, UNE 206007-1:2013, P.O.12.3, UTE C15-712-1:2013, CEI 0-16:2017, IEC 61683, PEA, NTCO |
| Grid Support | LVRT, HVRT, ZVRT, active & reactive power regulation, PF control, soft start/stop |
| Type designation | SG125HV-10 |



Test Report

Applicant : Sungrow Power Supply Co., Ltd.
Address : No.1699 Xiyou Rd., New & High Technology Industrial Development Zone,
230088,Hefei, P. R. China.

Sample Description
Product : PV Inverter

Brand Name/Trade Name : Sungrow

Model No. : SG125HV, SG111HV, SG125HV-20

Electrical Rating : SG125HV, SG125HV-20:
IP65 (Electronics), IP20 (Rear Portion), Class I
Input: Max. 1500VDC, MPPT voltage range: 860-1250VDC, Max. 148A, I_{sc}
PV:240A
Output:
Nominal AC voltage: 600V 3/PE, Max.AC output current :120A
AC output power: 125kVA
SG111HV:
Class I
Max. PV input voltage:1500V DC, MPP voltage range :780V-1450V DC,
MPP voltage range for nominal power:780V-1250V DC, Max. PV input
current:146A
Output:
Nominal AC voltage: 540V 3/PE, Max.AC output current :121A
AC output power: 111kVA

Manufacturer : Sungrow Power Supply Co., Ltd.

Model No. of Manufacturer : SG125HV, SG111HV, SG125HV-20

No. of Samples : 3

Date of receipt of test item : 2018-06-05

Date (s) of performance of test : 2018-06-05

Date of issue : 2018-06-19

Service Requested : IEC/EN 62109-1 Clause 10


Method : IEC/EN 62109-1 Clause 10

Conclusion : The testing of sample **complies** with the above safety standard
clause/requirement

Remark : SG125HV-20 is identical with SG125HV except that SG125HV-20 has
extra SVG function.

Test Report

Prepared and checked by:
Eurofins Product Testing Service (Shanghai) Co.,
Ltd.

Brian Pan 
Project Engineer
Industrial & Electrical Operation Dept.

Reviewed by
Eurofins Product Testing Service (Shanghai) Co.,
Ltd.


Teddy Wang
Technical Manager
Industrial & Electrical Operation Dept.

- The results reported in this test report shall refer only to the sample actually checked and shall not refer or be deemed to refer to bulk from which such a sample may be said to have been obtained.
- This report shall not be reported except in full without prior authorization from Eurofins Product Testing Service (Shanghai) Co., Ltd.
- The services are provided subject to the terms and condition of the company, which can be furnished upon request.

Test Report

| | | | |
|--------|---|--------|----|
| 10 | PROTECTION AGAINST SONIC PRESSURE HAZARDS | | -- |
| 10.1 | General | | P |
| | The equipment shall provide protection against the effect of sonic pressure. Conformity tests are carried out if the equipment is likely to cause such HAZARDS. | | P |
| 10.2 | Sonic pressure and Sound level | | P |
| 10.2.1 | Hazardous Noise Levels | 80 dBA | P |

Test Report**➤ Test data:**

SG111HV:

| Table 2: Hazardous noise levels | | | |
|--|------|-------|--------|
| Ambient (°C) | 25 | | |
| Measurement distance(m) | 1 | | |
| Measured sound pressure (dBA) | 64,8 | Limit | 80 dBA |
| If equipment produces noise at a level that could cause a hazard, the noise shall be measured to determine the maximum sound pressure level that the equipment can produce | | | |

SG125HV, SG125HV-20:

| Table 2: Hazardous noise levels | | | |
|--|------|-------|--------|
| Ambient (°C) | 25 | | |
| Measurement distance(m) | 1 | | |
| Measured sound pressure (dBA) | 64,9 | Limit | 80 dBA |
| If equipment produces noise at a level that could cause a hazard, the noise shall be measured to determine the maximum sound pressure level that the equipment can produce | | | |

Test Report

Photo:

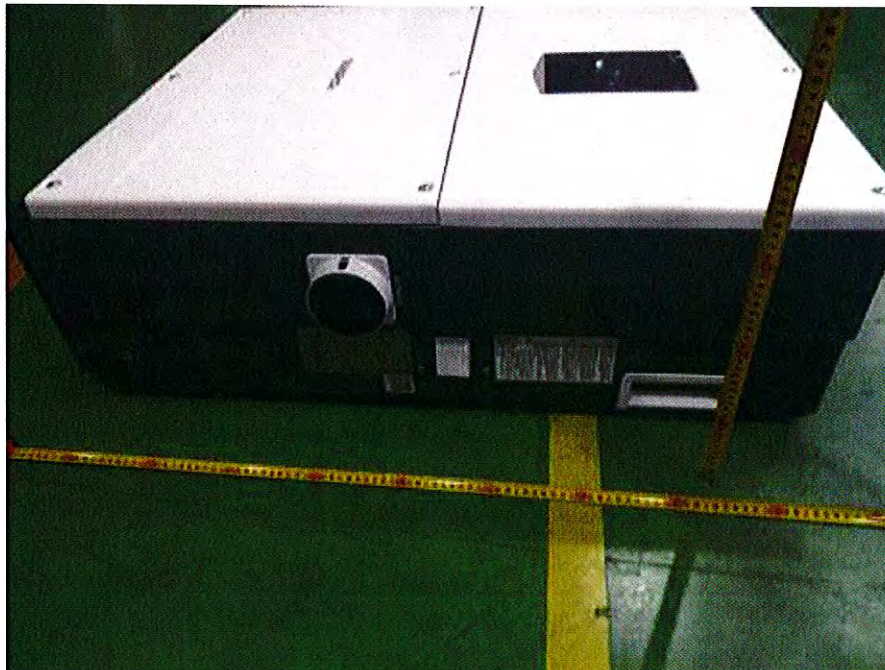
Photo 1.

Description: Enclosure-Front 1



Photo 2.

Description: Enclosure-Front 2



Test Report

Photo 3.

Description: Enclosure-Top



Photo 4.

Description: Enclosure-Bottom



Test Report

Photo 5.

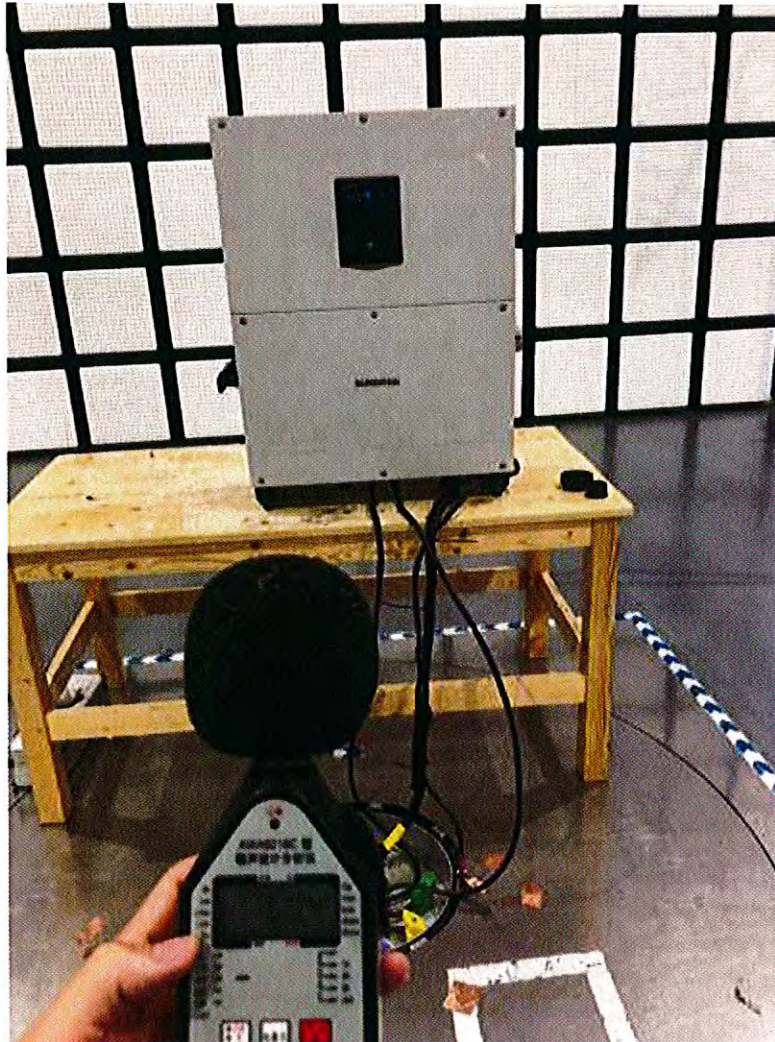
Description: Photo in testing (SG111HV)



Test Report

Photo 6.

Description: Photo in testing (SG111HV)



Test Report

Photo 7.

Description: Photo in testing (SG111HV)



Test Report

Photo 8.

Description: Photo in testing (SG111HV)



Test Report

Photo 9.

Description: Photo in testing (SG111HV)



Test Report

Photo 10.

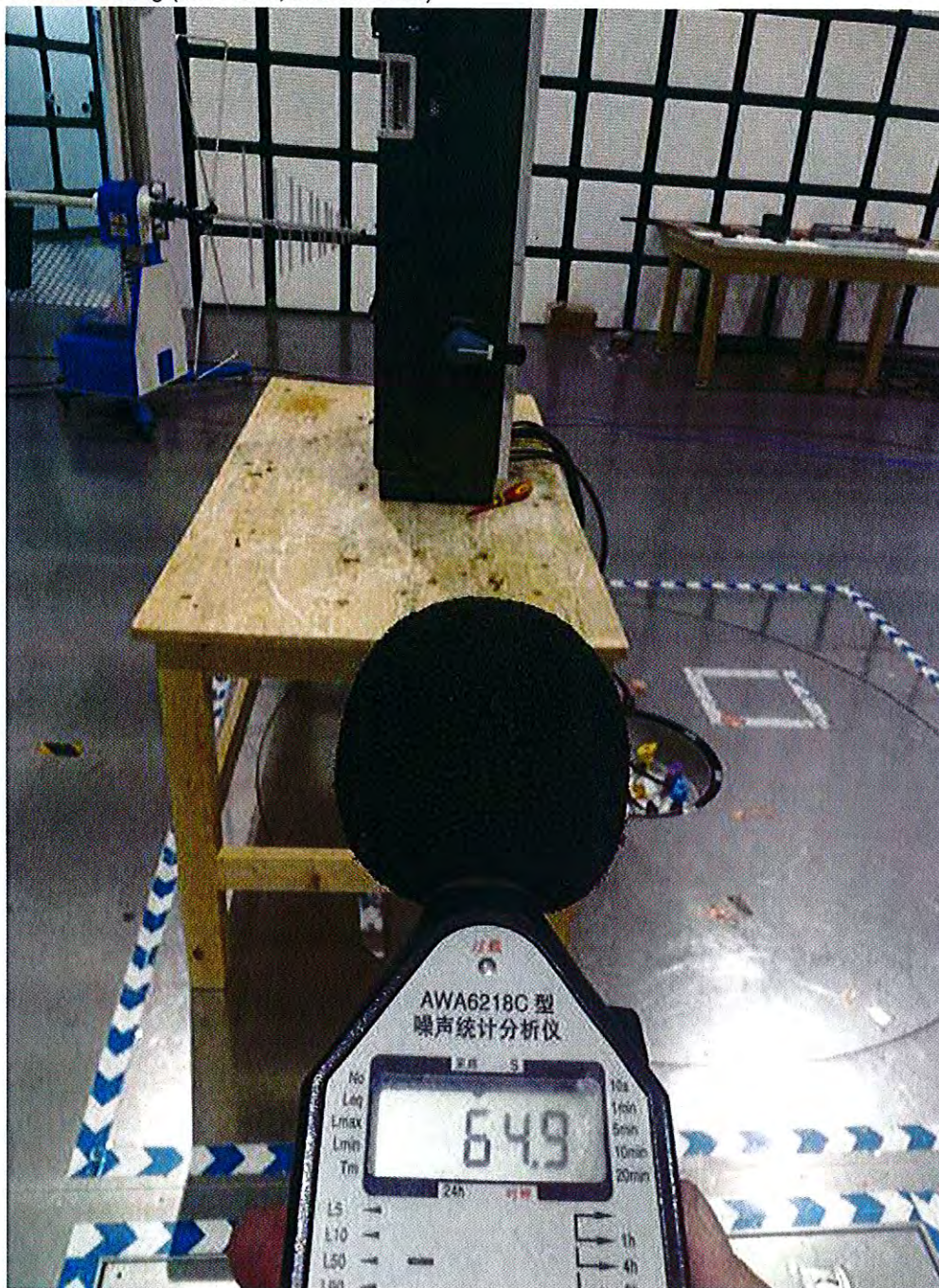
Description: Photo in testing (SG125HV, SG125HV-20)



Test Report

Photo 11.

Description: Photo in testing (SG125HV, SG125HV-20)



Test Report

Photo 12.

Description: Photo in testing (SG125HV, SG125HV-20)



Test Report

Photo 13.

Description: Photo in testing (SG125HV, SG125HV-20)



Test Report

Photo 14.

Description: Photo in testing (SG125HV, SG125HV-20)



***** End of page *****

APPENDIX 7

STORMWATER MANAGEMENT PLAN

(As being reviewed by MDEP)
C701 Pre-development Hydrology Plan
C702 Post-development Hydrology Plan

STORMWATER MANAGEMENT

A. Narrative

The intent of this Stormwater Management Plan is to comply with the requirements of the Maine Department of Environmental Protection (MDEP) Chapter 500 regulations. This project involves the construction of a 45-acre solar array. The solar panels will be mounted on piling which will create approximately 1,180 square feet (SF) of impervious area. Land cover below the panels will be grassed, serving as meadow buffers for the small impervious areas. For operation and maintenance purposes, a gravel road will be installed on site which totals 81,300 SF. Additional impervious area includes approximately 1,272 SF of inverter and transformer equipment pads. The stormwater management plan proposes treatment for 81.9% of the impervious linear portion of the project, and 100% of site portion of the project.

Erosion control measures will be in place prior to the start of any construction. Temporary and permanent measures will be installed in accordance with **Appendix 8** of this application. Upon completion of the construction and stabilization of all disturbed areas, the temporary erosion control measures will be removed.

Basic Standard Submission: Information is provided as required for the Basic Standard Submission in **Appendix 8**.

Flooding Standard Submission: The following information is provided as required in the Flooding Standard Submission.

1. Control of Peak Flows: The project is required to meet Flooding Standards. The Pre- and Post-Development Hydrology models and narrative are located in **Appendix 7B**.
2. Details, Design, and Specifications: The model runoff calculations are performed using HydroCAD model. Sizing of flood control structures are included in **Appendix 7A**.

General Standards Submission: The following information is provided as required in the General Standard Submission.

1. Narrative: The property is located in Auburn and Poland, Maine, north of Lewiston Junction Road. The project area currently consists of mostly woodland with several wetlands and some open meadow areas. The area that will not be within the fenced limits of the solar array will be left to remain in its existing land cover except for vegetation management to avoid shading of the panels. The overall topography of the site is gently sloped and drains to the southeast corner of the property. A second sub-watershed drains to the north of the property. Stormwater is ultimately conveyed to the Little Androscoggin River. The ground generally slopes from 0 to 8 percent. The topography will not be significantly altered after development and thus, stormwater runoff will continue along existing route.

The project area will be cleared to allow for panel installation. The land below the panels will behave as a grassed surface meadow. The land cover will be maintained to the standards of the MDEP meadow buffers. They will be mowed no more than twice per year and have motorized vehicle traffic limited to maintenance of the panels.

2. *Drainage Plans:* Pre- and Post-Development Hydrology Plans are provided in this section. The plan set includes the locations of the BMP's used to treat the stormwater from this development, and a detail sheet is included in **Appendix 11** that provides information on treatment measures.
3. *Calculations:* Buffer sizes were calculated in accordance with Tables 5.2, and 5.6 of the MDEP Stormwater BMP Technical Design Manual, Volume III. The required flow path for a downgradient meadow buffer receiving flow from one travel lane is 50 feet. As determined through correspondence with MDEP personnel, equipment pads adjacent to the roadway are considered part of the linear portion and will be treated by roadside meadow buffers. The required meadow buffer length adjacent to a small impervious area with Type "C" soils and 0 to 8 percent slopes is 150 feet. The proposed buffers have been sized accordingly.
4. *Details, Designs, and Specifications:* The project is currently proposing to control runoff quality issues using vegetated buffers as shown on the plan set.

Phosphorus Standards Submission:

This development is in the Little Androscoggin River watershed. This this section does not apply.

APPENDIX 7A

STORMWATER QUALITY CONTROL NARRATIVE

The proposed BD Solar project is being developed for the construction and installation of a solar energy generation project in the municipalities of Auburn and Poland in Androscoggin County, Maine. The site will be accessed by a gravel road. The total impervious area created by the solar panel pile foundations, access road and equipment pads is approximately 83,752 SF. Based on Maine Department of Environmental Protection stormwater standards, portions of this project qualify for the linear portion exemption. As a result, the project is required to treat 75% of the impervious and 50% of the developed area from the linear portion and 95% of the impervious area and 80% of the developed area from the site portion.

To treat stormwater associated with the new access roads as well as the proposed site area, BD Solar is proposing vegetated buffers to meet stormwater quality standards. The buffers will be located at various locations along the roadway and adjacent to site areas to maximize the treatment of runoff and provide the necessary treatment areas. The locations of these BMP's are shown on the Post-Development Hydrology plan. The entire area under and around the solar panels will serve as a meadow buffer for the pile foundations.

The following tables summarize the impervious and developed area created by the project, as well as the treatment structure, area treated, and relationship with the total developed and impervious areas for the project:

Project Site Area

| PROJECT AREA | IMPERVIOUS AREA | DEVELOPED AREA |
|--------------|-----------------|----------------|
| Site Area | 1,180 SF | 1,180 SF |

Stormwater Treatment Systems

| TREATMENT METHOD | SITE AREA TREATED | |
|-------------------------------------|-------------------|-----------------|
| | IMPERVIOUS | DEVELOPED |
| Buffer from a Small Impervious Area | 1,180 SF | 1,180 SF |
| TOTAL | 1,180 SF | 1,180 SF |
| PERCENT OF SITE AREA TREATED | 100 % | 100 % |

Project Roadway Area (Linear Portion)

| PROJECT AREA | IMPERVIOUS AREA | DEVELOPED AREA |
|----------------|------------------|------------------|
| Roadway Area | 81,300 SF | 81,300 SF |
| Equipment Pads | 1,272 SF | 1,272 SF |
| TOTAL | 82,572 SF | 82,572 SF |

Stormwater Treatment Systems (Linear Portion)

| TREATMENT METHOD | ROADWAY AREA TREATED | |
|--|----------------------|------------------|
| | IMPERVIOUS | DEVELOPED |
| Buffer Downgradient of One Travel Lane | 67,591 SF | 67,591 SF |
| TOTAL | 67,591 SF | 67,591 SF |
| PERCENT OF ROADWAY AREA TREATED | 81.9% | 81.9% |

A description of the treatment type is as follows:

1. **Vegetated Buffers:** Vegetated buffers are being used to treat runoff from the linear portion and site area. The buffer types are as follows:
 - a. *Buffer from Small Impervious Areas (Table 5.2)* Buffers adjacent to the solar panel support piles are small impervious areas that drain to Type “C” soil meadow buffers located beneath the solar panels. The flow path through the meadow buffer is proposed to be 150 feet.
 - b. *Buffer Adjacent to the Downhill Side of a Road (Table 5.6)* A series of roadside vegetated buffers will be used to treat stormwater runoff from the linear portion of the project. The buffers will be adjacent to the downhill side of the roadway and located beneath the solar panel array. These buffers have been designed to provide water quality treatment.

The proposed stormwater quality control devices have been designed according to the standards outlined in the Stormwater Management for Maine, Volume III BMP Manual, January 2006 and revised May 2016. Construction and maintenance will be according to standards outlined in this manual.

APPENDIX 7B

STORMWATER MANAGEMENT QUANTITY NARRATIVE

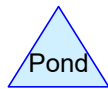
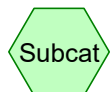
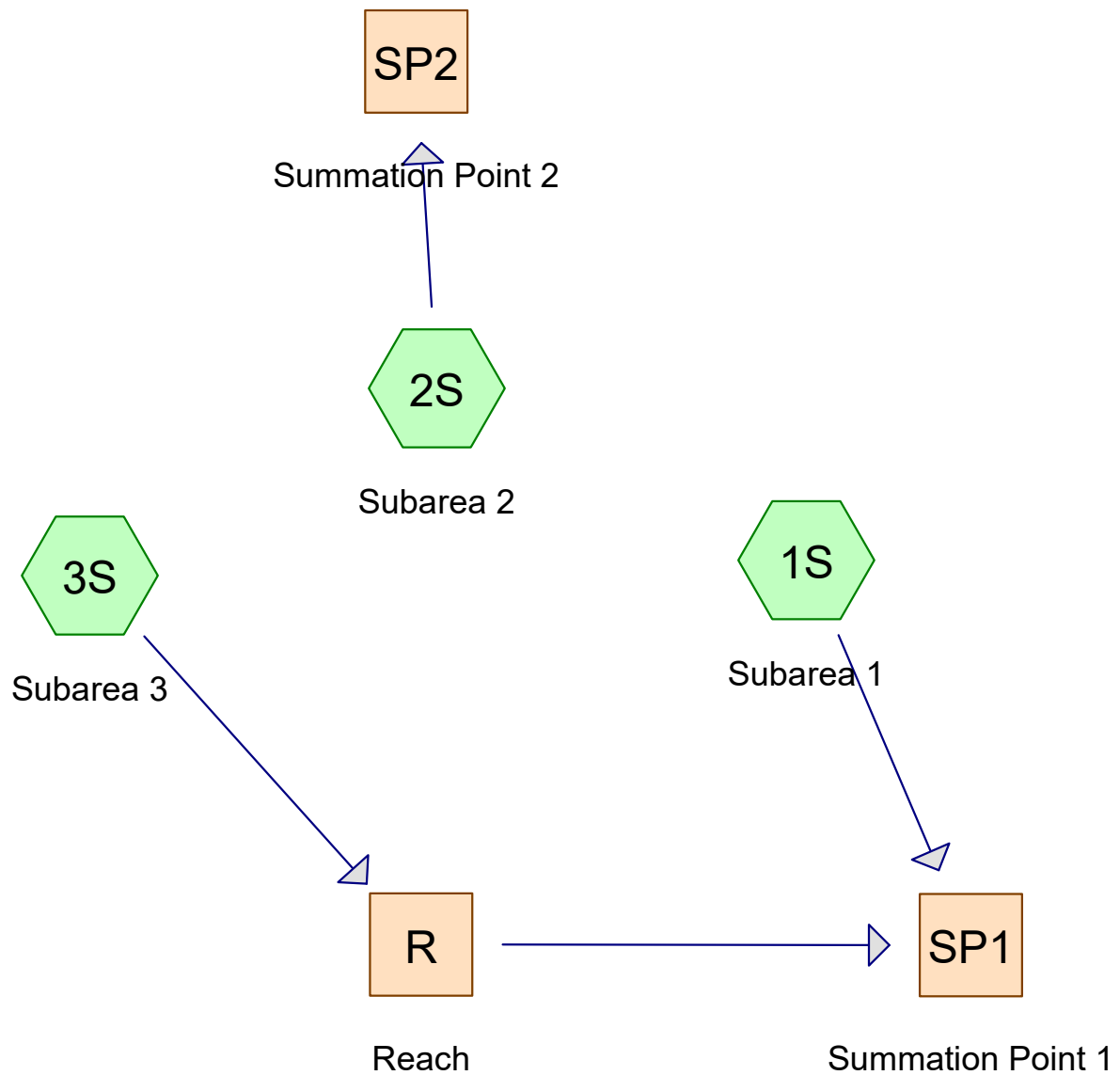
As stated, the project is required to meet the flooding standard under Chapter 500 Section 4.E(2)(a). To meet the flooding standard, HydroCAD calculations were performed to compare pre-development and post-development conditions. Curve numbers and peak runoff flows were calculated using HydroCAD.

The watershed of the project area is tributary to the Little Androscoggin River. The site is primarily wooded with several wetlands and some meadow areas. The overall site drains to the southeast corner at slopes ranging from 0 to 8 percent. The watershed boundary was broken into three subareas. Two summation points were identified, one being in the southeast corner and the other on the north end of the property. These summation points were used to compare runoff from pre-development to post-development conditions. Stormwater flows were modeled for 2-year, 10-year, and 25-year storm events.

Based on results of the HydroCAD it is expected that stormwater runoff from the site will be similar in post-development conditions as in pre-development conditions. A comparison of each of the watershed areas in both Pre- and Post-Development is organized in the table below.

| | | 2 Year (cfs) | 10 Year (cfs) | 25 Year (cfs) | 25 Year Net Change | 25 Year % Change |
|-------------------|------|-----------------|------------------|------------------|-----------------------|---------------------|
| Summation Point 1 | Pre | 24.92 | 53.05 | 79.76 | -3.28 | -4.1 |
| | Post | 24.08 | 51.00 | 76.48 | | |
| Summation Point 2 | Pre | 0.41 | 5.48 | 13.87 | 0.59 | 4.3 |
| | Post | 0.21 | 5.01 | 14.46 | | |

A slight increase in runoff is estimated at Summation Point 2 under 25-year storm conditions. Runoff is only estimated to increase by 0.59 cfs. We believe that this increase should be considered insignificant.



12186.008 Pre-Development Hydro*Type II 24-hr 2-yr Rainfall=3.00"*

Prepared by {enter your company name here}

Printed 12/18/2019

HydroCAD® 10.00-24 s/n 00641 © 2018 HydroCAD Software Solutions LLC

Page 2

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Subarea 1Runoff Area=1,857,439 sf 1.03% Impervious Runoff Depth>0.62"
Flow Length=1,530' Tc=58.6 min CN=70 Runoff=13.75 cfs 2.187 af**Subcatchment 2S: Subarea 2**Runoff Area=823,985 sf 0.00% Impervious Runoff Depth>0.10"
Flow Length=515' Tc=24.8 min CN=52 Runoff=0.41 cfs 0.153 af**Subcatchment 3S: Subarea 3**Runoff Area=3,582,060 sf 0.00% Impervious Runoff Depth>0.81"
Flow Length=3,080' Tc=134.1 min CN=75 Runoff=20.71 cfs 5.520 af**Reach R: Reach**Avg. Flow Depth=0.98' Max Vel=1.60 fps Inflow=20.71 cfs 5.520 af
n=0.022 L=840.0' S=0.0010 '/' Capacity=21.64 cfs Outflow=20.59 cfs 5.420 af**Reach SP1: Summation Point 1**Inflow=24.92 cfs 7.608 af
Outflow=24.92 cfs 7.608 af**Reach SP2: Summation Point 2**Inflow=0.41 cfs 0.153 af
Outflow=0.41 cfs 0.153 af**Total Runoff Area = 143.790 ac Runoff Volume = 7.860 af Average Runoff Depth = 0.66"**
99.69% Pervious = 143.350 ac 0.31% Impervious = 0.440 ac

12186.008 Pre-Development Hydro

Type II 24-hr 2-yr Rainfall=3.00"

Prepared by {enter your company name here}

Printed 12/18/2019

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Page 3

Summary for Subcatchment 1S: Subarea 1

Runoff = 13.75 cfs @ 12.69 hrs, Volume= 2.187 af, Depth> 0.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.00"

| Area (sf) | CN | Description |
|-----------|----|---------------------------|
| 326,802 | 36 | Woods, Fair, HSG A |
| 213,638 | 73 | Woods, Fair, HSG C |
| 752,072 | 79 | Woods, Fair, HSG D |
| 222,912 | 71 | Meadow, non-grazed, HSG C |
| 322,837 | 78 | Meadow, non-grazed, HSG D |
| 19,178 | 98 | Water Surface, HSG D |
| 1,857,439 | 70 | Weighted Average |
| 1,838,261 | | 98.97% Pervious Area |
| 19,178 | | 1.03% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 16.8 | 100 | 0.0400 | 0.10 | | Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.00" |
| 41.8 | 1,430 | 0.0130 | 0.57 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 58.6 | 1,530 | Total | | | |

Summary for Subcatchment 2S: Subarea 2

Runoff = 0.41 cfs @ 12.63 hrs, Volume= 0.153 af, Depth> 0.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.00"

| Area (sf) | CN | Description |
|-----------|----|-----------------------|
| 480,433 | 36 | Woods, Fair, HSG A |
| 218,346 | 73 | Woods, Fair, HSG C |
| 125,206 | 79 | Woods, Fair, HSG D |
| 823,985 | 52 | Weighted Average |
| 823,985 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 13.8 | 85 | 0.0470 | 0.10 | | Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.00" |
| 11.0 | 430 | 0.0170 | 0.65 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 24.8 | 515 | Total | | | |

12186.008 Pre-Development Hydro

Type II 24-hr 2-yr Rainfall=3.00"

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Page 4

Summary for Subcatchment 3S: Subarea 3

Runoff = 20.71 cfs @ 13.70 hrs, Volume= 5.520 af, Depth> 0.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.00"

| Area (sf) | CN | Description |
|-----------|----|---------------------------|
| 30,184 | 36 | Woods, Fair, HSG A |
| 1,646,601 | 73 | Woods, Fair, HSG C |
| 1,710,517 | 79 | Woods, Fair, HSG D |
| 194,758 | 71 | Meadow, non-grazed, HSG C |
| 3,582,060 | 75 | Weighted Average |
| 3,582,060 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 110.0 | 2,760 | 0.0070 | 0.42 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 24.1 | 320 | 0.0010 | 0.22 | | Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps |
| 134.1 | 3,080 | Total | | | |

Summary for Reach R: Reach

Inflow Area = 82.233 ac, 0.00% Impervious, Inflow Depth > 0.81" for 2-yr event
 Inflow = 20.71 cfs @ 13.70 hrs, Volume= 5.520 af
 Outflow = 20.59 cfs @ 13.96 hrs, Volume= 5.420 af, Atten= 1%, Lag= 15.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 1.60 fps, Min. Travel Time= 8.8 min
 Avg. Velocity= 1.03 fps, Avg. Travel Time= 13.6 min

Peak Storage= 10,820 cf @ 13.81 hrs
 Average Depth at Peak Storage= 0.98'
 Bank-Full Depth= 1.00' Flow Area= 13.3 sf, Capacity= 21.64 cfs

20.00' x 1.00' deep Parabolic Channel, n= 0.022 Earth, clean & straight
 Length= 840.0' Slope= 0.0010 '/'
 Inlet Invert= 254.84', Outlet Invert= 254.00'



‡

Summary for Reach SP1: Summation Point 1

Inflow Area = 124.874 ac, 0.35% Impervious, Inflow Depth > 0.73" for 2-yr event
Inflow = 24.92 cfs @ 13.80 hrs, Volume= 7.608 af
Outflow = 24.92 cfs @ 13.80 hrs, Volume= 7.608 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach SP2: Summation Point 2

Inflow Area = 18.916 ac, 0.00% Impervious, Inflow Depth > 0.10" for 2-yr event
Inflow = 0.41 cfs @ 12.63 hrs, Volume= 0.153 af
Outflow = 0.41 cfs @ 12.63 hrs, Volume= 0.153 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

12186.008 Pre-Development Hydro*Type II 24-hr 10-yr Rainfall=4.30"*

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Page 6

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Subarea 1Runoff Area=1,857,439 sf 1.03% Impervious Runoff Depth>1.36"
Flow Length=1,530' Tc=58.6 min CN=70 Runoff=33.29 cfs 4.818 af**Subcatchment 2S: Subarea 2**Runoff Area=823,985 sf 0.00% Impervious Runoff Depth>0.43"
Flow Length=515' Tc=24.8 min CN=52 Runoff=5.48 cfs 0.682 af**Subcatchment 3S: Subarea 3**Runoff Area=3,582,060 sf 0.00% Impervious Runoff Depth>1.63"
Flow Length=3,080' Tc=134.1 min CN=75 Runoff=43.72 cfs 11.170 af**Reach R: Reach**Avg. Flow Depth=1.47' Max Vel=1.91 fps Inflow=43.72 cfs 11.170 af
n=0.022 L=840.0' S=0.0010 '/' Capacity=21.64 cfs Outflow=43.37 cfs 11.027 af**Reach SP1: Summation Point 1**Inflow=53.05 cfs 15.845 af
Outflow=53.05 cfs 15.845 af**Reach SP2: Summation Point 2**Inflow=5.48 cfs 0.682 af
Outflow=5.48 cfs 0.682 af**Total Runoff Area = 143.790 ac Runoff Volume = 16.671 af Average Runoff Depth = 1.39"**
99.69% Pervious = 143.350 ac 0.31% Impervious = 0.440 ac

12186.008 Pre-Development Hydro

Type II 24-hr 10-yr Rainfall=4.30"

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Page 7

Summary for Subcatchment 1S: Subarea 1

Runoff = 33.29 cfs @ 12.65 hrs, Volume= 4.818 af, Depth> 1.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.30"

| Area (sf) | CN | Description |
|-----------|----|---------------------------|
| 326,802 | 36 | Woods, Fair, HSG A |
| 213,638 | 73 | Woods, Fair, HSG C |
| 752,072 | 79 | Woods, Fair, HSG D |
| 222,912 | 71 | Meadow, non-grazed, HSG C |
| 322,837 | 78 | Meadow, non-grazed, HSG D |
| 19,178 | 98 | Water Surface, HSG D |
| 1,857,439 | 70 | Weighted Average |
| 1,838,261 | | 98.97% Pervious Area |
| 19,178 | | 1.03% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 16.8 | 100 | 0.0400 | 0.10 | | Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.00" |
| 41.8 | 1,430 | 0.0130 | 0.57 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 58.6 | 1,530 | Total | | | |

Summary for Subcatchment 2S: Subarea 2

Runoff = 5.48 cfs @ 12.26 hrs, Volume= 0.682 af, Depth> 0.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.30"

| Area (sf) | CN | Description |
|-----------|----|-----------------------|
| 480,433 | 36 | Woods, Fair, HSG A |
| 218,346 | 73 | Woods, Fair, HSG C |
| 125,206 | 79 | Woods, Fair, HSG D |
| 823,985 | 52 | Weighted Average |
| 823,985 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 13.8 | 85 | 0.0470 | 0.10 | | Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.00" |
| 11.0 | 430 | 0.0170 | 0.65 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 24.8 | 515 | Total | | | |

12186.008 Pre-Development Hydro

Type II 24-hr 10-yr Rainfall=4.30"

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Page 8

Summary for Subcatchment 3S: Subarea 3

Runoff = 43.72 cfs @ 13.59 hrs, Volume= 11.170 af, Depth> 1.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.30"

| Area (sf) | CN | Description |
|-----------|----|---------------------------|
| 30,184 | 36 | Woods, Fair, HSG A |
| 1,646,601 | 73 | Woods, Fair, HSG C |
| 1,710,517 | 79 | Woods, Fair, HSG D |
| 194,758 | 71 | Meadow, non-grazed, HSG C |
| 3,582,060 | 75 | Weighted Average |
| 3,582,060 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 110.0 | 2,760 | 0.0070 | 0.42 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 24.1 | 320 | 0.0010 | 0.22 | | Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps |
| 134.1 | 3,080 | Total | | | |

Summary for Reach R: Reach

Inflow Area = 82.233 ac, 0.00% Impervious, Inflow Depth > 1.63" for 10-yr event
 Inflow = 43.72 cfs @ 13.59 hrs, Volume= 11.170 af
 Outflow = 43.37 cfs @ 13.85 hrs, Volume= 11.027 af, Atten= 1%, Lag= 15.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 1.91 fps, Min. Travel Time= 7.3 min
 Avg. Velocity= 1.14 fps, Avg. Travel Time= 12.3 min

Peak Storage= 19,035 cf @ 13.73 hrs
 Average Depth at Peak Storage= 1.47'
 Bank-Full Depth= 1.00' Flow Area= 13.3 sf, Capacity= 21.64 cfs

20.00' x 1.00' deep Parabolic Channel, n= 0.022 Earth, clean & straight
 Length= 840.0' Slope= 0.0010 '/'
 Inlet Invert= 254.84', Outlet Invert= 254.00'



Summary for Reach SP1: Summation Point 1

Inflow Area = 124.874 ac, 0.35% Impervious, Inflow Depth > 1.52" for 10-yr event
Inflow = 53.05 cfs @ 13.69 hrs, Volume= 15.845 af
Outflow = 53.05 cfs @ 13.69 hrs, Volume= 15.845 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach SP2: Summation Point 2

Inflow Area = 18.916 ac, 0.00% Impervious, Inflow Depth > 0.43" for 10-yr event
Inflow = 5.48 cfs @ 12.26 hrs, Volume= 0.682 af
Outflow = 5.48 cfs @ 12.26 hrs, Volume= 0.682 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

12186.008 Pre-Development Hydro*Type II 24-hr 10-yr Rainfall=4.30"*

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Page 1

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Subarea 1Runoff Area=1,857,439 sf 1.03% Impervious Runoff Depth>1.36"
Flow Length=1,530' Tc=58.6 min CN=70 Runoff=33.29 cfs 4.818 af**Subcatchment 2S: Subarea 2**Runoff Area=823,985 sf 0.00% Impervious Runoff Depth>0.43"
Flow Length=515' Tc=24.8 min CN=52 Runoff=5.48 cfs 0.682 af**Subcatchment 3S: Subarea 3**Runoff Area=3,582,060 sf 0.00% Impervious Runoff Depth>1.63"
Flow Length=3,080' Tc=134.1 min CN=75 Runoff=43.72 cfs 11.170 af**Reach R: Reach**Avg. Flow Depth=1.47' Max Vel=1.91 fps Inflow=43.72 cfs 11.170 af
n=0.022 L=840.0' S=0.0010 '/' Capacity=21.64 cfs Outflow=43.37 cfs 11.027 af**Reach SP1: Summation Point 1**Inflow=53.05 cfs 15.845 af
Outflow=53.05 cfs 15.845 af**Reach SP2: Summation Point 2**Inflow=5.48 cfs 0.682 af
Outflow=5.48 cfs 0.682 af**Total Runoff Area = 143.790 ac Runoff Volume = 16.671 af Average Runoff Depth = 1.39"**
99.69% Pervious = 143.350 ac 0.31% Impervious = 0.440 ac

