

# BARNSTABLE ADULT COMMUNITY CENTER

Master Plan Study

TOWN OF BARNSTABLE Department of Planning and Development

Leonardi Aray Architects LLC June 26, 2024



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### **1 EXECUTIVE SUMMARY**

The Town of Barnstable through its Planning and Development Department issued a Request for Quotation in July 2023 for consultant services for a Master Plan for town-owned parcels adjacent to the Barnstable Adult Community Center (BACC).

In August 2023, the Town selected a consultant team lead by Leonardi Aray Architects LLC (LAA) to work with the town. LAA's scope of work included examining existing conditions at the BACC site and a nearby Barnstable Public School support site; conceptual site plans; assessment of possible housing types that respond to identified housing needs and public input; and recreation concepts for the BACC site.

LAA met with staff from town departments on November 7, 2023, for input on housing needs, recreation preferences explored in the past, opportunities and constraints, and for a site visit. LAA participated in a public meeting February 1, 2024, to introduce the concept of infill housing

at the BACC site and learn about community preferences for housing and recreation. On May 22, 2024, LAA participated in a public meeting at which case studies of a variety of housing types and densities were shown along with alternative scenarios for housing and recreation. Comments, preferences and questions from the public at both meetings were addressed and recorded.

Housing opportunities exist on three sites at the BACC campus. A range of housing types and densities are possible and should be studied to determine feasibility and desirability. There are many opportunities for improvements to pedestrian conditions, to connect the BACC to the pond, physically and/or visually, and make enhancements to the landscape environment. Opportunities to promote intergenerational connections—seniors and students—could be enhanced by building housing and a youth facility where the school support buildings are currently located on the school access road. THE GOALS OF THE STUDY ARE TO EVALUATE HOW TO BETTER USE TOWN-OWNED LAND FOR INFILL DEVELOPMENT (HOUSING) IN CONCERT WITH THE BACC AND TO ENHANCE RECREATIONAL OPPORTUNITIES AT THE SITE AND CONNECTIVITY TO THE ADJACENT BARNSTABLE PUBLIC SCHOOLS PROPERTY.



## 2 GOALS OF THE STUDY

The Town of Barnstable's Housing Production Plan identifies the need for more affordable housing and for housing to support an intergenerational community. Over 80 percent of Barnstable's existing housing stock is single family. Land scarcity and high construction costs make housing development challenging in the entire Cape Cod region. The study seeks to identify ways to better utilize municipal land, which is served by public infrastructure and already the center of community activity, for housing.

A key objective of the study is to determine the potential for the property to support affordable housing and new recreational amenities to enhance this property for all, regardless of age or income. If feasible, the town ultimately seeks to issue a Request for Proposals for its preferred residential development scenario, with an emphasis on affordable housing. The town will also select concepts for recreation enhancements to begin to advance to design and construction.

# **3 STUDY PROCESS**

The town received a Housing Choice Grant from the Commonwealth's Executive Office of Housing and Livable Communities to conduct a study of housing options and site design at the BACC. The Planning and Development Department prepared a Request for Quotation and publicly advertised for a consultant. In August 2023, it selected a team led by Leonardi Aray Architects LLC (LAA). The team included M3 Land Studio (landscape planning and design), Strong Tree Engineering (survey and civil engineering) to supplement LAA's housing expertise.

The LAA team met with staff from town departments on November 7, 2023, to kick off the study. Participants included representatives from the Planning and Development Department, the BACC director, director of Community Services, Barnstable Public Schools superintendent, town architect, the director of Asset Management, and the Affordable Housing Trust administrator. The meeting included input on housing needs, recreation preferences explored in the past, opportunities and constraints, and a site visit.

The LAA team participated in a public meeting facilitated by the Planning and Development staff February 1, 2024, to introduce the concept of infill housing at the BACC site and learn about community preferences for housing and recreation.

On May 22, 2024, the LAA team participated in a public meeting facilitated by the Planning and Development staff. Case studies of a variety of housing types and densities were presented and compared and contrasted to the potential sites at the BACC campus. Environmental and cultural site analysis was performed (See Appendix C). Five conceptual site layouts for housing, along with pedestrian, landscape and recreation opportunities, were presented for three potential sites at the BACC campus. Comments, preferences and questions from the public at both meetings were addressed and recorded.



### **4** STAKEHOLDER INPUT

Meetings with members of the public provided input on housing and recreation issues at the BACC campus. Key themes were:

- Consider "new" models of housing
- Senior housing would be compatible on BACC campus
- Affordable housing is needed for teachers, caregivers, public safety providers and more
- Recreation opportunities are paramount
- Provide access to Dunn's Pond
- Improve walkability at BACC campus
- Consider BACC parking needs
- Consider ways to promote senior-school student interaction
- Maintain existing landscape to the extent possible and provide landscape buffers



Figure 1. Community Meeting, May 22, 2024



### **5** EXISTING CONDITIONS

The BACC was built in 1998 and sits on a 6-acre parcel with approximately 600 feet of frontage on Falmouth Road. The "BACC property" also includes an adjacent town owned parcel containing 1.5 acres of land with approximately 252 feet of frontage on Falmouth Road and 40 feet of frontage on Mark's Path (a private way with 10 single-family homes). These two town-owned parcels, the BACC property, contain the 1-story BACC building, a 20,604-s.f. facility, a parking lot for 144 cars, a ground-mounted solar array (solar panels) on the north and some vegetated area. The two parcels combined are approximately 8 acres. The solar array was built in cooperation with the Cape and Vineyard Electric Cooperative, installed around 2012. New England Telephone & Telegraph Company easement crosses through the 8-acre parcel and through a portion of the BACC building. See Appendix A.

Both parcels abuts a parcel under the stewardship of the Conservation Commission, dominated by Dunn's Pond, a 5.4-acre freshwater pond.

The Barnstable Intermediate School is about 1,000 feet west of the BACC and the Barnstable High School and corresponding playfields are less than one-quarter mile away to the south. The schools, playfields, courts and the BACC share an access drive owned by the school department. A number of school support buildings is on this access drive. The access drive at Falmouth Road is not signalized. Falmouth Road is an urban principal arterial with one lane in each direction. There are no crosswalks or sidewalks at the intersection with the schools' access road. An eight-foot shared use path is on the south side of Falmouth Road. Although Cape Cod Regional Transit Authority does not have a bus stop in this location, buses may use this flag stop to board and discharge passengers. A sidewalk on the west side of the access road exists beyond the entry to the Intermediate School and switches to the east side near the fields.

The LAA team considered the rich ecological diversity at Dunn's Pond, the physical constraints in the site's topography, and the current building side erosion to develop the different scenarios, maximize pedestrian connectivity and outdoor community recreation. See Appendix C and D.



# 6 STUDY AREA



Figure 2. Overall Study Area

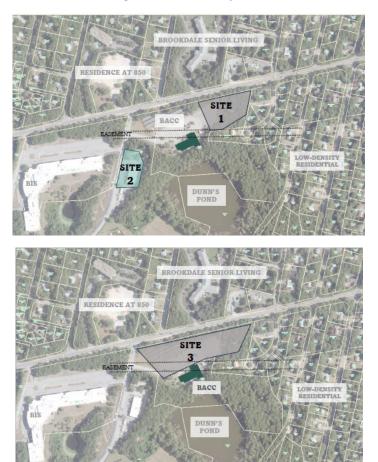


Figure 3. Areas of possible intervention: Site 1, Site 2 and Site 3



#### Barnstable Community Center – Master Plan Study

# 7 EXISTING CONDITIONS – PHOTO SURVEY



















## 8 HOUSING CASE STUDIES

Case studies of five existing housing developments were used to help illustrate several housing types on similar and dissimilar sites. Housing sites in the greater Barnstable area were selected because they represented distinct housing types and massing and are "nearby."

The case study analysis illustrates the range of housing types and numbers of units that could be developed at the BACC site while considering the neighborhood context, parking requirements, open space and recreation requirements, and access and connectivity needs. Multi-story buildings can provide more units while preserving green space and parking spaces. Single-family houses may be similar in style to the nearby neighborhood while providing relatively few units.

Site Comparison represents the approximately 1.5- to 2-acre housing site within the BACC parcel in comparison to the case study lot size. See Appendix B for more details.

Development Name & Location	Lot size	Number of Dwelling Units & Housing Type	Site Comparison
Island Cohousing West Tisbury	5-6 acres	16 single-family houses	3 times bigger than BACC Housing Site
Terrapin Ridge Sandwich	4 acres	30 units in 8 townhouse-style buildings	3-4 times bigger than BACC Housing Site
Canal Bluffs Bourne	1/3 acre	28 units in 3-story building	20% of BACC Housing Site
Residence at 850 Barnstable	4 acres	53 units in 3-story building	About 2 times bigger than BACC Housing Site
Brookdale Senior Living Barnstable	4 acres	80 units in 2-story building	About 2 times bigger than BACC Housing Site



### **9 ALTERNATIVES**

The LAA team studied two primary sites at the BACC campus (Site 1) and one secondary site (Site 2).

- Site 1 is a 1.5 acre-2.0 acre area east of the BACC building. It includes some of the BACC parking lot (the 2019 addition) and the wooded area near Mark's Path.
- Site 2 includes the Barnstable Public Schools support buildings on the school access road. It is approximately 1.5 acres.
- Site 3 is the site of the ground-mounted solar array, the BACC parking lot that fronts Falmouth Road and the parcel on Mark's Path (Site 1). This site is approximately 6.5 acres.

For more details on each one of the proposed scenarios refer to Appendix D and E.



Figure 4. Site 1, Site 2 and Site 3



#### 9.1 SCENARIO A ON SITE 1 FEATURES

- 5 duplexes (10 units) in a side-by-side configuration
- Pedestrian path south of the duplexes
- Wooded buffers at the BACC parking, on the south and east of the duplexes
- Each duplex can accommodate a driveway on each side for parking
- Easement from the new roundabout towards a wooded pocket park for neighborhood residents. The park could include picnic tables and recreational stations suitable for various ages, such as play equipment for children and exercise equipment for adults, placed among the trees and along the pedestrian trails.
- Bocce courts and/or community gardens located near the BACC.
- Potential vehicular access to the existing neighborhood through Mark's Path (private way)
- Parking at the BACC would be reduced by about one-half. Approximately 72 parking spaces will remain available to the BACC.

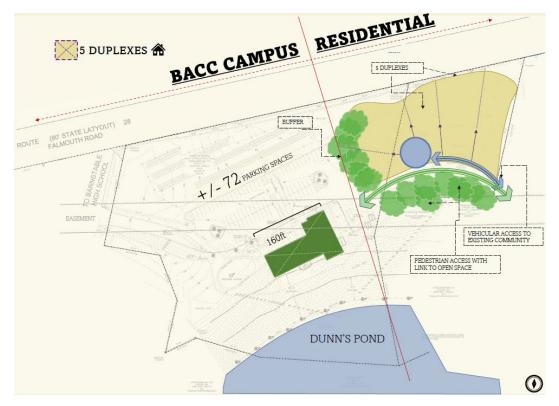


Figure 5. Scenario A



#### Barnstable Community Center – Master Plan Study

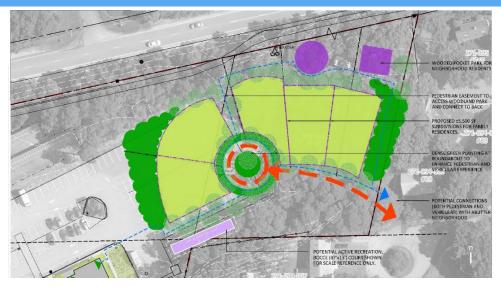


Figure 6. Scenario: Open Space and Recreation Concept

#### 9.2 SCENARIO B ON SITE 1 FEATURES

- 18-22 townhomes built around a central green
- A tree-lined central area for recreational activities surrounded by the townhouse buildings. Pedestrian walkways at all four corners of the proposed residential layout. The linear park includes two Bocce courts and a plaza for social gatherings. This area could feature game tables, benches, and labyrinth paving to cater to residents, community center users, and students with diverse interests.
- Approximately 30 parking spaces for the new residential development
- Parking at the BACC would be reduced by about one-half. Approximately 72 parking spaces will remain available to the BACC.
- Pedestrian path south of the townhouses connecting the BACC to Mark's Path (private way)
- Landscape buffers at the neighborhood



