

9/8/21

Jim Seymour  
Town Planner  
Town of Raymond, ME  
401 Webbs Mills Road  
Raymond, ME 04071

Jim,

We appreciate the time you have spent with us to understand how to develop this proposed solar project in Raymond so that it meets the needs of the town and surrounding neighbors. After our last planning board meeting in September, we walked away with a few key homework items.

It was clear that coordination with the Raymond Fire & Rescue Department was a critical path, to unsure that the project was built with fire safety in mind in order to address the needs of the RFRD. We met with Bruce Tupper, Chief and Wayne Jones, Fire Inspector to go through their memo and discuss workable solutions. A response to the memo is included in this packet.

You had also requested that we create a separate Private Way Plan for submittal, and to make sure it conformed with local ordinances. We appreciate the feedback that you were able to provide, and the final version that includes updates to the comments you gave us is included in this packet.

Lastly, the site plan has been modified to include changes to the layout based on feedback from the RFRD memo as well as the Private Way Plan. Also included in the site plan is a proposed E911 address that we obtained from Kaela Gonzalez. We understand that this is not final unless we obtain approval from the Planning Board.

Please let us know if you have any additional questions, and we look forward to speaking to you more about this at the October Planning Board Meeting.

Sincerely,



Chris Byers  
Senior Program Manager  
Biodiversity Research Institute  
30 Danforth St, Suite 213  
Portland ME, 04101

## Response to Raymond Fire Department Memo

9/7/21

Jim Seymour  
Town Planner  
Town of Raymond, ME  
401 Webbs Mills Road  
Raymond, ME 04071

Cc: Wayne Jones, Fire Inspector

**Re: Raymond Fire Department Plan Review Memo (dated 8/5/21)**

Jim,

Biodiversity Research Institute received comments from Wayne Jones in Plan Review Memorandum dated 8/5/21 to ensure that the project would meet certain NFPA and Raymond Road Ordinance standards. Our team has met with Wayne Jones and Bruce Tupper to discuss these requests, and we have also been collaborating with you to make sure that our Project complies with all national and local requirements, and to also provide the Raymond Fire Department with an updated site plan reflecting these requests.

- Section 1: NFPA 1, Chapter 18 Requirements
  - The project is proposing a 18ft wide road in the private way and access road outside and inside the fence.
  - Additionally, the road within the fence has been extended to the northern area of the project to provide vehicular access to the northern and southern limits of the solar panels.
  - Access gates will have a minimum width of 20ft and a Knox Box will be installed at all gate locations.
  - A plastic placard showing the location of the major disconnects on Site will be mounted next to each Knox box location. 24/7 emergency contact information will also be displayed on a sign.
  - All hammerheads and bypass lanes will be designated as a "Fire Lane". A sign like the one below will be mounted on a metal pole at hammerhead and bypass lanes in order to ensure that these turn around and driving lanes are not blocked once the project is operational.
    - The Project will install permanent signs similar to this:



- All roadway surfaces will be able to bear a GWVR of 75,000 lbs, and roads will at minimum provide a driving clearance of 13' 6".
- Street grades meet the following approach/departure/break-over angles:

- Angle approach of no greater than 8 degrees
- Departure angles no greater than 9 degrees
- Break-over angles no greater than 13 degrees
- Street Grade no greater than 10 degrees along its entire length.
- All hammerhead turn around conform to the newly approved Raymond road standards (18ft wide). A radius of 25ft and hammerhead length of 30ft
- The Project is proposing a Private Way Plan to establish the required road frontage for the project. As discussed, the simplest solution is to extend Dens Drive into the Project area, and then request a E911 address for the Project. Our team has been communicating with Kaela Gonzalez and is awaiting a final assigned number. Once provided, the site plan will include the actual E911 address.
- A request was made to install a 10,000 gallon cistern and a dry hydrant near the project fence. The Project team is agreeable to installing the cistern and dry hydrant, but is requesting the Raymond Fire Department/Town assume ownership and operations and maintenance responsibilities once the cistern is installed and properly commissioned. An easement will be granted to the Town to provide sufficient access rights to the infrastructure.
  - The Project team will offer training to first responder personnel to understand locations of disconnects and how to safely interact with the solar project.
  - The Project team and Raymond Fire Department will work together to develop and agree upon an operations and maintenance plan for the cistern prior to issuance of the building permit.
- Prior to construction, the Project team will provide the Raymond Fire Department with all operations and maintenance plans as well as the emergency response plans for their review and to have on file.
- Copies of any electrical and building permits including an issued for construction site plans will be provided prior to the commencement of construction.