12186.008 Pre-Development Hydro

Type II 24-hr 10-yr Rainfall=4.30"

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Page 2

Summary for Subcatchment 1S: Subarea 1

Runoff = 33.29 cfs @ 12.65 hrs, Volume= 4.818 af, Depth> 1.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.30"

| Area (sf) | CN | Description |
|-----------|----|---------------------------|
| 326,802 | 36 | Woods, Fair, HSG A |
| 213,638 | 73 | Woods, Fair, HSG C |
| 752,072 | 79 | Woods, Fair, HSG D |
| 222,912 | 71 | Meadow, non-grazed, HSG C |
| 322,837 | 78 | Meadow, non-grazed, HSG D |
| 19,178 | 98 | Water Surface, HSG D |
| 1,857,439 | 70 | Weighted Average |
| 1,838,261 | | 98.97% Pervious Area |
| 19,178 | | 1.03% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 16.8 | 100 | 0.0400 | 0.10 | | Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.00" |
| 41.8 | 1,430 | 0.0130 | 0.57 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 58.6 | 1,530 | Total | | | |

Summary for Subcatchment 2S: Subarea 2

Runoff = 5.48 cfs @ 12.26 hrs, Volume= 0.682 af, Depth> 0.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.30"

| Area (sf) | CN | Description |
|-----------|----|-----------------------|
| 480,433 | 36 | Woods, Fair, HSG A |
| 218,346 | 73 | Woods, Fair, HSG C |
| 125,206 | 79 | Woods, Fair, HSG D |
| 823,985 | 52 | Weighted Average |
| 823,985 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 13.8 | 85 | 0.0470 | 0.10 | | Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.00" |
| 11.0 | 430 | 0.0170 | 0.65 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 24.8 | 515 | Total | | | |

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Type II 24-hr 10-yr Rainfall=4.30"

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Page 3

Summary for Subcatchment 3S: Subarea 3

Runoff = 43.72 cfs @ 13.59 hrs, Volume= 11.170 af, Depth> 1.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.30"

| Area (sf) | CN | Description |
|-----------|----|---------------------------|
| 30,184 | 36 | Woods, Fair, HSG A |
| 1,646,601 | 73 | Woods, Fair, HSG C |
| 1,710,517 | 79 | Woods, Fair, HSG D |
| 194,758 | 71 | Meadow, non-grazed, HSG C |
| 3,582,060 | 75 | Weighted Average |
| 3,582,060 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 110.0 | 2,760 | 0.0070 | 0.42 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 24.1 | 320 | 0.0010 | 0.22 | | Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps |
| 134.1 | 3,080 | Total | | | |

Summary for Reach R: Reach

Inflow Area = 82.233 ac, 0.00% Impervious, Inflow Depth > 1.63" for 10-yr event
 Inflow = 43.72 cfs @ 13.59 hrs, Volume= 11.170 af
 Outflow = 43.37 cfs @ 13.85 hrs, Volume= 11.027 af, Atten= 1%, Lag= 15.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 1.91 fps, Min. Travel Time= 7.3 min
 Avg. Velocity= 1.14 fps, Avg. Travel Time= 12.3 min

Peak Storage= 19,035 cf @ 13.73 hrs
 Average Depth at Peak Storage= 1.47'
 Bank-Full Depth= 1.00' Flow Area= 13.3 sf, Capacity= 21.64 cfs

20.00' x 1.00' deep Parabolic Channel, n= 0.022 Earth, clean & straight
 Length= 840.0' Slope= 0.0010 '/'
 Inlet Invert= 254.84', Outlet Invert= 254.00'



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Type II 24-hr 10-yr Rainfall=4.30"

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Page 4

Summary for Reach SP1: Summation Point 1

Inflow Area = 124.874 ac, 0.35% Impervious, Inflow Depth > 1.52" for 10-yr event
Inflow = 53.05 cfs @ 13.69 hrs, Volume= 15.845 af
Outflow = 53.05 cfs @ 13.69 hrs, Volume= 15.845 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach SP2: Summation Point 2

Inflow Area = 18.916 ac, 0.00% Impervious, Inflow Depth > 0.43" for 10-yr event
Inflow = 5.48 cfs @ 12.26 hrs, Volume= 0.682 af
Outflow = 5.48 cfs @ 12.26 hrs, Volume= 0.682 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

12186.008 Pre-Development Hydro*Type II 24-hr 25-yr Rainfall=5.40"*

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Page 5

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Subarea 1Runoff Area=1,857,439 sf 1.03% Impervious Runoff Depth>2.09"
Flow Length=1,530' Tc=58.6 min CN=70 Runoff=52.61 cfs 7.428 af**Subcatchment 2S: Subarea 2**Runoff Area=823,985 sf 0.00% Impervious Runoff Depth>0.85"
Flow Length=515' Tc=24.8 min CN=52 Runoff=13.87 cfs 1.347 af**Subcatchment 3S: Subarea 3**Runoff Area=3,582,060 sf 0.00% Impervious Runoff Depth>2.42"
Flow Length=3,080' Tc=134.1 min CN=75 Runoff=65.58 cfs 16.572 af**Reach R: Reach**Avg. Flow Depth=1.93' Max Vel=2.04 fps Inflow=65.58 cfs 16.572 af
n=0.022 L=840.0' S=0.0010 '/' Capacity=21.64 cfs Outflow=64.94 cfs 16.392 af**Reach SP1: Summation Point 1**Inflow=79.76 cfs 23.820 af
Outflow=79.76 cfs 23.820 af**Reach SP2: Summation Point 2**Inflow=13.87 cfs 1.347 af
Outflow=13.87 cfs 1.347 af**Total Runoff Area = 143.790 ac Runoff Volume = 25.346 af Average Runoff Depth = 2.12"**
99.69% Pervious = 143.350 ac 0.31% Impervious = 0.440 ac

12186.008 Pre-Development Hydro

Type II 24-hr 25-yr Rainfall=5.40"

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Page 6

Summary for Subcatchment 1S: Subarea 1

Runoff = 52.61 cfs @ 12.62 hrs, Volume= 7.428 af, Depth> 2.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=5.40"

| Area (sf) | CN | Description |
|-----------|----|---------------------------|
| 326,802 | 36 | Woods, Fair, HSG A |
| 213,638 | 73 | Woods, Fair, HSG C |
| 752,072 | 79 | Woods, Fair, HSG D |
| 222,912 | 71 | Meadow, non-grazed, HSG C |
| 322,837 | 78 | Meadow, non-grazed, HSG D |
| 19,178 | 98 | Water Surface, HSG D |
| 1,857,439 | 70 | Weighted Average |
| 1,838,261 | | 98.97% Pervious Area |
| 19,178 | | 1.03% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 16.8 | 100 | 0.0400 | 0.10 | | Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.00" |
| 41.8 | 1,430 | 0.0130 | 0.57 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 58.6 | 1,530 | Total | | | |

Summary for Subcatchment 2S: Subarea 2

Runoff = 13.87 cfs @ 12.23 hrs, Volume= 1.347 af, Depth> 0.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=5.40"

| Area (sf) | CN | Description |
|-----------|----|-----------------------|
| 480,433 | 36 | Woods, Fair, HSG A |
| 218,346 | 73 | Woods, Fair, HSG C |
| 125,206 | 79 | Woods, Fair, HSG D |
| 823,985 | 52 | Weighted Average |
| 823,985 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 13.8 | 85 | 0.0470 | 0.10 | | Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.00" |
| 11.0 | 430 | 0.0170 | 0.65 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 24.8 | 515 | Total | | | |

12186.008 Pre-Development Hydro

Type II 24-hr 25-yr Rainfall=5.40"

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Page 7

Summary for Subcatchment 3S: Subarea 3

Runoff = 65.58 cfs @ 13.57 hrs, Volume= 16.572 af, Depth> 2.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=5.40"

| Area (sf) | CN | Description |
|-----------|----|---------------------------|
| 30,184 | 36 | Woods, Fair, HSG A |
| 1,646,601 | 73 | Woods, Fair, HSG C |
| 1,710,517 | 79 | Woods, Fair, HSG D |
| 194,758 | 71 | Meadow, non-grazed, HSG C |
| 3,582,060 | 75 | Weighted Average |
| 3,582,060 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 110.0 | 2,760 | 0.0070 | 0.42 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 24.1 | 320 | 0.0010 | 0.22 | | Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps |
| 134.1 | 3,080 | Total | | | |

Summary for Reach R: Reach

Inflow Area = 82.233 ac, 0.00% Impervious, Inflow Depth > 2.42" for 25-yr event
 Inflow = 65.58 cfs @ 13.57 hrs, Volume= 16.572 af
 Outflow = 64.94 cfs @ 13.81 hrs, Volume= 16.392 af, Atten= 1%, Lag= 14.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 2.04 fps, Min. Travel Time= 6.9 min
 Avg. Velocity= 1.20 fps, Avg. Travel Time= 11.6 min

Peak Storage= 26,805 cf @ 13.69 hrs
 Average Depth at Peak Storage= 1.93'
 Bank-Full Depth= 1.00' Flow Area= 13.3 sf, Capacity= 21.64 cfs

20.00' x 1.00' deep Parabolic Channel, n= 0.022 Earth, clean & straight
 Length= 840.0' Slope= 0.0010 '/'
 Inlet Invert= 254.84', Outlet Invert= 254.00'



Summary for Reach SP1: Summation Point 1

Inflow Area = 124.874 ac, 0.35% Impervious, Inflow Depth > 2.29" for 25-yr event
Inflow = 79.76 cfs @ 13.62 hrs, Volume= 23.820 af
Outflow = 79.76 cfs @ 13.62 hrs, Volume= 23.820 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach SP2: Summation Point 2

Inflow Area = 18.916 ac, 0.00% Impervious, Inflow Depth > 0.85" for 25-yr event
Inflow = 13.87 cfs @ 12.23 hrs, Volume= 1.347 af
Outflow = 13.87 cfs @ 12.23 hrs, Volume= 1.347 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

12186.008 Pre-Development Hydro*Type II 24-hr 25-yr Rainfall=5.40"*

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Page 1

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Subarea 1Runoff Area=1,857,439 sf 1.03% Impervious Runoff Depth>2.09"
Flow Length=1,530' Tc=58.6 min CN=70 Runoff=52.61 cfs 7.428 af**Subcatchment 2S: Subarea 2**Runoff Area=823,985 sf 0.00% Impervious Runoff Depth>0.85"
Flow Length=515' Tc=24.8 min CN=52 Runoff=13.87 cfs 1.347 af**Subcatchment 3S: Subarea 3**Runoff Area=3,582,060 sf 0.00% Impervious Runoff Depth>2.42"
Flow Length=3,080' Tc=134.1 min CN=75 Runoff=65.58 cfs 16.572 af**Reach R: Reach**Avg. Flow Depth=1.93' Max Vel=2.04 fps Inflow=65.58 cfs 16.572 af
n=0.022 L=840.0' S=0.0010 '/' Capacity=21.64 cfs Outflow=64.94 cfs 16.392 af**Reach SP1: Summation Point 1**Inflow=79.76 cfs 23.820 af
Outflow=79.76 cfs 23.820 af**Reach SP2: Summation Point 2**Inflow=13.87 cfs 1.347 af
Outflow=13.87 cfs 1.347 af**Total Runoff Area = 143.790 ac Runoff Volume = 25.346 af Average Runoff Depth = 2.12"**
99.69% Pervious = 143.350 ac 0.31% Impervious = 0.440 ac

12186.008 Pre-Development Hydro

Type II 24-hr 25-yr Rainfall=5.40"

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Page 2

Summary for Subcatchment 1S: Subarea 1

Runoff = 52.61 cfs @ 12.62 hrs, Volume= 7.428 af, Depth> 2.09"

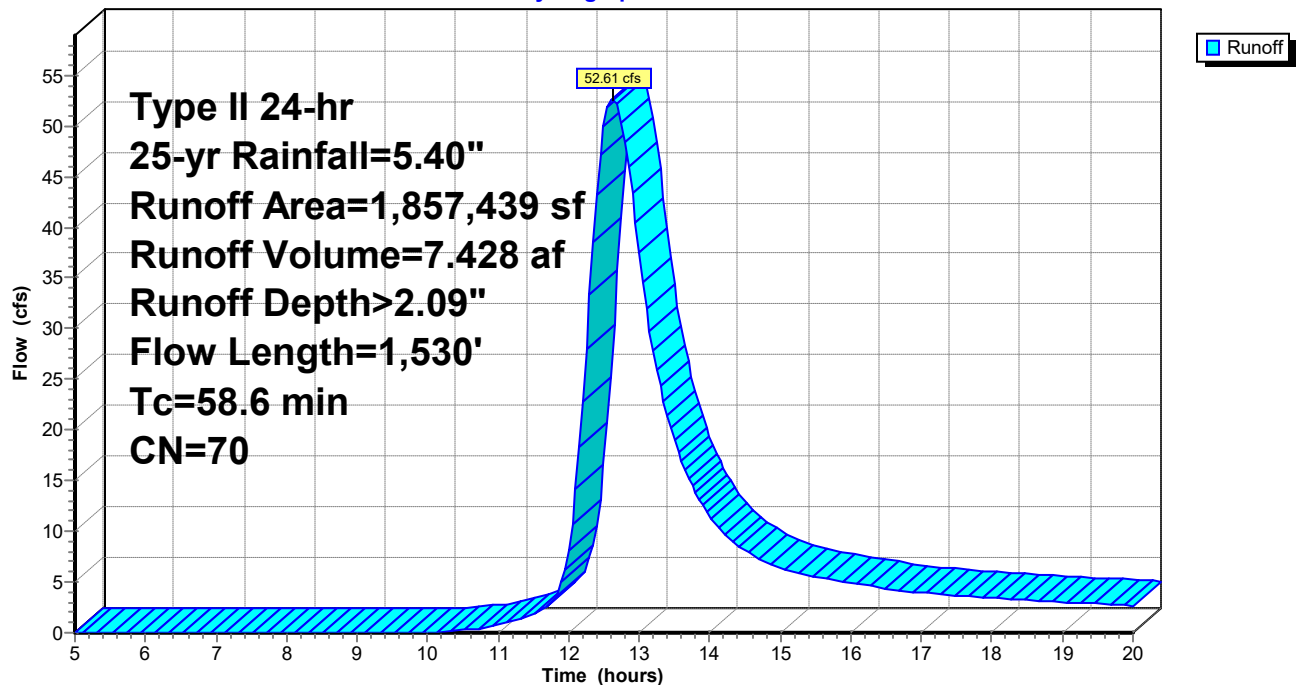
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=5.40"

| Area (sf) | CN | Description |
|-----------|----|---------------------------|
| 326,802 | 36 | Woods, Fair, HSG A |
| 213,638 | 73 | Woods, Fair, HSG C |
| 752,072 | 79 | Woods, Fair, HSG D |
| 222,912 | 71 | Meadow, non-grazed, HSG C |
| 322,837 | 78 | Meadow, non-grazed, HSG D |
| 19,178 | 98 | Water Surface, HSG D |
| 1,857,439 | 70 | Weighted Average |
| 1,838,261 | | 98.97% Pervious Area |
| 19,178 | | 1.03% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 16.8 | 100 | 0.0400 | 0.10 | | Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.00" |
| 41.8 | 1,430 | 0.0130 | 0.57 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 58.6 | 1,530 | Total | | | |

Subcatchment 1S: Subarea 1

Hydrograph



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Type II 24-hr 25-yr Rainfall=5.40"

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Page 3

Summary for Subcatchment 2S: Subarea 2

Runoff = 13.87 cfs @ 12.23 hrs, Volume= 1.347 af, Depth> 0.85"

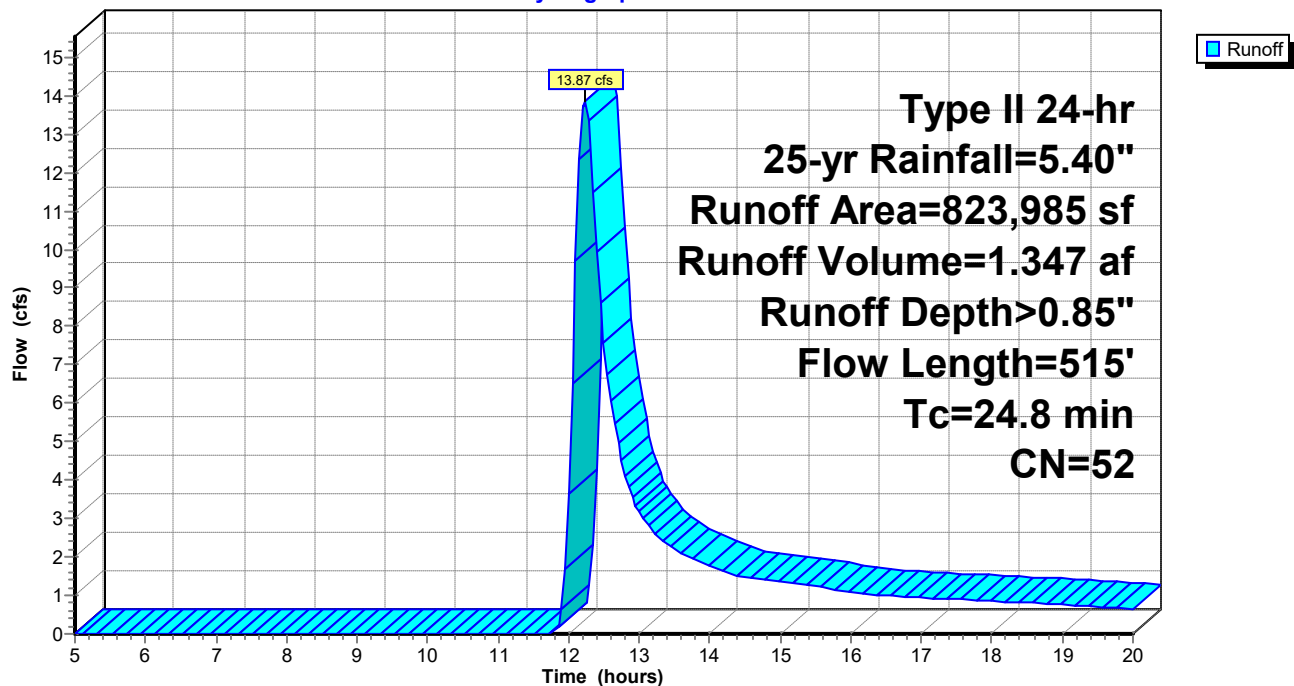
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=5.40"

| Area (sf) | CN | Description |
|-----------|----|-----------------------|
| 480,433 | 36 | Woods, Fair, HSG A |
| 218,346 | 73 | Woods, Fair, HSG C |
| 125,206 | 79 | Woods, Fair, HSG D |
| 823,985 | 52 | Weighted Average |
| 823,985 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 13.8 | 85 | 0.0470 | 0.10 | | Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.00" |
| 11.0 | 430 | 0.0170 | 0.65 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 24.8 | 515 | Total | | | |

Subcatchment 2S: Subarea 2

Hydrograph



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Type II 24-hr 25-yr Rainfall=5.40"

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Page 4

Summary for Subcatchment 3S: Subarea 3

Runoff = 65.58 cfs @ 13.57 hrs, Volume= 16.572 af, Depth> 2.42"

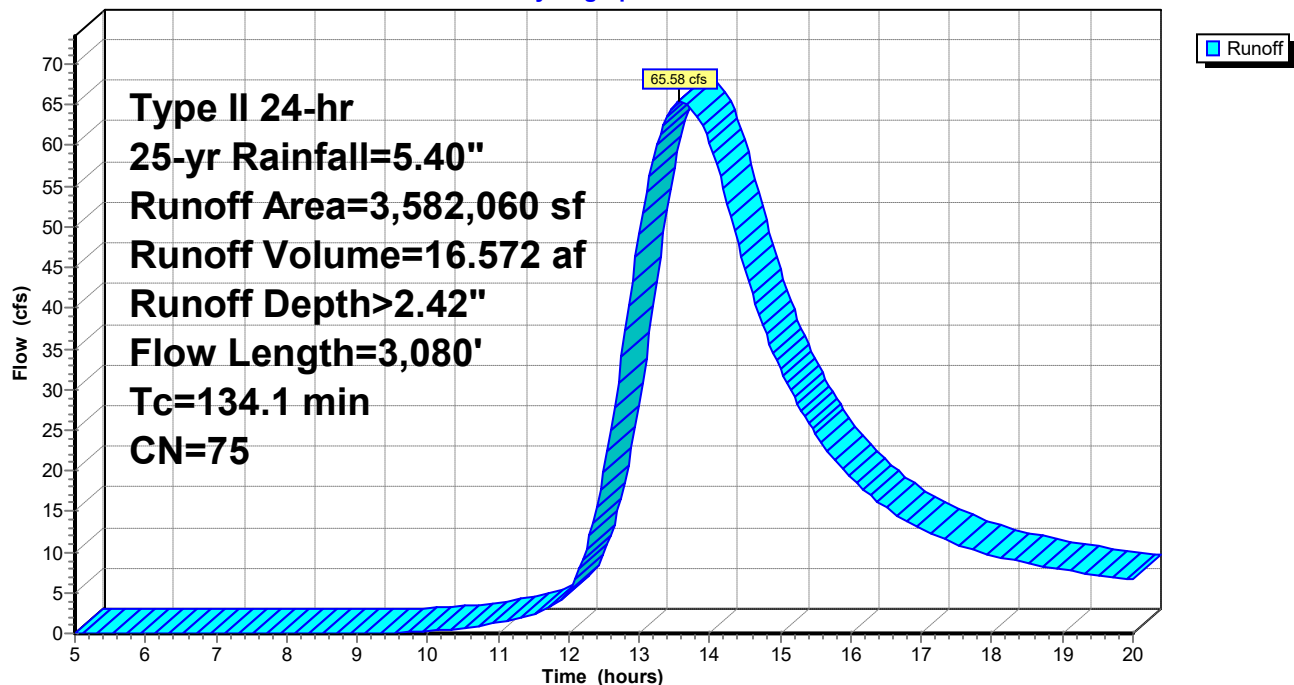
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=5.40"

| Area (sf) | CN | Description |
|-----------|----|---------------------------|
| 30,184 | 36 | Woods, Fair, HSG A |
| 1,646,601 | 73 | Woods, Fair, HSG C |
| 1,710,517 | 79 | Woods, Fair, HSG D |
| 194,758 | 71 | Meadow, non-grazed, HSG C |
| 3,582,060 | 75 | Weighted Average |
| 3,582,060 | | 100.00% Pervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 110.0 | 2,760 | 0.0070 | 0.42 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 24.1 | 320 | 0.0010 | 0.22 | | Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps |
| 134.1 | 3,080 | Total | | | |

Subcatchment 3S: Subarea 3

Hydrograph



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Type II 24-hr 25-yr Rainfall=5.40"

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Page 5

Summary for Reach R: Reach

Inflow Area = 82.233 ac, 0.00% Impervious, Inflow Depth > 2.42" for 25-yr event
Inflow = 65.58 cfs @ 13.57 hrs, Volume= 16.572 af
Outflow = 64.94 cfs @ 13.81 hrs, Volume= 16.392 af, Atten= 1%, Lag= 14.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.04 fps, Min. Travel Time= 6.9 min

Avg. Velocity = 1.20 fps, Avg. Travel Time= 11.6 min

Peak Storage= 26,805 cf @ 13.69 hrs

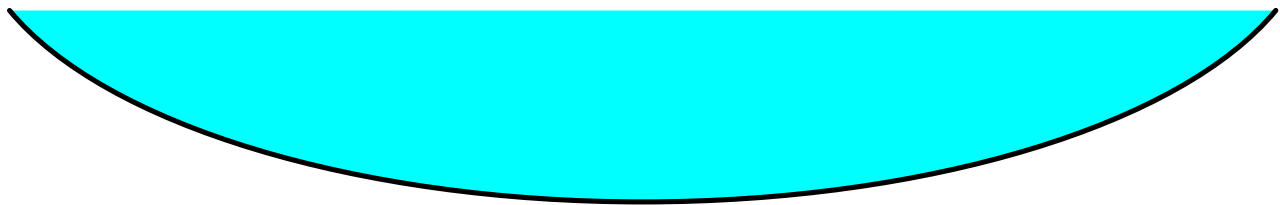
Average Depth at Peak Storage= 1.93'

Bank-Full Depth= 1.00' Flow Area= 13.3 sf, Capacity= 21.64 cfs

20.00' x 1.00' deep Parabolic Channel, n= 0.022 Earth, clean & straight

Length= 840.0' Slope= 0.0010 '/'

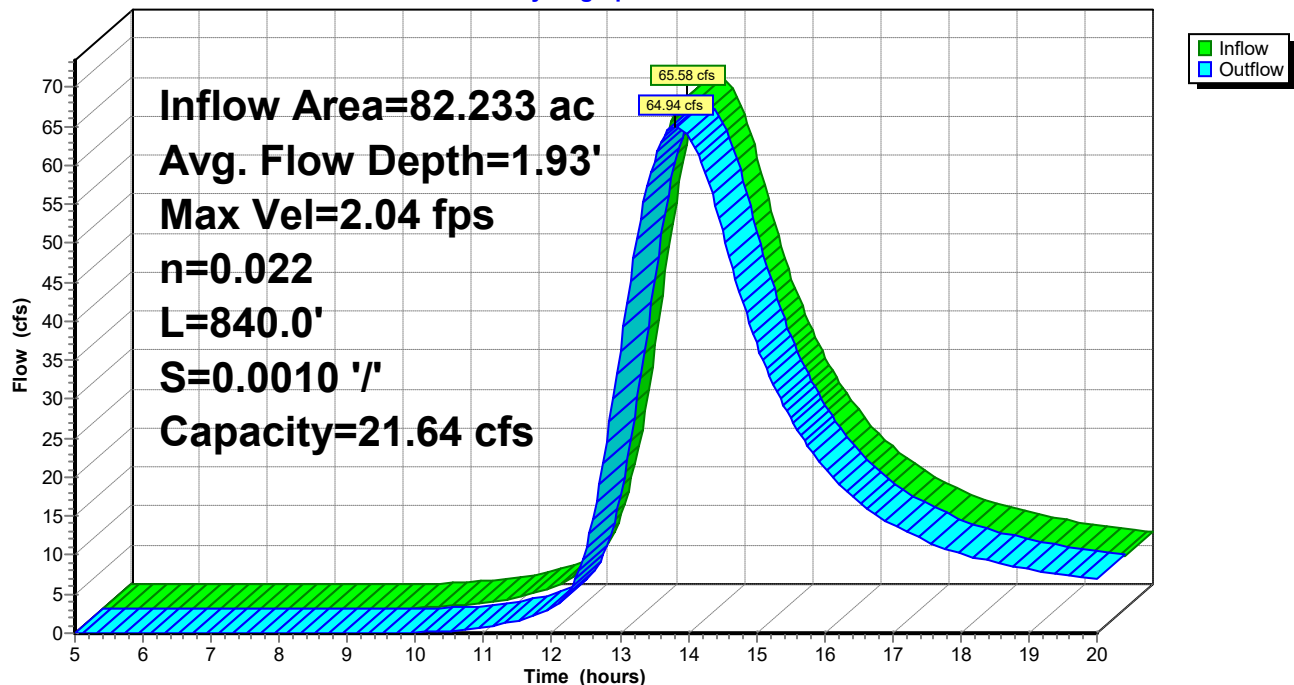
Inlet Invert= 254.84', Outlet Invert= 254.00'



‡

Reach R: Reach

Hydrograph



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Type II 24-hr 25-yr Rainfall=5.40"

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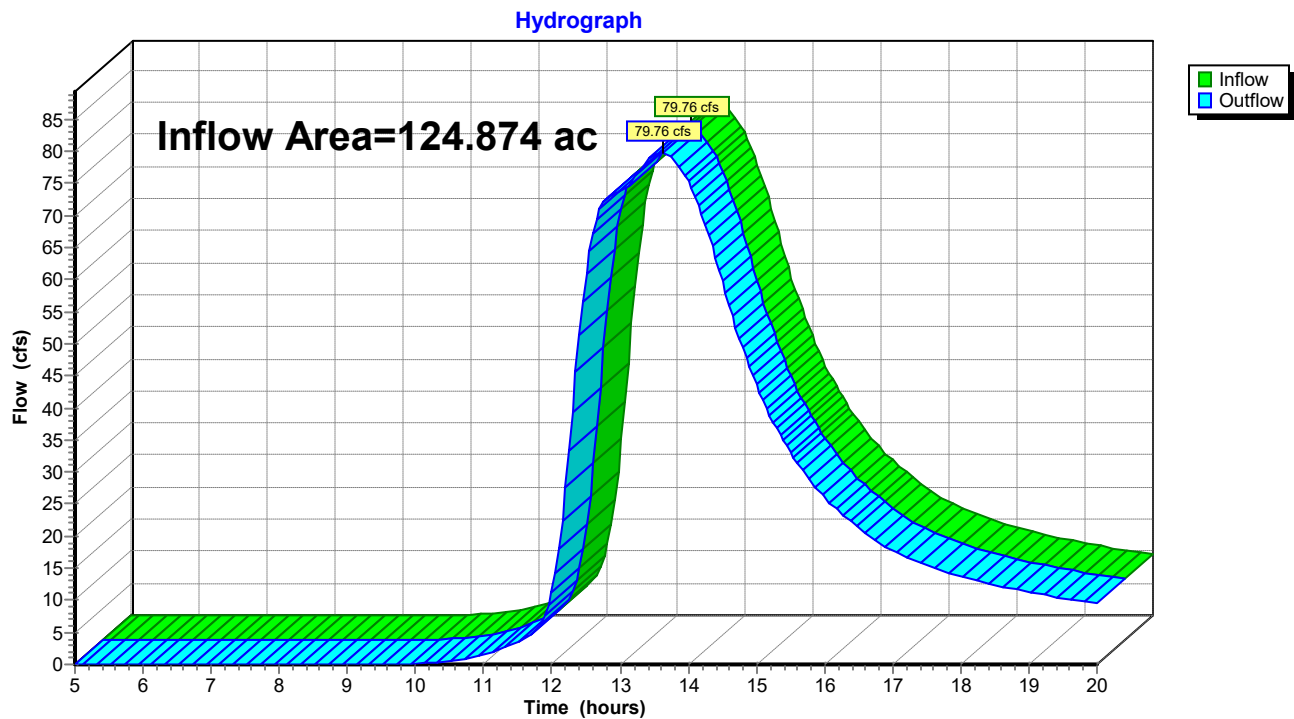
Page 6

Summary for Reach SP1: Summation Point 1

Inflow Area = 124.874 ac, 0.35% Impervious, Inflow Depth > 2.29" for 25-yr event
Inflow = 79.76 cfs @ 13.62 hrs, Volume= 23.820 af
Outflow = 79.76 cfs @ 13.62 hrs, Volume= 23.820 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SP1: Summation Point 1



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Type II 24-hr 25-yr Rainfall=5.40"

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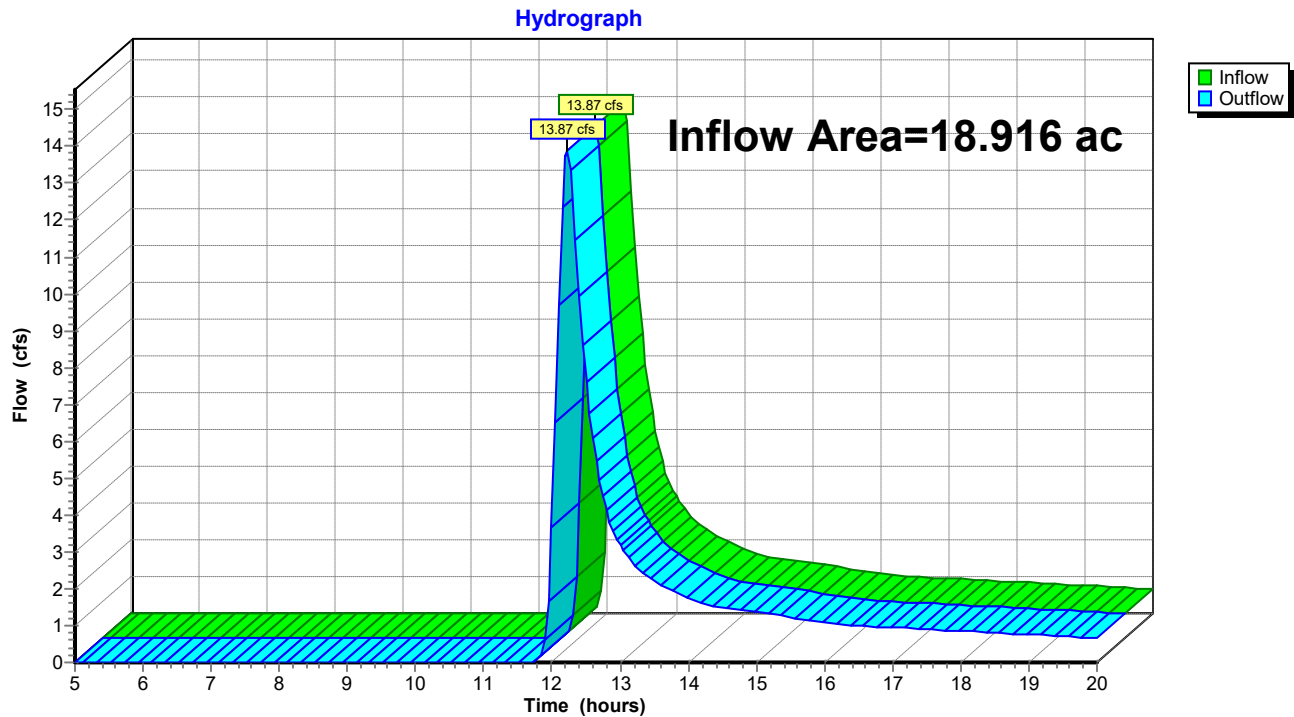
Page 7

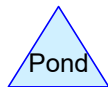
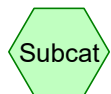
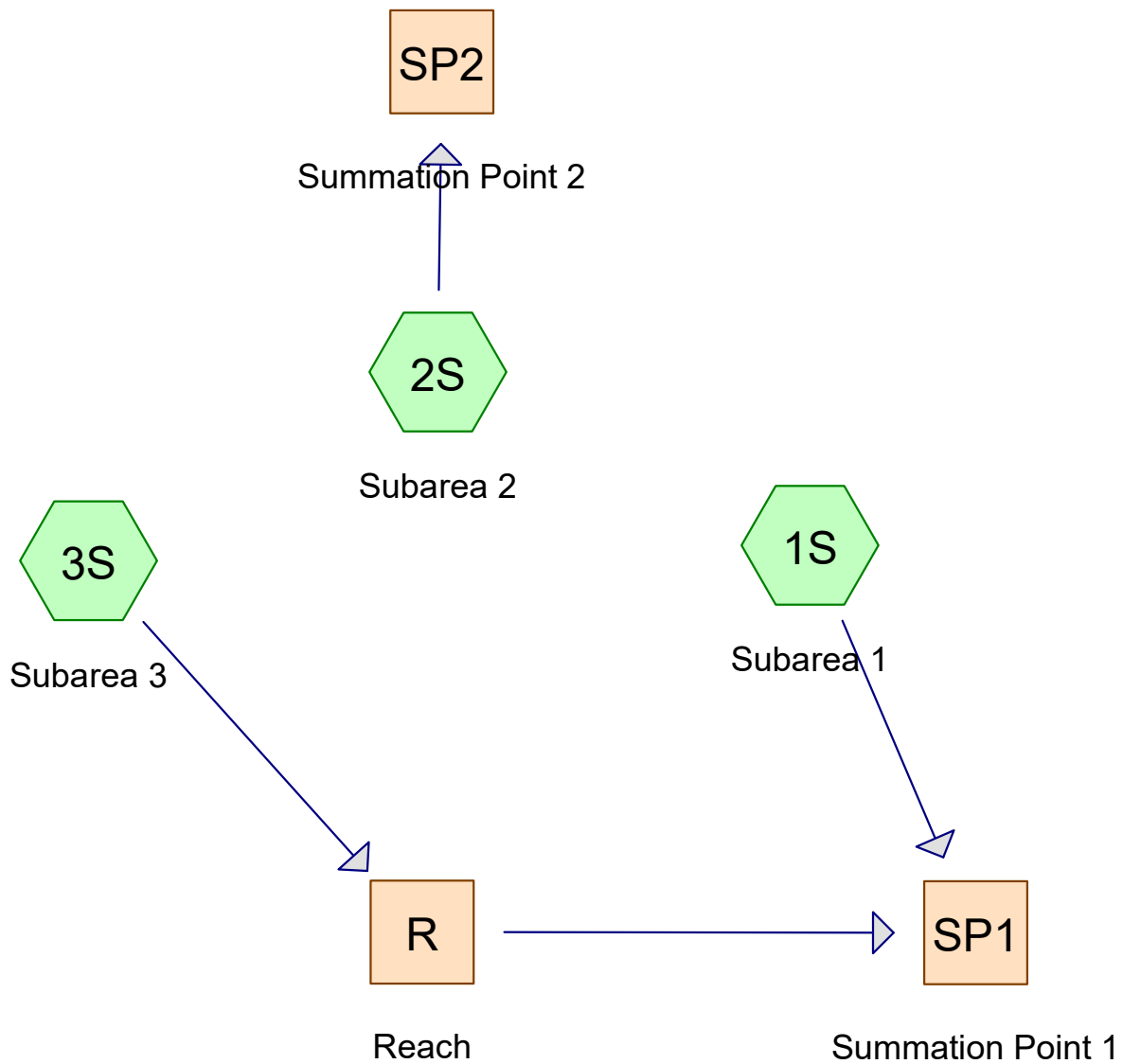
Summary for Reach SP2: Summation Point 2