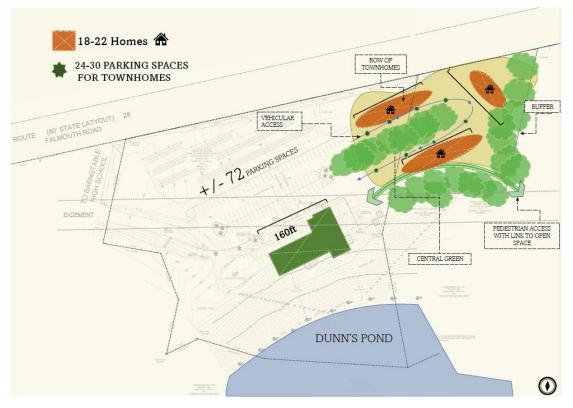


Figure 7. Scenario B



Figure 8. Scenario B: Open Space and Recreation Concept



#### 9.3 SCENARIO C ON SITE 1 FEATURES

- Single compact 4-story building with 30-36 units
- Active recreation such as bocce courts and other gathering spaces within the existing vegetated area on the east side of the property
- Approximately 30 parking spaces for the new residential development
- Ground-floor non-residential space/community center available to the public
- Pedestrian path south of the townhouses
- Landscape buffers at the neighborhood
- A clearing on the east side can provide space for courts, a small playground, and exercise stations among trails to connect the BACC and proposed homes in the north-south and east-west directions. Vehicular traffic would remain the same, with the addition of shade trees and the expansion of planting raised beds and social areas for potential Farmer's Market or Arts and Crafts fair.
- Parking at the BACC would be reduced by about one-half. Approximately 72 parking spaces will remain available to the BACC.
- Improvements to the community gardens and loading area at the BACC

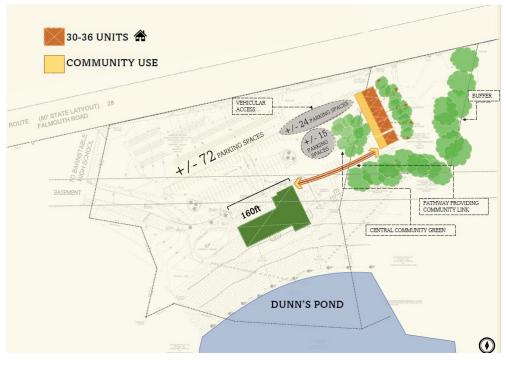


Figure 9. Scenario C

#### 9.4 SCENARIO D ON SITE 2 FEATURES – REPLACEMENT OF SCHOOL TRAILERS

- Multi-story building with 25-30 units acting as a gateway into the school campus
- Approximately 10,000 s.f. of community space or school/youth center at the ground floor



- New sidewalk on east side of the school access road connecting the BACC to the new center and housing
- Views of Dunn's Pond from new housing and community space
- Approximately 30 parking spaces. Replacing a former bus yard into a permeable parking lot with lined tree boxes and bioswales to collect and treat stormwater before it reaches Dunn's Pond
- Formalize the desired pathways with tree-lined sidewalks
- Universally accessible connections to the BACC's memorial garden and parking lot
- An outdoor amphitheater with shade trees and a permeable center plaza would provide the existing community with a multigenerational space for multicultural events. This design concept would preserve most of the pond's woodland and add ecological value to the area by implementing native vegetation and low-impact developments with LEEDcertified materials in landscape, civil engineering, and architectural developments.

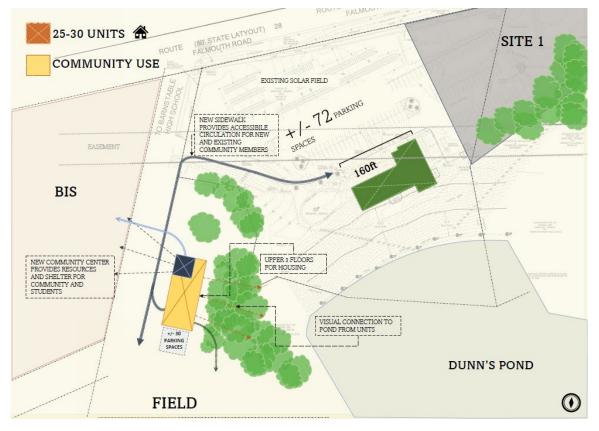


Figure 10. Scenario D



#### 9.5 SCENARIO X AND V ON SITE I FEATURES

- Solar array is relocated to free up land
- Single multi-story building with 60-80 units (Scenario X) or 30 townhomes (Scenario V)
- Parking for 170 or 120 cars serving the new residential use and the BACC. Most of the vehicular access and parking are located outside, facing Falmouth Road traffic (Alternatively, new buildings could be located closer to Falmouth Road to allow for more parking in front of the BACC).
- Solar canopy installed over parking to the east of the site
- Wooded buffer at the neighborhood
- Recreational courtyard consisting of courts, tree-lined pathways, a playground, game and café tables



Figure 11. Scenario X



#### Barnstable Community Center – Master Plan Study

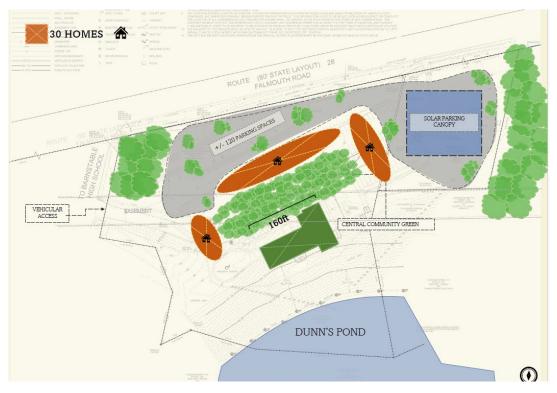


Figure 12. Scenario V



Figure 13. Scenario X. Open Space and Recreation Concept.



## **10 SUMMARY**

#### Site Availability

Three sites at the BACC campus should be considered for housing and recreation uses. Each could be developed as a stand-alone project or Site 1 and Site 2 could both be developed. Because Site 2 (school-owned site) and Site 1.1 (solar array) are currently being used for other purposes, these sites could take longer to plan, design and develop than Site 1. Consequently, a phased approach to creating housing and some recreation opportunities should be considered. Each site offers different opportunities and has various constraints.

Site 1:

- Current uses are parking and vegetation; developable in short term
- Adjacent neighborhood is low density, single family
- Existing vegetation provides buffer

#### Site 2:

- Current uses are school support functions and transportation; potentially developable when new locations are secured for school functions
- Adjacent to school, fields and Dunn's Pond; no abutting residences

Site 3:

- Current uses are solar array, BACC parking and vegetation; potentially developable if solar lease can be renegotiated
- Adjacent to Falmouth Road and BACC; adjacent neighborhood is low density, single family

#### **Housing Typologies**

A variety of housing types is possible for the sites.

Site 1 is the largest site and offers the greatest variety of housing types. Duplexes, townhouses, or a compact low-rise are options. While Site 1 could be developed for as many as 36 units, its proximity to the Mark's Path single-family residential neighborhood requires additional study to ensure a denser development could be done given the context.

Site 2 has fewer possible housing types available due to its proximity to Dunn's Pond (environmental constraints) and the school access road and the inclusion of the school/youth center on the ground floor. A multi-story building here could provide 25-30 units, some with unique views of the pond.

Site 1.1 is a large parcel fronting on Falmouth Road, a major arterial. The practical housing type for this site is a multi-story building with 60-80 units.





Figure 14. Terrapin Ridge Apartments, Sandwich, MA. See Appendix B.

#### Housing Density: Opportunities and Constraints

The feasibility of housing on any of the sites studied requires additional study. A detailed financial feasibility analysis that considers sources of public funding, cost per unit and housing market for homeownership and rentals would be needed.

Zoning, including parking and open space requirements, and environmental permitting requirements could constrain the number of units that could be built on any of the sites.

Housing restricted to certain groups such as senior housing could constrain the types of public funding that could be used.

Multi-story compact housing with a small building footprint allows for parking and landscape features. Low-density housing spread out on the site would reduce opportunities for parking and landscape and recreation features.



### **11 RECOMMENDATIONS FOR NEXT STEPS**

Any of the scenarios presented, while physically viable, would require community buy-in, professional resources and an understanding of municipal procedures to develop a financially feasible project with a clear vision. Immediately after this study, LAA recommends:

- Hold a community meeting or two with a larger audience, perhaps at two different locations, to discuss findings from this study.
- Widely distribute the findings of this study via media and town communications mechanisms.
- Identify key partners and define an approach for collaboration. For instance, the Affordable Housing Trust and the Conservation Commission, and other land conservation and recreation partners, may have apparent conflicting goals. These entities, however, can find common ground and manage community expectations and secure resources. BACC staff and users are a given and key participant.
- Further develop each of the scenarios with sufficient information for stakeholders to visualize building form, vehicular access and parking, site intervention as well as open space and recreation improvements.
- Identify potential sources of funding and its allowed uses.
- Survey usage of parking lot at the BACC during both typical and high-use periods and usage of parking at the school campus and BACC together. Consider transportation alternatives, like shuttle bus rental, community-based carpooling, or others, that could serve visitors, particularly seniors, during special events. Developers could be tasked with assisting with transportation alternatives if feasible.
- Identify any restrictions placed on the parcels that may limit the type of uses and may be a barrier to transferring the parcel(s) to a private developer or another town department as it may apply.



# **APPENDIX**

- A. Existing Conditions Survey
- B. Case Studies (Discussed at Community Meeting on May 22, 2024)
- C. Environmental and Cultural Site Analysis, Landscape features and Lookout Platform at Dunn's Pond
- D. Site Narrative and Development Concepts Around Proposed Infill
- E. Alternatives (presented at Community Meeting on May 22, 2024)



# APPENDIX A

# **Existing Conditions Survey**



### LEGEND

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BZ 50
——— BZ 100 ———

1,549.50'

### BUILDING **CONTOUR - MINOR** CONTOUR - MAJOR CURB EDGE OF PAVEMENT GUARD RAIL FENCE RIP RAP TREE LINE WALL - RETAINING WALL - STONE ABUTTING LOT EASEMENT LINE PROPERTY OR ROW SETBACK LINE DRAIN PIPE OVERHEAD WIRE WATER LINE WETLAND BOUNDARY WETLAND 50 BUFFER

WETLAND 100 BUFFER

FEMA FLOOD ZONE

### SYMBOLS

D DRAIN MANHOLE

RIM=55.37 INV (W)=47.8 INV (S)=47.9 INV (E)=47.8

SPIKE FD. (10/10/06)

کر SIGN

S.M.H. RIM=55.70 INV (NW)=48.80 INV (E)=48.70

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File Name: G:\My Drive\Projects\2023\23068 Barnstable BACC\Drawings\23068 EX BACC.dwg Saved 6/27/2024 12:36 PM Plotted: Jun 27, 2024 12:43:47pm Tab: 24X36 Plotted By: Justin Lamoureux

•	BENCHMARK	$\bigcirc$	CATCHBASIN
⊡СВ	BOUNDARY	8	FLARED END OUTLET
$\bigtriangleup$	CONTROL POINT		RIP RAP APRON
$\Theta$	EXISTING SHRUB	WV	WATER VALVE
	EXISTING TREE	sv	SEWER VALVE
***** *****	EXISTING EVERGREEN TREE	GV	GAS VALVE
× <sup>100</sup>	SPOT GRADE	$\boxtimes$	UTILITY BOX
S	SEWER MANHOLE	Ą	HYDRANT
E	ELECTRIC MANHOLE	UP ⊕	UTILITY POLE W/GUY
(T)	TELEPHONE MANHOLE	TP	TEST PIT
MH	MANHOLE	- <b>B#</b>	BORING
TV	TV BOX	₽ W	F WETLAND FLAG

MAIL BOX

10" PVC, SEWEL

C ROCK

### SURVEY NOTES

SUCH EASEMENTS EXIST.