\*See Attachment A for a copy of the original Plan Review Memorandum.

Sincerely,



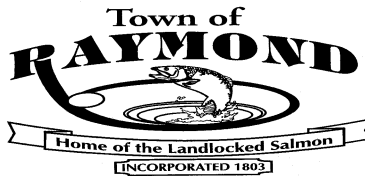
Chris Byers  
Senior Program Manager  
Biodiversity Research Institute  
30 Danforth St, Suite 213  
Portland ME, 04101

Attachment A

Plan Review Memorandum

8/5/21

**Bruce Tupper**  
*Chief*



**Cathy Gosselin**  
*Deputy Chief*

## **FIRE/RESCUE**

*1443Roosevelt Trail*  
Raymond, Maine 04071

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*Emergency 9-1-1*

*Chief's Office 655-1187*

*Dispatch 655-7851*

### **PLAN REVIEW MEMORANDUM**

August 5, 2021

To: Alex Sirois - Code Enforcement Officer  
CC: Sandy Fredricks - Planning Board Administrative Assistant, James Seymour - Town Planner, Bruce Tupper - Fire Chief, Dustin Roma - DM Roma Consulting Engineers, Raymond Planning Board  
From: Wayne C. Jones - Raymond Fire Inspector  
RE: Raymond Solar - Dens Drive - Site Plan Review Application of 7/14/2021.

The Raymond Fire Rescue Department (RFRD) requests, as a condition of approval, that the Raymond Solar - Site Plan Review Application incorporate the following:

1. The application should address Fire Rescue Department access in accordance with NFPA 1, Chapter 18.
  - a. Fire Rescue Department access shall be provided around the entire fenced in solar array complex with 18-foot fire access roads in accordance with town standards for private roads.
  - b. The fire access road within the solar array grid system shall be extended in a northerly direction approximately 750 feet to the northern extent of the solar grid. This extension should interconnect with a fire access road that will encircle the entire solar grid complex. The intersection of these access roads should incorporate the necessary turn radii for RFRD apparatus.
  - c. All fire access security gates shall have a minimum open clearance of 20 ft. All fire access security gates shall have a RFRD Knox Box installed in a tamper-proof housing at the gate location. The Knox Box shall contain all keys or key cards, to provide the RFRD access to the entire site, all enclosures, and any secured emergency shut-down equipment. A weather-proof site map shall also be provided at this location showing all AC & DC emergency shut-down equipment locations. Emergency contact personnel information on laminated cards shall be kept in the Knox Box.
  - d. The 180 degree "hammer-head" turn-around(s) and by-pass lanes should be designated as "Fire Lanes". These Fire Lanes shall be designated on the approved plans and/or addressed in the approved plan Notes.
  - e. The designated "Fire Lane" areas shall be marked with approved "Fire Lane" signs that read; "Fire Lane", "No Parking", "Vehicles Towed at the Owners Expense" (see example of the sign below). The location of the signs shall be approved by the Raymond Fire Rescue Department

(RFRD). These Fire Lane signs shall be designated on the approved plans and/or addressed in the approved plan Notes. The Fire Lane signs should also be included in the approved plan Details page.