Inflow Area = 18.916 ac, 0.00% Impervious, Inflow Depth > 0.85" for 25-yr event
Inflow = 13.87 cfs @ 12.23 hrs, Volume= 1.347 af
Outflow = 13.87 cfs @ 12.23 hrs, Volume= 1.347 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SP2: Summation Point 2





Routing Diagram for 12186.008 Post-Development Hydro
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12186.008 Post-Development Hydro*Type II 24-hr 2-yr Rainfall=3.00"*

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Page 2

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Subarea 1Runoff Area=1,857,439 sf 1.05% Impervious Runoff Depth>0.58"
Flow Length=1,530' Tc=49.0 min CN=69 Runoff=14.30 cfs 2.054 af**Subcatchment 2S: Subarea 2**Runoff Area=823,985 sf 0.05% Impervious Runoff Depth>0.07"
Flow Length=515' Tc=17.1 min CN=50 Runoff=0.21 cfs 0.104 af**Subcatchment 3S: Subarea 3**Runoff Area=3,582,060 sf 0.01% Impervious Runoff Depth>0.81"
Flow Length=3,080' Tc=134.1 min CN=75 Runoff=20.71 cfs 5.520 af**Reach R: Reach**Avg. Flow Depth=0.98' Max Vel=1.60 fps Inflow=20.71 cfs 5.520 af
n=0.022 L=840.0' S=0.0010 '/' Capacity=21.64 cfs Outflow=20.59 cfs 5.420 af**Reach SP1: Summation Point 1**Inflow=24.08 cfs 7.475 af
Outflow=24.08 cfs 7.475 af**Reach SP2: Summation Point 2**Inflow=0.21 cfs 0.104 af
Outflow=0.21 cfs 0.104 af**Total Runoff Area = 143.790 ac Runoff Volume = 7.678 af Average Runoff Depth = 0.64"**
99.67% Pervious = 143.322 ac 0.33% Impervious = 0.467 ac

12186.008 Post-Development Hydro

Type II 24-hr 2-yr Rainfall=3.00"

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Page 3

Summary for Subcatchment 1S: Subarea 1

Runoff = 14.30 cfs @ 12.56 hrs, Volume= 2.054 af, Depth> 0.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.00"

| Area (sf) | CN | Description |
|-----------|----|-----------------------------|
| 88,270 | 36 | Woods, Fair, HSG A |
| 109,998 | 73 | Woods, Fair, HSG C |
| 638,782 | 79 | Woods, Fair, HSG D |
| 238,532 | 30 | Meadow, non-grazed, HSG A |
| 309,357 | 71 | Meadow, non-grazed, HSG C |
| 434,205 | 78 | Meadow, non-grazed, HSG D |
| 19,178 | 98 | Water Surface, HSG D |
| 16,802 | 96 | Gravel surface, HSG C |
| 1,922 | 96 | Gravel surface, HSG D |
| 393 | 98 | Unconnected pavement, HSG C |
| 1,857,439 | 69 | Weighted Average |
| 1,837,868 | | 98.95% Pervious Area |
| 19,571 | | 1.05% Impervious Area |
| 393 | | 2.01% Unconnected |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 11.2 | 100 | 0.0400 | 0.15 | | Sheet Flow, Grass: Dense n= 0.240 P2= 3.00" |
| 10.0 | 480 | 0.0130 | 0.80 | | Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps |
| 27.8 | 950 | 0.0130 | 0.57 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 49.0 | 1,530 | Total | | | |

Summary for Subcatchment 2S: Subarea 2

Runoff = 0.21 cfs @ 13.07 hrs, Volume= 0.104 af, Depth> 0.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.00"

12186.008 Post-Development Hydro

Type II 24-hr 2-yr Rainfall=3.00"

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Page 4

| Area (sf) | CN | Description |
|-----------|----|-----------------------------|
| 75,559 | 36 | Woods, Fair, HSG A |
| 15,629 | 73 | Woods, Fair, HSG C |
| 14,698 | 79 | Woods, Fair, HSG D |
| 399,212 | 30 | Meadow, non-grazed, HSG A |
| 183,788 | 71 | Meadow, non-grazed, HSG C |
| 109,508 | 78 | Meadow, non-grazed, HSG D |
| 5,662 | 96 | Gravel surface, HSG A |
| 18,536 | 96 | Gravel surface, HSG C |
| 1,000 | 96 | Gravel surface, HSG D |
| 393 | 98 | Unconnected pavement, HSG C |
| 823,985 | 50 | Weighted Average |
| 823,592 | | 99.95% Pervious Area |
| 393 | | 0.05% Impervious Area |
| 393 | | 100.00% Unconnected |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 9.2 | 85 | 0.0470 | 0.15 | | Sheet Flow, Grass: Dense n= 0.240 P2= 3.00" |
| 7.9 | 430 | 0.0170 | 0.91 | | Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps |
| 17.1 | 515 | Total | | | |

Summary for Subcatchment 3S: Subarea 3

Runoff = 20.71 cfs @ 13.70 hrs, Volume= 5.520 af, Depth> 0.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.00"

| Area (sf) | CN | Description |
|-----------|----|---------------------------|
| 1,116,313 | 73 | Woods, Fair, HSG C |
| 1,490,725 | 79 | Woods, Fair, HSG D |
| 23,677 | 30 | Meadow, non-grazed, HSG A |
| 692,792 | 71 | Meadow, non-grazed, HSG C |
| 219,510 | 78 | Meadow, non-grazed, HSG D |
| 6,507 | 96 | Gravel surface, HSG A |
| 31,861 | 96 | Gravel surface, HSG C |
| 282 | 96 | Gravel surface, HSG D |
| 393 | 98 | Unconnected roofs, HSG C |
| 3,582,060 | 75 | Weighted Average |
| 3,581,667 | | 99.99% Pervious Area |
| 393 | | 0.01% Impervious Area |
| 393 | | 100.00% Unconnected |

12186.008 Post-Development Hydro

Type II 24-hr 2-yr Rainfall=3.00"

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Page 5

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|-------------|------------------|------------------|----------------------|-------------------|--|
| 110.0 | 2,760 | 0.0070 | 0.42 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 24.1 | 320 | 0.0010 | 0.22 | | Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps |
| 134.1 | 3,080 | Total | | | |

Summary for Reach R: Reach

Inflow Area = 82.233 ac, 0.01% Impervious, Inflow Depth > 0.81" for 2-yr event
 Inflow = 20.71 cfs @ 13.70 hrs, Volume= 5.520 af
 Outflow = 20.59 cfs @ 13.96 hrs, Volume= 5.420 af, Atten= 1%, Lag= 15.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 1.60 fps, Min. Travel Time= 8.8 min
 Avg. Velocity= 1.03 fps, Avg. Travel Time= 13.6 min

Peak Storage= 10,820 cf @ 13.81 hrs
 Average Depth at Peak Storage= 0.98'
 Bank-Full Depth= 1.00' Flow Area= 13.3 sf, Capacity= 21.64 cfs

20.00' x 1.00' deep Parabolic Channel, n= 0.022 Earth, clean & straight
 Length= 840.0' Slope= 0.0010 '/'
 Inlet Invert= 254.84', Outlet Invert= 254.00'

**Summary for Reach SP1: Summation Point 1**

Inflow Area = 124.874 ac, 0.37% Impervious, Inflow Depth > 0.72" for 2-yr event
 Inflow = 24.08 cfs @ 13.84 hrs, Volume= 7.475 af
 Outflow = 24.08 cfs @ 13.84 hrs, Volume= 7.475 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach SP2: Summation Point 2

Inflow Area = 18.916 ac, 0.05% Impervious, Inflow Depth > 0.07" for 2-yr event
 Inflow = 0.21 cfs @ 13.07 hrs, Volume= 0.104 af
 Outflow = 0.21 cfs @ 13.07 hrs, Volume= 0.104 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

12186.008 Post-Development Hydro*Type II 24-hr 10-yr Rainfall=4.30"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Subarea 1Runoff Area=1,857,439 sf 1.05% Impervious Runoff Depth>1.30"
Flow Length=1,530' Tc=49.0 min CN=69 Runoff=35.94 cfs 4.615 af**Subcatchment 2S: Subarea 2**Runoff Area=823,985 sf 0.05% Impervious Runoff Depth>0.36"
Flow Length=515' Tc=17.1 min CN=50 Runoff=5.01 cfs 0.564 af**Subcatchment 3S: Subarea 3**Runoff Area=3,582,060 sf 0.01% Impervious Runoff Depth>1.63"
Flow Length=3,080' Tc=134.1 min CN=75 Runoff=43.72 cfs 11.170 af**Reach R: Reach**Avg. Flow Depth=1.47' Max Vel=1.91 fps Inflow=43.72 cfs 11.170 af
n=0.022 L=840.0' S=0.0010 '/' Capacity=21.64 cfs Outflow=43.37 cfs 11.027 af**Reach SP1: Summation Point 1**Inflow=51.00 cfs 15.642 af
Outflow=51.00 cfs 15.642 af**Reach SP2: Summation Point 2**Inflow=5.01 cfs 0.564 af
Outflow=5.01 cfs 0.564 af**Total Runoff Area = 143.790 ac Runoff Volume = 16.350 af Average Runoff Depth = 1.36"**
99.67% Pervious = 143.322 ac 0.33% Impervious = 0.467 ac

12186.008 Post-Development Hydro

Type II 24-hr 10-yr Rainfall=4.30"

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Summary for Subcatchment 1S: Subarea 1

Runoff = 35.94 cfs @ 12.52 hrs, Volume= 4.615 af, Depth> 1.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.30"

| Area (sf) | CN | Description |
|-----------|----|-----------------------------|
| 88,270 | 36 | Woods, Fair, HSG A |
| 109,998 | 73 | Woods, Fair, HSG C |
| 638,782 | 79 | Woods, Fair, HSG D |
| 238,532 | 30 | Meadow, non-grazed, HSG A |
| 309,357 | 71 | Meadow, non-grazed, HSG C |
| 434,205 | 78 | Meadow, non-grazed, HSG D |
| 19,178 | 98 | Water Surface, HSG D |
| 16,802 | 96 | Gravel surface, HSG C |
| 1,922 | 96 | Gravel surface, HSG D |
| 393 | 98 | Unconnected pavement, HSG C |
| 1,857,439 | 69 | Weighted Average |
| 1,837,868 | | 98.95% Pervious Area |
| 19,571 | | 1.05% Impervious Area |
| 393 | | 2.01% Unconnected |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 11.2 | 100 | 0.0400 | 0.15 | | Sheet Flow, Grass: Dense n= 0.240 P2= 3.00" |
| 10.0 | 480 | 0.0130 | 0.80 | | Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps |
| 27.8 | 950 | 0.0130 | 0.57 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 49.0 | 1,530 | Total | | | |

Summary for Subcatchment 2S: Subarea 2

Runoff = 5.01 cfs @ 12.16 hrs, Volume= 0.564 af, Depth> 0.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.30"

12186.008 Post-Development Hydro

Type II 24-hr 10-yr Rainfall=4.30"

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Page 3

| Area (sf) | CN | Description |
|-----------|----|-----------------------------|
| 75,559 | 36 | Woods, Fair, HSG A |
| 15,629 | 73 | Woods, Fair, HSG C |
| 14,698 | 79 | Woods, Fair, HSG D |
| 399,212 | 30 | Meadow, non-grazed, HSG A |
| 183,788 | 71 | Meadow, non-grazed, HSG C |
| 109,508 | 78 | Meadow, non-grazed, HSG D |
| 5,662 | 96 | Gravel surface, HSG A |
| 18,536 | 96 | Gravel surface, HSG C |
| 1,000 | 96 | Gravel surface, HSG D |
| 393 | 98 | Unconnected pavement, HSG C |
| 823,985 | 50 | Weighted Average |
| 823,592 | | 99.95% Pervious Area |
| 393 | | 0.05% Impervious Area |
| 393 | | 100.00% Unconnected |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 9.2 | 85 | 0.0470 | 0.15 | | Sheet Flow, Grass: Dense n= 0.240 P2= 3.00" |
| 7.9 | 430 | 0.0170 | 0.91 | | Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps |
| 17.1 | 515 | Total | | | |

Summary for Subcatchment 3S: Subarea 3

Runoff = 43.72 cfs @ 13.59 hrs, Volume= 11.170 af, Depth> 1.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=4.30"

| Area (sf) | CN | Description |
|-----------|----|---------------------------|
| 1,116,313 | 73 | Woods, Fair, HSG C |
| 1,490,725 | 79 | Woods, Fair, HSG D |
| 23,677 | 30 | Meadow, non-grazed, HSG A |
| 692,792 | 71 | Meadow, non-grazed, HSG C |
| 219,510 | 78 | Meadow, non-grazed, HSG D |
| 6,507 | 96 | Gravel surface, HSG A |
| 31,861 | 96 | Gravel surface, HSG C |
| 282 | 96 | Gravel surface, HSG D |
| 393 | 98 | Unconnected roofs, HSG C |
| 3,582,060 | 75 | Weighted Average |
| 3,581,667 | | 99.99% Pervious Area |
| 393 | | 0.01% Impervious Area |
| 393 | | 100.00% Unconnected |

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Type II 24-hr 10-yr Rainfall=4.30"

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Page 4

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|-------------|------------------|------------------|----------------------|-------------------|--|
| 110.0 | 2,760 | 0.0070 | 0.42 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 24.1 | 320 | 0.0010 | 0.22 | | Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps |
| 134.1 | 3,080 | Total | | | |

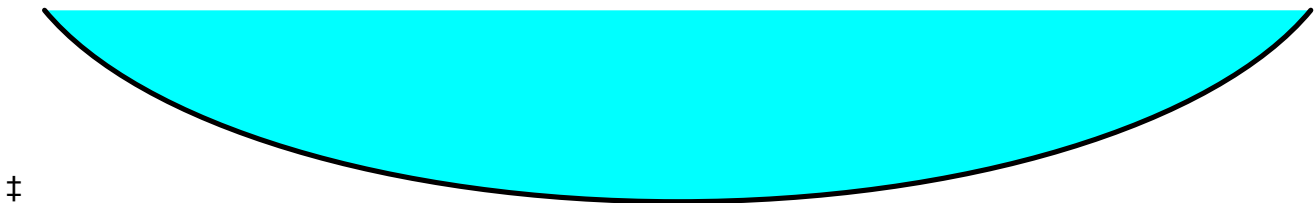
Summary for Reach R: Reach

Inflow Area = 82.233 ac, 0.01% Impervious, Inflow Depth > 1.63" for 10-yr event
 Inflow = 43.72 cfs @ 13.59 hrs, Volume= 11.170 af
 Outflow = 43.37 cfs @ 13.85 hrs, Volume= 11.027 af, Atten= 1%, Lag= 15.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 1.91 fps, Min. Travel Time= 7.3 min
 Avg. Velocity= 1.14 fps, Avg. Travel Time= 12.3 min

Peak Storage= 19,035 cf @ 13.73 hrs
 Average Depth at Peak Storage= 1.47'
 Bank-Full Depth= 1.00' Flow Area= 13.3 sf, Capacity= 21.64 cfs

20.00' x 1.00' deep Parabolic Channel, n= 0.022 Earth, clean & straight
 Length= 840.0' Slope= 0.0010 '/'
 Inlet Invert= 254.84', Outlet Invert= 254.00'

**Summary for Reach SP1: Summation Point 1**

Inflow Area = 124.874 ac, 0.37% Impervious, Inflow Depth > 1.50" for 10-yr event
 Inflow = 51.00 cfs @ 13.73 hrs, Volume= 15.642 af
 Outflow = 51.00 cfs @ 13.73 hrs, Volume= 15.642 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach SP2: Summation Point 2

Inflow Area = 18.916 ac, 0.05% Impervious, Inflow Depth > 0.36" for 10-yr event
 Inflow = 5.01 cfs @ 12.16 hrs, Volume= 0.564 af
 Outflow = 5.01 cfs @ 12.16 hrs, Volume= 0.564 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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Page 5

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Subarea 1Runoff Area=1,857,439 sf 1.05% Impervious Runoff Depth>2.02"
Flow Length=1,530' Tc=49.0 min CN=69 Runoff=57.49 cfs 7.175 af**Subcatchment 2S: Subarea 2**Runoff Area=823,985 sf 0.05% Impervious Runoff Depth>0.74"
Flow Length=515' Tc=17.1 min CN=50 Runoff=14.46 cfs 1.172 af**Subcatchment 3S: Subarea 3**Runoff Area=3,582,060 sf 0.01% Impervious Runoff Depth>2.42"
Flow Length=3,080' Tc=134.1 min CN=75 Runoff=65.58 cfs 16.572 af**Reach R: Reach**Avg. Flow Depth=1.93' Max Vel=2.04 fps Inflow=65.58 cfs 16.572 af
n=0.022 L=840.0' S=0.0010 '/' Capacity=21.64 cfs Outflow=64.94 cfs 16.392 af**Reach SP1: Summation Point 1**Inflow=76.48 cfs 23.567 af
Outflow=76.48 cfs 23.567 af**Reach SP2: Summation Point 2**Inflow=14.46 cfs 1.172 af
Outflow=14.46 cfs 1.172 af**Total Runoff Area = 143.790 ac Runoff Volume = 24.919 af Average Runoff Depth = 2.08"**
99.67% Pervious = 143.322 ac 0.33% Impervious = 0.467 ac

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Type II 24-hr 25-yr Rainfall=5.40"

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Page 6

Summary for Subcatchment 1S: Subarea 1

Runoff = 57.49 cfs @ 12.50 hrs, Volume= 7.175 af, Depth> 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=5.40"

| Area (sf) | CN | Description |
|-----------|----|-----------------------------|
| 88,270 | 36 | Woods, Fair, HSG A |
| 109,998 | 73 | Woods, Fair, HSG C |
| 638,782 | 79 | Woods, Fair, HSG D |
| 238,532 | 30 | Meadow, non-grazed, HSG A |
| 309,357 | 71 | Meadow, non-grazed, HSG C |
| 434,205 | 78 | Meadow, non-grazed, HSG D |
| 19,178 | 98 | Water Surface, HSG D |
| 16,802 | 96 | Gravel surface, HSG C |
| 1,922 | 96 | Gravel surface, HSG D |
| 393 | 98 | Unconnected pavement, HSG C |
| 1,857,439 | 69 | Weighted Average |
| 1,837,868 | | 98.95% Pervious Area |
| 19,571 | | 1.05% Impervious Area |
| 393 | | 2.01% Unconnected |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 11.2 | 100 | 0.0400 | 0.15 | | Sheet Flow, Grass: Dense n= 0.240 P2= 3.00" |
| 10.0 | 480 | 0.0130 | 0.80 | | Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps |
| 27.8 | 950 | 0.0130 | 0.57 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 49.0 | 1,530 | Total | | | |

Summary for Subcatchment 2S: Subarea 2

Runoff = 14.46 cfs @ 12.13 hrs, Volume= 1.172 af, Depth> 0.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=5.40"

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Type II 24-hr 25-yr Rainfall=5.40"

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Page 7

| Area (sf) | CN | Description |
|-----------|----|-----------------------------|
| 75,559 | 36 | Woods, Fair, HSG A |
| 15,629 | 73 | Woods, Fair, HSG C |
| 14,698 | 79 | Woods, Fair, HSG D |
| 399,212 | 30 | Meadow, non-grazed, HSG A |
| 183,788 | 71 | Meadow, non-grazed, HSG C |
| 109,508 | 78 | Meadow, non-grazed, HSG D |
| 5,662 | 96 | Gravel surface, HSG A |
| 18,536 | 96 | Gravel surface, HSG C |
| 1,000 | 96 | Gravel surface, HSG D |
| 393 | 98 | Unconnected pavement, HSG C |
| 823,985 | 50 | Weighted Average |
| 823,592 | | 99.95% Pervious Area |
| 393 | | 0.05% Impervious Area |
| 393 | | 100.00% Unconnected |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 9.2 | 85 | 0.0470 | 0.15 | | Sheet Flow, Grass: Dense n= 0.240 P2= 3.00" |
| 7.9 | 430 | 0.0170 | 0.91 | | Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps |
| 17.1 | 515 | Total | | | |

Summary for Subcatchment 3S: Subarea 3

Runoff = 65.58 cfs @ 13.57 hrs, Volume= 16.572 af, Depth> 2.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=5.40"

| Area (sf) | CN | Description |
|-----------|----|---------------------------|
| 1,116,313 | 73 | Woods, Fair, HSG C |
| 1,490,725 | 79 | Woods, Fair, HSG D |
| 23,677 | 30 | Meadow, non-grazed, HSG A |
| 692,792 | 71 | Meadow, non-grazed, HSG C |
| 219,510 | 78 | Meadow, non-grazed, HSG D |
| 6,507 | 96 | Gravel surface, HSG A |
| 31,861 | 96 | Gravel surface, HSG C |
| 282 | 96 | Gravel surface, HSG D |
| 393 | 98 | Unconnected roofs, HSG C |
| 3,582,060 | 75 | Weighted Average |
| 3,581,667 | | 99.99% Pervious Area |
| 393 | | 0.01% Impervious Area |
| 393 | | 100.00% Unconnected |

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Type II 24-hr 25-yr Rainfall=5.40"

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Page 8

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|-------------|------------------|------------------|----------------------|-------------------|--|
| 110.0 | 2,760 | 0.0070 | 0.42 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 24.1 | 320 | 0.0010 | 0.22 | | Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps |
| 134.1 | 3,080 | Total | | | |

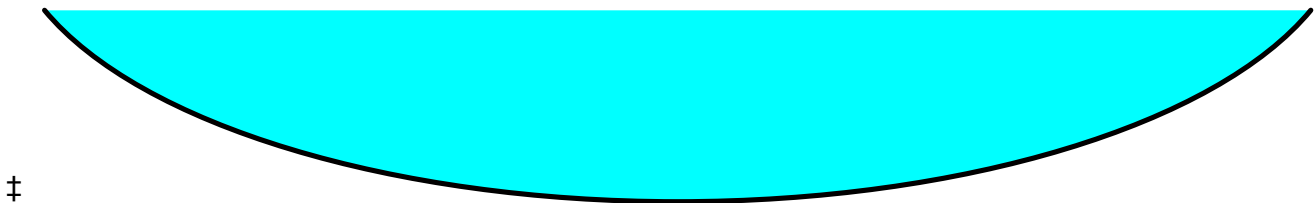
Summary for Reach R: Reach

Inflow Area = 82.233 ac, 0.01% Impervious, Inflow Depth > 2.42" for 25-yr event
 Inflow = 65.58 cfs @ 13.57 hrs, Volume= 16.572 af
 Outflow = 64.94 cfs @ 13.81 hrs, Volume= 16.392 af, Atten= 1%, Lag= 14.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 2.04 fps, Min. Travel Time= 6.9 min
 Avg. Velocity= 1.20 fps, Avg. Travel Time= 11.6 min

Peak Storage= 26,805 cf @ 13.69 hrs
 Average Depth at Peak Storage= 1.93'
 Bank-Full Depth= 1.00' Flow Area= 13.3 sf, Capacity= 21.64 cfs

20.00' x 1.00' deep Parabolic Channel, n= 0.022 Earth, clean & straight
 Length= 840.0' Slope= 0.0010 '/'
 Inlet Invert= 254.84', Outlet Invert= 254.00'

**Summary for Reach SP1: Summation Point 1**

Inflow Area = 124.874 ac, 0.37% Impervious, Inflow Depth > 2.26" for 25-yr event
 Inflow = 76.48 cfs @ 13.69 hrs, Volume= 23.567 af
 Outflow = 76.48 cfs @ 13.69 hrs, Volume= 23.567 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach SP2: Summation Point 2

Inflow Area = 18.916 ac, 0.05% Impervious, Inflow Depth > 0.74" for 25-yr event
 Inflow = 14.46 cfs @ 12.13 hrs, Volume= 1.172 af
 Outflow = 14.46 cfs @ 12.13 hrs, Volume= 1.172 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

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Page 1

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Subarea 1Runoff Area=1,857,439 sf 1.05% Impervious Runoff Depth>2.02"
Flow Length=1,530' Tc=49.0 min CN=69 Runoff=57.49 cfs 7.175 af**Subcatchment 2S: Subarea 2**Runoff Area=823,985 sf 0.05% Impervious Runoff Depth>0.74"
Flow Length=515' Tc=17.1 min CN=50 Runoff=14.46 cfs 1.172 af**Subcatchment 3S: Subarea 3**Runoff Area=3,582,060 sf 0.01% Impervious Runoff Depth>2.42"
Flow Length=3,080' Tc=134.1 min CN=75 Runoff=65.58 cfs 16.572 af**Reach R: Reach**Avg. Flow Depth=1.93' Max Vel=2.04 fps Inflow=65.58 cfs 16.572 af
n=0.022 L=840.0' S=0.0010 '/' Capacity=21.64 cfs Outflow=64.94 cfs 16.392 af**Reach SP1: Summation Point 1**Inflow=76.48 cfs 23.567 af
Outflow=76.48 cfs 23.567 af**Reach SP2: Summation Point 2**Inflow=14.46 cfs 1.172 af
Outflow=14.46 cfs 1.172 af**Total Runoff Area = 143.790 ac Runoff Volume = 24.919 af Average Runoff Depth = 2.08"**
99.67% Pervious = 143.322 ac 0.33% Impervious = 0.467 ac

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Page 2

Summary for Subcatchment 1S: Subarea 1

Runoff = 57.49 cfs @ 12.50 hrs, Volume= 7.175 af, Depth> 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=5.40"

| Area (sf) | CN | Description |
|-----------|----|-----------------------------|
| 88,270 | 36 | Woods, Fair, HSG A |
| 109,998 | 73 | Woods, Fair, HSG C |
| 638,782 | 79 | Woods, Fair, HSG D |
| 238,532 | 30 | Meadow, non-grazed, HSG A |
| 309,357 | 71 | Meadow, non-grazed, HSG C |
| 434,205 | 78 | Meadow, non-grazed, HSG D |
| 19,178 | 98 | Water Surface, HSG D |
| 16,802 | 96 | Gravel surface, HSG C |
| 1,922 | 96 | Gravel surface, HSG D |
| 393 | 98 | Unconnected pavement, HSG C |
| 1,857,439 | 69 | Weighted Average |
| 1,837,868 | | 98.95% Pervious Area |
| 19,571 | | 1.05% Impervious Area |
| 393 | | 2.01% Unconnected |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 11.2 | 100 | 0.0400 | 0.15 | | Sheet Flow, Grass: Dense n= 0.240 P2= 3.00" |
| 10.0 | 480 | 0.0130 | 0.80 | | Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps |
| 27.8 | 950 | 0.0130 | 0.57 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 49.0 | 1,530 | Total | | | |

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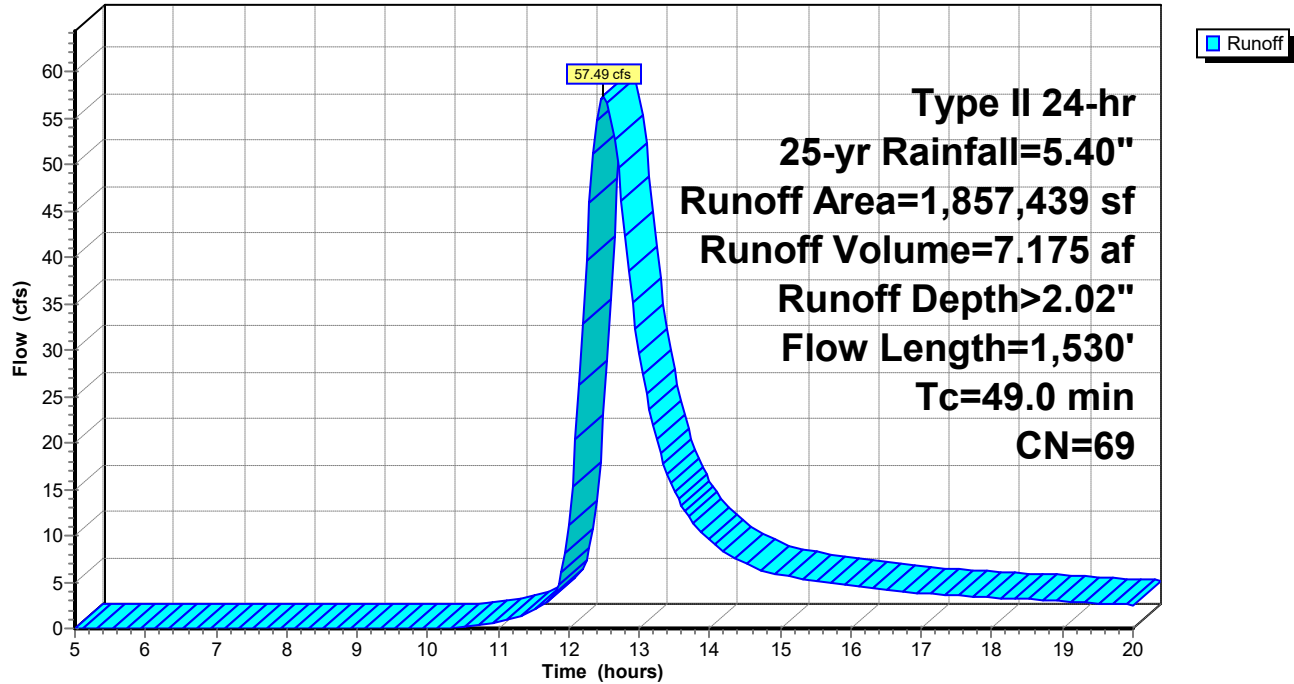
Type II 24-hr 25-yr Rainfall=5.40"

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Page 3

Subcatchment 1S: Subarea 1

Hydrograph



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Type II 24-hr 25-yr Rainfall=5.40"

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Page 4

Summary for Subcatchment 2S: Subarea 2

Runoff = 14.46 cfs @ 12.13 hrs, Volume= 1.172 af, Depth> 0.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=5.40"

| Area (sf) | CN | Description |
|-----------|----|-----------------------------|
| 75,559 | 36 | Woods, Fair, HSG A |
| 15,629 | 73 | Woods, Fair, HSG C |
| 14,698 | 79 | Woods, Fair, HSG D |
| 399,212 | 30 | Meadow, non-grazed, HSG A |
| 183,788 | 71 | Meadow, non-grazed, HSG C |
| 109,508 | 78 | Meadow, non-grazed, HSG D |
| 5,662 | 96 | Gravel surface, HSG A |
| 18,536 | 96 | Gravel surface, HSG C |
| 1,000 | 96 | Gravel surface, HSG D |
| 393 | 98 | Unconnected pavement, HSG C |
| 823,985 | 50 | Weighted Average |
| 823,592 | | 99.95% Pervious Area |
| 393 | | 0.05% Impervious Area |
| 393 | | 100.00% Unconnected |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|-------------|------------------|------------------|----------------------|-------------------|--|
| 9.2 | 85 | 0.0470 | 0.15 | | Sheet Flow, Grass: Dense n= 0.240 P2= 3.00" |
| 7.9 | 430 | 0.0170 | 0.91 | | Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps |
| 17.1 | 515 | Total | | | |

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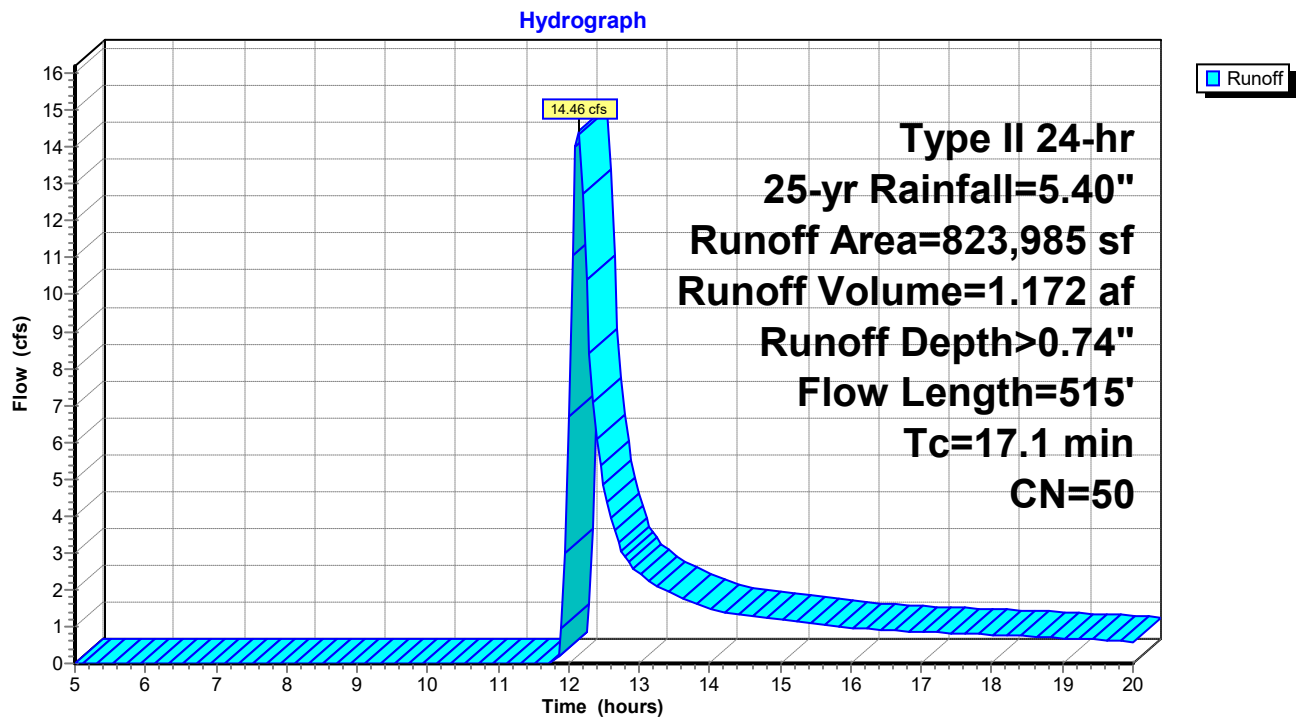
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Type II 24-hr 25-yr Rainfall=5.40"

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Page 5

Subcatchment 2S: Subarea 2



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Type II 24-hr 25-yr Rainfall=5.40"

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Page 6

Summary for Subcatchment 3S: Subarea 3

Runoff = 65.58 cfs @ 13.57 hrs, Volume= 16.572 af, Depth> 2.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-yr Rainfall=5.40"

| Area (sf) | CN | Description |
|-----------|----|---------------------------|
| 1,116,313 | 73 | Woods, Fair, HSG C |
| 1,490,725 | 79 | Woods, Fair, HSG D |
| 23,677 | 30 | Meadow, non-grazed, HSG A |
| 692,792 | 71 | Meadow, non-grazed, HSG C |
| 219,510 | 78 | Meadow, non-grazed, HSG D |
| 6,507 | 96 | Gravel surface, HSG A |
| 31,861 | 96 | Gravel surface, HSG C |
| 282 | 96 | Gravel surface, HSG D |
| 393 | 98 | Unconnected roofs, HSG C |
| 3,582,060 | 75 | Weighted Average |
| 3,581,667 | | 99.99% Pervious Area |
| 393 | | 0.01% Impervious Area |
| 393 | | 100.00% Unconnected |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|-------------|------------------|------------------|----------------------|-------------------|--|
| 110.0 | 2,760 | 0.0070 | 0.42 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 24.1 | 320 | 0.0010 | 0.22 | | Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps |
| 134.1 | 3,080 | Total | | | |

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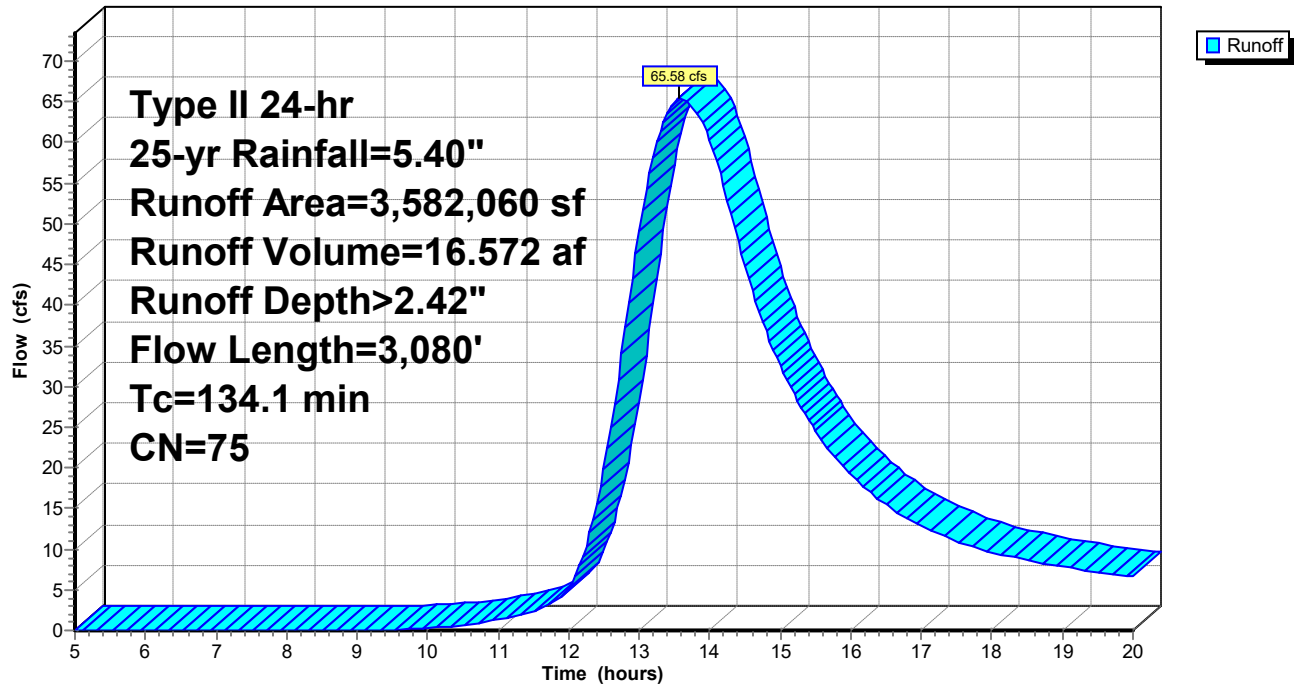
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Page 7