RIM=58.43

OWNER OF RECORD

TOWN OF BARNSTABLE (SCH) ASSESSORS MAP: 271

PARCEL: 97

DEED REF. 1556/214

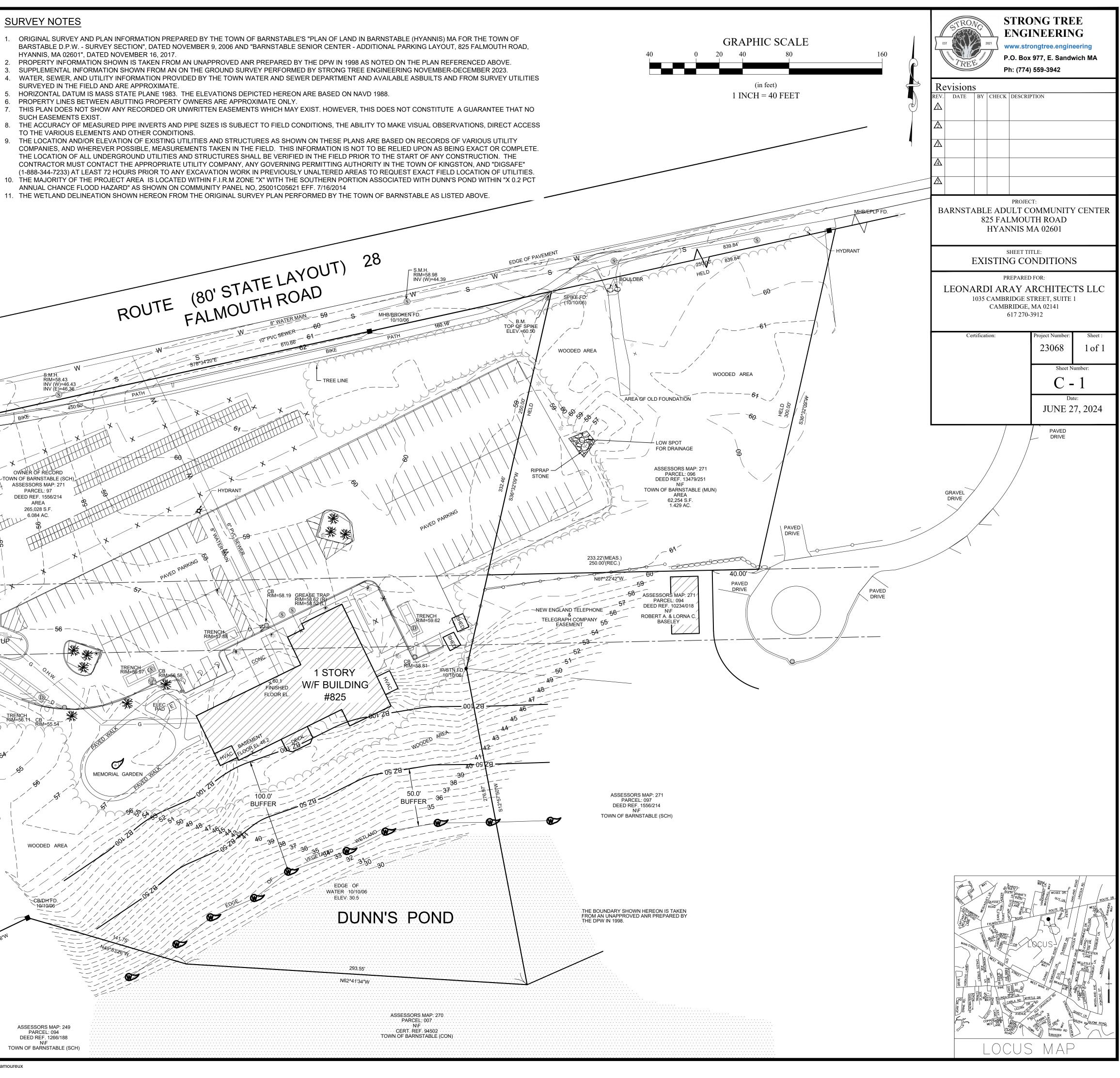
AREA 265,028 S.F. 6 084 AC

ASSESSORS MAP: 249 PARCEL: 094 DEED REF. 1266/188 N\F TOWN OF BARNSTABLE (SCH)

CB/DH FD

10/10/06

WOODED ARE



# APPENDIX B

# **Case Studies**

# (Discussed at Community Meeting on May 22, 2024)





SOUTH MOUNTAIN COMPANY

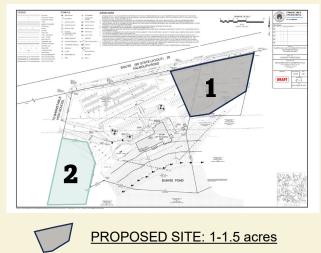
WEST TISBURY, MA

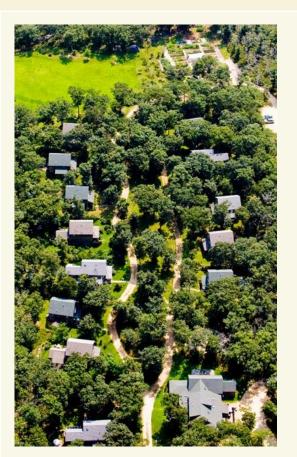
SCENARIO A

Single Family

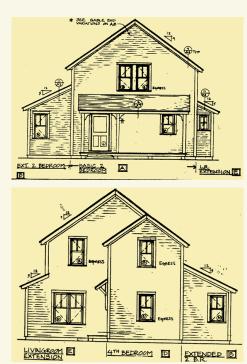
SITE: 5-6 acres (210,000SF) HOUSES (16): 900 - 1000 SF (40 x 25) LOTS: 4,800SF (80 x 60)

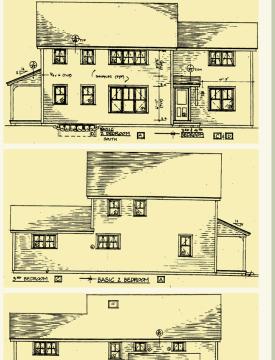
#### **EXISTING BACC SITE PLAN**





EXISTING ISLAND COHOUSING HOME **ELEVATIONS** 





EXTENDED 2 BEDROOM 4TH BEDROOM

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south mountain The Island Cohousing site is large enough to fit 3-4 of our proposed site within its boundaries.

16-home neighborhood ranging in affordability

16'-0"

#### Island Cohousing site plan compared to proposed Barnstable site 1 📿

B' X 1

11' X 11'

26'-6"

Living Area 17'-6" X 18



#### GROUND FLOOR SECOND FLOOR edroom 4 11' X 14' 11' X 12' Bedroor 9'-9" X 14 Bedroom 1 13' X 10'

ISLAND COHOUSING OFFERS 2 FLOOR HOMES WITH A RANGE OF LAYOUTS THROUHOUT THE COMMUNITY

**Includes shared common** facilities: common house, meeting, eating, and office space, as well as a community garden



SANDWICH, MA

SCENARIO B

Townhomes

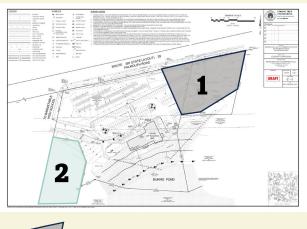
SITE: 4 acres (174,000SF)

BLOCKS (8): 900 – 1000 SF (40 x 25)

UNITS (30):

1BED 1BATH: 2BED 1BATH: 3BED 2BATH: 735SF 950SF 1,338SF

#### **EXISTING BACC SITE PLAN**



PROPOSED SITE: 1-1.5 acres







**BUILT 2021** AFFORDABLE SENIOR AND FAMILY HOUSING COMMUNITY



Proposed site can fit 18-22 units, depending on desired density

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units per block

Terrapin Ridge Apartments site plan compared to proposed Barnstable site 1 7.

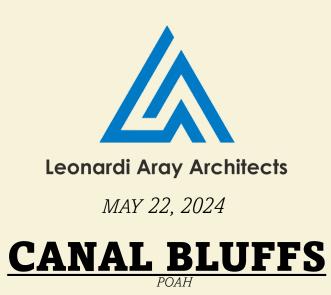




• Terrapin Ridge site offers 30 units spread through 8 buildings, 4

The central green space houses recreational space, playground, and septic field

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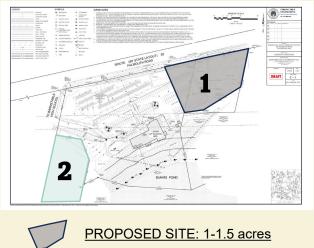


*BOURNE, MA* SCENARIO C

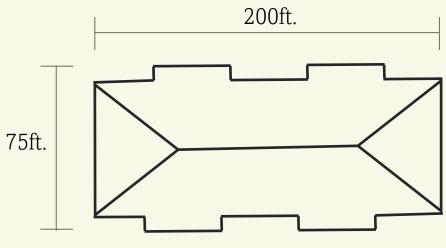
Apartments

SITE: 1/3 acre BUILDING: 15,000SF (200 x 75) UNITS (28)

#### **EXISTING BACC SITE PLAN**







### CANAL BLUFFS BUILDING FOOTPRINT



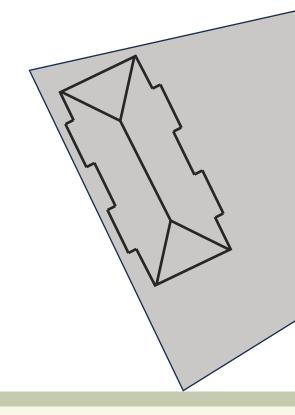
# POAH COMMUNITIES



• **Proposed site** is large enough to fit 6 Canal Bluff Buildings

Canal Bluffs building footprint compared to proposed Barnstable site 1

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The completion of Canal Bluffs lead to the construction of Clay Pond Cove. This included the completion of the wastewater treatment plant that serves the whole Canal Bluffs residential community and the abutting retail shopping center. The entire site is 17 acres.

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**Canal Bluffs** site offers 28 units **Central green houses** recreational space, playground and septic field

SITE COMPARISON

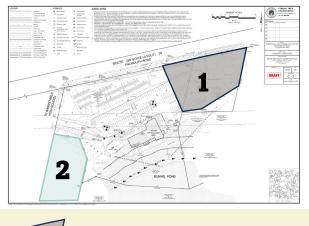


# **SURROUNDING HOUSING**

# BARNSTABLE, MA RESIDENCE AT 850

SITE: 4 acres (120,000SF) BUILDING: 20,400SF UNITS (53): One and Two bedroom Options 700-900SF

#### **EXISTING BACC SITE PLAN**





PROPOSED SITE: 1-1.5 acres

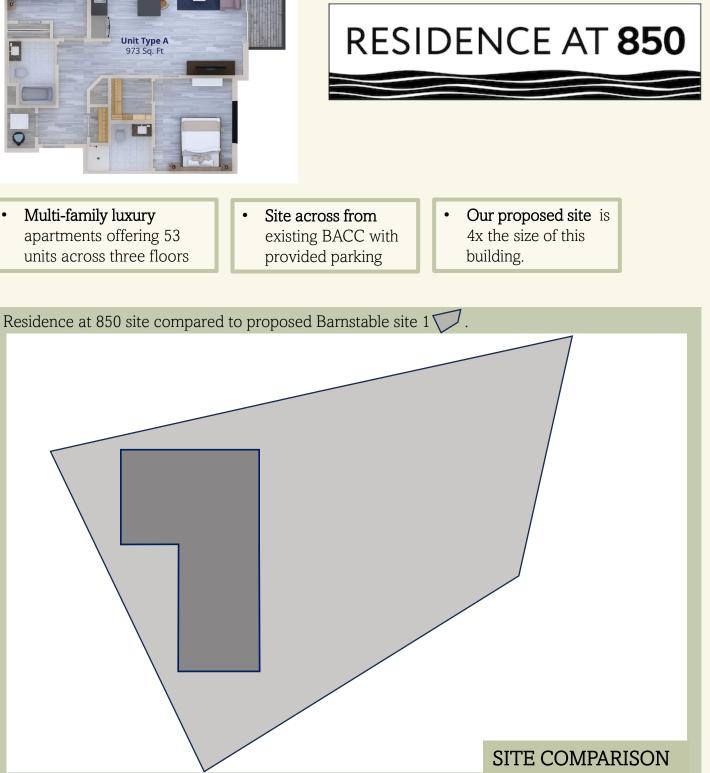




- Multi-family luxury apartments offering 53 units across three floors









# **SURROUNDING HOUSING**

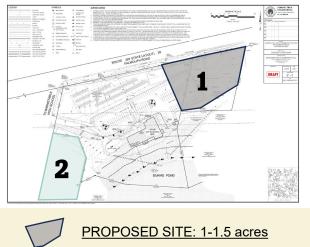
# BARNSTABLE, MA BROOKDALE SENIÓR LIVING

SITE: 4 acres (125,000SF) BUILDING: 31,500SF UNITS (80): 1BED 1BATH: 2BED 1BATH:

460SF 560SF 660SF

**EXISTING BACC SITE PLAN** 

2BED 2BATH:











Senior living facility offering 80 apartments over two floors.