- f. The street, fire access roads, “hammer-head” turn-around(s) and all bypass lanes shall be designed and maintained with an all-weather driving surface capable of supporting fire department apparatus with a Gross Vehicle Weight Rating (GVWR) of 75,000 lbs.
  - g. The street shall be designed with an unobstructed vertical clearance of 13’ 6”.
  - h. The street grades shall be designed according to the limitations of fire department apparatus regarding approach/departure/break-over angles as follows:
    - i. An angle of approach no greater than 8 degrees.
    - ii. Departure angles no greater than 9 degrees.
    - iii. Break-over angles no greater than 13 degrees.
    - iv. Street Grade shall not exceed 10 degrees along its entire length.
2. Provide an Auto-Turn (or equivalent) design for a 40-foot fire apparatus with a commercial cab, a tandem rear axle, and a 214-inch wheelbase. This design shall demonstrate that the above noted fire apparatus can maneuver onto and back out of the new proposed “hammer head” turn-around(s), bypass lanes, and all RFRD access road intersection radii. All proposed designs shall be approved by the Raymond Fire Rescue Department.
3. E911 Street addresses should be noted on the plans for the project as assigned by the Town of Raymond E911 Coordinator. The street address sign shall be installed to be visible from the approach direction on the proposed street and located to be clearly visible on approach from within the fire apparatus cab. The street address lettering shall be no less than 4” in height, shall be of a contrasting color to the sign background, of block letter style, and preferably the letters should be reflective for night or reduced light conditions. The placement of street address signs shall be approved by the Raymond Fire Rescue Department and E911 Coordinator.
4. The Solar Project should address the issue of fire protection water supply in accordance with NFPA 1. There is no fire protection water supply currently available on this property. The nearest fire protection water supply is a fire cistern with dry hydrant located at the Raymond Elementary School entrance. This fire cistern and dry hydrant is approximately 0.62 miles (3,249 ft) away and is the fire protection water supply for both school buildings (Raymond Elementary & Jordan Small School). The next nearest water supply is a Fire Pond and dry hydrant which is approximately 0.72 miles (3,817 ft) away. This Fire Pond is a seasonal fire protection water supply as it is inoperable during the summer and fall. The next available fire protection water supply is a Fire Pond with dry hydrant on Plains Road at the Camp Kingsley entrance road. This water supply is 2.34 miles (12,331 ft) away and is a year-round fire protection water supply. Based on the available water supplies in the area, the RFRD requests that a 10,000 gallon fire protection cistern be installed with dry hydrant, fill and vent piping

as approved and inspected by the RFRD. The fire cistern should be located at or near the southern access gate to the solar panel grid. This fire cistern is designed to provide a fire protection water supply on-site in the event of fires within the grid system, and for wildland fire protection in and around the grid system.

5. The project at a minimum, shall be in compliance with the relevant photovoltaic and fire safety standards as included in the 2020 edition of NFPA 70, NFPA 70B, NFPA 70E, UL 1471 and the 2018 edition of NFPA 1.
6. The RFRD requests the plan submittals include a map or diagram of the proposed PV system design. This map or diagram should include locations of all PV ground panels, AC & DC electrical disconnects and any system panels, conduit, combiner boxes, or inverters. The map or diagrams shall note the locations of ground fault, surge protection, lightning protection systems, arc fault protection or detection devices, ground fault or PV array isolation sensing devices, module level controls or "smart modules", automated performance monitoring instrumentation, and differential current sensors or residual current detectors. Data sheets shall be provided that details the equipment certifications for wind and hail resistance. Any additional system information should be noted on the map or diagram.
7. All proposed designs to address Fire Rescue access and fire protection shall be approved by the Raymond Fire Rescue Department (RFRD).
8. The RFRD would ask to review all plans that address solar panel cleaning, and maintenance, and plans regarding site maintenance for vegetation and debris control in and around the PV solar arrays, combiner boxes, transformers, and inverters. In addition, an emergency response plan shall be submitted to the RFRD for review and approval.
9. The approved plan Notes should include a statement that a copy of the State of Maine Electrical Permit shall be provided to the CEO & RFRD as part of the submittals when making application for construction and fire protection permits from the Town of Raymond. Fire protection permit submittals shall include the cistern /dry hydrant design documents for review and approval by the RFRD.

Please feel free to contact me with any questions.

Yours in Fire Safety,

*Wayne C. Jones*

Wayne C. Jones  
Fire Inspector  
Raymond Fire Rescue Department  
(207) 892-4046

Cc: Dale Knapp - BRI Environmental  
Cc: File



## Private Way Plan



NOTES:

1. OWNER: DENIS J. COLE  
8 DENS DRIVE  
RAYMOND, MAINE
2. APPLICANT: BWC LAKE FLORA, LLC.  
111 HUNTINGTON AVE, SUITE 650  
BOSTON, MASSACHUSETTS
3. ENGINEER: CHRISTOPHER R. MacDONALD PE#11985  
BH2M  
380B MAIN STREET  
GORHAM, MAINE
4. SURVEYOR: SACKETT & BRAKE SURVEY, INC.  
P.O. BOX 207  
SKOWHEGAN, MAINE 04976
5. DEED REFERENCES: BOOK 7621, PAGE 251  
BOOK 10068, PAGE 022
6. TAX MAP REFERENCE: MAP 10, LOT 88  
MAP 10, LOT 87A
7. ZONING: RURAL RESIDENTIAL (RR)
8. AREA OF PARCEL: 6.039 ACRES (LOT 88)  
18.098 (LOT 87A)
9. PROPOSED USE: RESIDENTIAL/COMMERCIAL  
(ACCESS TO SOLAR PROJECT)
10. REQUIREMENTS: TOWN OF RAYMOND PRIVATE WAY  
MIN ROW: 50'  
MIN. TRAVELED WAY: 18'  
MIN. SHOULDERS WIDTH: 3'  
MIN. GRADE: 0.5%  
MIN. GRADE: 10%  
MIN. GRADE 75' FROM INTERSECTION: 2%  
(NOTE: WAIVER REQUESTED)  
MIN SETBACKS:  
FRONT: 30'  
SIDES/REAR: 20'

1. MIN FRONTAGE: 225' FRONTAGE IS DEFINED AS DISTANCE ALONG FRONT LOT LINES, WITH CURVES CONNECTED BY STRAIGHT LINES. FRONTAGE IS PROVIDED WITH THE FOLLOWING DISTANCES:  
 $30+28.28+30+50+30+28.28+28.44 = 225'$

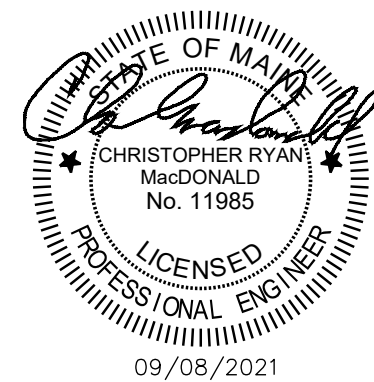
2. MAINTENANCE OF THE PRIVATE WAY, INCLUDING STORMWATER MANAGEMENT FACILITIES, SHALL BE MAINTAINED BY THE APPLICANT, OR FUTURE DESIGNEES RESPONSIBLE FOR OPERATIONS AND MAINTENANCE OF THE PROPOSED SOLAR ARRAY.

3. PLAN REFERENCES: A. "BOUNDARY SURVEY" FOR BH2M ROUTE 85 RAYMOND, MAINE 04071 BY SACKETT & BRAKE SURVEY, INC.

4. BEARINGS ARE BASED ON NAD83, STATE PLANE COORDINATES, MAINE ZONE WEST 1802.

5. CONTOUR INFORMATION BASED ON NOAA LIDAR INFORMATION FROM THE 2013 USGS-NRCS LIDAR: MAINE (CUMBERLAND, KENNEBEC AND YORK) DATA SET.

6. PROVIDE AN ACCESS EASEMENT FOR MAP 10 LOT 89 FOR THE DRIVEWAY ACROSS THE PROPERTY BETWEEN EXISTING PROPERTY LINE AND PROPOSED PRIVATE WAY.



REV. NO.	REVISIONS/COMMENTS	DATE

Drawing Title:

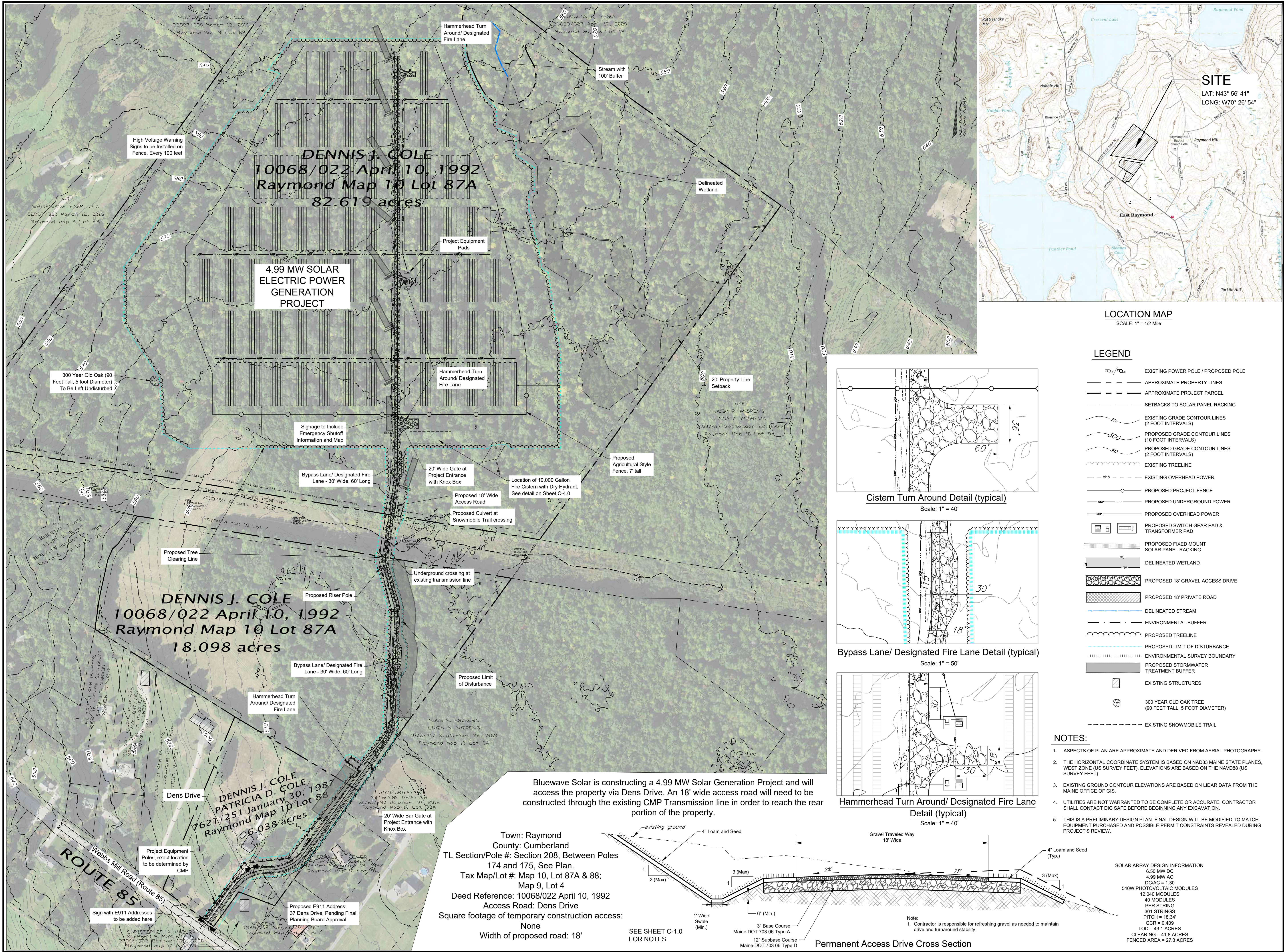
RAYMOND SOLAR PROJECT  
DENS DRIVE PRIVATE WAY  
PLAN AND PROFILE

DATE of Issue: 9/8/2021	
Drawn by: CRM	Checked by: SJB
Project No.: 21075	Scale: 1" = 50'
Drawing No.:	Rev No.:

## C-6.0

## Updated Site Plan





RAYMOND SOLAR

Dens Drive  
Raymond, Maine

BLUEWAVE

bri  
Biodiversity Research Institute

KREBS & LANSING  
CONSULTING ENGINEERS

164 Main Street, Suite 201  
Colchester, Vermont 05446

P: (802) 878-0375  
www.krebsandlansing.com

ISSUED FOR PERMITTING  
NOT FOR CONSTRUCTION

SOURCE DATA LEGEND

MAPPING SOURCE DATA USED FOR PLAN COMPILATION

Civil Engineering:  
Krebs and Lansing Consulting Engineers, Inc.  
164 Main Street, Suite 201  
Colchester, Vermont 05446

Environmental:  
Biodiversity Research Institute  
30 Danforth Street, Suite 213  
Portland, ME 04101