Subcatchment 3S: Subarea 3

Hydrograph



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Type II 24-hr 25-yr Rainfall=5.40"

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Page 8

Summary for Reach R: Reach

Inflow Area = 82.233 ac, 0.01% Impervious, Inflow Depth > 2.42" for 25-yr event
Inflow = 65.58 cfs @ 13.57 hrs, Volume= 16.572 af
Outflow = 64.94 cfs @ 13.81 hrs, Volume= 16.392 af, Atten= 1%, Lag= 14.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.04 fps, Min. Travel Time= 6.9 min

Avg. Velocity = 1.20 fps, Avg. Travel Time= 11.6 min

Peak Storage= 26,805 cf @ 13.69 hrs

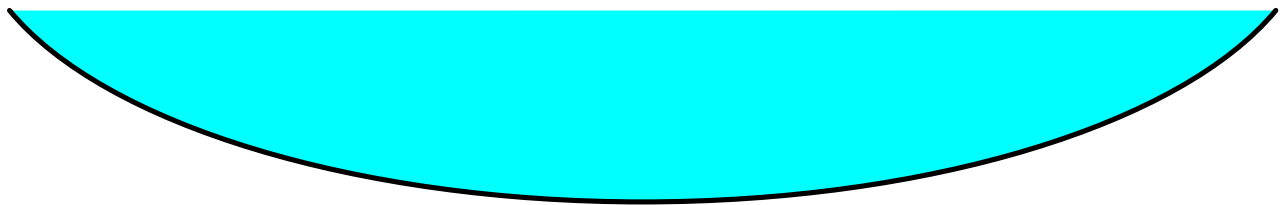
Average Depth at Peak Storage= 1.93'

Bank-Full Depth= 1.00' Flow Area= 13.3 sf, Capacity= 21.64 cfs

20.00' x 1.00' deep Parabolic Channel, n= 0.022 Earth, clean & straight

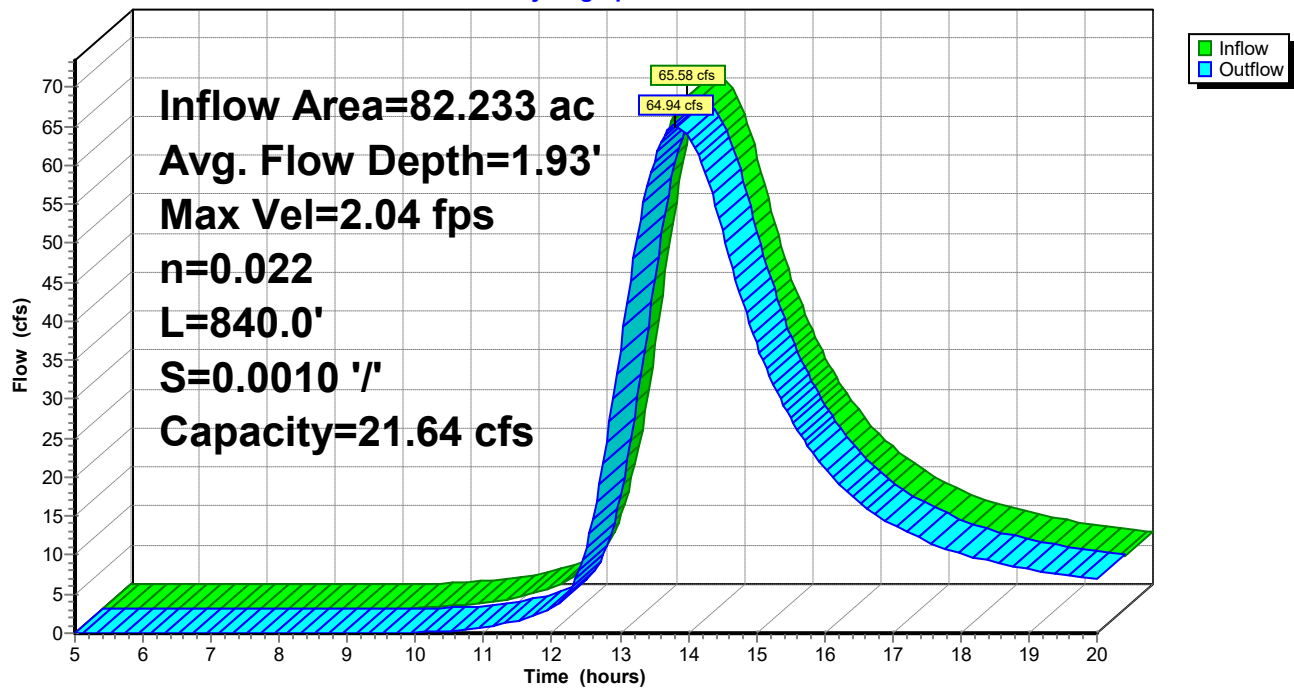
Length= 840.0' Slope= 0.0010 '/'

Inlet Invert= 254.84', Outlet Invert= 254.00'



Reach R: Reach

Hydrograph



12186.008 Post-Development Hydro

Prepared by {enter your company name here}

HydroCAD® 10.00-24 s/n 00641 © 2018 HydroCAD Software Solutions LLC

Type II 24-hr 25-yr Rainfall=5.40"

Printed 12/18/2019

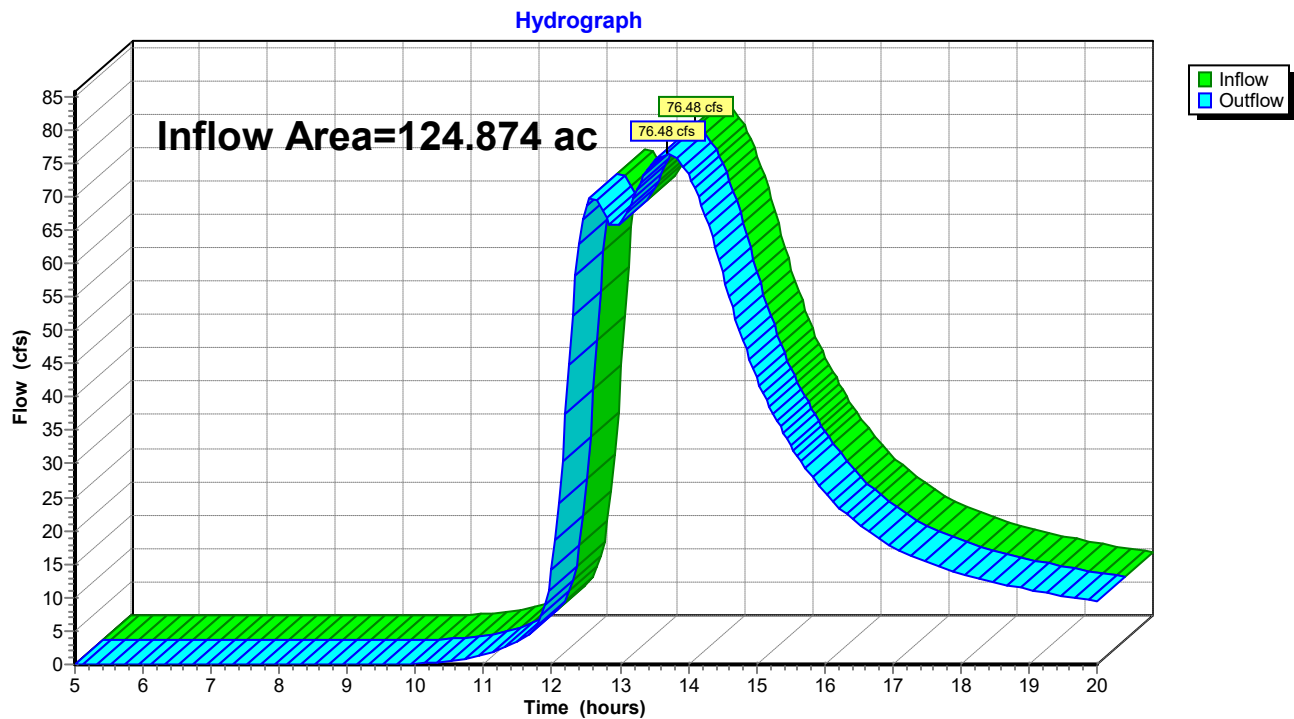
Page 9

Summary for Reach SP1: Summation Point 1

Inflow Area = 124.874 ac, 0.37% Impervious, Inflow Depth > 2.26" for 25-yr event
Inflow = 76.48 cfs @ 13.69 hrs, Volume= 23.567 af
Outflow = 76.48 cfs @ 13.69 hrs, Volume= 23.567 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SP1: Summation Point 1



12186.008 Post-Development Hydro

Prepared by {enter your company name here}

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Type II 24-hr 25-yr Rainfall=5.40"

Printed 12/18/2019

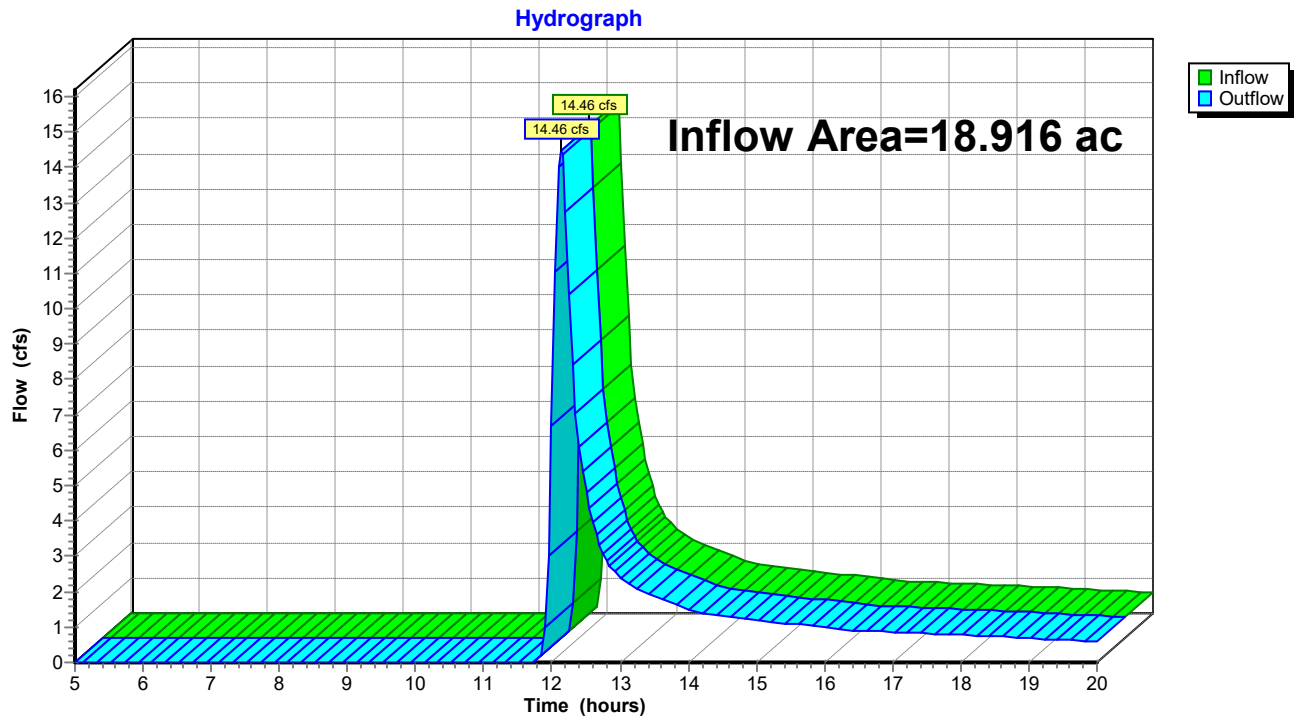
Page 10

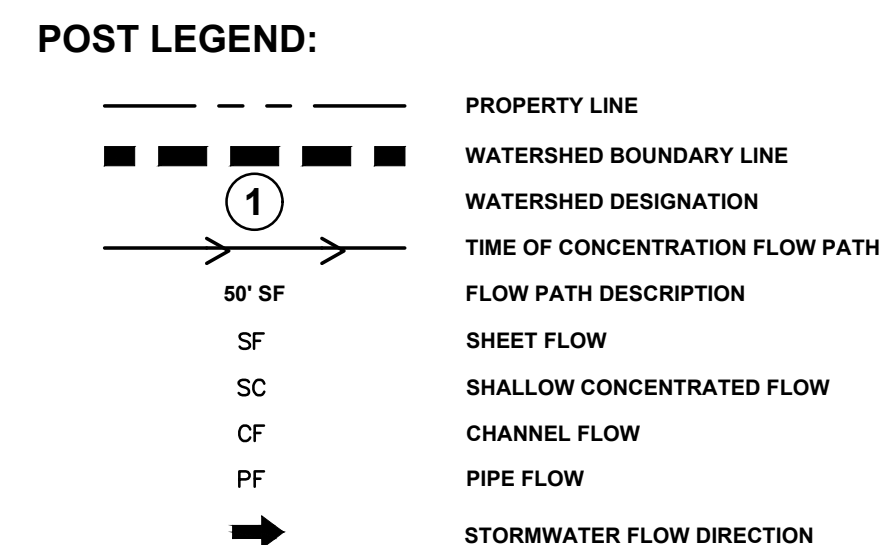
Summary for Reach SP2: Summation Point 2


Inflow Area = 18.916 ac, 0.05% Impervious, Inflow Depth > 0.74" for 25-yr event
Inflow = 14.46 cfs @ 12.13 hrs, Volume= 1.172 af
Outflow = 14.46 cfs @ 12.13 hrs, Volume= 1.172 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach SP2: Summation Point 2





CES  **INC**
Engineers • Environmental Scientists • Surveyors

www.cesincusa.com Brewer
465 South Main Street
PO Box 639
Brewer, ME
T 207-989-4824
F 207-989-4861

BD SOLAR AUBURN, LLC
AUBURN, MAINE

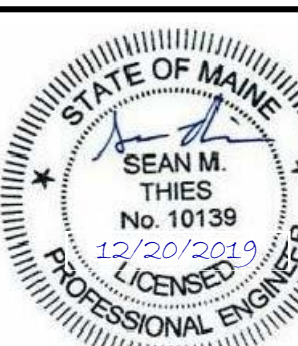
SHEET TITLE

PRE DEVELOPMENT
HYDROLOGY PLAN

[illegible]

ISSUE STATUS

**NOT FOR
CONSTRUCTION**



| | | | |
|--------------|--|-------------|--|
| SCALE | | 1"=200' | |
| DATE | | 2019-12-18 | |
| DRAWN BY | | CHECKED BY | |
| WAB/BLQ | | S | |
| DESIGNED BY | | APPROVED BY | |
| JAD | | S | |
| JOB NUMBER | | 12186.008 | |
| SHEET NUMBER | | | |

C701

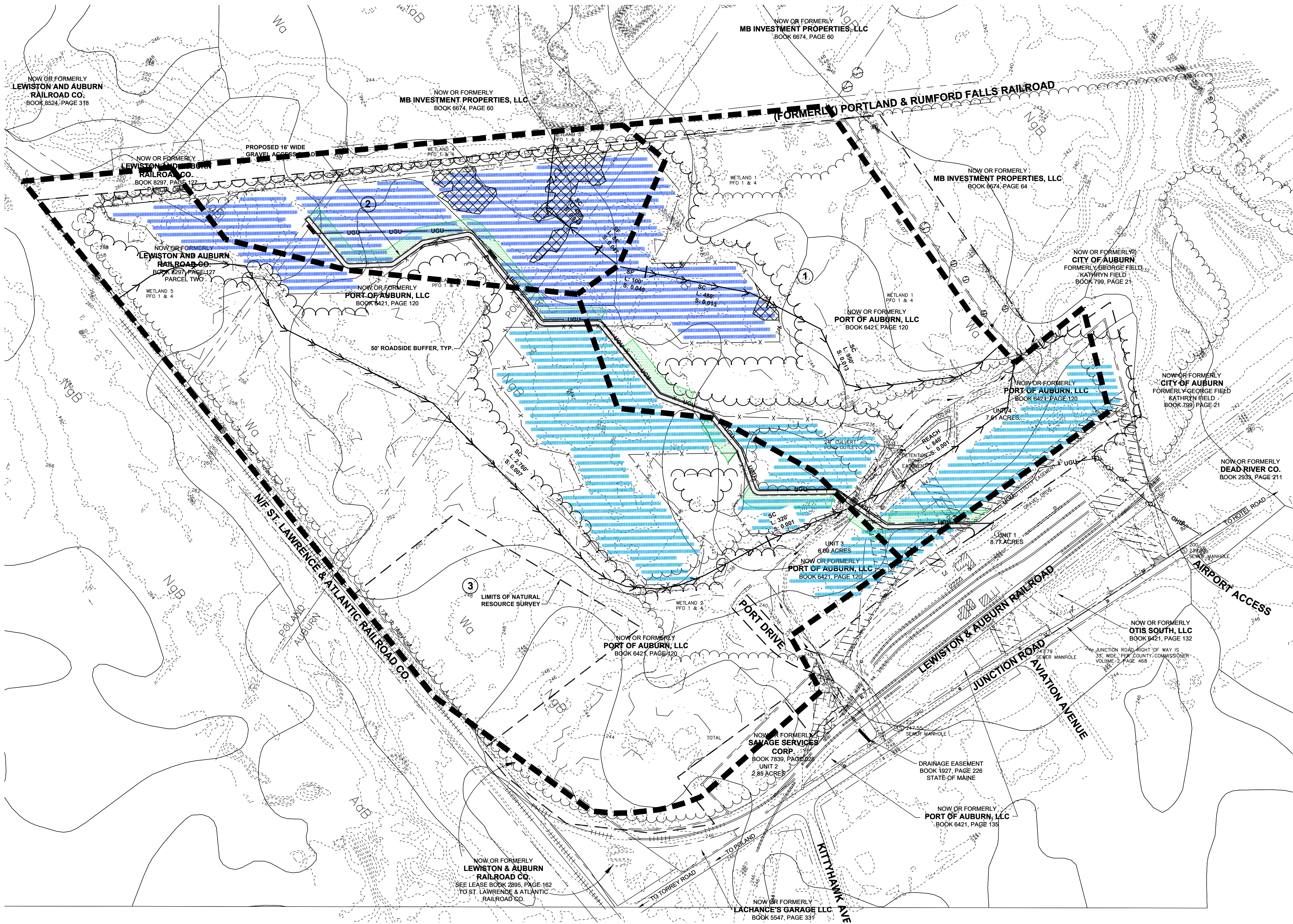
PRE DEVELOPMENT HYDROLOGY PLAN

GRAPHIC SCALE



(IN FEET)
1 inch = 200 ft

\\ces\local\projects\1218\1218-DIRGO_SOLAR\AUBURN\LEWISTON-CT-RD-SOLAR-SMTC-CAD-DRAWINGS\CD\1218-08-C-POST-HYDRO.DWG



POST LEGEND:

- PROPERTY LINE
- WATERSHED BOUNDARY LINE
- WATERSHED DESIGNATION
- TIME OF CONCENTRATION FLOW PATH
- FLOW PATH DESCRIPTION
- SHEET FLOW
- SHALLOW CONCENTRATED FLOW
- CHANNEL FLOW
- PIPE FLOW
- STORMWATER FLOW DIRECTION

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STORMWATER FLOW DIRECTION

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APPENDIX 8

EROSION AND SEDIMENTATION CONTROL PLAN

EROSION AND SEDIMENTATION CONTROL PLAN

- A. Narrative. The proposed construction will require the implementation of temporary and permanent erosion control measures. These measures will be implemented in accordance with the Maine Erosion and Sediment Control Best Management Practices (BMPs) Manual, prior to removal of any on-site vegetation or disturbance of any on-site soil. The general erosion and sediment control specifications and details, as provided within this section, are intended to describe measures to be used by contractors working on the site to maintain compliance with the standards established in the BMPs. These standards include information on temporary and permanent erosion control measures, rates of seeding and applied mulch, slope and soil stabilization, effect of construction schedule, and other details.

The proposed location and use of erosion control measures on-site are shown on the plan located in **Appendix 11** of this application. There are no known existing erosion control concerns with the site. Implementation of proper erosion control measures will be required by site conditions to confine sediment and debris within the limit of soil disturbance. Proper use and maintenance of erosion control measures will provide protection against off-site transport of sediment and discharge of sediment to undisturbed areas of the development.

- B. Completion Date. Fall 2020
- C. Site Features. For site features please refer to the enclosed plan.
- D. Temporary and Permanent Erosion Control Measures. For temporary and permanent erosion control measures please refer to the enclosed plan.
- E. Limits of Disturbed Areas. Areas of disturbance will be limited to the proposed work shown on the enclosed plan. An access road, approximately 16-feet wide, will be installed throughout the length of the property for access and maintenance of the solar array. Solar panels will be mounted on pile foundations to limit excavation and disturbance. Land cover around the piles will be grassed, serving as a buffer for the small impervious areas. Areas outside of the solar array will maintain its existing land cover.
- F. Design Drawings and Specifications. For design drawings please refer to the enclosed plan. The following specifications will be utilized by the site contractor during construction of the project.

EROSION CONTROL PLAN SPECIFICATIONS

A. General

1. All work and measures will be as per the Maine Erosion and Sediment Control BMPs manual.
2. The following specifications will be employed.

B. Prior to Construction

1. Prior to beginning of construction, erosion and sedimentation controls shall be in place.

C. During Construction

1. Exposed soil surfaces will be treated immediately if they are to remain ungraded more than 30 days, or if they are at final grades.
2. Drainage ways, either designed or incidental, will have filter barriers installed.
3. All work and materials necessary to minimize sediment loss from the site will be provided.
4. All erosion control measures will be inspected and repaired after every rainfall greater than ½-inch and at least daily during rain events lasting longer than 24 hours.

D. Post Construction

1. Erosion control measures will be maintained until permanent soil stabilization has been achieved with a growth of vegetation greater than 90%.

SOIL PROTECTION AND EROSION CONTROL

PART 1 - GENERAL

1.01 Description of Work

- A. Provide and maintain devices to control erosion, siltation, sedimentation, and dust that occur during construction operations. Undertake every reasonable precaution and do whatever is necessary to avoid erosion of soil and to prevent silting of wetland areas and drainage ditches.
- B. Provide measures to control dust caused whether on or off the project site.
- C. Deficiencies in erosion control measures indicated by failures or erosion will be corrected as soon as reasonably possible by providing additional measures or different techniques to correct the situation and prevent subsequent erosion.
- D. Exposure of soils on embankments, excavations, and graded areas will be kept as short as possible. Initiate seeding and other erosion control practices as soon as reasonably possible.

1.02 Quality Assurance

- A. Conform to all requirements of applicable Federal, State and local permits and conform to the recommendations of the Maine Erosion and Sediment Control BMPs (see Part B below) whether the measures are specifically noted herein, or not.
- B. Standards: Maine Erosion and Sediment Control BMPs Manual, hereinafter called Erosion Control Handbook.

PART 2 - PRODUCTS

2.01 **Materials:** Use the following materials to implement and construct erosion control measures.

- A. Hay Bale: Rectangular shaped bales of hay or straw weighting at least 40 pounds per bale; free from noxious weed seeds and rough or woody materials.
- B. Mulch: Type and use as specified by the Erosion Control Handbook
 - 1. Long fibered hay or straw in dry condition and which are relatively free of weeds and foreign matter detrimental to plant life.

2. Mulch netting: Plastic or nylon mesh netting with approximate openings of ¼-inch to 1-inch.

C. Permanent Seeding: Cut and fill slopes and disturbed areas will be stabilized as follows:

1. Four inches of loam will be spread over disturbed areas and smoothed to a uniform surface.
2. In lieu of tests, agricultural limestone will be spread at the rate of three tons per acre. 10-20-20 fertilizer will follow at the rate of 800 lbs. per acre. These two soil additives will be incorporated into the soil prior to seeding.
3. Following seed bed preparation, back slopes will be seeded to a mixture of 83% creeping red fescue, and 17% rye grass. Seeding rate is 3 lbs. per 1,000 square feet. Lawn quality sod may be substituted for seed.
4. Hay mulch at the rate of 90 lbs. per 1,000 square feet of a hydro-application of asphalt, wood, or paper fiber will be applied following seeding. A suitable binder such as curason or terrtack will be used on hay mulch for wind control.
5. If final seeding of the disturbed areas is not completed by September 15th of the year of the construction, then on that date these areas will be graded and a cover crop of rye at the rate of 112 lbs/acre or 3 lbs/1,000 sq. ft. will be applied. The rye seeding will be preceded by an application of 3 tons of lime and 800 lbs. of 10-20-20 fertilizer or its equivalent and covered by a layer of jute mat to aide in stabilization.

PART 3 - EXECUTION

3.01 Construction

A. Hay Bales:

1. Install as directed by Erosion Control Handbook, and stake with required stakes.

B. Mulch:

1. Undertake after each area has been properly prepared.
2. When seed for erosion control is sown prior to placing the mulch, place mulch on the seeded areas within 48 hours after seeding.
3. Blowing chopped mulch will be permitted.

4. Hay mulch should cover the ground enough to shade it, but the mulch should not be so thick that a person standing cannot see the ground through the mulch.
5. Remove matted mulch or bunches.

C. Temporary Erosion Control Matting (where necessary):

1. Surface Preparation:

- a. Conform to grades for slopes and ditches shown of the drawings.
- b. Finish to a smooth and even condition with all debris, roots, stones, and lumps raked out and removed.
- c. Loosen soil surface to permit bedding of the matting.
- d. Unless otherwise directed, apply seed prior to placement.

2. Installation:

- a. Place strips lengthwise in the direction of the flow of water.
- b. Where strips are laid parallel or meet as in a tee, overlap at least four inches.
- c. Overlap ends at least six inches in a shingle fashion.
- d. The up-slope end of each strip of the matting will be turned down and buried to a depth of not less than six inches with the soil firmly tamped against it.
- e. Build check slots at right angles to the direction of the flow of water. Space so that one check slot or one end occurs within each 50 feet of slope length. Construct by placing a tight fold of the matting at least six inches vertically into the ground and tamp the same as up-slope ends.
- f. Bury edges of matting around the edges of the catch basins and other structures.
- g. Where determined by the Engineers, additional seed will be spread over matting, particularly at those locations disturbed by building the slots. Matting will then be pressed onto the ground with a light lawn roller or by other satisfactory means.
- h. Drive staples vertically into the ground flush with the surface.
- i. On slopes flatter than 4:1, space staples not more than three feet and one row, alternately spaced, down the center.
- j. On grades 4:1 or steeper, place in the same three rows, but spaced two feet apart.
- k. On all overlapping or butting edges, double the number of staples, with the spacing halved; all ends of the matting and all required check slots will likewise have staples spaced every foot.

D. Permanent Seeding:

1. Seed with appropriate seeds and application rates as noted in Section 2.01C.
2. Mulch areas where seeding has been applied. Do not mulch seeded areas where matting will be immediately installed.

E. Topsoil Storage:

1. Topsoil which is stockpiled on the site for use in loam applications will be placed out of natural drainages, in piles that have side slopes of 2:1 to 1.5:1.
2. A trench (depth as required) will be constructed around the base of the pile to prevent eroding soil from washing into drainages.

F. Dust Control: Utilize the application of sprinkled water to reduce the emission of airborne soil particulates from the Project site.

G. Temporary Berms: Construct temporary barriers along the toe of embankments using side drains as necessary.

H. Temporary Basins: Construct temporary sedimentation basins adequate to avoid siltation of surface water bodies.

I. Other Temporary Measures:

1. Type and use will be as specified in the Erosion Control Handbook.

J. Winter Stabilization Notes

1. At this time, it is not expected that significant soil disturbance will occur during winter months or periods of heavy icing. If construction is performed during these times, the following construction practices will be followed.
 - a. All disturbed areas not stabilized with stone or other measures will have approved erosion control matting installed and be dormant seeded.
 - b. No frozen soil material or material containing significant snow or ice will be used for fill material.
 - c. All material stockpiles will have silt fence and/or hay bales installed downgradient of piles.
 - d. Follow general erosion control notes described previously wherever possible and as conditions permit.

3.02 Maintenance

- A. Inspect erosion control practices immediately after each rainfall greater than ½-inch and at least daily during rainfall lasting longer than 24 hours or snowmelt for damage. Provide maintenance and make appropriate repairs or replacement.
- B. Remove silt from around hay bales when it has reached one foot above grade or prior to expected heavy runoff or siltation.

- C. Repair matting if any staples become loosened or raised, or if any matting becomes loose, torn, or undermined, make satisfactory repairs immediately.

3.03 Removal of Temporary Erosion Control

- A. Remove temporary materials and devices when permanent soil stabilization has been substantially achieved. For vegetated areas, substantially complete means 95% vegetated cover has been established.
- B. Level and grade to the extent required to present a sightly appearance and to prevent any obstruction of the flow of water or any other interference with the operation of or access to the permanent works.
- C. Remove unsuitable materials from site and dispose of in a lawful manner.

INSPECTION AND MAINTENANCE

The following Maintenance Plan will be employed for this facility. BD Solar Auburn, LLC will be responsible for all maintenance. Erosion control measures for this site were designed by:

Sean Thies, P.E.
CES, Inc.
465 South Main Street
Brewer, Maine 04412
(207) 989-4824
sthies@cesincusa.com

A Pre- and Post-Construction Maintenance Plan for the stormwater management system and erosion control measures are included in this section.

MAINTENANCE PLAN

The MDEP's Stormwater Management for Maine: Best Management Practices (2006), and the MDEP's Chapter 500: Stormwater Management were used as guidelines in the development of this Maintenance Plan. General maintenance requirements are listed below.

A. DURING CONSTRUCTION

The general contractor will be responsible for the inspection and maintenance of all stormwater management system components during construction.

Inspection: Inspection of disturbed and impervious areas, erosion control measures, materials' storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site will be performed at least once a week as well as before and after a storm event, and prior to completing permanent stabilization measures. Inspections shall be conducted by a person with knowledge of erosion and stormwater control, including the standards and conditions in the permit.

Maintenance: All erosion control measures will be kept in effective operating condition until areas are permanently stabilized. If BMPs need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation will be completed within 7 calendar days and prior to any rainfall event.

Documentation: A log shall be kept summarizing the inspections and any corrective action taken. A copy of the log is provided at the end of this section, and is titled, Construction Inspection Log.

B. POST-CONSTRUCTION

The Owner or their assigns will be responsible for the inspection and maintenance of all stormwater management system components.

Inspection and Corrective Action

1. Vegetated Areas: Inspections and maintenance of vegetated areas will be performed early in the growing season or after significant rainfall to identify any erosion problems. Areas where erosion is evident will be covered with an appropriate lining, or erosive flows will be diverted to an area able to handle the flows. Any bare areas or areas with sparse growth will be replanted.
2. Ditches, Swales, and Culverts: Inspections and maintenance of ditches, culverts, and swales will be performed in the Spring, late Fall, and after rain events greater than 1-inch in depth to remove any obstructions to flow, to remove any accumulated sediments within the structures, and to repair any erosion of channel linings, check dams, inlet protection,

or outlet protection. Vegetated ditches and swales must be mowed no more than twice per year and cut no less than 6-inch in height.

3. Inspection shall be performed by an individual with experience and/or training on the maintenance and functions of these devices.
4. Documentation: A log will be kept summarizing the inspections, maintenance, and any corrective action taken. A copy of the log is provided at the end of this section, and is titled, BMP Inspection Log.
5. Recertification requirement. Within three months of the expiration of each five-year interval from the date of issuance of the permit, the permittee shall certify the following to the department.
 - A. All areas of the project site have been inspected for areas of erosion, and appropriate steps have been taken to permanently stabilize these areas.
 - B. All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the facilities.
 - C. The erosion and stormwater maintenance plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the department, and the maintenance log is being maintained.

HOUSEKEEPING

1. Spill Prevention - During construction, controls will be used to prevent pollutants from being discharged from materials on site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation.
2. Groundwater Protection - During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater will not be stored or handled in areas of the site draining to an infiltration area. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.
3. Fugitive Sediment and Dust - Actions will be taken to ensure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil will not be used for dust control. Water will be used for dust control during construction.

Operations during wet months that cause mud to be tracked off the site onto public roads will provide sweeping of the road areas at least once per week and prior to significant storm events.

4. Debris and Other Materials - Litter, construction debris, and chemicals exposed to stormwater will be prevented from becoming a pollutant source. The nature of this development will not cause problems related to debris and other materials.
5. Trench or Foundation De-Watering - If de-watering is necessary, the collected water will be removed from the ponded area and spread through natural wooded buffers or discharged into a construction sedimentation basin. The water will not be allowed to flow over disturbed areas to the site.

BD SOLAR AUBURN, LLC
LOG OF INSPECTIONS DURING CONSTRUCTION

| Inspection Date | Inspector (Name and Qualifications) | Major Observations | Work Performed |
|-----------------|-------------------------------------|--------------------|----------------|
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Notes

- 1) Major Observations include the operation and maintenance of erosion and sedimentation controls, materials storage areas, and vehicle access points to the parcel. Major Observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations(s) where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken.
- 2) Work Performed will include a description of the corrective action taken, the date the corrective action was taken, and the name and qualifications of the person taking the corrective actions
- 3) The log must be made accessible to MDEP staff and a copy must be provided upon request.
- 4) The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

***BD SOLAR AUBURN, LLC
BMP INSPECTION LOG***

| Date | Inspector (Name and Qualifications) | ID Number | BMP Structure | Work Performed | Comments |
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Notes

- 1) If a maintenance task requires the clean-out of any sediments or debris, indicate where the sediment and debris was disposed after removal.
- 2) BMP structures shall be numbered sequentially and located on attached site map.
- 3) The log must be made accessible to MDEP staff and a copy must be provided upon request.
- 4) The permittee shall retain a copy of the log for a period of at least five years from the completion of permanent stabilization.

| INSPECTION AND MAINTENANCE PLAN FOR STORMWATER MANAGEMENT STRUCTURES (BMPS) | | |
|--|---|--|
| | INSPECTION SCHEDULE | CORRECTIVE ACTIONS |
| VEGETATED AREAS | Annually early spring and after heavy rains | Inspect all slopes and embankments and replant areas of bare soil or with sparse growth |
| | | Armor rill erosion areas with riprap or divert the runoff to a stable area |
| | | Inspect and repair down-slope of all spreaders and turn-outs for erosion |
| | | Mow vegetation as specified for the area |
| DITCHES, SWALES AND OPEN STORMWATER CHANNELS | Annually spring and late fall and after heavy rains | Remove obstructions, sediments or debris from ditches, swales and other open channels |
| | | Repair any erosion of the ditch lining |
| | | Mow vegetated ditches |
| | | Remove woody vegetation growing through riprap |
| | | Repair any slumping side slopes |
| CULVERTS | Spring and late fall and after heavy rains | Repair riprap where underlying filter fabric or gravel is showing or if stones have dislodged |
| | | Remove accumulated sediments and debris at the inlet, outlet, or within the conduit |
| | | Remove any obstruction to flow |
| CATCHBASINS | Annually in the spring | Repair any erosion damage at the culvert's inlet and outlet |
| | | Remove sediments and debris from the bottom of the basin and inlet grates |
| ROADWAYS AND PARKING AREAS | Annually in the spring or as needed | Remove floating debris and oils (using oil absorptive pads) from any trap |
| | | Clear and remove accumulated winter sand in parking lots and along roadways |
| | | Sweep pavement to remove sediment |
| | | Grade road shoulders and remove accumulated winter sand |
| | | Grade gravel roads and gravel shoulders |
| | | Clean-out the sediment within water bars or open-top culverts |
| RESOURCE AND TREATMENT BUFFERS | Annually in the spring | Ensure that stormwater runoff is not impeded by false ditches of sediment in the shoulder |
| | | Inspect buffers for evidence of erosion, concentrated flow, or encroachment by development |
| | | Manage the buffer's vegetation with the requirements in any deed restrictions |
| | | Repair any sign of erosion within a buffer |
| | | Inspect and repair down-slope of all spreaders and turn-outs for erosion |
| | | Install more level spreaders, or ditch turn-outs if needed for a better distribution of flow |
| WETPONDS AND DETENTION BASINS | Annually in fall and after heavy rains | Clean-out any accumulation of sediment within the spreader bays or turnout pools |
| | | Mow non-wooded buffers no shorter than six inches and less than three times per year |
| | | Inspect the embankments for settlement, slope erosion, piping, and slumping |
| | | Mow the embankment to control woody vegetation |
| | | Inspect the outlet structure for broken seals, obstructed orifices, and plugged trash racks |
| | | Remove and dispose of sediments and debris within the control structure |
| FILTRATION AND INFILTRATION BASINS | Annually in the spring and late fall | Repair any damage to trash racks or debris guards |
| | | Replace any dislodged stone in riprap spillways |
| | | Remove and dispose of accumulated sediments within the impoundment and forebay |
| | | Clean the basin of debris, sediment and hydrocarbons |
| | | Provide for the removal and disposal of accumulated sediments within the basin |
| | | Renew the basin media if it fails to drain within 72 hours after a one inch rainfall event |
| PROPRIETARY DEVICES | Annually in the spring and late fall | Till, seed and mulch the basin if vegetation is sparse |
| | | Repair riprap where underlying filter fabric or gravel is showing or where stones have dislodged |
| OTHER PRACTICES | As specified by manufacturer | Contract with a third-party for inspection and maintenance |
| | | Follow the manufacturer's plan for cleaning of devices |
| OTHER PRACTICES | As specified for devices | Contact the department for appropriate inspection and maintenance requirements for other drainage control and runoff treatment measures. |

APPENDIX 9

FINANCIAL CAPACITY

Certificate of Good Standing
Statement of Financial Capacity
Technical Capacity
Resumes



MAINE

Department of the Secretary of State
Bureau of Corporations, Elections and Commissions

Corporate Name Search

Information Summary

[Subscriber activity report](#)

This record contains information from the CEC database and is accurate as of: Thu Aug 29 2019 10:28:55. Please print or save for your records.

| Legal Name | Charter Number | Filing Type | Status |
|------------------------|----------------|---|------------------|
| BD SOLAR AUBURN LLC | 20200060DC | LIMITED LIABILITY COMPANY (DOMESTIC) | GOOD STANDING |

| Filing Date | Expiration Date | Jurisdiction |
|-------------|-----------------|--------------|
| 07/09/2019 | N/A | MAINE |

Other Names (A=Assumed ; F=Former)

NONE

Clerk/Registered Agent

NICHOLAS MAZUROSKI
100 MIDDLE STREET, WEST TOWER
P.O. BOX 9729
PORTLAND, ME 04104 9729

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t: + 353 1 7917882

e: info@bnrg.ie

w: www.bnrg.ie

Unit 1B, No.3 Custom House Plaza
Harbourmaster Place, Dublin 1

November 8, 2018

To Whom It May Concern

BNRG Renewables Ltd (BNRG) is providing development funding to Dirigo Solar LLC (Dirigo) to develop a 110 Megawatt (MW) portfolio of photovoltaic power production projects in the state of Maine pursuant to the Long-Term Contract awarded by the Maine Public Utilities Commission in 2015, Docket No.2015-00026. Once key milestones have been achieved the Projects will be acquired by BNRG.