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#### Residence at 850 site plan compared to proposed Barnstable site 1 🤝





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**Communal** living and dining areas with on site library

This facility could fit 1-1.5 of our proposed site

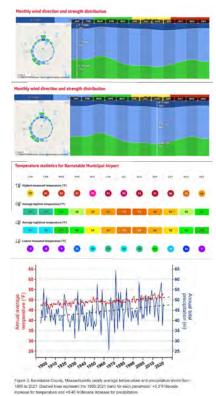
# APPENDIX C

# Environmental and Cultural Site Analysis, Landscape features and Lookout Platform at Dunn's Pond

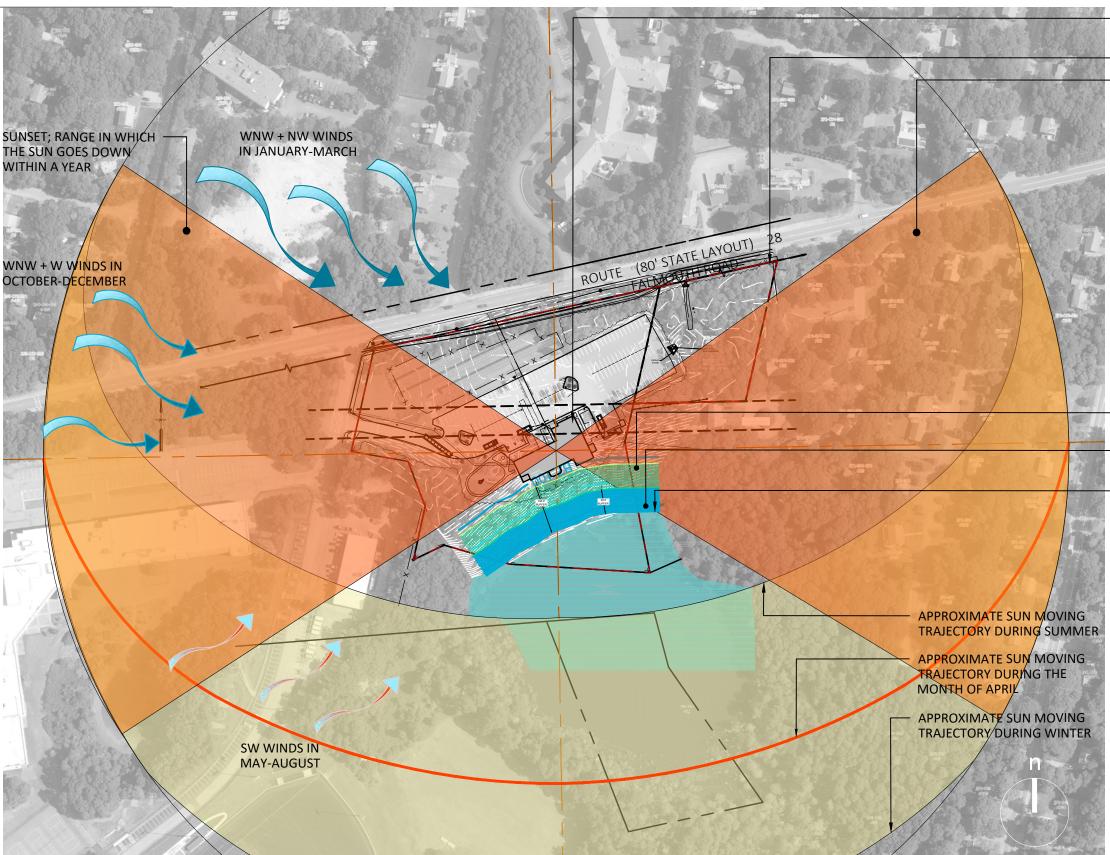


#### SITE ANALYSIS NOTES:

- Information is based on www.suncalc.org, www.weatheratlas.com, US Climate Data. Base map provided by Town.
- Site Geodata: Latitude: N41°39'35.17" Longitude: W70°19'05.41" Height: 21m TZ: USA, NY DST EDT
- Sunshine hours: 10.8 in August; 4.6 in December
- Daylight hours: 15.2 in June; 9.2 in December
- Temperature: 72.5°F in August; 30.4°F in January.
- Humidity: within 74% to 84% (slight increments during warmer months).
- 7. Rainfall: distributed universally across the year, though peaking in October with an average of 3.7"
- 8. Snowfall: mostly winter, predominantly in February with an average of 1.93"
- 9. Wind speed + gusts (mph): average 27-26 in winter; 23 in summer







# ENVIRONMENTAL SITE ANALYSIS | Barnstable Adult Community Center

#### EXISTING BARNSTABLE COMMUNITY CENTER BUILDING

#### PROPERTY LINE

#### SUNRISE; RANGE IN WHICH THE SUN RISES WITHIN A YEAR

#### TRENDS FROM 1895 TO 2020:

Month (2021)	Total precipitation (in)	Departure from long-term average precipitation (in)
January	2.50	-1.43
February	4.24	+0.77
March	2.76	-1.38
April	3.48	-0.49
May	4.75	+1.43
June	1.70	-1.51
July	2.90	+0.06
August	2.89	-0.85
September	10.82	+7.28
October	8.17	+4.29
November	2.17	-1.97
December	1.81	-2.31
Annual	48.19	+3.88

Table 2. Barnstable County, Massachusetts monthly and annual total precipitation and departures from long-term average totals. Departures from average are based on a comparison of 2021 precipitation levels to relevant averages from 1895-2020.

#### **100' BORDERING VEGETATED** WETLANDS (BVW) ZONE

#### **50' BORDERING VEGETATED** WETLANDS (BVW) ZONE

#### FLAGGED WETLANDS

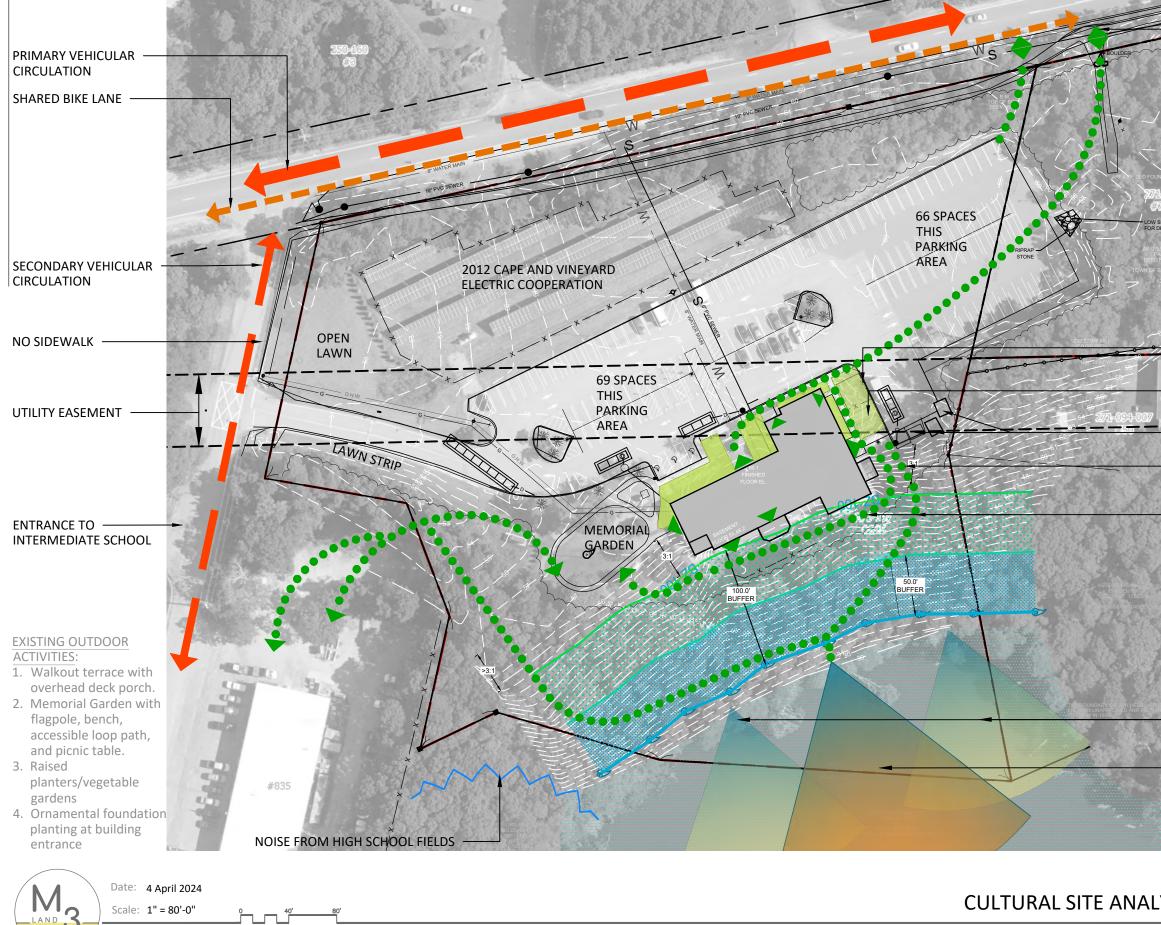
Month (2021)	Average temperature (°F)	Departure from long-term average temperature (°F)
January	33.8	+3.9
February	32.8	+3.0
March	39.1	+2.6
April	47.3	+2.4
May	56.6	+2.0
June	67.6	+4.0
July	70.5	+0.6
August	73.5	+4.8
September	67.4	+5.0
October	59.0	+5.9
November	44.7	+1.2
December	40.6	+6.5
Annual	52.7	+3.5

Table 1. Barnstable County, Massachusetts average monthly, average annual, and departures from long-term average temperatures. Departures from average are based on a comparison of 2021 average temperatures to relevant averages from 1895-2020

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### 825 Falmouth Rd, Hyannis, MA 02601

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LANDSCAPE ARCHITECTURE + LAND PLANNING

Scale: 1" = 80'-0"

	- PROPERTY LINE
HVDRANT	<ul> <li>INFORMAL PEDESTRIAN ENTRANCE AND EXIT TO THE SITE (WITH DESIRED LINES)</li> </ul>
WODDED AREA NDATION HODSS 757 SRAINAGE SOORS MAP 271 NOCEL OF REALTING HERE - SATURES NOCE AREA TO ADDE AREA SOORS MAP 271 NOCEL OF REALTING HERE - SATURES TO ADDE AREA SOORS MAP 271 NOCEL OF SOORS AREA TO ADDE AREA SOORS MAP 271 NOCEL OF SOORS AREA TO ADDE AREA SOORS MAP 271 NOCEL OF SOORS MAP 27	<ol> <li>DESIRED OUTDOOR ACTIVITIES:</li> <li>1. Universally accessible paths, especially towards Dunn's Pond.</li> <li>2. Lookout deck or viewing platform at Pond with vistas.</li> <li>3. Gazebo or Pavilion with seats.</li> <li>4. Pickleball, Bocce or other outdoor recreation game.</li> </ol>
	- FENCED GARDEN
ASS CONTRACT TO THE PROPERTY OF THE PROPERTY O	<ul> <li>RAISED BED PLANTERS WITH HERBS</li> </ul>
	— (3) STORAGE SHEDS
Contraction of	<ul> <li>ERODED STEEP SLOPES (3:1) BY</li> <li>PEDESTRIAN DESIRED LINES</li> </ul>
	<ul> <li>INFORMAL PATHS, TYP.</li> <li>a. TOP PATH IN FLATTER</li> <li>PLATEAU AREA, BEHIND THE</li> <li>CHAIN LINK FENCE.</li> <li>b. BOTTOM PATH TOWARDS</li> <li>DUNN'S POND IS INACCESSIBLE</li> <li>AND DENSELY VEGETATED</li> <li>WITH TREES AND</li> <li>UNDERBRUSH ON STEEP SLOPE</li> </ul>
	<ul> <li>POTENTIAL VIEW IMPEDED BY ACCESS</li> </ul>
n n	- OPTIMAL VIEW
	THIS DRAWING WAS PREPARED FOR LEONARDI ARAY ARCHITECTS FOR ILLUSTRATIVE PURPOSES ONLY. NOT FOR CONSTRUCTION