Stormwater:  
B2M Inc.  
3805 Main Street  
Gorham, ME 04038

0' 150' 300' 450'  
0" 1" 2" 3"  
STANDARD GRAPHIC SCALE (1" = 150')  
VALID WHEN PLOTTED ON 24" BY 36" MEDIA

LEGEND

EXISTING POWER POLE / PROPOSED POLE  
APPROXIMATE PROPERTY LINES  
APPROXIMATE PROJECT PARCEL  
SETBACKS TO SOLAR PANEL RACKING  
EXISTING GRADE CONTOUR LINES (2 FOOT INTERVALS)  
PROPOSED GRADE CONTOUR LINES (10 FOOT INTERVALS)  
PROPOSED GRADE CONTOUR LINES (2 FOOT INTERVALS)  
EXISTING TREELINE  
EXISTING OVERHEAD POWER  
PROPOSED PROJECT FENCE  
PROPOSED UNDERGROUND POWER  
PROPOSED OVERHEAD POWER  
PROPOSED SWITCH GEAR PAD & TRANSFORMER PAD  
PROPOSED FIXED MOUNT SOLAR PANEL RACKING  
DELINEATED WETLAND  
PROPOSED 18' GRAVEL ACCESS DRIVE  
PROPOSED 18' PRIVATE ROAD  
DELINEATED STREAM  
ENVIRONMENTAL BUFFER  
PROPOSED TREELINE  
PROPOSED LIMIT OF DISTURBANCE  
ENVIRONMENTAL SURVEY BOUNDARY  
PROPOSED STORMWATER TREATMENT BUFFER  
EXISTING STRUCTURES  
300 YEAR OLD OAK TREE (90 FEET TALL, 5 FOOT DIAMETER)  
EXISTING SNOWMOBILE TRAIL

NOTES:

1. ASPECTS OF PLAN ARE APPROXIMATE AND DERIVED FROM AERIAL PHOTOGRAPHY.  
2. THE HORIZONTAL COORDINATE SYSTEM IS BASED ON NAD83 MAINE STATE PLANES, WEST ZONE (US SURVEY FEET). ELEVATIONS ARE BASED ON THE NAVD83 (US SURVEY FEET).  
3. EXISTING GROUND CONTOUR ELEVATIONS ARE BASED ON LIDAR DATA FROM THE MAINE OFFICE OF GIS.  
4. UTILITIES ARE NOT WARRANTED TO BE COMPLETE OR ACCURATE. CONTRACTOR SHALL CONTACT DIG SAFE BEFORE BEGINNING ANY EXCAVATION.  
5. THIS IS A PRELIMINARY DESIGN PLAN. FINAL DESIGN WILL BE MODIFIED TO MATCH EQUIPMENT PURCHASED AND POSSIBLE PERMIT CONSTRAINTS REVEALED DURING PROJECT'S REVIEW.

SOLAR ARRAY DESIGN INFORMATION:  
6.50 MW DC  
4.99 MW AC  
DC/AC = 1.30  
540W PHOTOVOLTAIC MODULES  
12,040 MODULES  
40 MODULES PER STRING  
301 STRINGS  
PITCH = 18.34°  
GCR = 0.409  
LOD = 43.1 ACRES  
CLEARING = 41.8 ACRES  
FENCED AREA = 27.3 ACRES

Bluewave Solar is constructing a 4.99 MW Solar Generation Project and will access the property via Dens Drive. An 18' wide access road will need to be constructed through the existing CMP Transmission line in order to reach the rear portion of the property.

Town: Raymond  
County: Cumberland  
TL Section/Pole #: Section 208, Between Poles 174 and 175, See Plan.  
Tax Map/Lot #: Map 10, Lot 87A & 88; Map 9, Lot 4  
Deed Reference: 10068/022 April 10, 1992  
Access Road: Dens Drive  
Square footage of temporary construction access: None  
Width of proposed road: 18'

Permanent Access Drive Cross Section

SEE SHEET C-1.0 FOR NOTES

1' Wide Swale (Min.)  
3" Base Course  
Maine DOT 703.06 Type A  
12" Subbase Course  
Maine DOT 703.06 Type D

Note:  
1. Contractor is responsible for refreshing gravel as needed to maintain drive and turnaround stability.

4" Loam and Seed (Typ.)  
Gravel Traveled Way 18' Wide  
2%  
2%  
3 (Max)  
3 (Max)  
1  
1  
2 (Max)  
2 (Max)

4' Loam and Seed (Typ.)