Founded in 2007, BNRG is an international developer of solar projects and has a solid track record of successfully developing, financing and constructing in multiple markets simultaneously. To date BNRG has financed and constructed over 115 MW of solar PV projects in the UK, Northern Ireland, Bulgaria, and Greece valued at approximately US\$269 million. In the US, BNRG is currently constructing 35 MW portfolio of Projects in Oregon worth approximately US\$45 million, which will be owned and operated by BNRG in the long term. The first projects in Oregon will be commissioned in early December 2018.

| BNRG Renewables: Global Portfolio | | | |
|-----------------------------------|-----|----------|--------|
| Values in US\$m | MW | Projects | Value |
| ASSETS COMPLETED & SOLD | | | |
| Great Britain | 89 | 16 | \$200m |
| Northern Ireland | 14 | 1 | \$24m |
| Bulgaria | 10 | 2 | \$35m |
| Greece | 2 | 25 | \$10m |
| ASSETS UNDER CONSTRUCTION | | | |
| United States - Oregon | 35 | 10 | \$46m |
| ASSETS UNDER DEVELOPMENT | | | |
| United States - Maine | 110 | 14 | \$124m |
| Ireland | 260 | 24 | \$322m |

BNRG has been working with Dirigo since 2016, and based on our track record, financial capabilities and technical expertise, we are confident that we will successfully deliver the full 110 MW portfolio in Maine.

Sincerely,

BNRG Renewables Ltd

By: 

Name: Nicolas Holman

Title: Director

TECHNICAL CAPACITY

CES, Inc. has prepared numerous Site Location of Development Applications, Amendments, and Modifications to existing permits. Sean Thies, P.E. has overseen the preparation of this application. Sean has been involved in the preparation of many Site Location of Development Applications for various clients. Included are resumés for CES, Inc. personnel involved with the design and preparation of this application.

BNRG Renewables is an international Renewable Energy development company. Based in Dublin, Ireland the company has developed projects in seven countries. A specialist in solar PV, BNRG develops, finances, constructs and operates both ground-mounted and rooftop solar plants. As an Irish company established in 2007, BNRG has developed and constructed over \$250m of Solar PV projects in Greece, Bulgaria the UK and Northern Ireland. BNRG has a pipeline of over 300MW of projects currently under development in several mature and emerging markets including Ireland (250 MW) and the United States (140MW) and is exploring opportunities in South East Asia and Australia. BNRG is currently constructing a 35MW portfolio in Oregon with construction of the final project expected to be completed in 2019.

Highly Experienced Team

BNRG has a highly capable team of 12 employees with a broad range of experience in the solar, renewable energy, finance and property industries respectively.

David Maguire - Founder Director

David is an environmental scientist by profession respectively holds Masters' Degrees from National University of Ireland and the University of Wales, in Environmental Sciences and Resource Management. With over 20 years in the environmental and renewable energy sectors, he is consulted frequently on complex environmental and energy issues. David is a founding member of the Irish Solar Energy Association ISEA and the Alliance for Affordable Solar Energy AFASE, the industry group that represents over 850 European companies with a combined annual turnover of over €25bn and employing over 84,000 people. David held positions with the Environmental Protection Agency with responsibility for Research & Development.

Nick Holman - Director

Prior to joining BNRG, Nick spent 17 years working in Asia, Europe and the Middle East as an International Manager for the HSBC Group. During this time, Nick has performed a diverse number of senior roles including running HSBC's Trade and Supply Chain business in Paris, project managing the establishment of a Business Process Outsourcing center in the Philippines and leading HSBC's global trade finance transformation project in Hong Kong. He has recently completed the Mid-Career Master's in Public Administration program at the Harvard Kennedy School where he focused on Infrastructure Finance, Innovation and Microfinance. Nick also holds a Masters' Degree from the London School of Economics and a BA in Economics and Mathematics from Trinity College Dublin

William Martinez - Program Manager (USA)

William is a Project Manager with BNRG and has been in the renewable industry for the past eight years. He has experienced the fast-paced growth of the solar industry through various aspects of building commercial solar projects including design, construction project management, and project development. William earned a Bachelor of Engineering degree in Mechanical Engineering with a concentration in Green Engineering from Stevens Institute of Technology. William is also a NABCEP PV Installation Professional and holds OSHA 10 and OSHA 30 certifications. William is responsible for the oversight of BNRG's Portfolio in the US.

Ross Wolhuter - Program Manager

Ross has worked in the renewable energy industry for seven years, across both sales and project management, focusing in the last three years on the delivery of large scale ground mount solar farms. He was part of a team at Primrose Solar that delivered 253 MWp of sites, ranging from 5MWp to 50MWp, with direct responsibility for in excess of 150 MWp. Prior to working in the renewable energy industry, Ross studied at the University of Leeds, where he graduated with a BA in Environment and Business.

Elina Cipane - Project Manager

Elina graduated from Ventspils University College in Latvia where she acquired Bachelors' Degree of Business Administration and Economics with Specialization in Marketing Management. She then moved to Ireland where she worked in various roles in Billing and Sales Operations in IT industry. Elina joined BNRG Renewables in 2015 and is currently coordinating the company's development portfolio across Ireland and US.

Andre Lopes – Design Engineer

Andre graduated from Federal Technological University of Parana in Brazil where he acquired a Bachelors' Degree in Electrical Engineering. After graduating Andre joined Fotovolttec in Rio, Brazil, designing PV plants from distributed generation to utility scale. He has extensive experience in working with and programming yield analysis and bespoke design software. Andre joined BNRG Renewables in May 2018 as Design Engineer and is responsible for design optimization on all projects.

Brian O' Rorke - Consultant

Brian is an engineer by profession and holds master's degrees in both engineering and business having studied in National University of Ireland, Cork and Nanyang Technological University, Singapore. Brian has been active in Renewables since 2006, initially working in technology R&D for offshore renewables, then in government policy, before taking up a commercial role in a solar PV company. Immediately prior to joining BNRG, Brian worked with a global solar PV EPC company where he successfully establishing businesses for them in Australia and the Philippines contracting 50 MW directly and enabling additional MW's through frameworks and partnerships he established. Brian was responsible for the complete sales cycle from origination to contract signing whilst in parallel established the necessary partnerships to execute the projects. Brian will lead BNRG's market entry into Australia whilst also leveraging his EPC experience for the benefit BNRG's projects globally.

Robert Cleaves**BD Solar Auburn, LLC**

After practicing law for nearly two decades including three years as a federal prosecutor at the Department of Justice (Honors Program), Bob became an environmental entrepreneur and a pioneer in creating business opportunities around sustainable business practices. He founded New England's first wetlands bank, negotiated the nation's largest trade of renewable energy credits from biomass and waste to energy, developed numerous biomass QF's, and has counseled Fortune 500 companies on a broad range of green initiatives. He currently leads the efforts of the Biomass Power Association, a national advocacy group with 50 members in 20 states, including generators, feedstock providers, pulp mills and landowners. He was instrumental in drafting and helping enact the so-called open-loop biomass Production Tax Credit as part of the JOBS Act of 2004. In addition, he represents the industry on overall renewable tax reform. He works closely with Senate Finance and Ways and Means tax staff. His work for BPA spans both tax and non-tax issues, including work on the biogenic emission regulation under the Tailoring Rule, Boiler MACT and NHSM; strategic alliances with USDA, DOE, and environmental NGO's; and energy policy on the Hill. His work for Stratex Energy includes representing some of the largest pulp and paper companies in the US. Bob was responsible for creating \$8 billion in value to the industry in 2008 and 2009 work that avoided thousands of mill layoffs. Bob is a frequent lecturer on renewable energy at RISI, TAPPI, ACORE, CPA, BBI and other conferences. He is a graduate of Wesleyan University and Boston College Law School.

Nicholas Mazuroski**BD Solar Auburn, LLC**

Nick is a founding member of BD Solar and brings extensive experience in business origination, development, operations and fundraising. Nick also consults for the Biomass Power Association, the nation's leading trade organization for biomass power producers, and led business development efforts for Algasol Renewables, a global algal technology company based in Spain. In 2011, Nick launched Casco Solar LLC, a Maine-based renewable energy developer with solar PV projects in Cyprus, Greece and Italy. Nick has also served on several Congressional, Gubernatorial and Presidential campaigns. Nick studied Politics, Philosophy, and Economics at Oxford University, and earned his BA in Political Science from Bates College.



Sean M. Thies, PE

Senior Project Manager

Sean Thies has over 20 years of civil engineering experience, which includes site design, roadway design, and permitting. Sean's experience includes working with private developers, municipalities, housing authorities, and universities. As a Senior Project Manager, Sean manages a wide variety of projects including road construction/reconstruction projects for municipalities, site development projects for medical facilities, retail facilities, banks, restaurants, offices, and ports to name a few. Additionally, he has managed several projects for affordable senior and family housing. Sean has also managed and designed commercial and residential subdivisions. Sean is experienced in permitting with the Maine Department of Environmental Protection, Land Use Planning Commission, Army Corps of Engineers, and many municipalities throughout the State of Maine. Sean's areas of permitting expertise are in site development, stormwater, and natural resources.

stheis@cesincusa.com
(207) 989-4824 ext. 2302

Professional History

2014 – Present

CES, Inc.
Senior Project Manager

2007 – 2014

CES, Inc.
Project Manager

2002 – 2007

CES, Inc.
Project Engineer

1999 – 2002

CES, Inc.
Assistant Project Engineer



Core Expertise:

Site Development
Stormwater Design
MDEP Permitting
Road & Infrastructure Design

Education

B.S. (1996) Civil Engineering, University of Maine, Orono

Registrations

Professional Engineer, State of Maine (#10139)

Certifications

MDOT Local Project Administrator, Level II
Standard First Aid & CPR



Project Experience

RH Foster - Freshies | Various Locations

As project manager, Sean has overseen the concept planning, site design, and local permitting for more than ten sites for RH Foster. The work at each site varies from concept planning for future development to site design for the redevelopment of an existing convenience store/gas station as RH Foster has been rebranding their store to “Freshies”. Many of the site have included redesign of the site layout and access. Upon completion for the redesign, Sean has overseen the preparation of local permit applications and presented to municipal planning boards for approval. Typical services have included: site survey; concept layouts; site layout and grading; site lighting; and local permitting.

Krispy Kreme | Auburn, Maine

As project manager, Sean provided the site design and City permitting for the new Krispy Kreme located on Center Street in Auburn. The proposed development included a small strip mall with the anchor tenant being Krispy Kreme. The site was previously developed with a combination of commercial and residential properties. The existing facilities were demolished to accommodate the proposed development. Sean managed CES’ effort for demolition surveys, site survey, site design, and site plan permitting with the City of Auburn.

Hampshire Street Housing Project | Auburn, Maine

Sean served as the project manager for the site design and City permitting for a 53 unit affordable housing project located on the corner of Hampshire Street and Troy Street in Auburn. The project included 53 housing units in one 3-story building. The project was developed on property owned by the City of Auburn. The project included the City abandonment of Troy Street so that the street right-of-way could be incorporated into the project boundary. In addition to the City property, the development also obtained an option agreement to purchase adjacent land for Pan Am Railways. CES’ services included site survey, site design, and City planning board approval.

Park Street Retaining Wall | Bangor, Maine

CES teamed with Sargent Corp. for the design-build of the Park Street retaining wall stabilization for the City of Bangor. The project included the stabilization of an existing retaining wall that separates Park Street from City Hall and provides the structural integrity of Park Street. The existing failing wall ranged in height from 8 to 22 feet tall and supported Park Street located behind City Hall. As part of this project, the City wanted to improve the staff parking lot adjacent to the wall and building. Sean oversaw the site design for improvements to the parking lot and drainage. The site plan was submitted to the City for planning board approval. Sean worked directly with City staff to incorporate their desired improvements and recommendations in the site design for what has ended up being a great improvement to the staff parking area.

Eastern Maine Healthcare | Brewer, Maine

As project engineer, Sean provided the site design and SLODA and NRPA permitting for a 500,000- square foot professional office complex on a 126-acre lot in Brewer, Maine. This work involved the design of a new intersection onto Wilson Street (U.S. Route 1A), a 1,000-foot access



road complete with all utilities, and approximately 24 acres of parking lot. This project also involved interior roadway design, sanitary sewer, water, surface and subsurface drainage, underground electric and fiber-optic telephone utilities, and a stormwater detention/treatment system.

University of Maine | Parking Lots | Orono, Maine

Sean has assisted in the Permitting and design as well construction observation on four parking lots at the University of Maine. These lots ranged in size from 90 spaces to 360 spaces. Projects included developing surface and subsurface drainage systems for each lot and connecting these systems into the existing drainage system of the University. CES was also responsible for providing lighting designs to meet the University's requirements. One project included the construction of a detention pond and treatment system to control runoff quality and quantity. Other responsibilities have included providing existing conditions surveys, developing conceptual plans, reviewing conceptual plans with the University and selecting a design, permitting the project with the MDEP, providing final design plans and specifications, putting the project out to bid, contractor selection, construction observation, and contract administration.

Leonard Lake Senior Housing | Ellsworth, Maine

As the Project Manager/Senior Project Engineer, Sean provided site design and permitting for a 26-unit senior housing facility located in Ellsworth, Maine. The proposed project was developed by Penquis Housing for low income senior citizens. The project included one 12,000 square foot two story building with associated parking and access. CES provided site design including parking, vehicle and pedestrian access, utilities, stormwater, and retaining wall design. The project required Site Plan and Subdivision review by the City of Ellsworth along with a MDEP Storm Water Permit-by-Rule application. The project is currently under construction and scheduled for completion this summer.

Brewer Housing Authority Community Center | Brewer, Maine

As the Project Manager/Senior Project Engineer, Sean provided site design and permitting for a proposed 12,000 square foot community center building for the Brewer Housing Authority in Brewer, Maine. The proposed building included adult education classrooms as well as daycare facilities. CES provided site design including: parking, pedestrian access, utilities, and stormwater management design services. The proposed project required Site Development permitting through the City of Brewer along with an amendment to the Housing Authority's existing MDEP Site Location of Development Permit. The site design was required to meet all MDEP requirements pertaining to stormwater management. The project was successfully completed in the fall of 2013.

Miscellaneous Projects for Husson University | Bangor, Maine

Sean was involved in preparing an after-the-fact Site Location of Development Application (SLODA) for Husson University to permit completed and planned projects at that time. Since this was completed, Sean has been involved in the design and permitting of additional parking lots for Husson as well as the design and permitting for a new entrance road to the University.



University of Maine Bike Paths | Orono, Maine

CES was hired by the University of Maine (UMaine) to provide design and permitting services for the construction of a 0.5-mile extension of the existing bike path system as well as the reconstruction of the existing bike paths that were constructed in the 1970's. Sean served as the Project Manager for both of these projects. Tasks included: survey, MDEP permitting, Army Corps of Engineers Permitting, design, and assisting UMaine with the MDOT LPA process. Both of these projects were funded by the MDOT and locally administered by UMaine. Due to limited funds, the existing bike paths were evaluated to determine what level of reconstruction should be done on each section depending on the conditions of those sections. We were able to work well with UMaine and the contractors to complete two very successful projects that the owner is very happy with.

Veteran's Park | Milo, Maine

Sean served as the project manager for the design of Veteran's Park for the Town of Milo. The Town hired CES to design a park area along the shores of the Sebec River. The project included improvements to an existing boat ramp facility, parking area improvements, and walkways connecting the existing park gazebo area to the Main Street sidewalks. CES provided survey, design services, and construction administration and inspection. Since the project included improvements to the Main Street sidewalk, coordination with MDOT was also required. The project was funded with CDBG money and CES provided the grant administration.

Dirigo Drive | Brewer, Maine

Sean served as Project Engineer and assisted the task of designing 7,700 feet of new roadway to alleviate traffic congestion on Wilson Street in Brewer, Maine. This road, known during construction as the Parallel Road, runs alongside Wilson Street on the north and Interstate 395 on the south. Sean was involved with the right-of-way, roadway design, storm and sanitary sewer design, permitting, and construction monitoring for the entire project.

The Pines Neighborhood Infrastructure Project | Millinocket, Maine

CES, Inc. worked with the Town and Aqua Maine (the Town's water service provider) on a neighborhood scale infrastructure improvement project in the "Pines" neighborhood. As Project Manager, Sean was directly involved with the replacement of sanitary sewer lines, water lines, storm drain, and the reconstruction and repaving of all affected roadways.

Brewer Economic Development Corporation (BEDC), Dirigo Drive Subdivision and Shapero Lot Subdivision | Brewer, Maine

Sean designed and permitted two commercial subdivisions on Dirigo Drive in the City of Brewer. The two subdivisions created 12 lots for development in the newly created Professional Business District in the City. Work included City and State permitting as well as lot layout. Lots were generally accessed from Dirigo Drive, which was also designed and built as a separate project.



Miscellaneous Permitting for the University of Maine

Sean was involved in preparing an after-the-fact Site Location of Development Application (SLODA) for the University of Maine (UMaine) to permit completed and planned projects at that time. Since this permit was issued by MDEP, Sean has helped prepare more than 35 minor modifications, minor amendments, and amendments to the original permit. Projects have included parking lots, building additions, new building construction, sidewalk construction, and many other miscellaneous projects. Through these permitting projects, CES, Inc. has completed stormwater management plans to control the runoff from the campus. All new projects done on campus that create impervious surface are required to modify the original SLODA permit. Sean worked on a stormwater management plan for the entire UMaine campus to address drainage issues that are a concern to both UMaine and MDEP.



Justine A. Drake

Civil Project Professional

Justine has over six years of background, training and experience in the Civil Engineering field. As a Civil Project Professional, Justine has a wide variety of experience in site design, stormwater management design and utility infrastructure design. Justine is experienced in the preparation of local, state and federal permit applications to include local site plan applications, Site Location of Development (SLODA), Stormwater Permit Applications.

jdrake@cesincusa.com
(207) 989-4824 ext. 2300

Professional History

2017 – Present

CES, Inc.
Civil Project Professional, EI

2012 – 2017

Maine Air National Guard
Civil Engineer Technician

2011 – 2017

Maine Air National Guard
Engineering Apprentice



Core Expertise

Site Development
Stormwater Design
Roadway & Infrastructure Design
Local, State and Federal Permitting
AutoCAD

Education

B.S. Civil Engineering
(2016), University of
Maine, Orono
Engineering Apprentice
Technical School (2012),
Ft. Leonard Wood, MO

Registrations

American Red Cross
Standard First Aid & Adult
CPR



Project Experience

BD Solar | Maine

Justine prepared Maine Department of Environmental Protection (MDEP) and local permit applications for the development of solar arrays in various locations in Maine including Oxford, Milo, Augusta and Fairfield. Three of the sites required full SLODA permit applications while Milo required a SLODA Minor Amendment. Stormwater management design, which included extensive HydroCAD modeling and the design of stormwater management structures, was accomplished for each site as required by the MDEP. Justine also completed local site plan permit applications for each of the four sites.

Main Street Village Center Improvements | Mount Desert, Maine

Justine used HydroCAD modeling to size the proposed closed drainage system on Main Street in Mount Desert, Maine. In addition to modeling the system, Justine aided in the layout and drainage design. The project also involved replacement of sanitary sewer, electrical and water. It was imperative to coordinate the drainage design closely with other utilities to eliminate utility conflicts.

Town of Easton Subdivision Permitting | Easton, Maine

Justine accomplished a subdivision layout and roadway design and an MDEP Stormwater Management permit application for the Town of Easton. The subdivision consisted of 18 lots and approximately 2,200 linear feet of roadway. Stormwater was conveyed to a level spreader and forested buffer through a ditch and culvert system.

Hampshire Street Housing Project | Auburn, Maine

Justine aided in the site design and City permitting for a 53-unit affordable housing project located on the corner of Hampshire Street and Troy Street in Auburn. The project included 53 housing units in one 3-story building. The project was developed on property owned by the City of Auburn. CES' services included site survey, site design, and City planning board approval.

May Street Retaining Wall Replacement and Drainage Improvements | Bangor, Maine

Justine redesigned a parking lot and stormwater appurtenances on May Street in Bangor to support the reconstruction of a failing stone retaining wall. This project was designed in conjunction with a closed stormwater drainage system on May Street for the City of Bangor. The previous drainage system on May Street consisted of a combined sewer and stormwater system. This project allowed separation of utilities and provided drainage for the retaining wall Owner. Also included in the design was a replacement of sanitary sewer to address aging pipes. The site plan was submitted to the City of Bangor for staff approval. Justine coordinated with the private Owner and the City to ensure the two designs were integrated seamlessly.

APPENDIX 10

AGENCY CORRESPONDENCE

*Maine Department of Inland Fish and Wildlife
Maine Historic Preservation Commission
Maine Natural Areas Program*



STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
284 STATE STREET
41 STATE HOUSE STATION
AUGUSTA ME 04333-0041



May 3, 2019

Sean Thies
CES Inc.
P.O. Box 639
Brewer, ME 04412

RE: Information Request -146-acre parcel, Auburn

Dear Sean:

Per your request received April 26, 2019, we have reviewed current Maine Department of Inland Fisheries and Wildlife (MDIFW) information for known locations of Endangered, Threatened, and Special Concern species; designated Essential and Significant Wildlife Habitats; and fisheries habitat concerns within the vicinity of the *146-acre parcel Project* in Auburn. Note that as project details are lacking our comments are non-specific and should be considered preliminary.

Our Department has not mapped any Essential Habitats that would be directly affected by your project.

Endangered, Threatened, and Special Concern Species

Bats

Of the eight species of bats that occur in Maine, the three *Myotis* species are protected under Maine's Endangered Species Act (MESA) and are afforded special protection under 12 M.R.S §12801 - §12810. The three *Myotis* species include little brown bat (State Endangered), northern long-eared bat (State Endangered), and eastern small-footed bat (State Threatened). The five remaining bat species are listed as Special Concern: big brown bat, red bat, hoary bat, silver-haired bat, and tri-colored bat.

While a comprehensive statewide inventory for bats has not been completed, based on historical evidence it is likely that several of these species occur within the project area during migration and/or the breeding season. We recommend that you contact the U.S. Fish and Wildlife Service--Maine Fish and Wildlife Complex (Wende Mahaney, 207-902-1569) for further guidance, as the northern long-eared bat is also listed as a Threatened Species under the Federal Endangered Species Act. Otherwise, our Agency does not anticipate significant impacts to any of the bat species as a result of this project.

Significant Wildlife Habitat

Significant Vernal Pools

At this time MDIFW Significant Wildlife Habitat (SWH) maps indicate no known presence of SWHs subject to protection under the Natural Resources Protection Act (NRPA) within the project area, which include Waterfowl and Wading Bird Habitats, Seabird Nesting Islands, Shorebird Areas, and Significant Vernal Pools. However, a comprehensive statewide inventory for Significant Vernal Pools has not been completed. Therefore, we recommend that surveys for vernal pools be conducted within the project boundary by qualified wetland scientists prior to final project design to determine whether there are Significant Vernal Pools present in the area. These surveys should extend up to 250 feet beyond the anticipated project footprint because of potential performance standard requirements for off-site Significant Vernal Pools, assuming such pools are located on land owned or controlled by the applicant. Once surveys are completed, survey forms should be submitted to our Agency for review well before the submission of any necessary permits. Our Department will need to review and verify any vernal pool data prior to final determination of significance.

Fisheries Habitat

We recommend that 100-foot undisturbed vegetated buffers be maintained along streams. Buffers should be measured from the edge of stream or associated fringe and floodplain wetlands. Maintaining and enhancing buffers along streams that support coldwater fisheries is critical to the protection of water temperatures, water quality, natural inputs of coarse woody debris, and various forms of aquatic life necessary to support conditions required by many fish species. Stream crossings should be avoided, but if a stream crossing is necessary, or an existing crossing needs to be modified, it should be designed to provide full fish passage. Small streams, including intermittent streams, can provide crucial rearing habitat, cold water for thermal refugia, and abundant food for juvenile salmonids on a seasonal basis and undersized crossings may inhibit these functions. Generally, MDIFW recommends that all new, modified, and replacement stream crossings be sized to span at least 1.2 times the bankfull width of the stream. In addition, we generally recommend that stream crossings be open bottomed (i.e. natural bottom), although embedded structures which are backfilled with representative streambed material have been shown to be effective in not only providing habitat connectivity for fish but also for other aquatic organisms. Construction Best Management Practices should be closely followed to avoid erosion, sedimentation, alteration of stream flow, and other impacts as eroding soils from construction activities can travel significant distances as well as transport other pollutants resulting in direct impacts to fish and fisheries habitat. In addition, we recommend that any necessary instream work occur between July 15 and October 1.

This consultation review has been conducted specifically for known MDIFW jurisdictional features and should not be interpreted as a comprehensive review for the presence of other regulated features that may occur in this area. Prior to the start of any future site disturbance we recommend additional consultation with the municipality, and other state resource agencies including the Maine Natural Areas Program and Maine Department of Environmental Protection in order to avoid unintended protected resource disturbance.

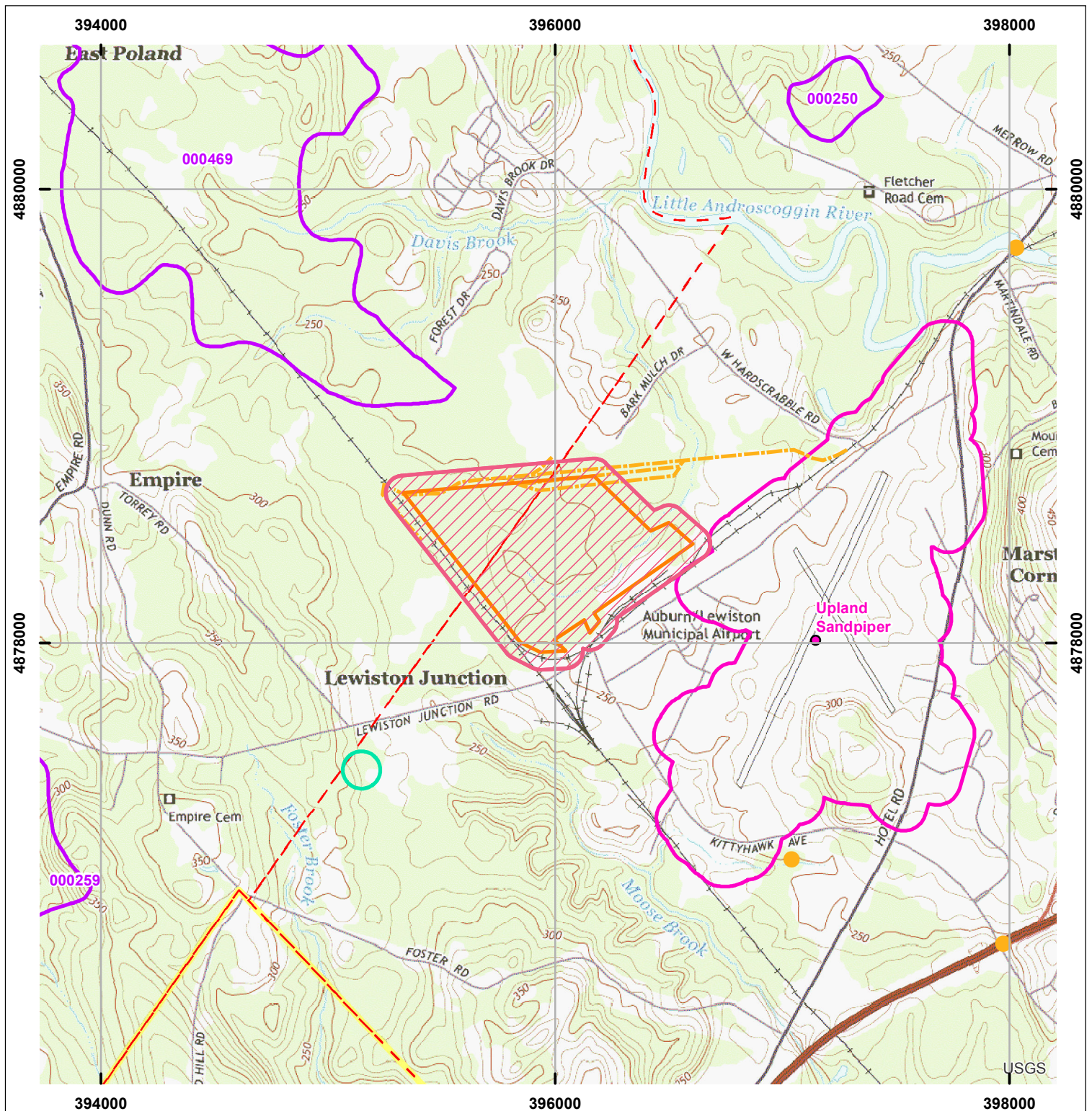
Letter to Sean Thies
Comments RE: 146-acre parcel, Auburn
May 3, 2019

Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,

A handwritten signature in black ink, appearing to read 'Becca Settele', with a large, stylized loop at the end.

Becca Settele
Wildlife Biologist

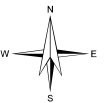


Environmental Review of Fish and Wildlife Observations and Priority Habitats

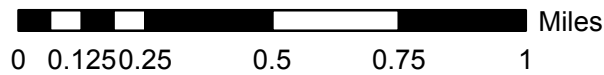
Project Name:

Auburn, 146-acre parcel

(Version 1)



Maine Department of
Inland Fisheries and Wildlife



Projection: UTM, NAD83, Zone 19N

Date: 4/30/2019

- | | | |
|--------------------|-------------------------------|---|
| ProjectPoints | Deer Winter Area | Roseate Tern |
| ProjectLines | LUPC p-fw | Piping Plover/Least Tern |
| ProjectPolys | Cooperative DWAs | Aquatic ETSc (2.5 mi review) |
| ProjectSearchAreas | Seabird Nesting Islands | Rare Mussels (5 mi review) |
| | Shorebird Areas | Maine Heritage Fish Waters |
| | Inland Waterfowl/Wading Bird | Arctic Charr Habitat |
| | 2008 Iwwh (Shoreland Zoning) | Redfin Pickerel/Swamp Darter Habitats (buffer100ft) |
| | Tidal Waterfowl/Wading Bird | Special Concern-occupied habitats(100ft buffer) |
| | Significant Vernal Pools | Wild Lake Trout Habitats |
| | Environmental Review Polygons | |





JANET T. MILLS
GOVERNOR

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

12186

KIRK F. MOHNEY
DIRECTOR

June 25, 2019



Mr. Sean Thies
CES Inc
PO Box 639
Brewer, ME 04412

Project: MHPC #0865-19 North of the Lewiston Junction Road
Potential Development
Town: Auburn, ME

Dear Mr. Thies:

In response to your recent request, I have reviewed the information received June 21, 2019 to initiate consultation on the above referenced project in accordance with the requirements of the Maine Department of Environmental Protection.

Phase I prehistoric archaeological survey for Paleoindian sites is recommended for the entire parcel. Archaeological survey on similar soils and topography around the Auburn Airport has resulted in the location of 8 Paleoindian sites.

A list of qualified prehistoric archaeologists has been enclosed and can be found on our website:
<https://www.maine.gov/mhpc/programs/survey/approved-consultants/prehistoric>

No architectural or historic archaeological resources will be affected by this undertaking.

If you have any questions regarding archaeology, please contact Dr. Arthur Spiess of this office at Arthur.Spiess@maine.gov.

Sincerely,

Kirk F. Mohnney
State Historic Preservation Officer



MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

JANET T. MILLS
GOVERNOR

KIRK F. MOHNEY
DIRECTOR

Archaeological Survey Guidelines

Updated: June 10, 2002

This document is provided as background information to agencies, corporations, professional consultants or individuals needing contract archaeological services (also known as Cultural Resources Management archaeology) in Maine. These guidelines are based on state rules (94-089 Chapter 812).

Project Types

The vast majority of contract archaeology survey work falls into one of three categories.

Phase I surveys are designed to determine whether or not archaeological sites exist on a particular piece of land. Such work involves checking records of previous archaeology in the area, walking over the landscape to inspect land forms and look for surface exposures of soil and possible archaeological material, and the excavation of shovel test pits in areas of high probability.

Phase II surveys are designed to focus on one or more sites that are already known to exist, find site limits by digging test pits, and determine site content and preservation. Information from Phase II survey work is used by the Maine Historic Preservation Commission (MHPC) to determine site significance (eligibility for listing in the National Register of Historic Places). Phase III archaeological work, often called data recovery, is careful excavation of a significant archaeological site to recover the artifacts and information it contains in advance of construction or other disturbance.

Archaeological sites are further divided into two broad categories of culture, prehistoric (or Native American), and historic (or European-American). Different archaeological specialists are usually needed for prehistoric or historic sites because the nature of content and preservation and site locations are quite different.

Scope of Work

In responding to a project submission, the MHPC may issue a letter specifying which type of archaeological survey is needed (prehistoric, historic or both) and at what level (Phase I, II, or III). Often the response letter contains further information, such as the suspected presence of an historic site of a certain age, or a statement that only a portion of the project parcel in question is sensitive for prehistoric sites and only that portion needs archaeological survey.

Once the project applicant has one or more scopes of work (proposals) from appropriate archaeologists (see below), the applicant should submit their preferred proposal (without attached financial information or bid total) to the MHPC for approval. MHPC will not comment upon cost, but will comment on the appropriateness of the scale and scope of the work. An approval from MHPC of the scope of work is the applicant's guarantee that, if the field and laboratory work are done according to the scope, and appropriately described in writing, the results will be accepted by MHPC.

The final written report on the project must also be submitted to MHPC for review and comment.

Finding an Archaeologist

At the time that MHPC issues a letter requiring archaeological survey work, MHPC will also supply one (or more) lists of archaeologists (Levels 1 and/or 2, historic or prehistoric) appropriate to the type of work (Phase I, II, III, historic or prehistoric). Archaeologists on the Level 2 Approved Lists can do projects of any level, including Phase I archaeological survey projects. Level 1 archaeologists are restricted to doing Phase I surveys, and certain planning projects for municipal governments.

MHPC maintains lists of archaeologists interested in working in different geographic areas of Maine, and those who are qualified in different types of work. The archaeologists themselves indicate their availability (except for short-term absence) to MHPC on a periodic basis, so archaeologists on the list can be expected to respond to inquiries. The applicant should solicit proposals or bids for work from archaeologists whose names appear on the list supplied by MHPC.

These archaeologists' names are taken from lists of archaeologists approved for work in Maine by MHPC under a set of rules establishing minimal qualifications, such as previous supervisory experience in northern New England, and an appropriate graduate degree. However, the inclusion of an archaeologist on one of these lists should not be interpreted as an endorsement by the MHPC beyond these limited qualification criteria. Moreover, the MHPC cannot recommend the services of an individual archaeologist.

Project Final Report

Whatever the archaeological survey result, a final report on the project should be submitted by the applicant to the MHPC. The MHPC will review the report, and issue further guidance or issue a "clearance" letter for the project.