# CULTURAL SITE ANALYSIS | Barnstable Adult Community Center 825 Falmouth Rd, Hyannis, MA 02601

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21 May 2024













































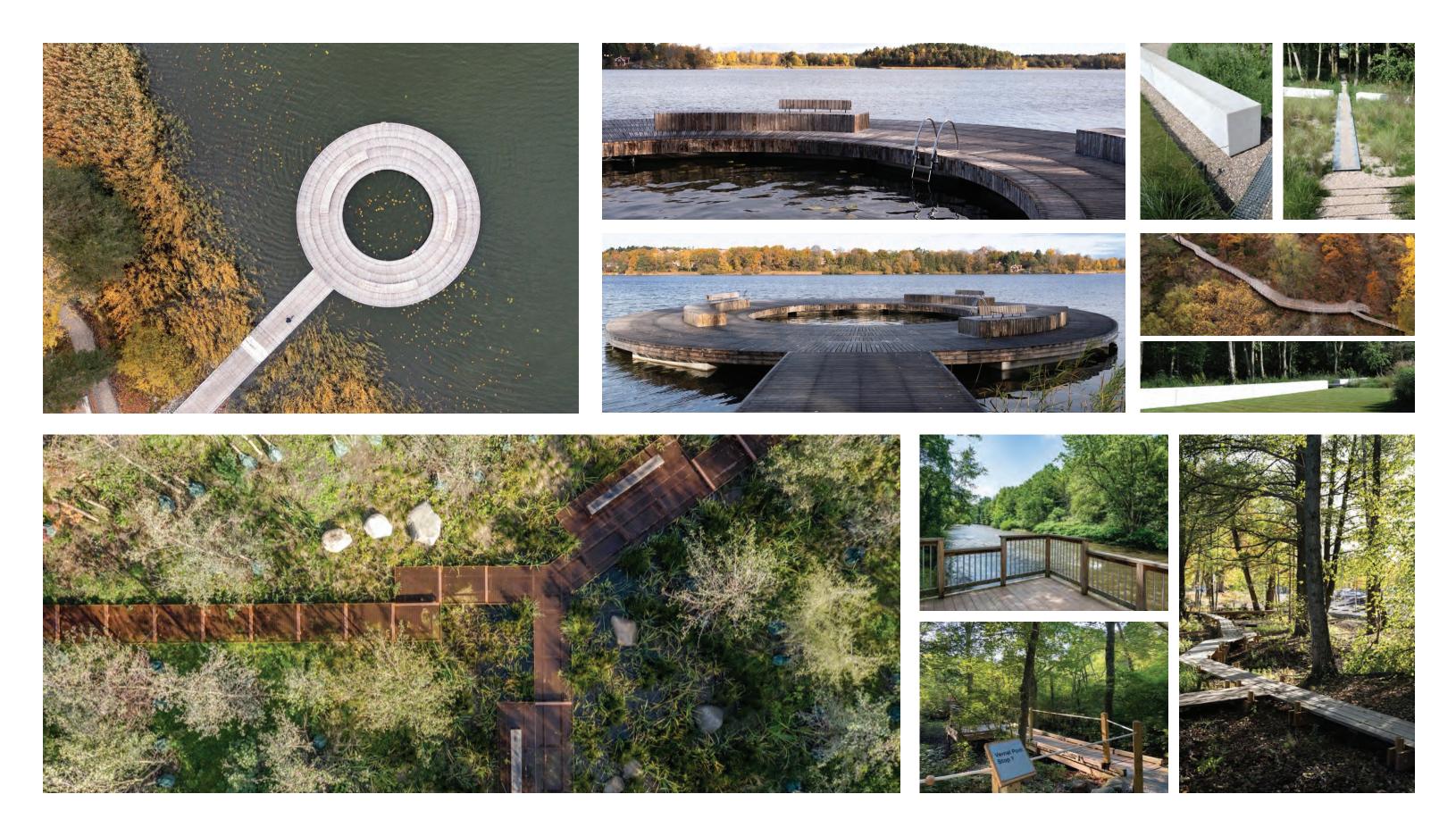








# Barnstable Adult Community Center Community Outdoor Activities and Events

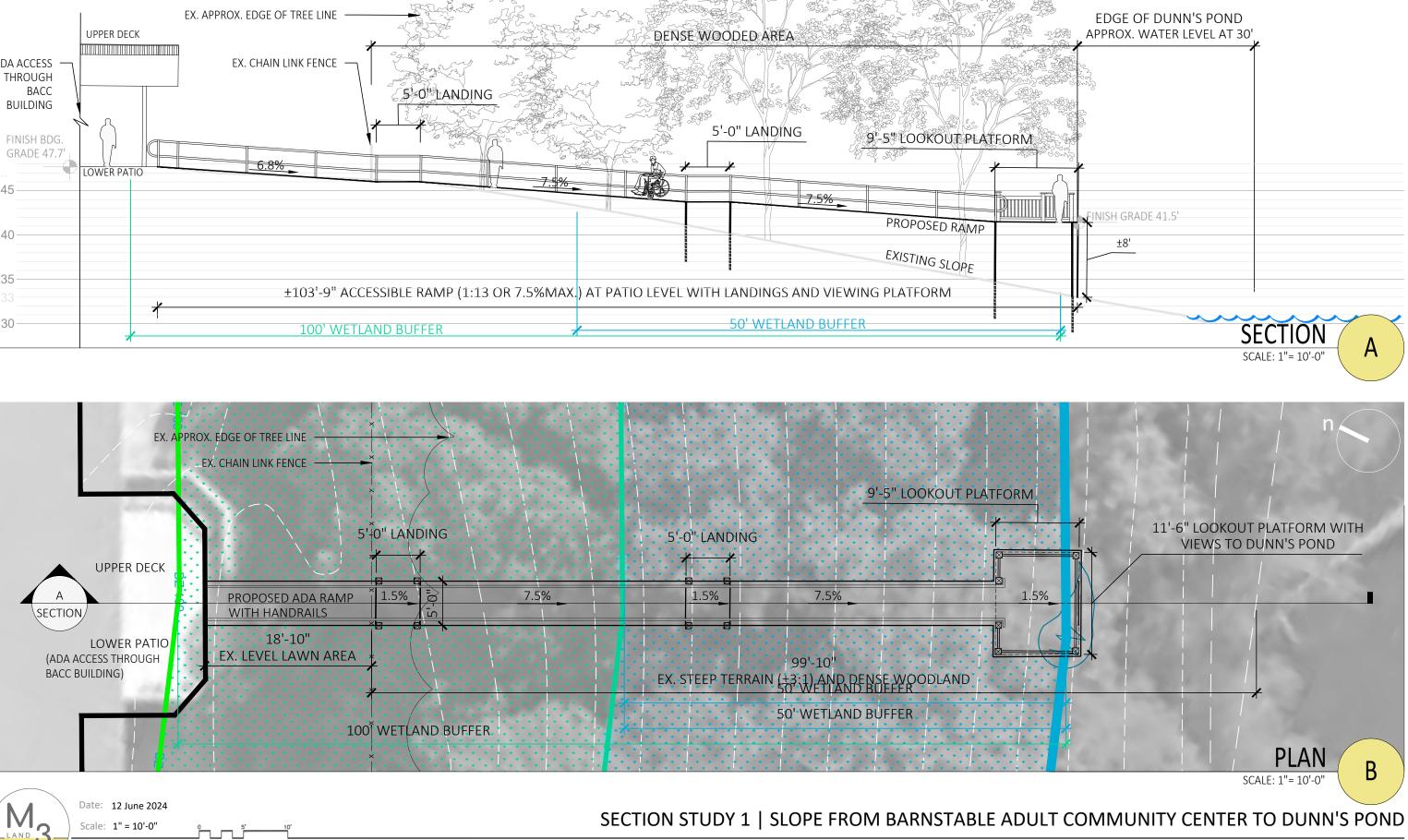


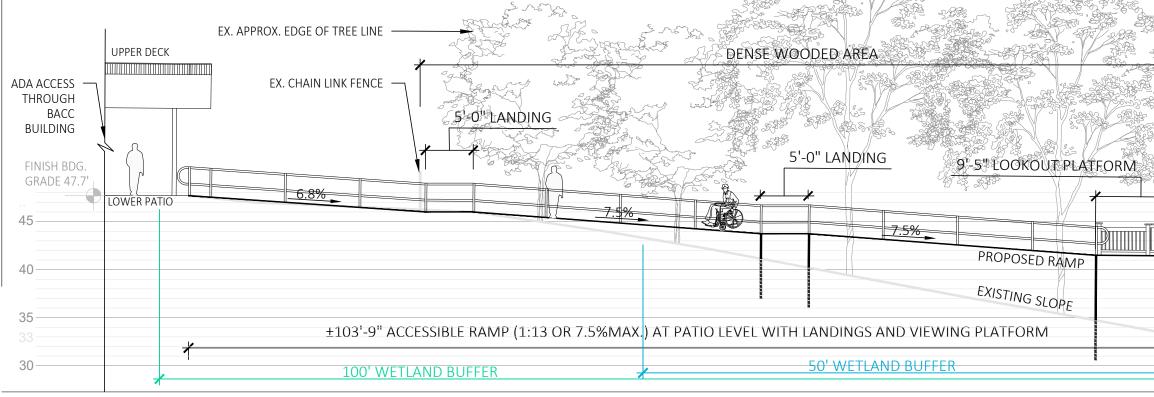


# Barnstable Adult Community Center Potential Accessible Trails Around Pond



# SECTION STUDY 1 | SLOPE FROM BARNSTABLE ADULT COMMUNITY CENTER TO DUNN'S POND



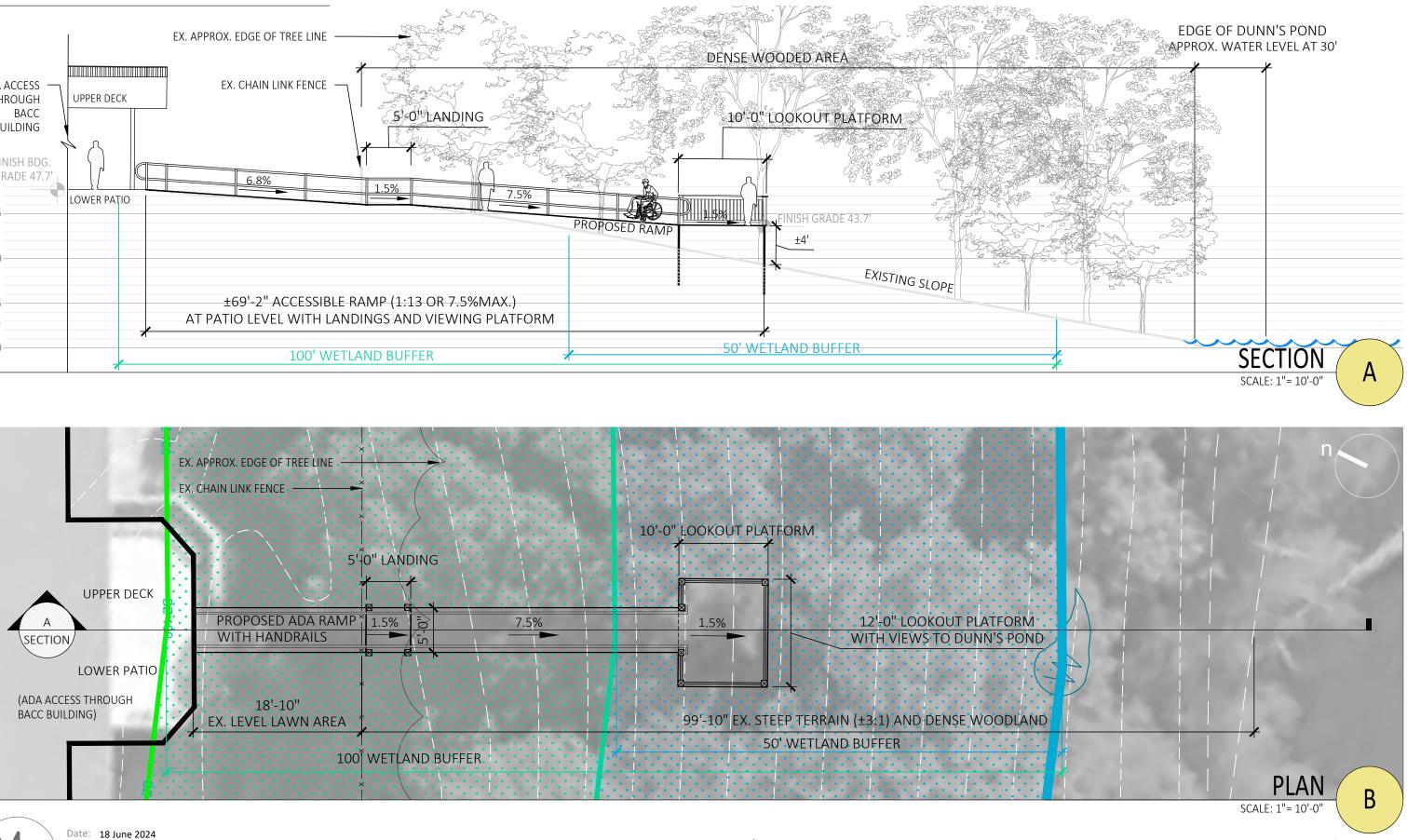


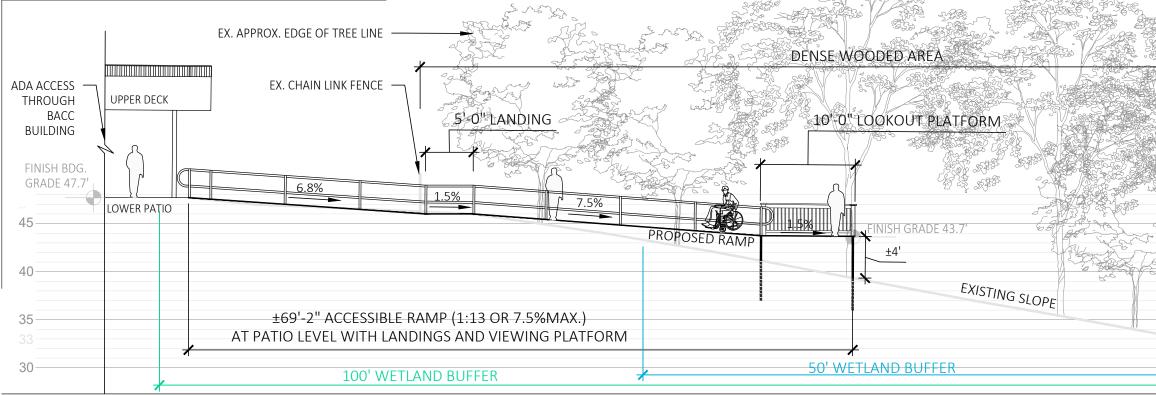
### 825 Falmouth Rd, Hyannis, MA 02601

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SECTION STUDY 2 | SLOPE FROM BARNSTABLE ADULT COMMUNITY CENTER TO DUNN'S POND





### 825 Falmouth Rd, Hyannis, MA 02601

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## APPENDIX D

## Site Narrative and Development Concepts Around Proposed Infill



# Barnstable Adult Community Cente Site Master Plan Narrative





### Prepared for: Leonardi Aray Architects

Prepared on: June 21, 2024

Prepared by: m3 Land Studio LLC

Landscape Architecture + Land Planning

### INTRODUCTION

#### **OBJECTIVE**

The Barnstable Adult Community Center (BACC) Master Plan aims to evaluate opportunities for infill development of affordable housing for seniors and enhance recreational prospects and connectivity on Example of BMP (Best Management Practices), the town's properties with the adjacent LID Barnstable Public Schools properties.

During the various meetings conducted with moist conditions, but the porous path material community and the participation, we have heard a consensus for:

- Walking trails •
- Bocce courts
- Outdoor Pavilion
- Seating spaces to rest, eat/exercise
- Water management integrated into the **High School curriculum**
- LID, BMP. sustainable and environmentally sensitive interventions
- Amphitheater for High school performances
- Multigenerational activities to promote BACC seniors' connection with the student population

"Wisdom is not a product of schooling but of the lifelong attempt to acquire it."

- Albert Finstein

(Low Impact Development), and environmentally sensitive interventions: this path across a wooded area not only respects the native vegetation adapted to both dry and stakeholders' allows for stormwater to infiltrate, filter through the plants and restore the groundwater table. Note the path becomes a raised platform across the woodland to protect tree roots. Image courtesy of Andrew van Egmond and Landzine Awards 2021.



PAGE 2

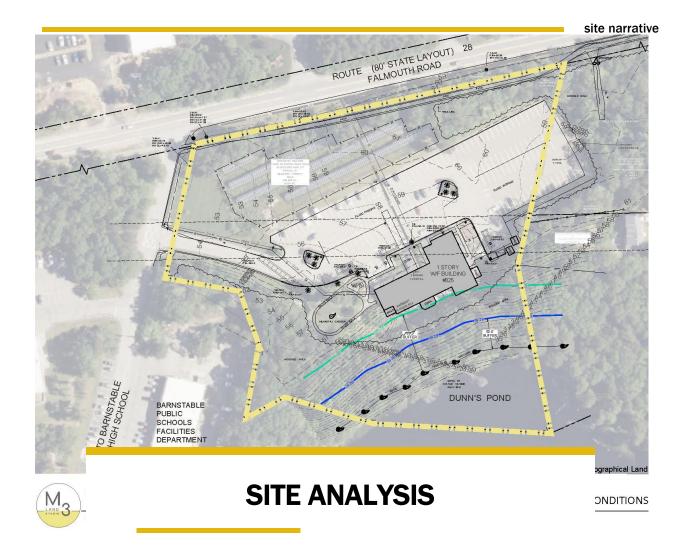
The site development goals for the BACC properties are not just about promoting local outdoor community recreation, integration, and prosperity. They are about enriching lives through service, education, recreation, and fitness. The center already offers a variety of programs, including brown bag lunches, fuel assistance, health insurance counseling, and Meals on Wheels. By extending these activities to the outdoor environment, we aim to provide a secondary layer of health: immersing in the beautiful outdoor space. It's a place where seniors can lead active, stimulating, and rewarding lives.

We are committed to addressing housing needs in innovative and collaborative ways while being mindful of the existing environment, particularly Dunn's Pond and its surrounding densely wooded wetlands. These approaches support healthy aging and balance the requirements for outdoor recreation with the need to manage natural resources that provide health benefits to all of us.

For this project, we have conducted *environmental and cultural site analysis* and developed *five site design concepts* based on five architectural infill studies. Below is a summary of each concept's open space and recreation narrative. Lastly, due to an overwhelming request for universal accessibility to/around the pond, we have provided *two plan and section grading studies* illustrating an accessible lookout platform for various community and recreation uses. We hope to extend accessibility to Dunn's Pond with minimal disturbance to its ecosystem.



Figure 1: Fire pit gathering space near a pond provides recreational activities for all.



The BACC is a 20,604-square-foot facility constructed in 1998. It is in the Village of Hyannis, with a frontage on Falmouth Road/Route 28 and Oakland Road. The Town also owns an adjoining 1.58-acre property to the north and a 4.85-acre property to the south under the stewardship of the Conservation Commission, which primarily contains Dunn's Pond, a 5.4-acre freshwater pond.

pond. The parking lot consists of a total of 213 spaces, which are all used during voting and significant events. The property's frontage is developed with a ground-

mounted solar array, built in 2012 with the cooperation of Cape & Vineyard Electric Cooperative.

Site Analysis and Assessment of this property is critical given the rich ecological diversity at Dunn's Pond, the physical constraints in the site's topography, and the current building side erosion due to user need for pedestrian connectivity around the BACC building and towards the adjacent school facilities.



Figure 2: Observed desired lines from students/BACC users crossing through the BACC parking lot



Figure 3: Side erosion occurs due to desired connections from the parking lot to the back of BACC terrace and lawn area or from the lawn area to the parking lot. It's important to note that there is currently no formal or informal trail toward Dunn's Pond, making it challenging to reach.

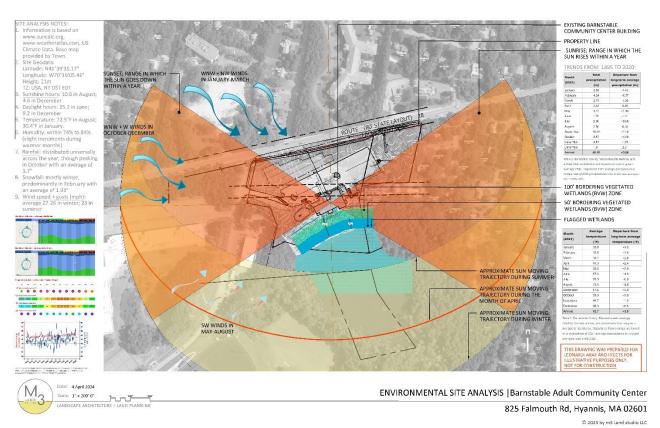


Figure 4: Environmental Site Analysis of the BACC. Refer to the appendix for the 11x17 plan drawing, to scale.

The BACC is located only 2 miles from the Barnstable Municipal Airport. This has usefully provided a handful of weather data and statistical historical information. For this project, we have illustrated the leading environmental aspects as follows and illustrated in Figure 4 above:

- The back of the BACC building faces the south, sunny side, and is partially shaded by the dense and mature trees
- The highest measured temperature is 99°F in May
- The lowest measured temperature is 32°F in May
- The south-west prevailing winds provide a breeze in early to midsummer (May through August)
- The west-north and north-west prevailing winds occur in autumn and winter, respectively, with a maximum of 27 miles per hour
- Rainfall maximum average is 3.7" in October
- There are very few shade trees among the 240+/- parking lot spaces, so the asphalt paving gets hot in the summer.
- The 100' Bordering Vegetated Wetland Zone (BVW) reaches the outdoor edge of the BACC building.

#### site narrative

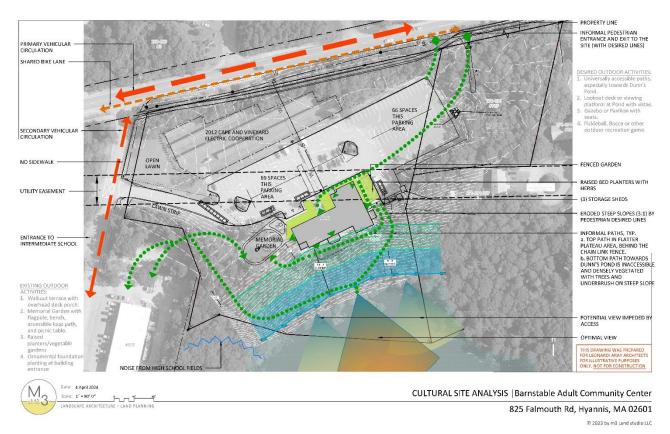


Figure 5: Cultural Site Analysis of the BACC. Refer to the appendix for the 11x17 plan drawing, to scale.

Figure 5 above illustrates the following cultural observations during the site visit on November 11, 2023:

- Vehicular traffic (shown in red dashed lines) "Route 28" or "Falmouth Road" is busy with peak hours at school drop-off or pick-up times. Community members and residents mentioned they do not leave or plan to arrive at their homes/BACC between 1:30-3 PM
- There is a separate paved bikeway along Route 28 (shown in orange short, dashed line) with a grass strip edge divider from the busy road:



Figure 6: Paved Bikeway along Route 28/Falmouth Road

- The northeast corner of the site shows "desired lines;" these are eroded, preferred informal shortcut paths to the BACC and the High School premises. See Figure 2, above.
- We have represented the formal and informal pedestrian circulation in green dotted lines. It is important to note that there are currently no sidewalks, curb cuts, or crosswalks connecting the schools or the BACC to the residences and institutional buildings north of Route 28.
- There are only 3 Accessible parking spaces.
- The community members mentioned the noise from the High school fields during a significant game.
- It appears that the school uses the pond for kayak/boat activities, but there was no visible boat launching point from the BACC or close to the boat storage school facilities.
- The best views of the pond are to the south, perpendicular to the BACC, as shown by the cones in Figure 5 and recorded in Figure 7 below:



*Figure 7: Panoramic view from the edge of Dunn's Pond, with BACC behind the viewer.* 

# Site

# Development

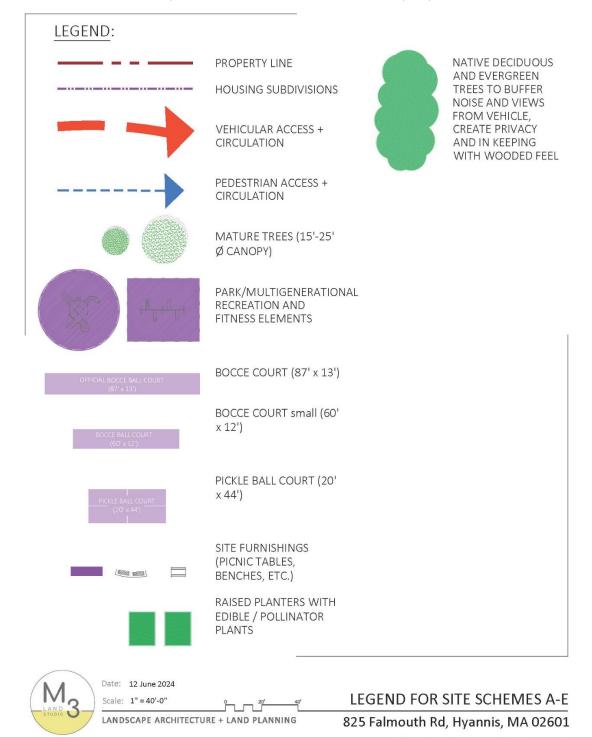
# Concepts

**Around Proposed** 

Infill

The following Site Conceptual Diagrams should be reviewed with the description of the proposed residential Infill scenarios.

Please note that the courts shown (Bocce and Pickle Ball) in each site scheme are meant to provide known proportions of outdoor space, not a definitive type and number of recreational courts. These Concepts are only diagrammatical to provide an idea of the outdoor space left after each residential proposed scenario.



*Figure 8: Please refer to this legend for the descriptive narratives per each of the five schemes below.* 

#### Site 1 | Scheme A



Figure 9: Site 1 | Scheme A. See Appendix for 11x17 scaled plan drawing.

The Single Family or Duplex Residence Scheme A is proposed for Site 1, located at the northeastern corner of the property, next to the single-family residence along "Mark's Path" road and cul-de-sac (east of the property line). This proposal suggests creating equally subdivided lots of approximately 5,500 SF (square feet) per single-family house/duplex residence, as shown in Figure 9. This smaller subdivision of lot lines will allow an easement from the new roundabout between two new properties and northeast towards a wooded pocket park for neighborhood residents. The park could include picnic tables and recreational stations suitable for various ages, such as play equipment for children and exercise equipment for adults, placed among the trees and along the pedestrian trails. This scheme would provide vehicular and pedestrian connections to "Mark's Path" road and the BACC.