JANET T. MILLS
GOVERNOR

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

KIRK F. MOHNEY
DIRECTOR

**Prehistoric Archaeologists Approved List:
Review and Compliance Consulting/Contracting (Active)
LEVEL 2 (Phase I, II, III, date recovery, all phases of survey)
LEVEL 2**

Dr. Richard Will
TRC/Northeast Cultural Resources
71 Oak Street
Ellsworth, ME 04605
P-207-667-4055
rwill@trcsolutions.com

Mr. Jacob A. Freedman
SEARCH, INC.
P.O. Box 1080
Portsmouth, NH 03802
P-603-319-6939
jacob@searchinc.com

Dr. Nathan Hamilton
Dept. of Geography & Anthropology
University of Southern Maine
Gorham, ME 04038
P-207-780-5324
casco@usm.maine.edu

Dr. Dianna Doucette
Public Archaeology Laboratory
26 Main Street
Pawtucket, RI 02860
ddoucette@palinc.com

Dr. Gemma-Jayne Hudgell
Northeast Archaeology Research Center
382 Fairbanks Road
Farmington, ME 04938
P-207-860-4032
hudgell@nearchaeology.com

Mr. Jacob Tumelaire
Independent Archaeological Consulting
801 Islington St. Suite 31
Portsmouth, NH 03801-4257
jtumelaire@iac-llc.net

Karen Mack
TRC/Northeast Cultural Resources
71 Oak Street
Ellsworth, ME 04605
P-207-667-4055
kemack@trcsolutions.com

Robert N. Bartone
Northeast Archaeology Research Center
382 Fairbanks Road
Farmington, ME 04938
P-207-860-4032
bartone@nearchaeology.com

David Putnam
47 Hilltop Road
Chapman, ME 04757
P-207-762-6078
putnamd@umpi.edu

Dr. William R. Belcher
US Army CILHI
310 Worcester Ave, Bldg 45
Hickam AFB HI 96853-5530
wbelcher@msn.com

Gabriel Hryn timer
UNB, Anthropology
PO Box 4400
Fredericton, NB Canada E3B 5A3
P-506-458-7405
Gabriel.hryn timer@unb.ca

Nathan C. Scholl
Gray & Pape
60 Valley Street, Suite 103
Providence, RI 02857
P-401-273-9900
C-717-515-5349
nscholl@graypape.com

Dr. Stuart Eldridge
Power Engineers, Inc.
303 US Rte 1
Freeport, ME 04032
P-207-869-1261
Stuart.Eldridge@powereng.com

Dr. Victoria Bunker
P.O. Box 16
New Durham, NH 03809-0016
P-603-776-4306
vbi@worldpath.net

Dr. Robert Goodby
Monadnock Archaeological Consulting
144 Greenwood Road
Dublin, NH 04333
P-603-563-81
rgoodby@monardarch.com

Dr. Daniel F. Cassidy, AECOM
791 Corporate Center Drive
Raleigh, NC 27607
P-919-854-6207
Daniel.cassidy@aecom.com

Dr. Chris Clement
SEARCH, Inc.
2 Dayton Drive
Hanover, NH 03755
P-803-360-0035
Chris.clement@searchinc.com

Dr. Arthur Spiess, Ex officio
Maine Historic Preservation Commission
55 Capitol Street
65 State House Station
Augusta, ME 04333
P-20-287-2789
Arthur.spiess@maine.gov
(Not available for contract work)

LEVEL 1 (Phase I and reconnaissance survey only)

LEVEL 1

Dr. Christopher Donta
SWCA Environmental Consultants
15 Research Drive
Amherst, MA 01002
P-413-256-0202
Christopher.donta@swca.com

James A. Clark
P.O. Box 815
Belfast, ME 04915
P-207-930-0543
clarkja@gmail.com

Ora Elquist
Public Archaeology Laboratory
26 Main Street
Pawtucket, RI 02860
P-401-728-8780
oequist@palinc.com

Ms. Sarah Haugh
Tetra Tech
451 Presumpscot Street
Portland, ME 04103
P-207-358-2395
sarah.haugh@tetratech.com

Mark Penney
The Louis Berger Group Inc.
20 Corporate Woods Blvd.
Albany, NY 12211-2370
P-518-432-9545
mpenney@louisberger.com

Mary Lynne Rainey
RGA Cultural Resource Consultants
1376 Kingstown Road
Wakefield, RI 02789
Maryllynne.rainey@verizon.net

Inactive, Retired, No longer doing fieldwork, no longer at address given

Mr. Brian Valimont
New England Archaeology Co. LLC
128R Main Street
Plaistow, NH 03865
Newarch1@comcast.net

Ms. Edna Feighner
5 Thomas Street, Apt. 3
Concord, NH 03301
P. 603-228-8091
Edna.Feighner@dcn.nh.gov

Dr. Bruce J. Bourque
Maine State Museum
83 State House Station
Augusta, ME 04333-0083
P-207-287-3909
bbourque@abacus.bates.edu

Edward Moore
TRC/Northeast Cultural Resources
71 Oak Street
Ellsworth, ME 04605
F-207-667-0485

Geraldine Baldwin
4 Dickson Lane
Bedford Corners, NY 10549
P-914-271-0897
GeraldineBaldwin@aol.com

Dr. Ellen Cowie
Northeast Archaeology Research Center
382 Fairbanks Road
Farmington, ME 04938
cowie@nearchaeology.com

**Archaeological Phase I Survey of the Proposed
Dirigo Solar Auburn Project, MHPC # 0865-19
Auburn, Androscoggin County, Maine**

Scope-of-Work

prepared for:

Dirigo Solar, LLC

prepared by:

Robert N. Bartone, M.A.

And

Gemma Hudgell, PhD

Northeast Archaeology Research Center, Inc.
382 Fairbanks Road
Farmington, ME 04938

August 2, 2019

Revised:

August 20, 2019

**Archaeological Phase I Survey of the Proposed
Dirigo Solar Auburn Project, MHPC # 0865-19
Auburn, Androscoggin County, Maine**

Scope-of-Work

I. Introduction

This scope-of work (SOW) has been prepared by the Northeast Archaeology Research Center, Inc. (NE ARC) on behalf of Dirigo Solar, LLC, for an archaeological phase I survey of an approximately 66-acre parcel of land proposed for the development of two 4.99 MWac solar facilities located on the north side of Lewiston Junction Road, across from the Auburn-Lewiston Municipal Airport in Auburn, Androscoggin, Maine (MHPC Project #0865-19) (Figures 1-3). The facilities will consist of photovoltaic panels, inverters and other related infrastructure. The solar panels will be held in place using friction pilings that do not require fill and are mounted onto a fixed racking system. Panels will be wired together via cables that run along the panel system. The goal of the archaeological phase I survey is to determine if archaeological sites of potential significance are present within the proposed project area or to establish that it is unlikely that site(s) of potential significance are present. Significant sites are those that meet eligibility criteria for the State and National Registers of Historic Places.

The archaeological work proposed herein is required as part of the Maine Department of Environmental Protection Site Location of Development (Site Law) review process and will adhere to standards and guidelines as determined by the Maine Historic Preservation Commission (MHPC) for archaeological studies in Maine. Results of this work must be judged satisfactory by the MHPC State Historic Preservation Officer Kirk Mohny and his staff.

II. Problem Statement

The proposed project area has never been archaeologically surveyed but was determined to be archaeologically sensitive by the MHPC during their initial project review (see MHPC Letter dated 6/25/2019). In general terms sensitivity is based on the project setting on sandy landforms in proximity to drainages and wetlands associated with the Androscoggin River which lies approximately 1.3 km northeast of the project. Specifically, the project area is located in a relatively tight geographic area around the airport which contains a cluster of eight archaeological sites dating to the Paleoindian period

of Native American history for the region, ca. 9000-7000 B.C. The Paleoindian period represents the first inhabitants of Maine following de-glaciation of the region. As noted by the MHPC, the sites are located on similar soils and topography as the current study area

III. Work Plan

Background Research

Some time will be required for background research in order to develop brief environmental and cultural contexts for the project and will include review of paleoenvironmental information and both published and 'grey' archaeological literature specifically applicable to the study area. It is expected that the background research can take place in-house.

Fieldwork

Archaeological phase I survey field work will follow standardized NE ARC methodological procedures and include the excavation of 0.5 x 0.5 m test pits placed at 10.0 m and/or 5.0 m intervals along sampling transects. Excavations will proceed by hand, by arbitrary 10 cm levels within natural strata with all sediments passed through 6.4 mm (1/4 inch) hardware cloth. If conditions are suitable, phase I survey will also include systematic surface collection of exposed ground along woods roads and skidder roads focused on sandy exposures in order to increase survey coverage. Sketch maps of the location of all archaeological testing will be made utilizing sub-decimeter GPS and conventional survey methods as appropriate. The area(s) included in the surface survey and any artifacts that may be identified will also be GPS plotted/mapped. A daily log will be maintained by the Field Supervisor summarizing site activity and recording initial site assessment. All field work will be photo documented digitally. A daily log will be kept by the Field Supervisor.

Based on preliminary review of aerial photographs and topographic maps, including 2' contour Lidar, It is estimated that approximately 150 test pits will be necessary to adequately sample the project area, focused on micro-topographic features and landform margins. The exact location of testing will be determined in the field. Fairly intensive sampling is necessary to identify expected Paleoindian period sites, which are typically comprised of relatively small discrete loci/activity areas. Fieldwork is expected to take a crew of six archaeological field technicians and a field supervisor up to 5.0 days to complete including some drive time. Up to two days is included for the field supervisor to conduct the surface survey if conditions are suitable.

Laboratory Work and Report Preparation

Although it is uncertain what types or quantity of cultural material will be recovered, some degree of laboratory work will be needed. A letter report detailing the results of the study and including recommendations will be prepared within two weeks of completion of the field work. If no sites are identified the letter report will suffice and meet all reporting requirements. If archaeological deposits of potential significance are identified a full technical report will be required, fully detailing the results of the study.

IV. Proposed Work Schedule

NE ARC can conduct the field late summer of fall and can schedule the work once authorization to proceed is received from the client. As noted above the archaeological phase I field work will take approximately up to 5.0 days to complete. The interim, end-of-field letter report will be submitted within two weeks of completion of field work. If a site is identified the MHPC required technical report will be prepared and submitted within 6.0 months of completion of fieldwork. The interim end-of-field letter report will have all necessary information for project review and short-term management decisions. MHPC approval of the proposal is also necessary prior to undertaking the work.

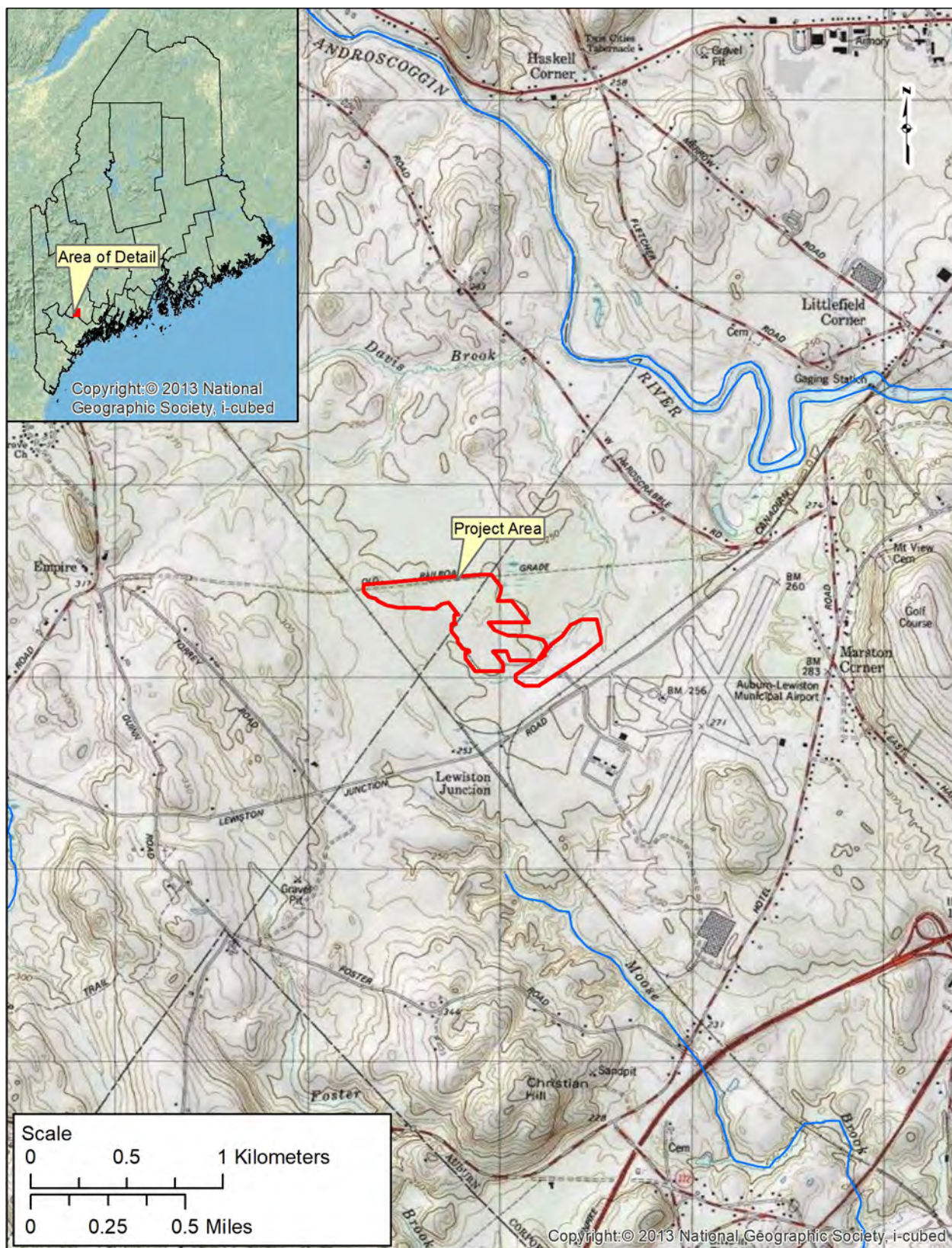


Figure 1. Topographic map showing the location of the proposed Dirigo Solar Auburn Project, MHP #0865-19, Auburn, Androscoggin, Maine.

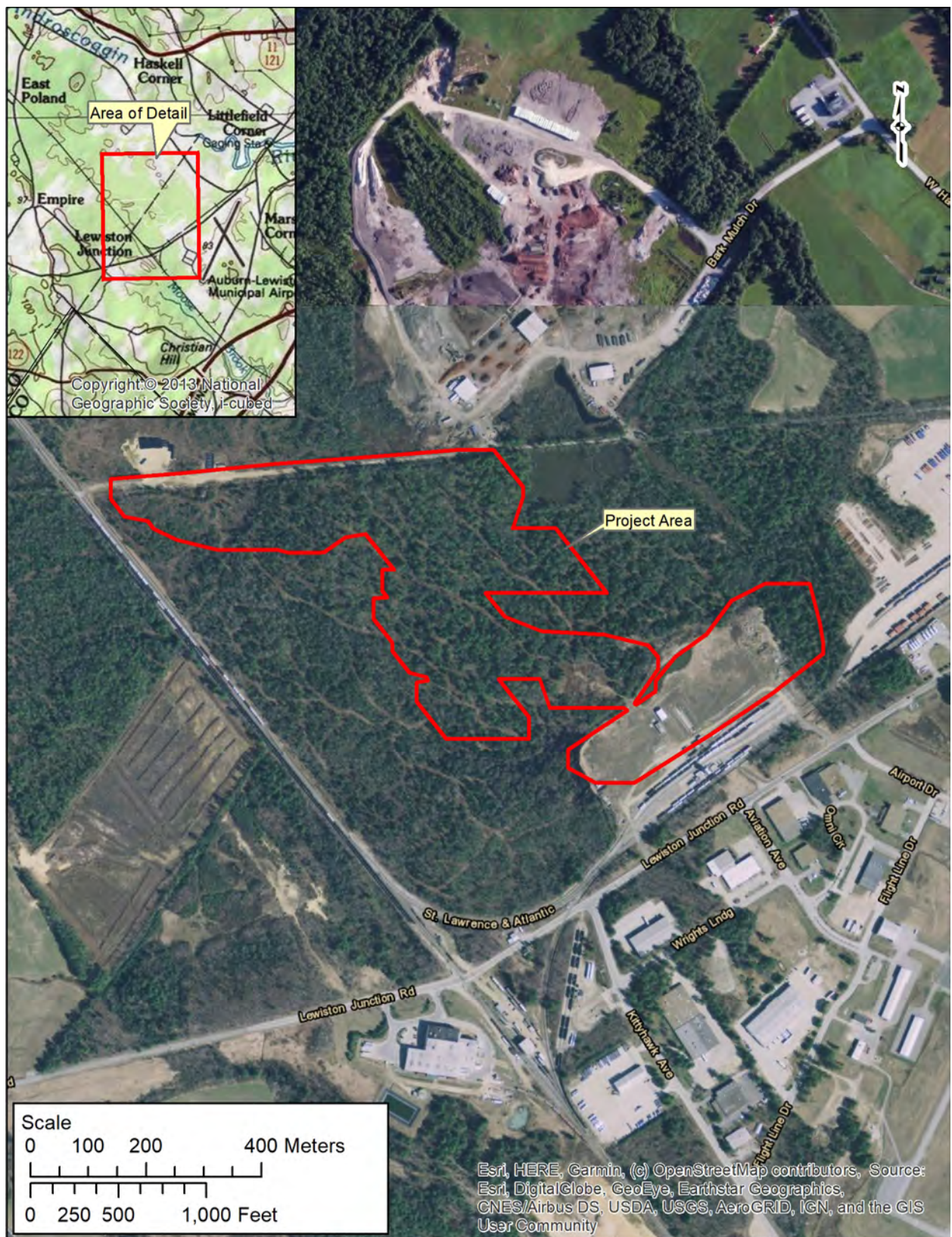


Figure 2. Aerial photograph showing the proposed Dirigo Solar Project, Auburn Project, MHPC #0865-19, Auburn, Androscoggin, Maine.

Northeast Archaeology Research Center, Inc.

Nicholas Mazuroski
Dirigo Solar, LLC
PO Box 9729
Portland, ME, 04104-5029

September 24, 2019

**RE: Archaeological Phase I Survey of the Proposed Dirigo Solar Auburn Project, Auburn,
Androscoggin County, Maine (MHPC #8065-19)**

Dear Nick,

We write to inform you of the completion of an archaeological phase I survey of the proposed Dirigo Solar, LLC project located in Auburn, Androscoggin County, Maine (MHPC Project #0865-19) (Figures 1 and 2). The work was conducted by the Northeast Archaeology Research Center, Inc. (NEARC, Inc.) on behalf of Dirigo Solar, LLC from September 3 to 7, 2019, as part of the Maine Department of Environmental Protection Site Location of Development (Site Law) review process. The goal of the phase I survey was to determine if archaeological sites of potential significance are present, and to determine potential project effects to archaeological deposits if identified.

The project includes an approximately 66-acre parcel of land proposed for the development of two 4.99 MWac solar facilities located on the north side of Lewiston Junction Road, across from the Auburn-Lewiston Municipal Airport. The facilities will consist of photovoltaic panels, inverters and related infrastructure. Solar panels will be held in place using friction pilings that do not require fill and are mounted onto a fixed racking system. Panels will be wired together via cables that run along the panel system.

The project area has never received archaeological survey but is considered sensitive for the presence of Native American archaeological sites as indicated by the MHPC's review of the project (see letter dated June 25, 2019). In general terms sensitivity is based on the project setting on sandy landforms in proximity to drainages and wetlands associated with the Androscoggin River which lies approximately 1.3 km northeast of the project. Specifically, the project is located within a relatively tight geographic area around the Auburn-Lewiston Municipal Airport which contains a cluster of nine archaeological sites dating to the Paleoindian period of Native American history for the region, ca. 9,000-7,000 B.C. The Paleoindian period represents the first inhabitants of Maine following de-glaciation of the region. As noted by the MHPC, the sites are located on similar soils and topography as the current study area.

As detailed below the phase I survey included the excavation of 150 0.5 m x 0.5 m test pits (Figure 3). In addition, surface survey was undertaken in areas of exposed soil where present within woods roads/skidder trails. No artifacts were recovered during test pit excavation or surface survey, and indicate

that it is unlikely the significant, i.e. State and National Register of Historic Places eligible, archaeological sites are present. Therefore, no additional archaeological work is recommended prior to project construction.

Project Description

The project is located to the north of Lewiston Junction Road and to the south and east of the St. Lawrence and Atlantic rail line. The overall project area consists of two topographically distinct portions: a larger, wooded area forming the northern portion of the project, and a smaller, mostly open, industrialized area forming the southern portion. These two areas are separated by west-to-east flowing seasonal drainage, with the northern, wooded area accessed by crossing a culvert.

The wooded portion of the parcel possesses a rolling topography with elevations ranging from 239 to 253 ft above mean sea level (a.m.s.l.), with the highest elevations towards the northern portions of the area. To the southwest and particularly to the east, the landforms generally slope downwards to overlook the ephemeral stream and associated wetlands that drain west then generally northwards into the Androscoggin River, which is located about 1.3 km (0.8 miles) north of the project area. Vegetation is mixed woodland which has been logged at various times in the past, including fairly recently, and includes mature softwoods with a thick underbrush of both coniferous and deciduous growth mainly including birch and fir. Logging trails and woods roads visible on aerial photographs of the parcel have mainly grown over, however some trails in the southeastern part of the northern portion of the parcel still remain relatively clear and show evidence of recent rutting with numerous brush piles and bark chips present (Figure 4).

The southern portion of the project area is an open, industrialized area associated with a set of rail sidings that are located at the southern extent of the parcel along Lewiston Junction Road (Figure 5). This area is largely denuded and has been artificially levelled, as indicated by a series of push piles that are particularly noticeable towards the southeastern extent of the project area (Figure 6). This area possesses a fairly uniform elevation of 239 to 242 ft a.m.s.l. Cement and concrete structures and a large steel pole tent are situated in the center of this portion of the project, and further concrete walls are located within thick undergrowth in the area of the push piles at the southeastern extent of the project area. An artificial pond is also located along the northern edge of the southern portion of the project area, parallel to and separated from the aforementioned seasonal drainage. Overall, the area is generally vegetated with tall grass and weeds; an intact, wooded landform is located beyond the push piles/concrete structures at the far eastern edge of this portion of the project.

Archaeological Phase I Survey

Archaeological testing included the excavation of 150 0.5 m x 0.5 m test pits placed at 5.0 and 10.0 m intervals along testing transects positioned to best sample archaeologically sensitive landforms. Given the obvious disturbance in the southern portion of the project, the majority of testing was placed in the northern, wooded portion. Transects were placed on level, ridge and knoll landforms and shoulders, and on other level areas immediately overlooking swales, wetlands, and drainages associated with the ephemeral stream crosscutting the overall parcel (Figures 7 and 8). Much of the central, northern part of the wooded portion of the project is relatively undifferentiated, and so testing was focused on distinct landforms located in the far northwest, in the center, and in the far southeast of the wooded portion of the project. Testing was also placed on the intact landform at the far eastern edge of the southern portion of the project (Figure 9), and three test pits were placed within the central area of the southern portion of the project to definitely determine that the area is disturbed (Figure 10).

Test pits were excavated to depths of 38 to 102 cm below ground surface (cmbs) with an average depth of 59 cmbs (Appendix I). Stratigraphy was generally consistent on intact landforms and included an uppermost 'Ao' organic horizon of dark brown sandy loam measuring 10 to 22 cm in thickness, occasionally overlying an 'Ae' albic horizon of light gray fine sandy loam measuring between 5 and 16 cm in thickness, in turn overlying an intact, developed 'B' soil horizon of strong brown sandy loam measuring 13 to 30 cm in thickness. All excavations were terminated within a sterile, basal 'C' soil horizon characterized by a yellowish brown grading into a light olive brown sandy loam horizon. These soils corroborate the NRCS soil classification for the area as Adams loamy sandy and Ninigret sandy loam, which both form from glaciofluvial deposits (USDA 2019).

The three test pits excavated within the industrialized, southern portion of the project were dug to depths of 65 to 90 cm below ground surface and evidenced a thin, developing 'A' soil horizon or mixed disturbed soils ranging from 10 to 23 cm in thickness directly overlying sandy loam fill containing gravel, pebbles and cobbles to base of excavation. Test pits were terminated on bedrock ledge/boulders or on concrete cinder blocks.

No Native American cultural material was recovered in the course of excavations within either the northern or southern portions of the project. A few 20th century artifacts were recovered from the fill in the southern portion of the project, including some rusted nails and other unidentifiable pieces of metal, two small sherds of earthenware ceramic, and a small fragment of window glass. These are not considered to be a significant archaeological deposit.

Surface survey was conducted within any portions of the project area evidencing open, visible ground surface. Such areas were present in some locations towards the southeastern extent of the northern portion of the parcel, where logging trails are still relatively open. For the most part the ground surface was not particularly clear given the presence of deep ruts, brush, and bark chips, however any

visible patches of ground were thoroughly surveyed. No Native American cultural material was identified.

Conclusions and Recommendations

NE ARC has completed archaeological phase I survey of the proposed Dirigo Solar, LLC project located in Auburn, Androscoggin County, Maine (MHPC Project #0865-19). No Native American archaeological material was recovered within the project area. Given this, it is unlikely that significant, i.e. National Register of Historic Places eligible, archaeological sites are present or will be adversely affected by the project, therefore no further archaeological work is recommended prior to project construction. Please call if you have any questions and thank you for the opportunity to conduct this study.

Sincerely,



Gemma-Jayne Hudgell, Ph.D.
Assistant Director, NE ARC, Inc.



Robert N. Bartone, M.A.
Director, NE ARC, Inc.

References

USDA
2019 *Web Soil Survey*. United States Department of Agriculture.

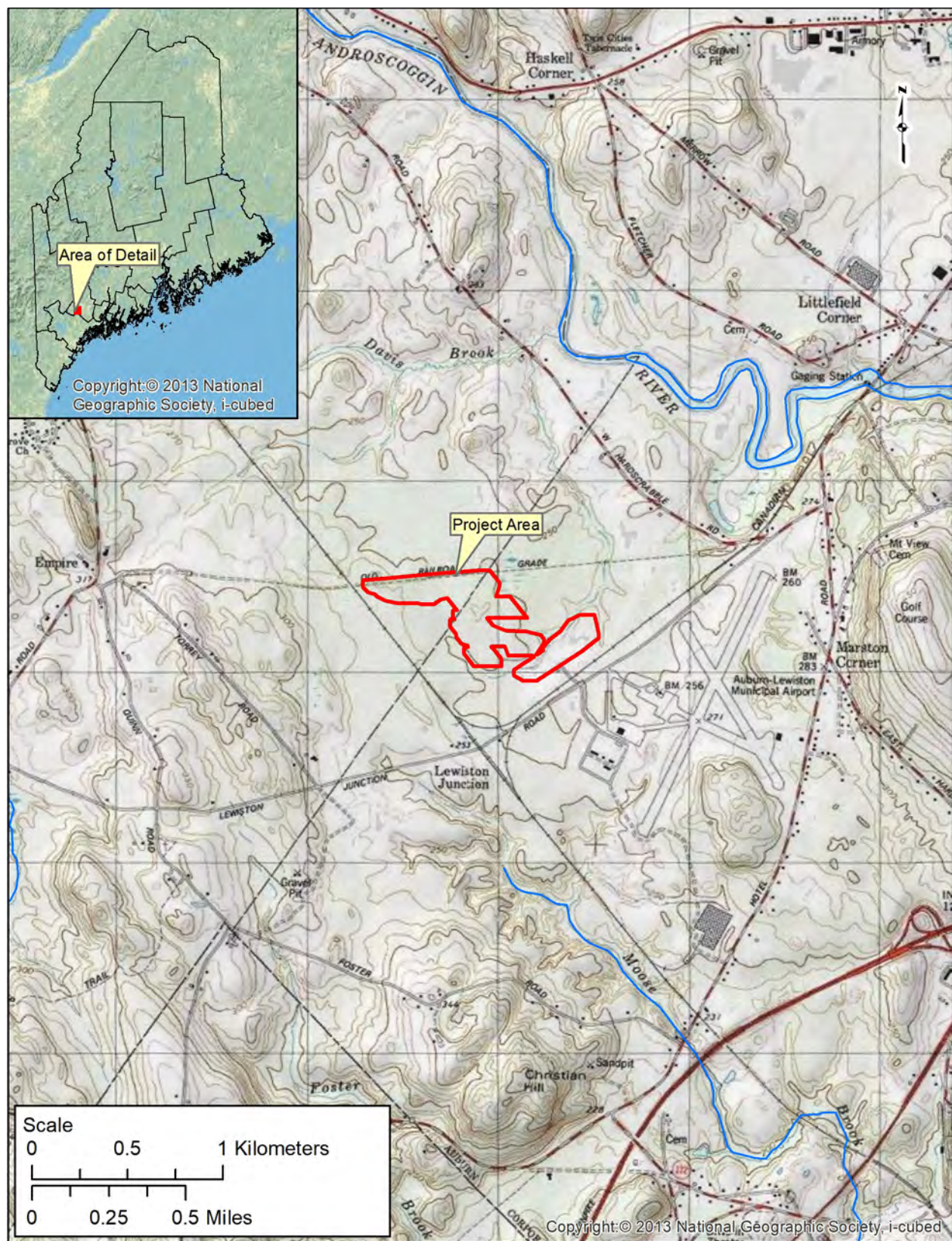


Figure 1. Topographic map showing the location of the proposed Dirigo Solar Auburn Project, MHPC #0865-19, Auburn, Androscoggin, Maine.

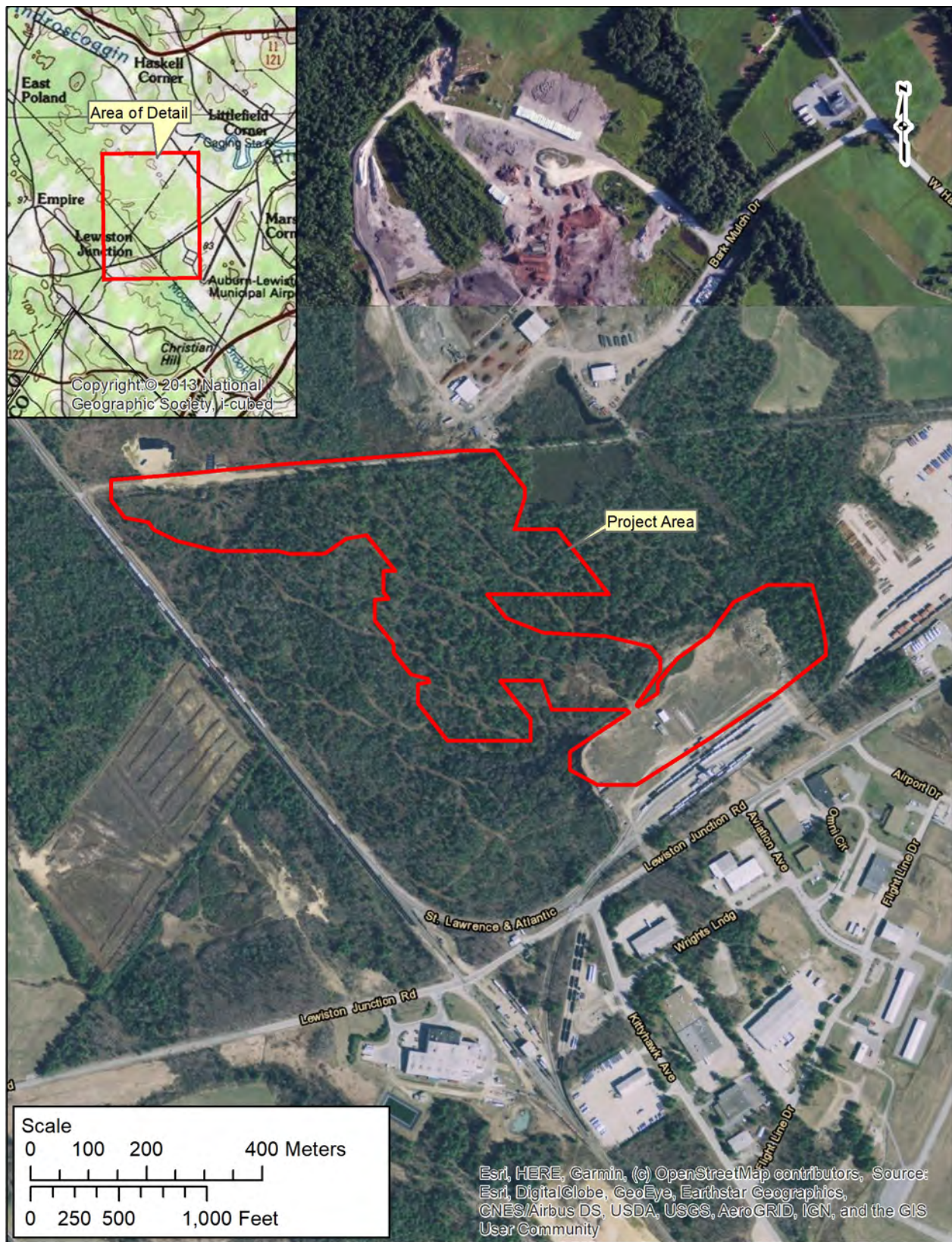


Figure 2. Aerial photograph showing the location of the proposed Dirigo Solar Auburn Project, MHPC #0865-19, Auburn, Androscoggin, Maine.

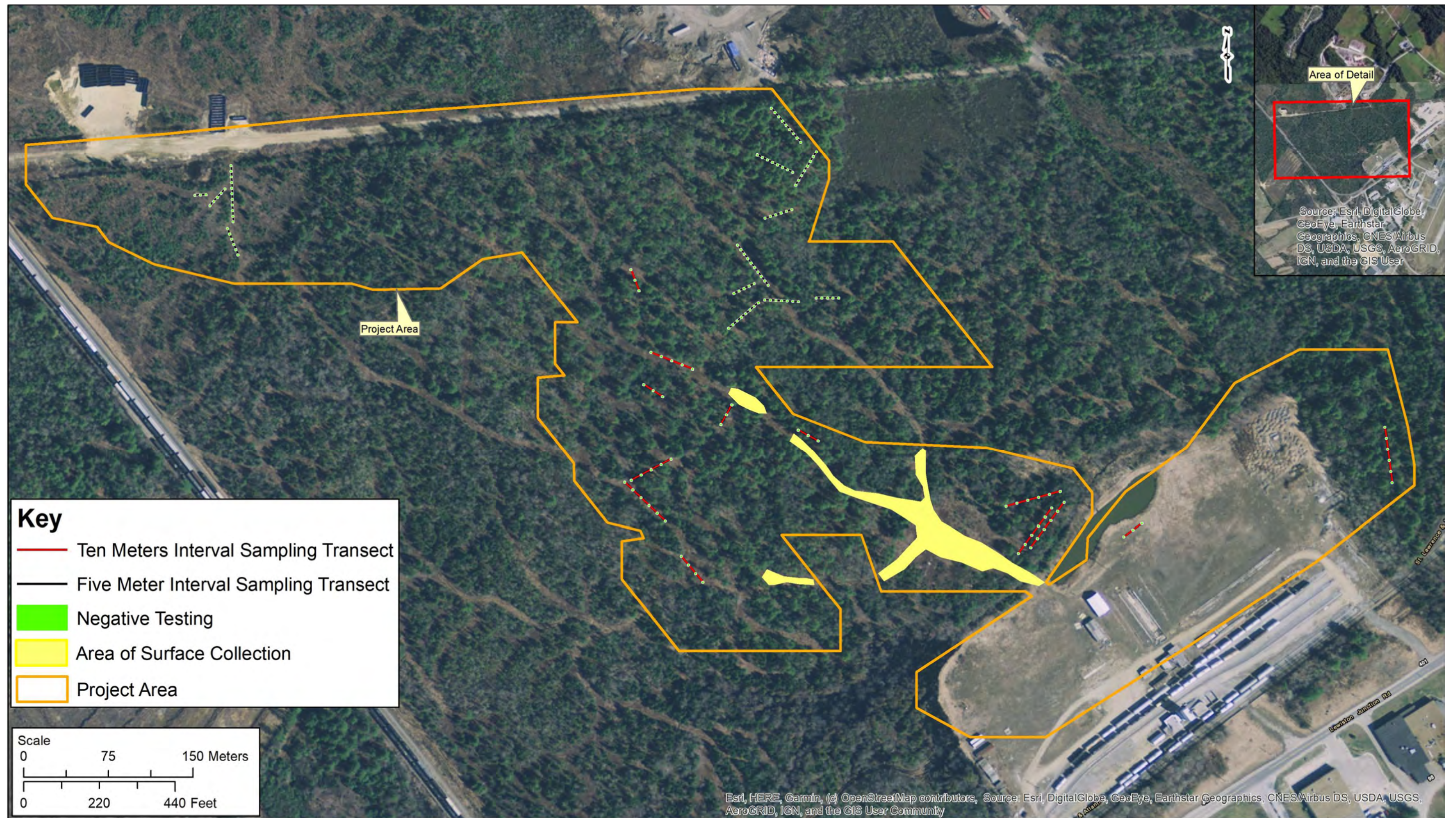


Figure 3. Aerial photograph showing the location of archaeological phase I survey transects and test pits within the proposed Dirigo Solar Auburn Project, MHPC #0865-19, Auburn, Androscoggin, Maine.



Figure 4. View northwest along logging trail in the northern portion of the proposed Dirigo Solar Auburn Project, MHPC #0865-19, Auburn, Androscoggin, Maine.



Figure 5. View southwest of the southern portion of the proposed Dirigo Solar Auburn Project, MHPC #0865-19, Auburn, Androscoggin, Maine.



Figure 6. View northeast of push piles towards the eastern end of the southern portion of the proposed Dirigo Solar Auburn Project, MHPC #0865-19, Auburn, Androscoggin, Maine.