Figure 10 a+b: examples of recreational stations suitable for various ages: left image for adults and right image for 5-12 year olds.

#### Site 1 | Scheme B



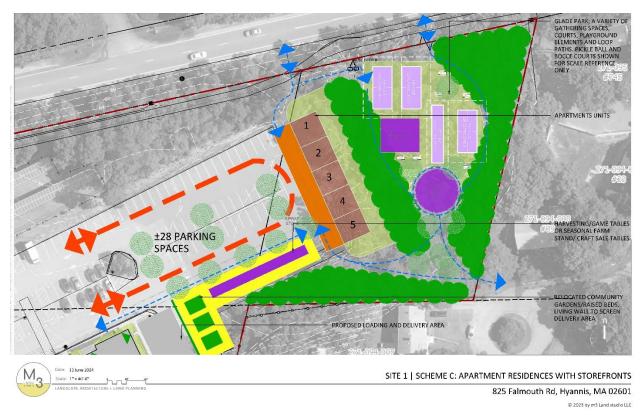
Figure 11: Site 1 | Scheme B. See Appendix for 11x17 scaled plan drawing.

The Townhouse Residence Scheme B is proposed at the northeastern corner of the property ("Site 1"). The landscape design encourages continuity and community with a tree-lined central area for recreational activities, surrounded by three townhouse buildings (refer to Figure 11). Both vehicular and pedestrian traffic are focused internally, with pedestrian walkways at all four corners of the proposed residential layout. The linear park includes two Bocce courts and a plaza for social gatherings. This area could feature game tables, benches, and labyrinth paving to cater to residents, community center users, and students with diverse interests.



Figure 12 a+b: examples of linear recreational parks and simple grass and stone labyrinths suitable for all ages.

#### Site 1 | Scheme C



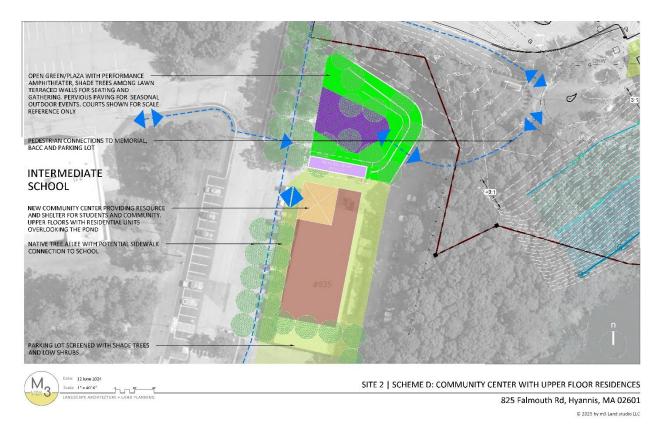
*Figure 13: Site 1 | Scheme C. See Appendix for 11x17 scaled plan drawing.* 

Apartment Scheme C on Site 1 introduces a denser residential development consisting of units 1-5, as shown in Figure 13 above. This layout preserves the parking lot for occasional overflow. It could incorporate extra parking underneath the new buildings, allowing recreational activities to be spread out behind the buildings and into the woods. Here, a clearing can provide space for courts, a small playground, and exercise stations among trails to connect the BACC and proposed homes in the north-south and east-west directions. Vehicular traffic would remain the same, with the addition of shade trees and the expansion of planting raised beds and social areas for potential Farmer's Market or Arts and Crafts fair, as indicated in yellow on the plan diagram.



Figure 14 a+b: examples of multi-generational recreation; raised planting beds and playground. Image of a Farmer's Market stand

### Site 2 | Scheme D



*Figure 15: Site 2 | Scheme D. See Appendix for 11x17 scaled plan drawing.* 

Apartment Scheme D on Site 2 proposes redeveloping the existing school facility into a new building that would be a gateway to the school neighborhood. This building could include a community center on the first floor and residential apartments on the upper floors, offering great views of Dunn's Pond. The site is already used as a pedestrian cut-through from the north to the southern school buildings so that the design would formalize the desired pathways with tree-lined sidewalks. The topography here is less steep than on the east of the BACC building, so universally accessible connections to the BACC's memorial garden and parking lot would require less construction operation for ADA compliance. An outdoor amphitheater with shade trees and a permeable center plaza (shown in purple in Figure 15) would provide the existing community with a multigenerational space for multicultural events. Further south, a former bus yard could be transformed into a permeable parking lot with lined tree boxes and bioswales to collect and treat stormwater before it reaches Dunn's Pond. This design concept would preserve most of the pond's woodland and add ecological value to the area by implementing native vegetation and low-impact developments with LEED-certified materials in landscape, civil engineering, and architectural developments.





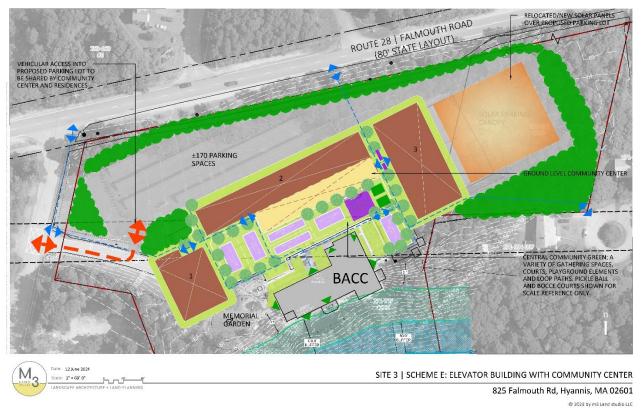




Figure 16 a+b top images: examples of low-impact developments for amphitheaters using grass or decking to allow for rainwater to filter down and cool before reaching Dunn's Pond. Figure 14 c+d+e+f: examples of stormwater management using tree boxes and bio-retention swales



#### Site 3 | Scheme E



*Figure 17: Site 3 | Scheme E. See Appendix for 11x17 scaled plan drawing.* 

Scheme E proposes a high-density central housing development around the BACC. Three buildings and the BACC enclose a recreational courtyard consisting of courts, tree-lined pathways, a playground, game and café tables (see Figure 17). Vehicular access, circulation, and parking are outside, facing Route 28 traffic. A solar canopy over the east side parking area replaces the array of solar panels. This option got a lot of pushback from the community at the public meeting, mainly because the accessible parking spaces are now moved further away from the entrance to the BACC.



Figure 18 a+b: examples of recreational elements suitable for this scheme and all ages.

### APPENDIX E

## Alternatives

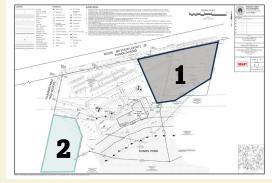
# (presented at Community Meeting on May 22, 2024)





# **BACC** Aerial Site Photograph

BARNSTABLE, MA





# SITE 1



# **POTENTIAL SITES**

### BARNSTABLE, MA

MAY 22, 2024



1.5-2 acres

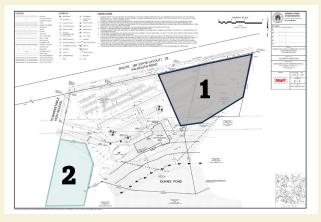
# SITE 2 1.5 acres

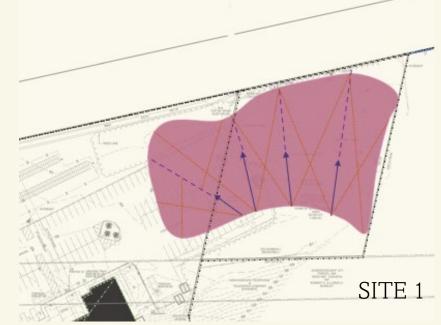


## **BACC RESIDENCIES**

HOUSING SCENARIOS A, B, C *SITE:* 1.5 – 2 *Acres* (+/- 65,000 SF - 87,000 SF) SCENARIO D SITE: 1.5 Acres BARNSTABLE, MA

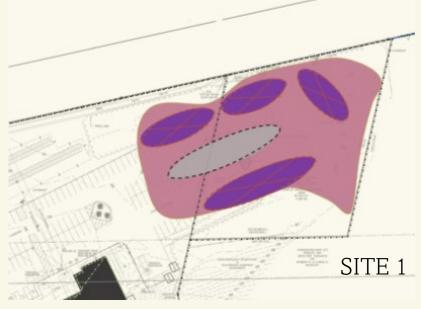
### **EXISTING BACC SITE PLAN**





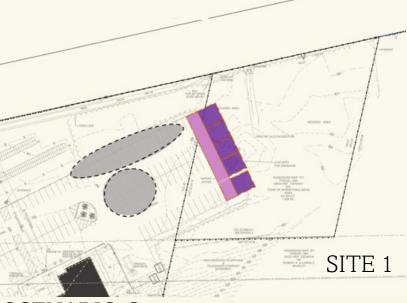
SCENARIO A : Low Density Residential SITE: 1.5-2 acres PARCELS (5): 10,000 - 14,000SF (80 x 140)

HOUSES (5): Duplexes

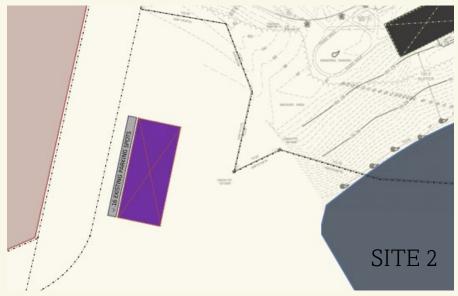


### SCENARIO B : Townhouse style

SITE: 1.5-2 acres TOWNHOMES: 900 - 1000SF (40 x 20) each, 1 or 2 stories. TOTAL UNITS: 18-22



SCENARIO C : 30-36 units with ground floor community room(s) SITE: 1.5-2 acres UNITS (30-36): 1BR & 2BR **BUILDING: 4-Story** 