Figure 7. View east of crew members excavating along transect T11 in the northeastern extent of the northern portion of the proposed Dirigo Solar Auburn Project, MHPC #0865-19, Auburn, Androscoggin, Maine.



Figure 8. View north of crew members excavating along transect T4 in the southeastern extent of the northern portion of the proposed Dirigo Solar Auburn Project, MHPC #0865-19, Auburn, Androscoggin, Maine.



Figure 9. View east of crew members excavating along transect T1 in the eastern extent of the southern portion of the proposed Dirigo Solar Auburn Project, MHPC #0865-19, Auburn, Androscoggin, Maine.



Figure 10. View north of crew members excavating along transect T26 in the central part of the southern portion of the proposed Dirigo Solar Auburn Project, MHPC #0865-19, Auburn, Androscoggin, Maine.

APPENDIX I: SELECT TEST PIT SEDIMENT PROFILES

Northeast Archaeology Research Center - Test Pit Profile Form

Project Auburn Solar I State Site # Test Pit T2P1

Area/Locus PN Area 101-200 PROV# 101 Feature #(s)

Supervisor LB3 Exc. Team DDO/CIB Recorder DDO Date 9/3/19

| Depth (cm) | PN's / Artifacts, by level (see reverse for codes) | Soil Descriptions |
|------------|--|------------------------|
| 0-10 | A0 | A0 (0-14 cm) |
| 10-20 | A0 | 10YR 4/3 bn |
| 20-30 | B | sa lo |
| 30-40 | B | A0 (14-20 cm) |
| 40-50 | C1 | 10YR 7/1 lt gray |
| 50-60 | C1 | sa lo |
| 60-70 | C2 | B (20-33 cm) |
| 70-80 | C2 | 7.5YR 4/6 strong brown |
| 80-90 | C2 | sa lo |
| 90-100 | C2 | C1 (33-60 cm) |
| 100-110 | C2 | 10YR 5/3 yellow brown |
| 110-120 | C2 | sa lo |
| 120-130 | C2 | C2 (60-79 cm) |
| 130-140 | C2 | 2.5Y 5/6 lt bluish |
| 140-150 | C2 | sa lo |

Comments* NAR/NCM - One small mound. Tree throws.

Number of bags: 0

* Provide comments on Artifacts, Soils, Disturbances, Context, etc.

Northeast Archaeology Research Center - Test Pit Profile Form

Project Auburn Solar I State Site # Test Pit T2P5

Area/Locus PN Area 201-300 PROV# 204 Feature #(s)

Supervisor LB3 Exc. Team AMP/ODD Recorder MAP Date 9/3/19

| Depth (cm) | PN's / Artifacts, by level (see reverse for codes) | Soil Descriptions |
|------------|--|------------------------|
| 0-10 | A0 | A0 (0-13 cm) 10YR 4/3 |
| 10-20 | A0 | Bn sa lo |
| 20-30 | B | A0 (13-21 cm) 10YR 7/1 |
| 30-40 | B | lt gray sa lo |
| 40-50 | C | B (21-32 cm) 7.5YR 4/6 |
| 50-60 | C | st. Bn sa lo |
| 60-70 | C | C (32-54 cm) 2.5Y 5/6 |
| 70-80 | C | lt. ol. Bn sa lo |
| 80-90 | C | |
| 90-100 | C | |
| 100-110 | C | |
| 110-120 | C | |
| 120-130 | C | |

Comments* NCM

Number of bags: 0

* Provide comments on Artifacts, Soils, Disturbances, Context, etc.

Northeast Archaeology Research Center - Test Pit Profile Form

Project Auburn Solar I State Site # Test Pit T4P3

Area/Locus PN Area 1-100 PROV# 5 Feature #(s)

Supervisor LB3 Exc. Team LMW, DPK Recorder LMW Date 9/7/19

| Depth (cm) | PN's / Artifacts, by level (see reverse for codes) | Soil Descriptions |
|------------|--|------------------------|
| 0-10 | A0 | A0 (0-9 cm) |
| 10-20 | A0 | 10YR 4/3 bn |
| 20-30 | B | sa lo |
| 30-40 | C1 | A0 (9-17 cm) |
| 40-50 | C1 | 10YR 7/1 lt gray |
| 50-60 | C1 | sa lo |
| 60-70 | C2 | B (17-28 cm) |
| 70-80 | C2 | 7.5YR 4/6 strong brown |
| 80-90 | C2 | sa lo |
| 90-100 | C2 | C1 (28-38 cm) |
| 100-110 | C2 | 10YR 4/8 yellow brown |
| 110-120 | C2 | sa lo |
| 120-130 | C2 | C2 (38-54 cm) |
| 130-140 | C2 | 2.5Y 5/6 lt bluish |
| 140-150 | C2 | sa lo |

Comments* NCM

Number of bags: 0

* Provide comments on Artifacts, Soils, Disturbances, Context, etc.

Northeast Archaeology Research Center - Test Pit Profile Form

Project Auburn Solar I State Site # Test Pit T7P6

Area/Locus PN Area 1-100 PROV# 16 Feature #(s)

Supervisor LB3 Exc. Team LMW, DPK Recorder DPK Date 9/9/19

| Depth (cm) | PN's / Artifacts, by level (see reverse for codes) | Soil Descriptions |
|------------|--|---------------------------|
| 0-10 | A0 | A0 (0-17 cm) |
| 10-20 | A0 | 10YR 4/3 brown |
| 20-30 | B | sa lo |
| 30-40 | C1 | A0 (17-24 cm) |
| 40-50 | C1 | 10YR 7/1 lt. gray |
| 50-60 | C1 | sa lo |
| 60-70 | C2 | B (24-34 cm) |
| 70-80 | C2 | 7.5YR 4/6 strong brown |
| 80-90 | C2 | sa lo |
| 90-100 | C2 | C1 (34-55 cm) |
| 100-110 | C2 | 10YR 6/8 yellow brown |
| 110-120 | C2 | sa lo |
| 120-130 | C2 | C2 (55-69 cm) |
| 130-140 | C2 | 2.5Y 5/6 lt. bluish brown |
| 140-150 | C2 | sa lo |

Comments* NCM

Number of bags: 0

* Provide comments on Artifacts, Soils, Disturbances, Context, etc.

Northeast Archaeology Research Center - Test Pit Profile Form

Project Auburn Solar I State Site # Test Pit T14P6

Area/Locus PN Area 101-200 PROV# 29 Feature #(s)

Supervisor LBS Exc. Team CLB, DDD Recorder CLB Date 9/6/19

| Depth (cm) | PN's / Artifacts, by level (see reverse for codes) | Soil Descriptions |
|------------|--|---|
| 0-10 | 1.1 NAR | A _p = 0 - 18 cm 10YR 4/3 br s.s. Lo |
| 10-20 | 2 | |
| 20-30 | 3 | |
| 30-40 | 4 | A ₂ = 18 - 29 cm 10YR 7/1 Mg s.s. Lo |
| 40-50 | 5 | |
| 50-60 | 6 | B = 29 - 60 cm 7.5YR 4/6 s.t. br s.s. Lo |
| 60-70 | 7 | |
| 70-80 | 8 | C ₁ = 60 - 75 cm 10YR 4/8 yw br s.s. Lo |
| 80-90 | 9 | |
| 90-100 | 10 | |
| 100-110 | 11 | C ₂ = 75 - 100 cm 2.5Y 5/6 lt. d. br s.s. Lo |
| 110-120 | 12 | |
| 120-130 | 13 | |

Comments* NCM

Number of bags: 0

* Provide comments on Artifacts, Soils, Disturbances, Context, etc.

Northeast Archaeology Research Center - Test Pit Profile Form

Project Auburn Solar I State Site # Test Pit T11 D3

Area/Locus PN Area 1-100 PROV# 27 Feature #(s)

Supervisor LBS Exc. Team LMW, DPK Recorder LMW Date 9/5/19

| Depth (cm) | PN's / Artifacts, by level (see reverse for codes) | Soil Descriptions |
|------------|--|--|
| 0-10 | 1.1 NAR | A ₂ (0-23 cm) 10YR 4/3 br s.s. Lo |
| 10-20 | 2 | |
| 20-30 | 3 | B (23-43 cm) 7.5YR 4/6 s.t. br s.s. Lo |
| 30-40 | 4 | |
| 40-50 | 5 | |
| 50-60 | 6 | C ₁ (43-53 cm) 10YR 4/8 yw br s.s. Lo |
| 60-70 | 7 | |
| 70-80 | 8 | |
| 80-90 | 9 | |
| 90-100 | 10 | C ₂ (53-66 cm) 2.5Y 5/6 lt. d. br s.s. Lo |
| 100-110 | 11 | |
| 110-120 | 12 | |
| 120-130 | 13 | |

Comments* NCM

Number of bags: 0

* Provide comments on Artifacts, Soils, Disturbances, Context, etc.

Northeast Archaeology Research Center - Test Pit Profile Form

Project Auburn Solar I State Site # Test Pit T19 P2

Area/Locus PN Area 100 PROV# 50 Feature #(s)

Supervisor LBS Exc. Team LMW, DPK Recorder LMW Date 9/6/19

| Depth (cm) | PN's / Artifacts, by level (see reverse for codes) | Soil Descriptions |
|------------|--|---|
| 0-10 | 1.1 NAR | A ₂ (0-13 cm) 10YR 4/3 br s.s. Lo |
| 10-20 | 2 | |
| 20-30 | 3 | |
| 30-40 | 4 | A ₂ (13-19 cm) 10YR 7/1 lt. gy s.s. Lo |
| 40-50 | 5 | |
| 50-60 | 6 | B (19-26 cm) 7.5YR 4/6 s.t. br s.s. Lo |
| 60-70 | 7 | |
| 70-80 | 8 | |
| 80-90 | 9 | |
| 90-100 | 10 | C (36-52 cm) 2.5Y 5/6 lt. d. br s.s. Lo |
| 100-110 | 11 | |
| 110-120 | 12 | |
| 120-130 | 13 | |

Comments* NCM

Number of bags: 0

* Provide comments on Artifacts, Soils, Disturbances, Context, etc.

Northeast Archaeology Research Center - Test Pit Profile Form

Project Auburn Solar I State Site # Test Pit T22 P2

Area/Locus PN Area 1-100 PROV# 56 Feature #(s)

Supervisor LBS Exc. Team LMW, DPK Recorder LMW Date 9/7/19

| Depth (cm) | PN's / Artifacts, by level (see reverse for codes) | Soil Descriptions |
|------------|--|--|
| 0-10 | 1.1 NAR | A ₂ (0-13 cm) 10YR 4/3 br s.s. Lo |
| 10-20 | 2 | |
| 20-30 | 3 | |
| 30-40 | 4 | B (13-28 cm) 7.5YR 4/6 s.t. br s.s. Lo |
| 40-50 | 5 | |
| 50-60 | 6 | C ₁ (28-38 cm) 10YR 4/8 yw br s.s. Lo |
| 60-70 | 7 | |
| 70-80 | 8 | |
| 80-90 | 9 | |
| 90-100 | 10 | C ₂ (38-53 cm) 2.5Y 5/6 lt. d. br s.s. Lo |
| 100-110 | 11 | |
| 110-120 | 12 | |
| 120-130 | 13 | |

Comments* NCM

Number of bags: 0

* Provide comments on Artifacts, Soils, Disturbances, Context, etc.

Northeast Archaeology Research Center - Test Pit Profile Form

Project Ashmun Solar I State Site # 101-200 Test Pit T24P2

Area/Locus 1 PN Area 101-200 PROV# 144 Feature # (s) 1

Supervisor LBS Exc. Team CLB, DDD Recorder CLB Date 9/7/19

| Soil Descriptions | PN's / Artifacts, by level (see reverse for codes) |
|--------------------|--|
| 0-13 cm | L1 NAR |
| 10YR 4/3 Bm | |
| 8 = 13-35 cm | |
| 7.5YR 4/4 Silty Sn | |
| 8 = 35-51 cm | |
| 10YR 4/3 Bm | |
| 8 = 51-62 cm | |
| 2.5Y 5/6 Lt Bn | |

Comments* NLM

Number of bags: 0

* Provide comments on Artifacts, Soils, Disturbances, Context, etc.

Northeast Archaeology Research Center - Test Pit Profile Form

Project Ashmun Solar I State Site # 101-200 Test Pit T26P1

Area/Locus 1 PN Area 101-200 PROV# 60 Feature # (s) 1

Supervisor LBS Exc. Team CLB, DDD Recorder CLB Date 9/7/19

| Soil Descriptions | PN's / Artifacts, by level (see reverse for codes) |
|-------------------|--|
| Fill (0-27 cm) | L1 |
| 2.5Y 4/4 Silty Sn | |
| 8 = 27-51 cm | |
| 10YR 4/3 Bm | |
| 8 = 51-62 cm | |
| 2.5Y 5/6 Lt Bn | |

Comments* terminated on ledge

Number of bags: 0

* Provide comments on Artifacts, Soils, Disturbances, Context, etc.

Northeast Archaeology Research Center - Test Pit Profile Form

Project Ashmun Solar I State Site # 101-200 Test Pit T26P2

Area/Locus 1 PN Area 101-200 PROV# 145 Feature # (s) 1

Supervisor LBS Exc. Team CLB, DDD Recorder CLB Date 9/7/19

| Soil Descriptions | PN's / Artifacts, by level (see reverse for codes) |
|-------------------|--|
| APCO-29 cm | L1 NAR |
| 10YR 4/3 Bm | |
| Fill (29-68 cm) | |
| 2.5Y 4/4 Silty Sn | |
| 8 = 68-85 cm | |
| 10YR 4/3 Bm | |
| 8 = 85-100 cm | |
| 2.5Y 5/6 Lt Bn | |

Comments* terminated on asphalt road surface. Various pieces of industrial debris were found out of context.

Number of bags: 0

* Provide comments on Artifacts, Soils, Disturbances, Context, etc.

Northeast Archaeology Research Center - Test Pit Profile Form

Project Ashmun Solar I State Site # 101-200 Test Pit T26P3

Area/Locus 1 PN Area 101-200 PROV# 145 Feature # (s) 1

Supervisor LBS Exc. Team CLB, DDD Recorder CLB Date 9/7/19

| Soil Descriptions | PN's / Artifacts, by level (see reverse for codes) |
|-------------------|--|
| Developing A | L1 |
| Fill ₁ | |
| Fill ₂ | |
| 8 = 10-24 cm | |
| 2.5Y 4/4 Silty Sn | |
| 8 = 24-65 cm | |
| 10YR 4/3 Bm | |
| 8 = 65-100 cm | |
| 2.5Y 5/6 Lt Bn | |

Comments* Term on concrete cinder block.

Number of bags: 1

* Provide comments on Artifacts, Soils, Disturbances, Context, etc.



STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
177 STATE HOUSE STATION
AUGUSTA, MAINE 04333

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

June 24, 2019

Sean Thies
CES
465 South Main Street
Brewer, ME 04412

Via email: sthies@cesincusa.com

Re: Rare and exemplary botanical features in proximity to: #12186.008, Dirigo Solar, Auburn Maine

Dear Mr. Thies:

I have searched the Maine Natural Areas Program's Biological and Conservation Data System files in response to your request received June 19, 2019 for information on the presence of rare or unique botanical features documented from the vicinity of the project in Auburn, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. However, there is a mapped occurrence of Swamp White Oak (*Quercus bicolor*) on the abutting parcel along the same tributary to Davis Brook that runs through the Dirigo Solar site. MNAP strongly recommends survey for Swamp White Oak in and near wet areas of the Dirigo Solar site.

This lack of documented data specifically on the project site may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project site. The list may include information on features that have been known to occur historically in the area as well as recently field-verified information. While historic records have not been documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area, and it should be considered if you choose to conduct field surveys.

MOLLY DOCHERTY, DIRECTOR
MAINE NATURAL AREAS PROGRAM
BLOSSOM LANE, DEERING BUILDING



PHONE: (207) 287-804490
WWW.MAINE.GOV/DACF/MNAP

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

The Maine Natural Areas Program (MNAP) is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. MNAP welcomes coordination with individuals or organizations proposing environmental alteration, or conducting environmental assessments. If, however, data provided by MNAP are to be published in any form, the Program should be informed at the outset and credited as the source.

The Maine Natural Areas Program has instituted a fee structure of \$75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for \$150.00 for two hours of our services.

Thank you for using MNAP in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

A handwritten signature in cursive script, appearing to read "Kristen Puryear".

Kristen Puryear | Ecologist | Maine Natural Areas Program
207-287-8043 | kristen.puryear@maine.gov

| |
|--------------------------------------|
| About MNAP |
| Focus Areas |
| Communities, Plants and Animals |
| Natural Communities and Ecosystems |
| Rare Plants |
| Invasive Plants |
| Ecological Inventory and Monitoring |
| Rare Animals |
| State and Global Rarity Ranks |
| Survey Forms |
| Maps, Data, and Technical Assistance |
| Ecological Reserves |

Maine Natural Areas Program

Quercus bicolor Willd.

Swamp White Oak

- State Rank: S1
- Global Rank: G5
- State Status: Threatened

Habitat: Bottomlands, stream margins, and swamps.
[Forested wetland]

Range: Southern Maine and southern Quebec to southern Minnesota and Nebraska, south to southern New England, Long Island, Delaware, Maryland, northern West Virginia, upland to Georgia and Kentucky, Arkansas and Oklahoma.



Aids to Identification: *Quercus bicolor* is a member of the white oak subgenus, a diverse group of species that have leaves with rounded lobes (as opposed to bristle-tipped lobes in the red oak group) and acorns that mature in one year. Swamp white oak can be distinguished from other white oak species in Maine by the following combination of characters: ovate leaves, widest above the middle, with 6-10 pairs of low but fairly even lobes (like rounded teeth); hairless buds; and acorns on stalks that are more than 3 cm long. It can be difficult to distinguish from bur oak (*Q. macrocarpa*), which occurs in similar habitats, unless one has buds and/or acorns. *Q. macrocarpa* usually has a deep sinus near the middle of the leaf, but leaf shape and lobing are very variable, even among leaves on the same tree. The larger branches of *Q. macrocarpa* will have corky ridges along them and are absent in *Q. bicolor*. Common white oak (*Q. alba*) is an upland species with leaves that have longer lobes than those of *Q. bicolor*. Chestnut oak (*Q. montana*) is also an upland species, found in Maine only in dryish rocky woods on and around Mt. Agamenticus and has leaves which are much narrower in outline though similarly lobed. Hybridization between *Q. bicolor*, *Q. alba*, and *Q. macrocarpa* has been reported. Hybrids would be very difficult to identify. When in doubt, press a small branch with a few leaves and either buds or acorns and send to the University of Maine herbarium.



Ecological characteristics: Swamp white oak is a tree of hardwood floodplain forests, basin swamps, or vernal pools. It grows with ash (*Fraxinus* spp.), silver maple or red maple (*Acer saccharinum* and *A. rubrum*, respectively), and occasionally with *Q. macrocarpa*.

Phenology: Acorns mature in the first year, ripe in September - October.







Family: Fagaceae

Synonyms: None noted.

Known Distribution in Maine: This rare plant has been documented from a total of 11 town(s) in the following county(ies): Kennebec, Knox, Somerset, Waldo, York.

Reason(s) for rarity: At northern limit of range; not rare southward.

Conservation considerations: Populations are small and could be eliminated by logging.

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|  Copyright © 2013 All rights reserved. | Maine.gov Site Policies Accessibility Comments/Questions Jobs @ DACF Grants & Loans Educational Resources |  Facebook  Twitter  YouTube  Email/SMS Updates  Instagram Event & Meeting Calendar See more social media... | Maine State Park Passes Volunteer Specialty License Plates Outdoor Heritage Fund Lottery Ticket Donations & More | Department of Agriculture, Conservation and Forestry 22 State House Station 18 Elkins Lane Augusta, ME 04333 More Locations Phone: (207) 287-3200 Fax: (207) 287-2400 TTY Users Call Maine Relay 711 DACF@Maine.gov |

Rare and Exemplary Botanical Features within 4 miles of Project: #12186.008, Dirigo Solar, Auburn, Maine

| Common Name | State Status | State Rank | Global Rank | Date Last Observed | Occurrence Number | Habitat |
|-----------------------------------|--------------|------------|-------------|--------------------|-------------------|--|
| Broad Beech Fern | | | | | | |
| | SC | S2 | G5 | 1895-09 | 13 | Hardwood to mixed forest (forest, upland) |
| | SC | S2 | G5 | 1991-06 | 18 | Hardwood to mixed forest (forest, upland) |
| Fern-leaved False Foxglove | | | | | | |
| | SC | S3 | G5 | 1893-08-28 | 14 | Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland) |
| | SC | S3 | G5 | 1895 | 12 | Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland) |
| | SC | S3 | G5 | 1938-08-18 | 11 | Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland) |
| Large Whorled Pogonia | | | | | | |
| | PE | SX | G5 | 1895 | 2 | Hardwood to mixed forest (forest, upland) |
| Ram's-head Lady's-slipper | | | | | | |
| | E | S1 | G3 | 1935 | 11 | Forested wetland,Hardwood to mixed forest (forest, upland) |
| Scarlet Oak | | | | | | |
| | E | S1 | G5 | 1893 | 1 | Hardwood to mixed forest (forest, upland) |
| Small Whorled Pogonia | | | | | | |
| | E | S2 | G2? | 2016-07-11 | 32 | Hardwood to mixed forest (forest, upland) |
| Swamp White Oak | | | | | | |
| | T | S1 | G5 | 2017-08-30 | 15 | Forested wetland |
| Tiny Lovegrass | | | | | | |
| | PE | SH | G5 | 1908-11 | 5 | Old field/roadside (non-forested, wetland or upland),Dry barrens (partly forested, upland) |
| Upright Bindweed | | | | | | |
| | T | S2 | G4G5 | 1958-06-22 | 10 | Dry barrens (partly forested, upland),Old field/roadside (non-forested, wetland or upland) |

Rare and Exemplary Botanical Features within 4 miles of Project: #12186.008, Dirigo Solar, Auburn, Maine

| Common Name | State Status | State Rank | Global Rank | Date Last Observed | Occurrence Number | Habitat |
|------------------|--------------|------------|-------------|--------------------|-------------------|------------------------------------|
| Vasey's Pondweed | | | | | | |
| | SC | S2 | G4 | 1800 | 6 | Open water (non-forested, wetland) |

STATE RARITY RANKS

- S1** Critically imperiled in Maine because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.
- S2** Imperiled in Maine because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- S3** Rare in Maine (20-100 occurrences).
- S4** Apparently secure in Maine.
- S5** Demonstrably secure in Maine.
- SU** Under consideration for assigning rarity status; more information needed on threats or distribution.
- SNR** Not yet ranked.
- SNA** Rank not applicable.
- S#?** Current occurrence data suggests assigned rank, but lack of survey effort along with amount of potential habitat create uncertainty (e.g. S3?).

Note: **State Rarity Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines State Rarity Ranks for animals.

GLOBAL RARITY RANKS

- G1** Critically imperiled globally because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extinction.
- G2** Globally imperiled because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- G3** Globally rare (20-100 occurrences).
- G4** Apparently secure globally.
- G5** Demonstrably secure globally.
- GNR** Not yet ranked.

Note: **Global Ranks** are determined by NatureServe.

STATE LEGAL STATUS

Note: State legal status is according to 5 M.R.S.A. § 13076-13079, which mandates the Department of Conservation to produce and biennially update the official list of Maine's **Endangered** and **Threatened** plants. The list is derived by a technical advisory committee of botanists who use data in the Natural Areas Program's database to recommend status changes to the Department of Conservation.

- E** ENDANGERED; Rare and in danger of being lost from the state in the foreseeable future; or federally listed as Endangered.
- T** THREATENED; Rare and, with further decline, could become endangered; or federally listed as Threatened.

NON-LEGAL STATUS

- SC** SPECIAL CONCERN; Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.
- PE** Potentially Extirpated; Species has not been documented in Maine in past 20 years or loss of last known occurrence has been documented.

ELEMENT OCCURRENCE RANKS - EO RANKS

Element Occurrence ranks are used to describe the quality of a rare plant population or natural community based on three factors:

- **Size**: Size of community or population relative to other known examples in Maine. Community or population's viability, capability to maintain itself.
- **Condition**: For communities, condition includes presence of representative species, maturity of species, and evidence of human-caused disturbance. For plants, factors include species vigor and evidence of human-caused disturbance.
- **Landscape context**: Land uses and/or condition of natural communities surrounding the observed area. Ability of the observed community or population to be protected from effects of adjacent land uses.

These three factors are combined into an overall ranking of the feature of **A**, **B**, **C**, or **D**, where **A** indicates an **excellent** example of the community or population and **D** indicates a **poor** example of the community or population. A rank of **E** indicates that the community or population is **extant** but there is not enough data to assign a quality rank. The Maine Natural Areas Program tracks all occurrences of rare (S1-S3) plants and natural communities as well as A and B ranked common (S4-S5) natural communities.

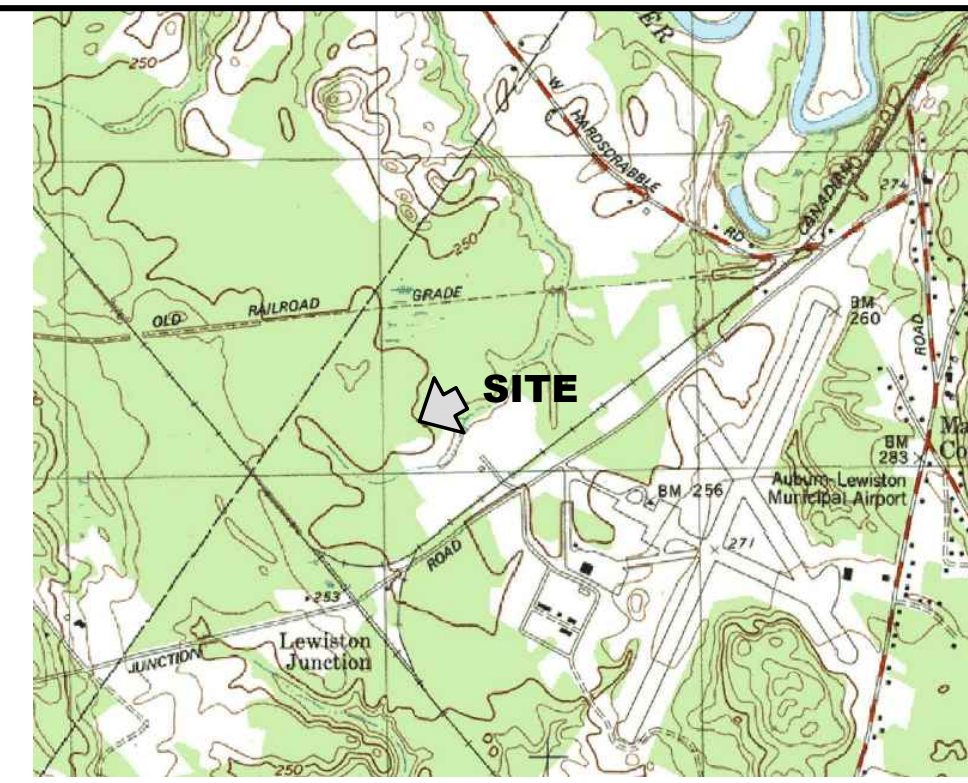
Note: **Element Occurrence Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines Element Occurrence ranks for animals.

Visit our website for more information on rare, threatened, and endangered species!
<http://www.maine.gov/dacf/mnap>

APPENDIX 11

DRAWINGS

C101 Site Plan
C501 Details



CES **INC**
Engineers • Environmental Scientists • Surveyors

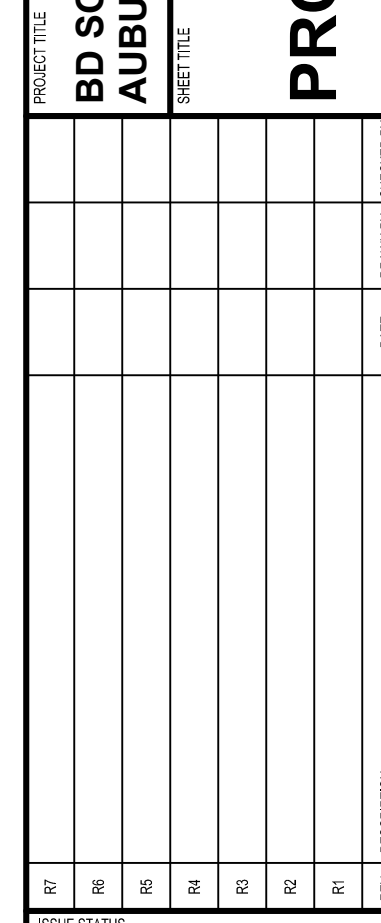
INDIRECT WETLAND IMPACT: 313,310 SF / 7.19 AC
DIRECT WETLAND IMPACT: 80,710 SF / 1.85 AC

| | Calculation (sq ft) | Comments |
|-----------------------------------|---------------------|---|
| Direct Impact | 80,710 | Clearing and grading in Wetlands 1, 3, and 4 Fill for solar panel pilings Fill for access road in Wetland 2 |
| Temporary Impact | 0 | Impacts for construction/access |
| Indirect/Conversion Impact | 313,310 sq ft | Vegetation clearing adjacent to panels, in Wetlands 1, 3, 4 and 5 |
| TOTAL IMPACT, Main DEP | 394,020 sq ft | |
| TOTAL IMPACT, Army Corps | 80,710 | Direct wetland impacts, as described above |

SETBACKS (POLAND):
FRONT - 50'
REAR - 25'
SIDE - 40'

ENGINEER:
CES, INC.
ATTN: SEAN THIES
PO BOX 639
BREWER, ME 04412

(IN FEET)
1 inch = 200 ft.

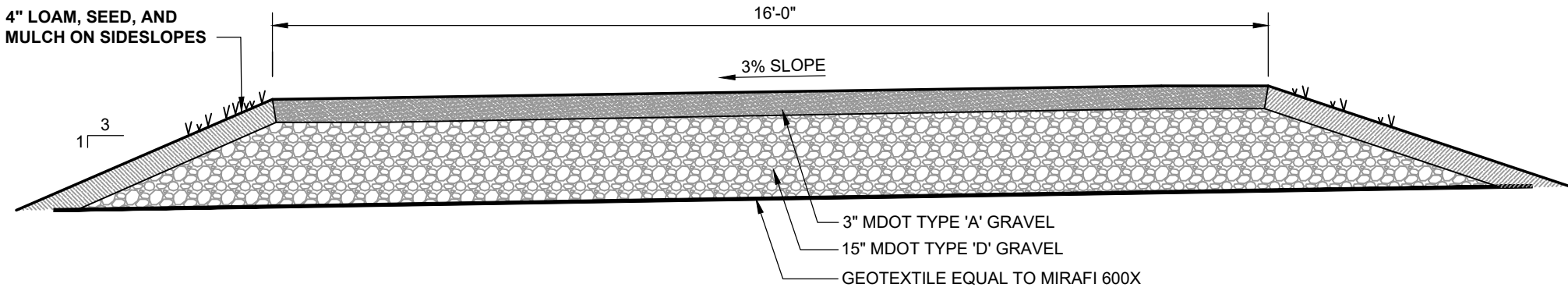


**NOT FOR
CONSTRUCTION**

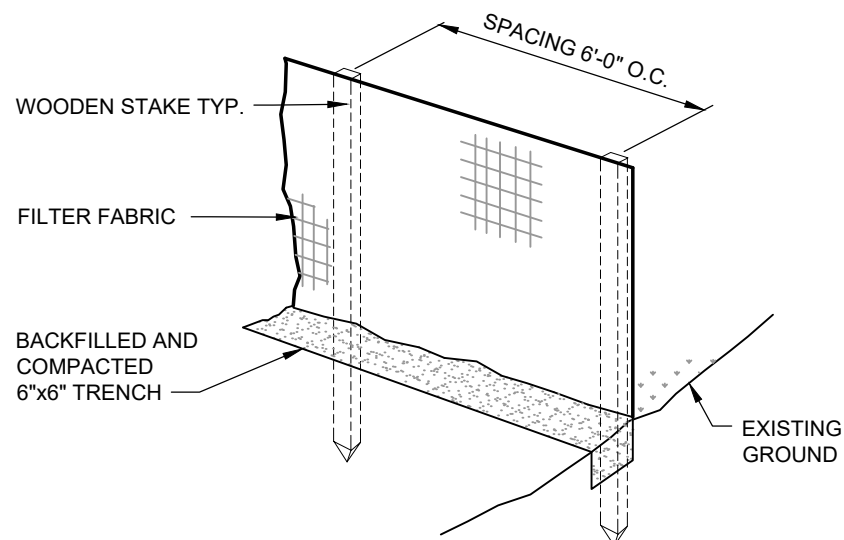


| | | | |
|----------------|--|-------------|--|
| SCALE | | 1"=200' | |
| DATE | | | |
| 2019-12-18 | | | |
| DRAWN BY | | CHECKED BY | |
| WAB/BLQ | | JED/J | |
| DESIGNED BY | | APPROVED BY | |
| JED | | SM | |
| JOB NUMBER | | 12186.008 | |
| DRAWING NUMBER | | | |

C101

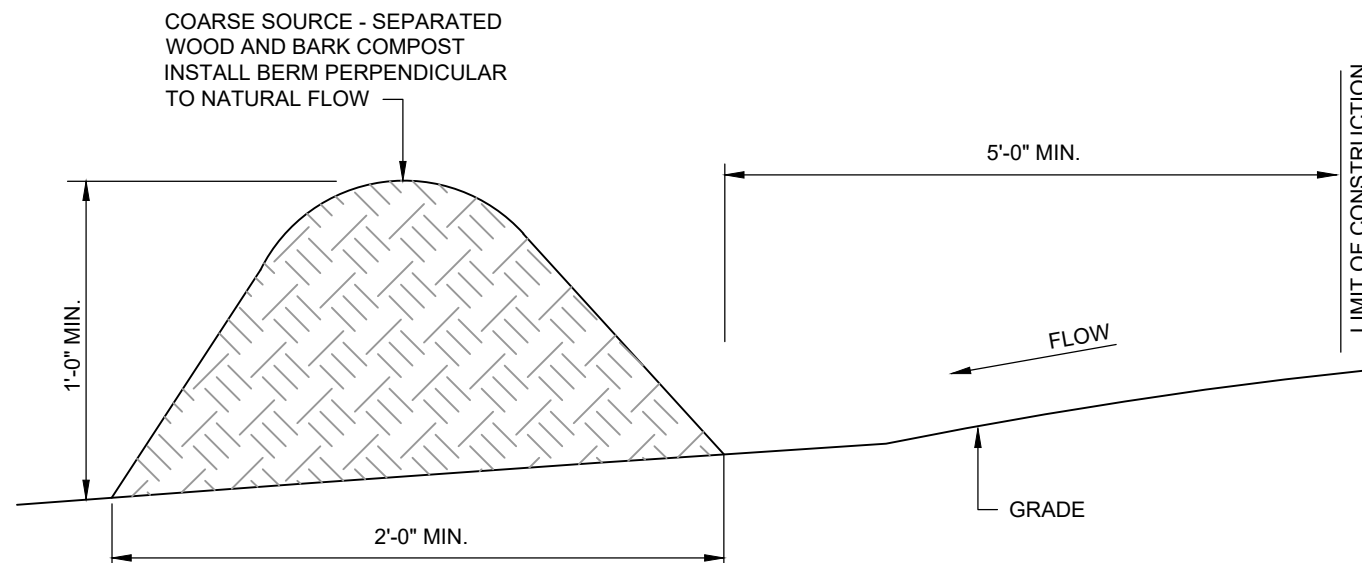


GRAVEL ACCESS ROAD SECTION
N.T.S.



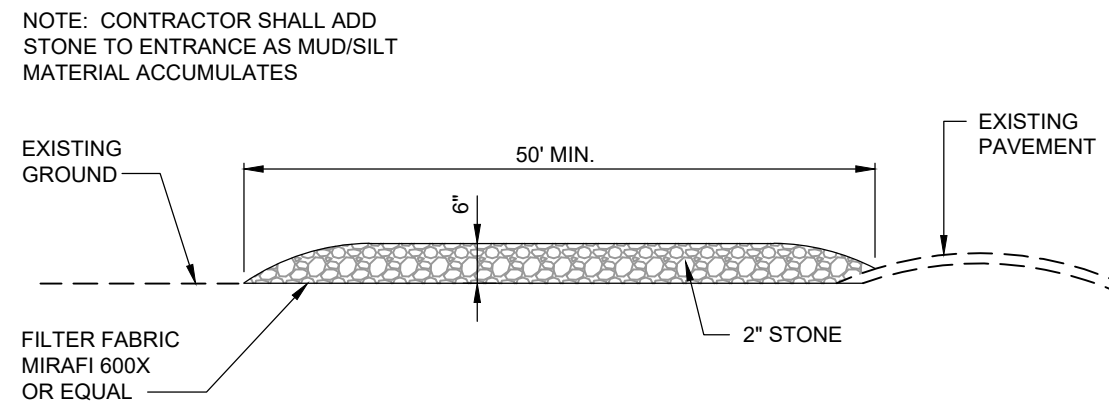
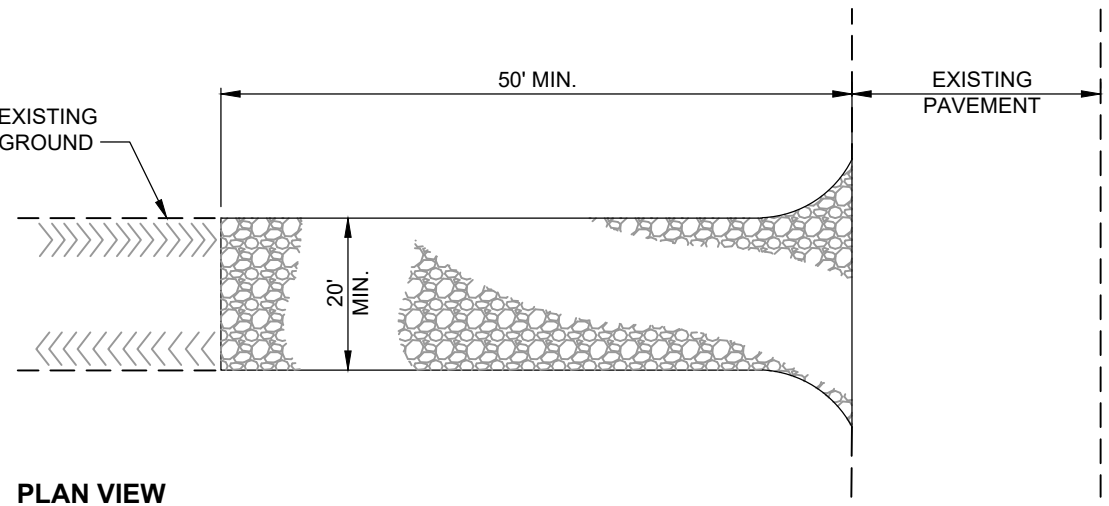
- NOTES:
1. KEY FABRIC IN A 6"x6" TRENCH W/BACKFILL AND COMPACT.
 2. SILT FENCE SHALL BE A 3" FENCE WITH A MINIMUM GRAB STRENGTH OF 120 LBS.

SILT FENCE DETAIL
N.T.S.

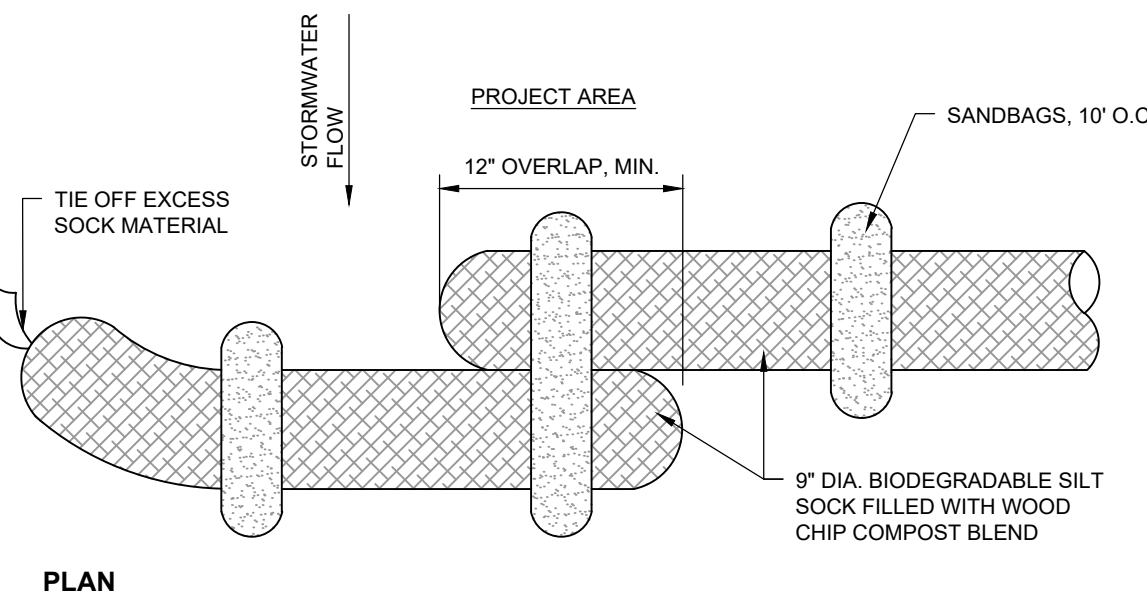
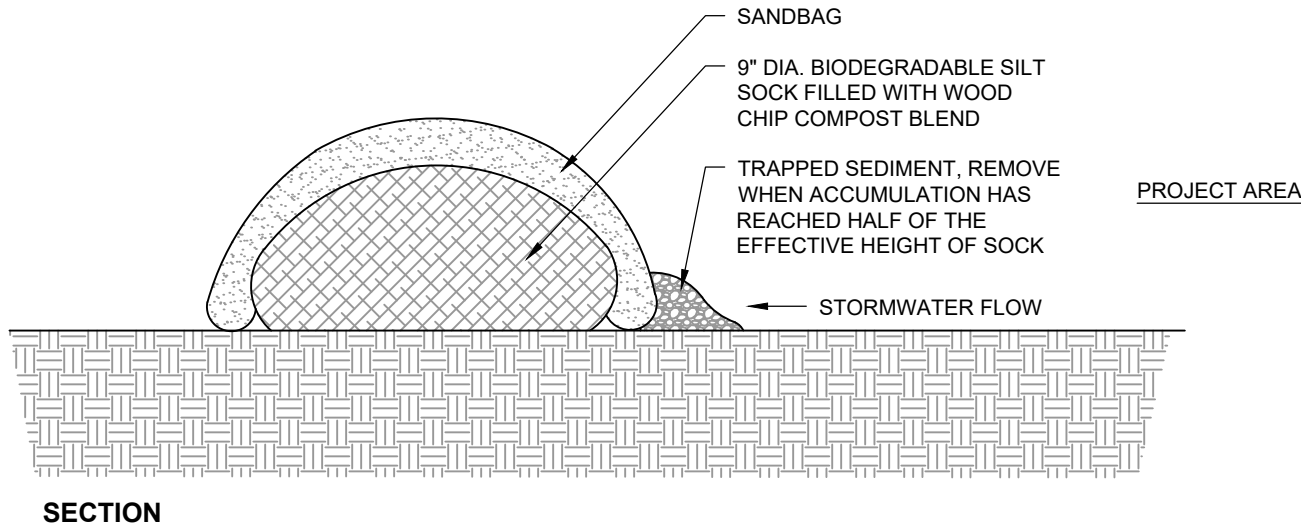


NOTE:
THE EROSION CONTROL MIX MUST BE WELL-GRADED WITH AN ORGANIC COMPONENT THAT IS BETWEEN 50 AND 100% OF DRY WEIGHT, AND THAT IS COMPOSED OF FIBROUS AND ELONGATED FRAGMENTS. THE MINERAL PORTION OF THE MIX SHOULD BE NATURALLY INCLUDED IN THE PRODUCT WITH NO LARGER ROCKS (>4") OR LARGE AMOUNTS OF FINES (SILTS AND CLAYS). IN STUMP GRINDING, THE MINERAL SOIL ORIGINATES FROM THE ROOT BALL AND SHOULD NOT BE REMOVED BEFORE GRINDING. THE MIX SHOULD BE FREE OF REFUSE, MATERIAL TOXIC TO PLANT GROWTH OR UNSUITABLE MATERIAL (BARK CHIPS, GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS).

EROSION CONTROL MIX BERM DETAIL
N.T.S. (MAY BE USED AS AN ALTERNATE TO SILT FENCE)



STABILIZED CONSTRUCTION ENTRANCE DETAIL
N.T.S.



SILT SOCK DETAIL
N.T.S. (MAY BE USED AS AN ALTERNATE TO SILT FENCE)

EROSION CONTROL NOTES

1. ALL SEDIMENTATION AND EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE MAINE EROSION AND SEDIMENTATION CONTROL BEST MANAGEMENT PRACTICES (BMPs), PUBLISHED BY THE BUREAU OF LAND AND WATER QUALITY, MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, LATEST EDITION.
2. SILT FENCE WILL BE INSPECTED, REPLACED AND/OR REPAIRED IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL OR SNOW MELT OR LOSS OF SERVICEABILITY DUE TO SEDIMENT ACCUMULATION. AT A MINIMUM, ALL EROSION CONTROL DEVICES WILL BE OBSERVED WEEKLY.
3. DURING THE CONSTRUCTION PHASE, INTERCEPTED SEDIMENT WILL BE RETURNED TO CONSTRUCTION SITE.
4. SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL AREAS UPSLOPE ARE STABILIZED BY A SUITABLE GROWTH OF GRASS. ONCE A SUITABLE GROWTH OF GRASS HAS BEEN OBTAINED, ALL TEMPORARY EROSION CONTROL ITEMS SHALL BE REMOVED BY THE CONTRACTOR. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THEY ARE REMOVED SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE, PREPARED, SEEDED, AND MULCHED IMMEDIATELY.
5. ALL DISTURBED AREAS WILL BE SEEDED WITH 2.5 LBS. RED FESCUE AND 0.5 LBS. RYE GRASS PER 1,000 SQUARE FEET AND MULCHED AT A RATE OF 90 LBS. PER 1,000 SQUARE FEET OR EQUIVALENT APPLICATION OF SEED AND MULCH.
6. A SUITABLE BINDER SUCH AS CURASOL OR TERRTACK WILL BE USED ON THE HAY MULCH FOR WIND CONTROL.
7. IF FINAL SEEDING OF DISTURBED AREAS IS NOT COMPLETED BY SEPTEMBER 15th OF THE YEAR OF CONSTRUCTION, THEN ON THAT DATE THESE AREAS WILL BE GRADED AND SEEDED WITH WINTER RYE AT THE RATE OF 112 POUNDS PER ACRE OR 3 POUNDS PER 1000 SQUARE FEET. THE RYE SEEDING WILL BE PRECEDED BY AN APPLICATION OF 3 TONS OF LIME AND 800 LBS. OF 10-20-20 FERTILIZER OR ITS EQUIVALENT. MULCH WILL BE APPLIED AT A RATE OF 90 POUNDS PER 1000 SQUARE FEET.
8. IF THE RYE SEEDING CANNOT BE COMPLETED BY OCTOBER 1st OR IF THE RYE DOES NOT MAKE ADEQUATE GROWTH BY DECEMBER 1st, THEN ON THOSE DATES, HAY MULCH WILL BE APPLIED AT 150 POUNDS PER 1000 SQUARE FEET.
9. INTERIOR SILT FENCES ALONG CONTOUR DIVIDING FLAT AND STEEP SLOPES, AREAS WITH DIFFERENT DISTURBANCE SCHEDULES, AROUND TEMPORARY STOCKPILES OR IN OTHER UNSPECIFIED POSSIBLE CIRCUMSTANCES SHOULD BE CONSIDERED BY THE CONTRACTOR. THE INTENT OF SUCH INTERIOR SILT FENCES IS TO LIMIT SEDIMENT TRANSPORT WITHIN THE SITE TOWARD THE PROTECTED CATCH BASIN INLETS TO MINIMIZE SEDIMENT REMOVAL REQUIRED BY THE EROSION CONTROL NOTE 9 PROTECTIONS AND EXTEND LIFE OF SUCH DEVICES.
10. MEADOW BUFFERS WILL BE MOWED NO SHORTER THAN SIX INCHES, NO MORE THAN TWICE PER YEAR.
11. MINIMUM EROSION CONTROL MEASURES WILL NEED TO BE IMPLEMENTED AND THE CONTRACTOR WILL BE RESPONSIBLE TO MAINTAIN ALL COMPONENTS OF THE EROSION CONTROL PLAN UNTIL THE SITE IS FULLY STABILIZED. HOWEVER, BASED ON SITE AND WEATHER CONDITIONS DURING CONSTRUCTION, ADDITIONAL EROSION CONTROL MEASURES MAY NEED TO BE IMPLEMENTED. ALL AREAS OF INSTABILITY AND EROSION MUST BE REPAIRED IMMEDIATELY DURING CONSTRUCTION AND NEED TO BE MAINTAINED UNTIL THE SITE IS FULLY STABILIZED OR VEGETATION IS ESTABLISHED. A CONSTRUCTION LOG MUST BE MAINTAINED FOR THE EROSION AND SEDIMENTATION CONTROL INSPECTIONS AND MAINTENANCE.

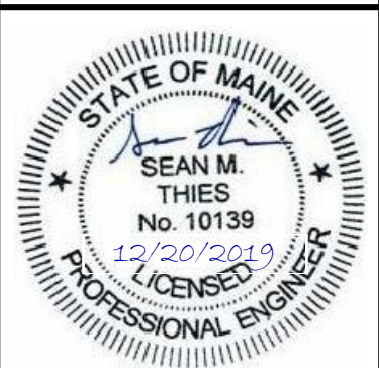
CONTRACTOR WILL BE RESPONSIBLE FOR FOLLOWING PROCEDURES FOUND IN THE "MAINE EROSION AND SEDIMENT CONTROL PRACTICES FIELD GUIDE FOR CONTRACTORS" (PUBLISHED MARCH 2015). THE PUBLICATION CAN BE FOUND AT: [HTTP://WWW.MAINE.GOV/DEPL/AND/EROSION/ESCBMPS/INDEX.HTML](http://www.maine.gov/depl/and/erosion/escbmps/index.html)

PROJECT FILE
BD SOLAR AUBURN, LLC
AUBURN, MAINE
SHEET TITLE

SITE DETAILS

| REV | DESCRIPTION | DATE | DRAWN BY | CHECKED BY |
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NOT FOR
CONSTRUCTION



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|----------------|------------|
| SCALE | NTS |
| DATE | 2019-12-19 |
| DRAWN BY | WAB |
| CHECKED BY | SMT |
| DESIGNED BY | JAD |
| APPROVED BY | SMT |
| JOB NUMBER | 12186.008 |
| DRAWING NUMBER | C501 |

C501



Engineering Review Memorandum

To: Town of Poland Planning Board (STI # 20089)

From: James Seymour, P.E., Planning Consultant, Sebago Technics, Inc.

Date: February 18, 2020

Subject: February 25, 2020 Planning Board Meeting

Project: BD Solar Auburn, LLC-Solar Farm,
Site Plan Review

Applicant: BD Solar Auburn, LLC, PO Box 9729, Portland, ME 04104
Tax Map 4 Lots 16 & 15-1

I. Project Description and Background

This project qualifies as a Site Plan application as it entails development for BD Solar Auburn LLC proposed Solar Farm facilities located off Lewiston Junction Road. The Proposal is to remove wood vegetation and utilize the natural land topography for the most part to construct a 14.6 MW solar array farm/facility, consisting of 36,072 individual panels spread out over 45+ acres.

The project is in General Purpose 3 Zone, consisting of 46.2 acres. The site is currently wooded, and meadow vegetated, and has been historically used for agricultural purposes. Our understanding that this project will impact a significant area of wetlands (1.85 Acres) located within the development area. The project does not appear to require waivers. We have prepared the following memorandum review comments to facilitate better understanding of the project, and site plan requirements.

II. Technical Review

We have reviewed the revised submitted information for the purposes of determining if the project is compliant with the Site Plan Standards (Sect 509.8) and meets the requirements as applied for the proposed commercial/industrial or private utility company development.

Site Plan Review:

The site design for the project essentially only includes a small area of the site for paving or structural addition to the existing site. Below are our concerns with the project as proposed:

1. The Property is fairly complex given the access will originate in Auburn cross the Lewiston Auburn Railroad company, before entering the owned/leased property. The site already has a right of way Port Drive into the site, but the applicants are not utilizing that access. We feel the Planning Board should request a formal boundary survey to understand the ownership, and conveyances of rights. The font and print type are very small and difficult to read so the plan may take two sheets to adequately follow and read.

2. The proposed access appears somewhat narrow and we believe that the fire department typically has requested 20 width of access. That can be done simply with extending 2 (two) 2-foot shoulders at the same grade on each side of the proposed access. Additionally, we would request that a formal grading plan be provided for the total access. Given the remote location and lack of space to turnaround that a formal hammerhead terminus be provided. With the excessive length, we would recommend a turnaround at the halfway point and at the terminus of the access drive.
3. The applicant should provide clear evidence as to the Entrance into the site will be designed, specifically for construction and deliveries of thousands of solar panels. Address turning radius at entrances, and label potential storage yards for materials and supplies.
4. How will utilities, fire suppression/ and/or water services be integrated into the design. We will need to see details or summaries of how fire suppression will be addressed, given the chance for wildfire with so much combustible material and potential sources for sparking from the panels. Details will be needed for underground and above ground utilities. And any culverts or drainage required by the driveway design.
5. Landscaping near the front of the existing railroad yard may need to be enhanced as the panels will be readily visible from the public way, and they maybe in a utility easement but is tough to decipher from the plans. The rest of the site is fairly well buffered with vegetation from other public views. Given how tight the panels are stacked and that they need southern exposure the applicant might need a waiver, or determination from the Planning Board that screening from the street is not necessary. Again, it is difficult to assess the elevations with the plan set scale so large and details so small.
6. Stormwater appears to account that the roadway access is the major contributing factor towards impervious surface impacts. We noted that the applicant downplayed the woods quality and, in the Pre-Developed condition, and typically we assess woods in this type of condition as good which will create a wider gap between pre and post conditions/peak flows. What this means is that the post development difference could be greater by cutting out good woods, over fair woods and placing down grass in the developed condition. This should be explored to see how great the change may be, and it may not change the overall treatment measure by use of meadow buffers but could alter the flows. Also, the driveway design will need to be assessed for grading as the length is near 5000 LF, we suspect pipe culverts and ditching will be necessary to keep this accessible year-round or driveway elevated through wetland areas. No details were discussed or presented.
7. We will need a site-specific erosion control details and measures shown on the plan, where the site will be placing access driveway, or cutting and grubbing at tree cut areas. A plan shall be provided showing the clear extent of tree clearing and grubbing. This might be done with an aerial map. A written report should be placed on a plan sheet for easier use in the field.

8. Based on data submitted as part of the Maine DEP permits, the applicant was requested to assess vernal pools per letter from State of Maine Department of Fisheries and Wildlife dated May 3, 2019. We have seen no proof or evidence such a mapping has taken place. Given the areas of wetlands and woods there are some odds they may exist. We recommend they provide proof they did perform such a vernal pool audit of the entire parcel.
9. The Maine Department of Agriculture, Conservation, and Forestry noted in their responses of a species of Swamp oaks that may be present on the site. The applicant shall provide evidence that no swamp oaks are present or will be disturbed, or a program if there is such a conflict.
10. Other items:
 - A. We strongly recommend that all State and Federal permits be acquired and submitted prior to the Planning Board granting approval of the project. Given the extent of review for wetland impacts of 80,000 Sf and the impervious and grading impacts for the stormwater, we would want to evaluate those against the Town ordinances/requirements.
 - B. We would like to see a clear delineation on the site plan showing City of Auburn limits and Poland Town line on the Site Plan.
 - C. In the discussion for Financial Capacity we noted Financial statements refer to Dirigo Solar as being the developer, for 110 MW of power production in Maine. Can the corporate or financial connection of Dirigo Solar be made to BD Solar Auburn LLC?
 - D. Lastly, given that the solar farm is close to the Auburn Airport will there be any conflicts with glare or of reflectivity for flights approaching, or could there be any other construction related issues?
 - E. We recommend that the applicant acquire a letter of support for accessibility and fire suppression needs from the Poland Fire Department as well.

III. Recommendations:

Upon review of the information provided in the submitted plans and documentations through January 24, 2020, we would recommend that the submission requirements be completed and reviewed as suggested. The project is for a site plan with the largest concern understanding wetland impacts, stormwater, and utility rights and access that are associated with a solar farm and then what PUC regulations could exist (the Town has no regulations for solar farms, currently). The driveways with buffers as designed could address water quality but some details/statement as to how roof runoff is collected, and treated, is needed. We do feel that a discussion to address the need for the Maine DEP approvals plan additions and their review should be made part of the final approval, and that the plan should add a note indicating the permit number and approval date for both Army Corp and Maine DEP approvals. The plan is a living document and record on file for historical tracking for all.

We suggest the applicant work through the final plan items with the Code Enforcement Officer and Planning Board at this hearing, as we feel the list of items is relatively important, it can be worked through with additional information relatively quickly. The Planning Board could accept the application as complete, but we would recommend waiting on any final approval or conditions, and require the applicant return with a final plan at a later meeting once all other State and Federal permits are obtained. Then if all the items of conditions have been reviewed and approved prior, the

Planning Board may consider for final approval. As always these are recommendations to the Planning Board and not final determinations but merely offer guidance, and approvals if appropriate, are left with the Planning Board at their discretion

***Respectfully Submitted,
SEBAGO TECHNICS, INC.***

A handwritten signature in black ink, reading "James R. Seymour". The signature is fluid and cursive, with a long horizontal stroke at the end.

***James R. Seymour, P.E.
Engineering Consultant***



Planning Board Office

1231 Maine Street,
Poland, Maine 04274-7328

Findings of Fact & Conclusion of Law

Date: January 28, 2020

Application Type: Formal Shoreland Zoning Application

Owners Name: Mark Fiorino (30 Cross St. Foxborough, MA 02035)

Located at: 40 West Shore Drive

Parcel ID: 0046-0011

Zoning Districts: Rural Residential 2 and Limited Residential

Project Description:

On July 9, 2019 Mr. Fiorino submitted an amended Formal Shoreland Zoning Application to raise the existing roof by four feet (4'). The existing lowest grade was found to be 312.3 feet in elevation and the existing roofline is at 328 feet. The total existing height from the ground to the roof is 15.7 feet. Adding four feet (4') would increase the height of the structure to a total of 19.7 feet. On January 28, 2020 Mr. Fiorino submitted a second amendment to the approved March 26, 2019 Formal Shoreland Zoning Application. After the discovery that the existing foundation and the first floor framing was damaged beyond repair Mr. Fiorino would like to remove the structure and rebuild. The proposed new structure will not change from the July 9, 2019 approval except for the fact it will be moved back fifteen (15') feet westerly away from Middle Range Pond.

303.2.G. In addition to the standards contained elsewhere in Comprehensive Land Use Code (CLUC), the Planning Board shall consider the following in the Shoreland Area as defined:

1. Will maintain safe and healthful conditions

The proposed building will not interfere with the general health or safety of any neighbors. Based on this information the Planning Board (Board) finds that this criterion will be met.

2. Will not result in water pollution, erosion, or sedimentation to surface waters

Based on the plan submitted the Board finds that the issues of water pollution, erosion, or sedimentation to surface waters have been properly addressed. Based on this information the Board finds that this criterion will be met.

3. Will adequately provide for disposal of all wastewater

A new wastewater disposal system was not applied for; therefore, the Board finds that this section is not applicable.

4. Will not have an adverse impact on spawning grounds, fish, aquatic life, birds, or other wildlife habitat

The structure is located completely on land and will not have an impact on the spawning grounds, fish, aquatic life, birds, or other wildlife habitat. Based on this information the Board finds this criterion will be met.

5. Will conserve shore cover and visual, as well as actual, points of access to inland waters

The applicant is proposing to revegetate all disturbed areas. Based on this information above and in the record the Board finds that this criterion will be met.

6. Will protect archaeological and historic resources as designated in the Town of Poland Comprehensive Plan

The parcel and abutting parcels do not appear to be associated with any archaeological or historic resources as designated in the Comprehensive Plan; therefore, the Board finds that this section is not applicable.

7. Will avoid problems associated with floodplain development and use

The new structure associated with this application has a finished floor level that is one foot above base flood elevation. Based on this information above and in the record the Board finds that this criterion will be met.

504.3 Non-Conforming Structures

504.3. A. Expansions of Non-Conforming Structures

The expansion was approved at the March 26, 2019 Planning Board Meeting; therefore, the Board finds that this section is not applicable.

504.3. B. Relocation of Non-Conforming Structures

The applicant has proposed to move the structure fifteen (15') feet westerly away from Middle Range Pond with the limiting factor being the subsurface waste system. Based on this information above and in the record the Board finds that this criterion will be met.

507.3.C. Reconstruction or Replacement of Non-Conforming Structures

The Board must determine if the proposed structure meets the setbacks to the greatest practical extent. The Board considered the size of the lot, the slope of the land, the potential for soil erosion, the location of other similar structures on the adjacent property, the location of the existing rain gardens and underdrainage, the location of the existing septic system, and the type and amount of vegetation that may need to be removed if the structure would be relocated. The application showed the new structure will be set back to the greatest practical extent and the base floor level will be one foot above the base flood elevation of 309 feet. Based on this information above and in the record the Board finds that this criterion will be met.

504.3. D. Change of Use of a Nonconforming Structure

This application is not for a change of use of the existing non-conforming structure; therefore, the Board finds that this section is not applicable.

504.3. E. Planning Board Special Review for a Legal Non-Conforming Single-Family Dwelling Located in a Shoreland Zoning District

Setback reductions were not applied for; therefore, the Board finds that this section is not applicable.

508.27 Shoreland Zoning Standards

508.27.B. Principal and Accessory Structures

Chapter 5 §504.3 provides the performance standards for relocation and/or reconstruction of non-conforming structures. The applicant has not proposed any accessory structures; therefore, the Board finds that this section is not applicable.

508.27.C. Multiple Principal Structures

This application does not include multiple principal structures; therefore, the Board finds that this section is not applicable.

508.27.D. Piers, Docks, Wharves, Bridges, and Other Structures and Uses

This application does not include any piers, docks, wharves, bridges or similar structures; therefore, the Board finds that this section is not applicable.

508.27.E. Individual Private Campsites

This application does not include any individual private campsites; therefore, the Board finds that this section is not applicable.

508.27.F. Parking Areas

There are no proposed parking areas with this application nor is the parcel located in the Resource Protection Shoreland Zoning District; therefore, the Board finds that this section is not applicable.

508.27.G. Roads and Driveways

There are no proposed driveway changes with this application nor is the parcel located in the Resource Protection Shoreland Zoning District; therefore, the Board finds that this section is not applicable.

508.27.H. Storm Water Runoff

Storm water runoff was waived at the March 26, 2019 Planning Board approval; therefore, the Board finds that this section is not applicable.

508.27.I. Essential Services

The applicant is not proposing to install any new electrical poles, transmission lines, satellite dishes, generators, hydrants etc.; therefore, the Board finds that this section is not applicable.

508.27.J. Mineral Exploration and Excavation Permits

The application is not for mineral exploration or any other mining or gravel pit operations; therefore, the Board finds that this section is not applicable.

508.27.K. Agriculture

The applicant is not proposing any livestock grazing areas, manure stockpiles, or any agriculture activities within the parcel; therefore, the Board finds that this section is not applicable.

508.27.M. Clearing or Removal of Vegetation for Development Other Than Timber Harvesting or Individual Private Campsites

The removal of vegetation was not part of this application, the Board finds that this section is not applicable.

Conclusion

- The application checklist was approved as complete on February 11, 2020, at which time the Board voted to waive the requirement for a site walk and public hearing.
- The applicant has provided the Board with a Deed (Book 8842, Page 295) showing reasonable right, title, or interest in the property.
- The Board has concluded that they have the jurisdiction to review the application under section Chapter 5 §504.3 (Non-Conforming Structures).

Therefore, the Town of Poland Planning Board hereby approves (5-0) with the following conditions, the application for Mark Fiorino, to remove and replace the structure, as described in the applications dated January 28, 2020, March 26, 2019 and the approved site plan dated January 28, 2020 and the above findings of facts.

Conditions of Approval

- Soil Erosion Control and Stormwater Management Measures shall be in place prior to construction. The Code Enforcement Officer may require additional measures be taken.
- Soil disturbance during the period March 1st to May 1st is prohibited.
- Any disturbed soils shall be revegetated immediately upon completion of construction and any disturbed soils within 100-ft. of the high-water mark shall be revegetated per the approved plan.
- This approval will expire twelve (12) months from the date of Planning Board approval if the project or the use has not been started within this allotted time.
- Building/use permits shall be obtained prior to the start of construction/use.
- A certified person in erosion control practices by the Maine Department of Environmental Protection must be present at the site each day earthmoving activity occurs for a duration that is sufficient to ensure that proper erosion and sedimentation control practices are followed. This is required until erosion and sedimentation control measures have been installed, which will either stay in place permanently or stay in place until the area is sufficiently covered with vegetation necessary to prevent soil erosion.
- The applicant has agreed to follow the recommendations by Androscoggin County Soil and Water Conservation District regarding pre and post storm water, erosion, and phosphorus issues within the parcel.
- Plan approval is also conditioned upon compliance by the Applicant with the Plans and specifications which have been received by the Planning Board in connection with the development proposal as well as with any oral or written commitments regarding the project which were specifically made by the Applicant to the Board in the course of its deliberations.

- The applicant must apply for and obtain all applicable permits for the proposed development under the Natural Resources Protection Act, Title 38 M.R.S.A. section 480-C, the Site Location of Development Act, the Erosion and Sedimentation Control law, Title 38 M.R.S.A. section 420-C, the Stormwater Management Law, the Federal Clean Waters Act as delegated to the State of Maine, and all other applicable state and federal laws regulating the use or development of land.
- The new site plan must be recorded with the Androscoggin County Registry of Deeds within 90 days of approval.
- The existing unpermitted patio and shed #2 must be removed before any permits are issued.
- A corrected site plan showing the overhangs and setbacks must be submitted to the Code Enforcement Office before permits will be issued.

Pursuant to Section 304.5.B of the CLUC anyone aggrieved of this decision may file a written appeal within thirty (30) days of date of this decision in accordance with Rule 80-B of the Maine Rules of Civil Procedure.

Date Approved: February 11, 2020
Poland Planning Board

James Porter, Chairperson

Stephanie Floyd, Vice -Chairperson

Absent Without Notice

Mark Weinberg, Secretary

George Greenwood

Cheryl Skilling

James Walker, Alternate



Planning Board Office

1231 Maine Street,
Poland, Maine 04274-7328

Findings of Fact & Conclusion of Law

Date: February 11, 2020

Application Type: Formal Shoreland Zoning Application

Owners Name: Margery Finley Camden (70 Paradise Rd. Bethel, Maine 04217)

Located at: 36 West Shore Drive

Parcel ID: 0046-0010

Zoning Districts: Rural Residential 2 and Limited Residential

Project Description:

On July 9, 2019 Ms. Finley Camden submitted a Formal Shoreland Zoning Application to remove the existing 16' x 12' section of the camp and replace it with 22' x 19' two story addition not to exceed the 20' height limit. The second floor of the proposed addition will also have a 10' x 7' deck built within the footprint of the first floor. A screen porch will also be added within the footprint of the existing first floor deck. The applicant is also seeking to remove three trees around the existing structure.

303.2.G. In addition to the standards contained elsewhere in Comprehensive Land Use Code (CLUC), the Planning Board shall consider the following in the Shoreland Area as defined:

1. Will maintain safe and healthful conditions

The proposed building will not interfere with the general health or safety of any neighbors. Based on this information the Planning Board (Board) finds that this criterion will be met.

2. Will not result in water pollution, erosion, or sedimentation to surface waters

Based on the plan submitted the Board finds that the issues of water pollution, erosion, or sedimentation to surface waters have been properly addressed. Based on this information the Board finds that this criterion will be met.

3. Will adequately provide for disposal of all wastewater

A new wastewater disposal system was not applied for; therefore, the Board finds that this section is not applicable.

4. Will not have an adverse impact on spawning grounds, fish, aquatic life, birds, or other wildlife habitat

The project is located completely on land and will not have an impact on the spawning grounds, fish, aquatic life, birds, or other wildlife habitat. Based on this information the Board finds this criterion will be met.

5. Will conserve shore cover and visual, as well as actual, points of access to inland waters

The applicant is proposing to revegetate all disturbed areas. Based on this information above and in the record the Board finds that this criterion will be met.

6. Will protect archaeological and historic resources as designated in the Town of Poland Comprehensive Plan

The parcel and abutting parcels do not appear to be associated with any archaeological or historic resources as designated in the Comprehensive Plan; therefore, the Board finds that this section is not applicable.

7. Will avoid problems associated with floodplain development and use

The new structure associated with this application has a finished floor level that is one foot above base flood elevation. Based on this information above and in the record the Board finds that this criterion will be met.

504.3 Non-Conforming Structures

504.3. A. Expansions of Non-Conforming Structures

The proposed 226 square foot addition falls within the allowed thirty percent expansion. Based on this information above and in the record the Board finds that this criterion will be met.

504.3. B. Relocation of Non-Conforming Structures

The applicant has not proposed to move the structure only to remove an addition and replace it with an expanded addition; therefore, the Board finds that this section is not applicable.

507.3.C. Reconstruction or Replacement of Non-Conforming Structures

The Board must determine if the proposed structure meets the setbacks to the greatest practical extent. The Board considered the size of the lot, the slope of the land, the potential for soil erosion, the location of other similar structures on the adjacent property, the location of the existing rain gardens and underdrainage, the location of the existing septic system, and the type and amount of vegetation that may need to be removed if the structure would be relocated. The application is for an addition of 226 square feet not reconstruction or replacement; therefore, the Board finds that this section is not applicable.

504.3. D. Change of Use of a Nonconforming Structure

This application is not for a change of use of the existing non-conforming structure; therefore, the Board finds that this section is not applicable.

504.3. E. Planning Board Special Review for a Legal Non-Conforming Single-Family Dwelling Located in a Shoreland Zoning District

Setback reductions were not applied for; therefore, the Board finds that this section is not applicable.

508.27 Shoreland Zoning Standards

508.27.B. Principal and Accessory Structures

Chapter 5 §504.3 provides the performance standards for relocation and/or reconstruction of non-conforming structures. The applicant has not proposed any accessory structures; therefore, the Board finds that this section is not applicable.

508.27.C. Multiple Principal Structures

This application does not include multiple principal structures; therefore, the Board finds that this section is not applicable.

508.27.D. Piers, Docks, Wharves, Bridges, and Other Structures and Uses

This application does not include any piers, docks, wharves, bridges or similar structures; therefore, the Board finds that this section is not applicable.

508.27.E. Individual Private Campsites

This application does not include any individual private campsites; therefore, the Board finds that this section is not applicable.

508.27.F. Parking Areas

There are no proposed parking areas with this application nor is the parcel located in the Resource Protection Shoreland Zoning District; therefore, the Board finds that this section is not applicable.

508.27.G. Roads and Driveways

There are no proposed driveway changes with this application nor is the parcel located in the Resource Protection Shoreland Zoning District; therefore, the Board finds that this section is not applicable.

508.27.H. Storm Water Runoff

A Phosphorus calculation form was included with the application showing fifteen points for clearing limitations and fifteen points for rock lined drip edge. Based on this information above and in the record the Board finds that this criterion will be met.

508.27.I. Essential Services

The applicant is not proposing to install any new electrical poles, transmission lines, satellite dishes, generators, hydrants etc.; therefore, the Board finds that this section is not applicable.

508.27.J. Mineral Exploration and Excavation Permits

The application is not for mineral exploration or any other mining or gravel pit operations therefore, the Board finds that this section is not applicable.

508.27.K. Agriculture

The applicant is not proposing any livestock grazing areas, manure stockpiles, or any agriculture activities within the parcel; therefore, the Board finds that this section is not applicable.

508.27.M. Clearing or Removal of Vegetation for Development Other Than Timber Harvesting or Individual Private Campsites

The applicant has asked to remove three trees. The Code Enforcement office will inspect the trees to decide if the trees may be removed. Based on this information above and in the record the Board finds that this criterion will be met.

Conclusion

- The application checklist was approved as complete on February 11, 2020, at which time the Board voted to waive the requirement for a site walk and public hearing.
- The applicant has provided the Board with a Deed (Book 10268, Page 339) showing reasonable right, title, or interest in the property.
- The Board has concluded that they have the jurisdiction to review the application under section Chapter 5 §504.3 (Non-Conforming Structures).

Therefore, the Town of Poland Planning Board hereby approves (5-0) with the following conditions, the application for Margery Finley Camden, for an addition to the existing structure, as described in the application dated February 11, 2020 and the approved site plan dated February 11, 2020 and the above findings of facts.

Conditions of Approval

- Soil Erosion Control and Stormwater Management Measures shall be in place prior to construction. The Code Enforcement Officer may require additional measures be taken.
- Soil disturbance during the period March 1st to May 1st is prohibited.
- Any disturbed soils shall be revegetated immediately upon completion of construction and any disturbed soils within 100-ft. of the high-water mark shall be revegetated per the approved plan.
- This approval will expire twelve (12) months from the date of Planning Board approval if the project or the use has not been started within this allotted time.
- Building/use permits shall be obtained prior to the start of construction/use.
- A certified person in erosion control practices by the Maine Department of Environmental Protection must be present at the site each day earthmoving activity occurs for a duration that is sufficient to ensure that proper erosion and sedimentation control practices are followed. This is required until erosion and sedimentation control measures have been installed, which will either stay in place permanently or stay in place until the area is sufficiently covered with vegetation necessary to prevent soil erosion.
- The applicant has agreed to follow the recommendations by Androscoggin County Soil and Water Conservation District regarding pre and post storm water, erosion, and phosphorus issues within the parcel.
- Plan approval is also conditioned upon compliance by the Applicant with the Plans and specifications which have been received by the Planning Board in connection with the development proposal as well as with any oral or written commitments regarding the project which were specifically made by the Applicant to the Board in the course of its deliberations.
- The applicant must apply for and obtain all applicable permits for the proposed development under the Natural Resources Protection Act, Title 38 M.R.S.A. section 480-C, the Site Location of Development Act, the Erosion and Sedimentation Control law, Title 38 M.R.S.A. section 420-C, the Stormwater Management Law, the Federal Clean Waters Act as delegated to the State of Maine, and all other applicable state and federal laws regulating the use or development of land.

- The new site plan must be recorded with the Androscoggin County Registry of Deeds within 90 days of approval.

Pursuant to Section 304.5.B of the CLUC anyone aggrieved of this decision may file a written appeal within thirty (30) days of date of this decision in accordance with Rule 80-B of the Maine Rules of Civil Procedure.

Date Approved: February 11, 2020
Poland Planning Board

James Porter, Chairperson

Stephanie Floyd, Vice -Chairperson

Absent Without Notice

Mark Weinberg, Secretary

George Greenwood

Cheryl Skilling

James Walker, Alternate