upper floor residencies **BUILDING: 5-Story** 

# SCENARIO D : Community center (+/- 10,000 SF) with SITE: 1.5 acres, +/- 65,000SF UNITS (25-30): 1BR, 2BR, few 3BR

SITE 3 w/ BACC

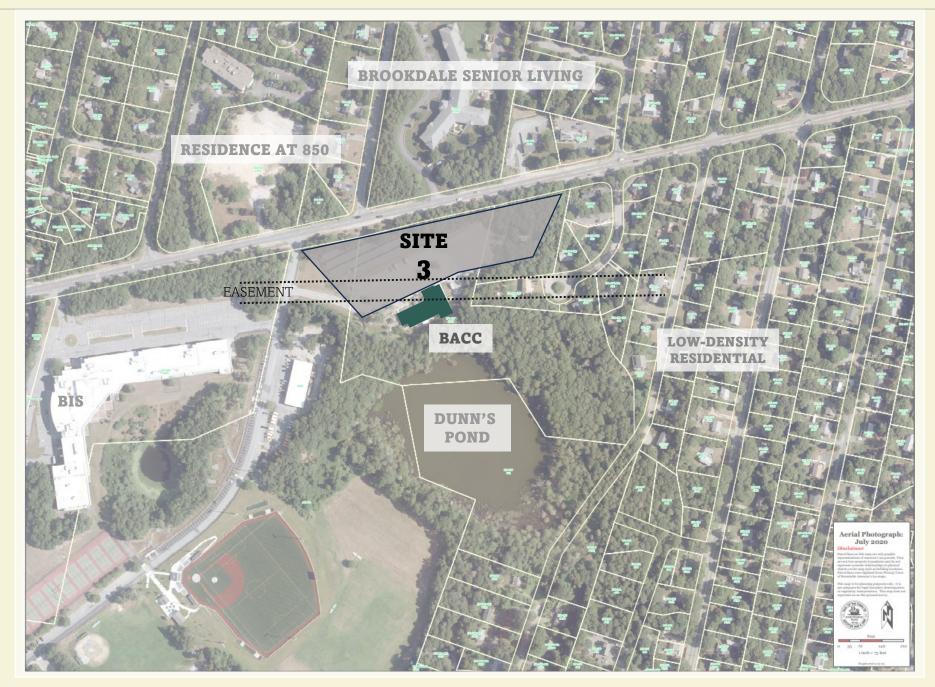
5 – 5.5 acres



# **POTENTIAL SITES**

BARNSTABLE, MA

MAY 22, 2024



BASE PLAN FOR SCENARIOS X & Y

# BACC .5 acres

# SITE 1



# **POTENTIAL SITES**

### BARNSTABLE, MA

MAY 22, 2024



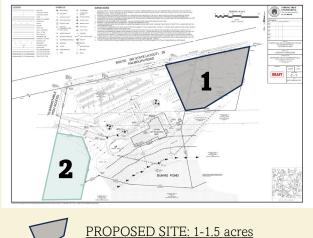
1.5-2 acres

# SITE 2 1.5 acres



# **SCENARIO A**

5 DUPLEXES (10 Units)

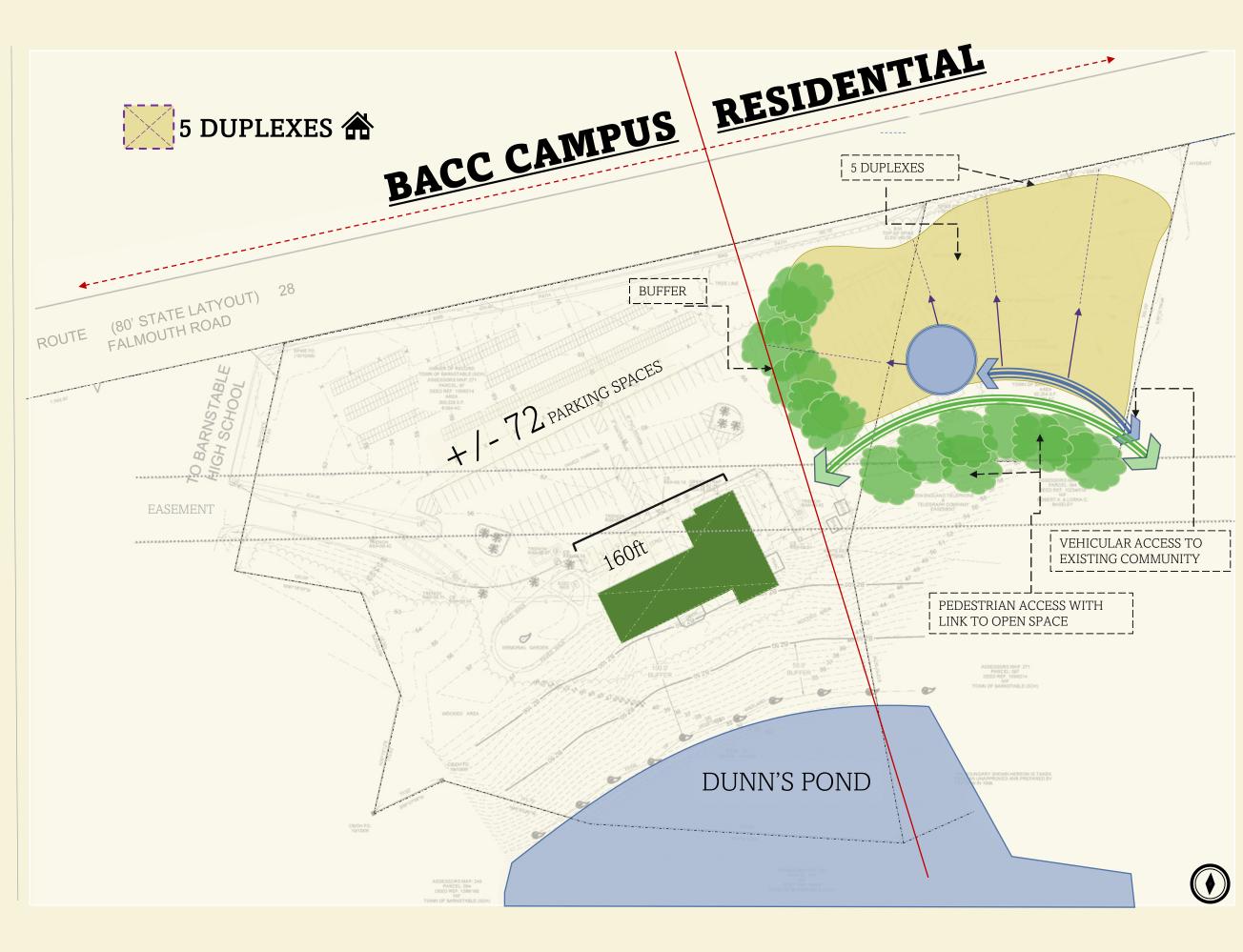


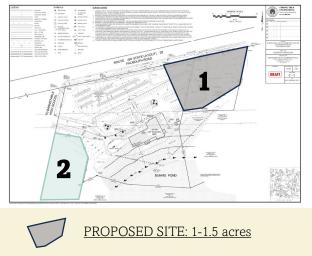


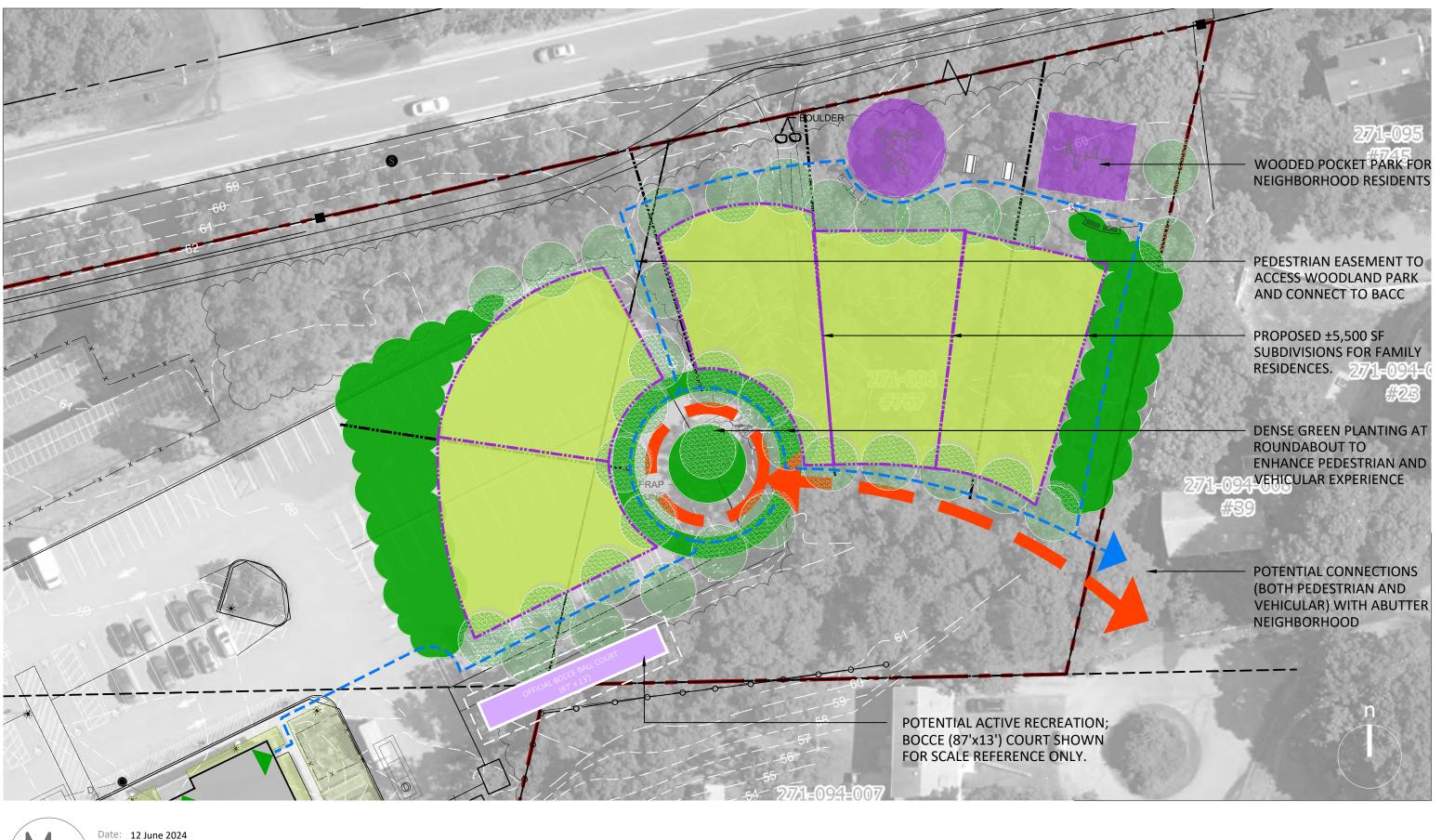


# **SCENARIO A**

### 5 DUPLEXES (10 Units)







Ma Scale: 1" = 40'-0"

LANDSCAPE ARCHITECTURE + LAND PLANNING

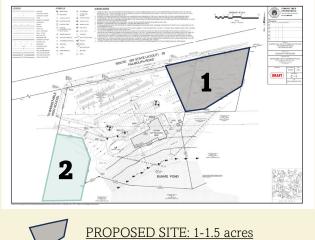
### SITE 1 | Scheme A: Single Family Residences 825 Falmouth Rd, Hyannis, MA 02601

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# **SCENARIO B**

*TOWNHOMES 18-22 UNITS* 

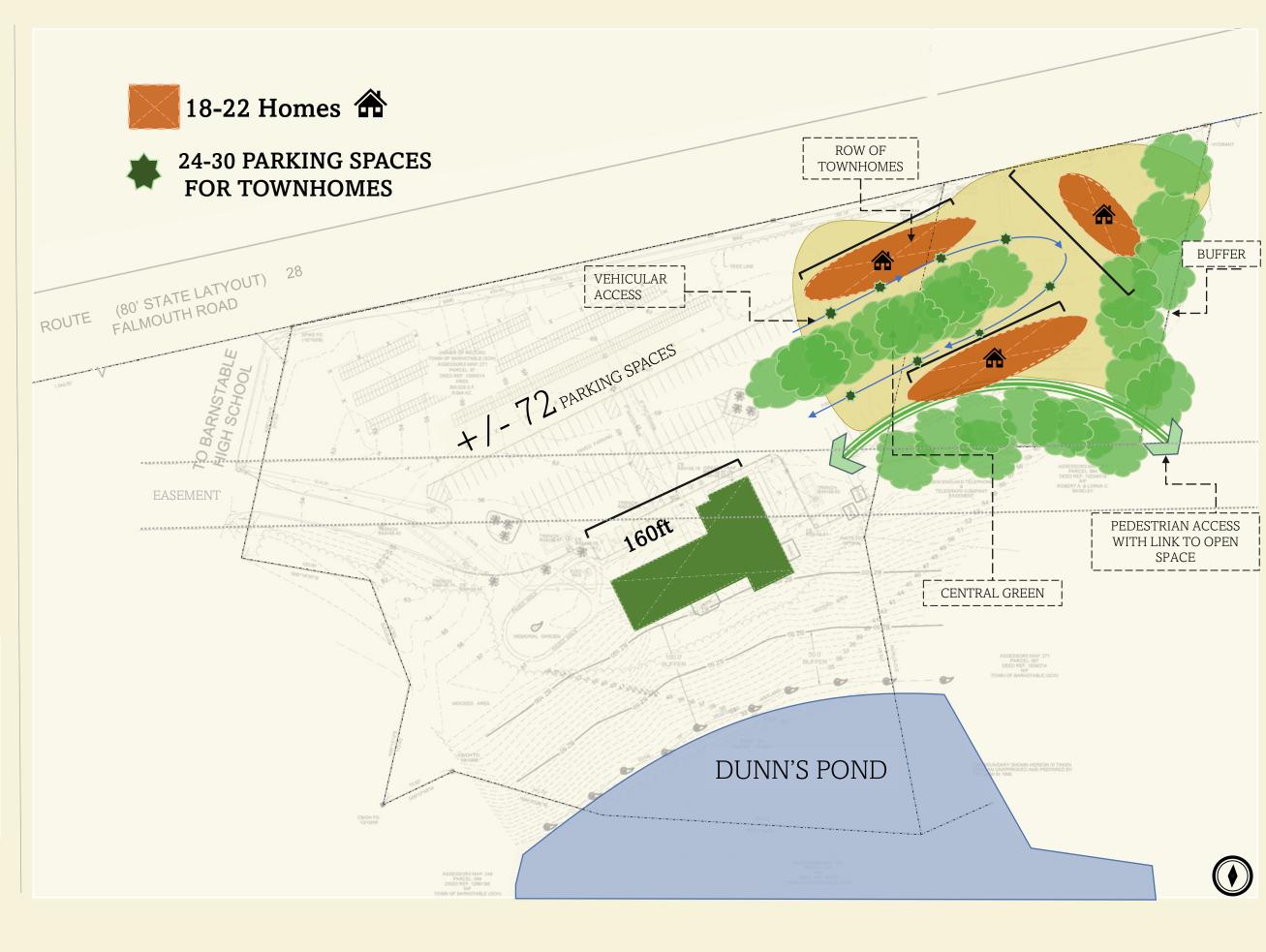


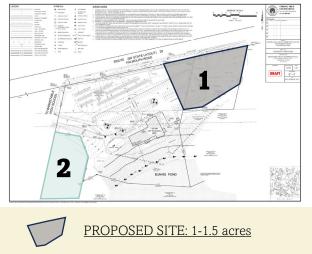


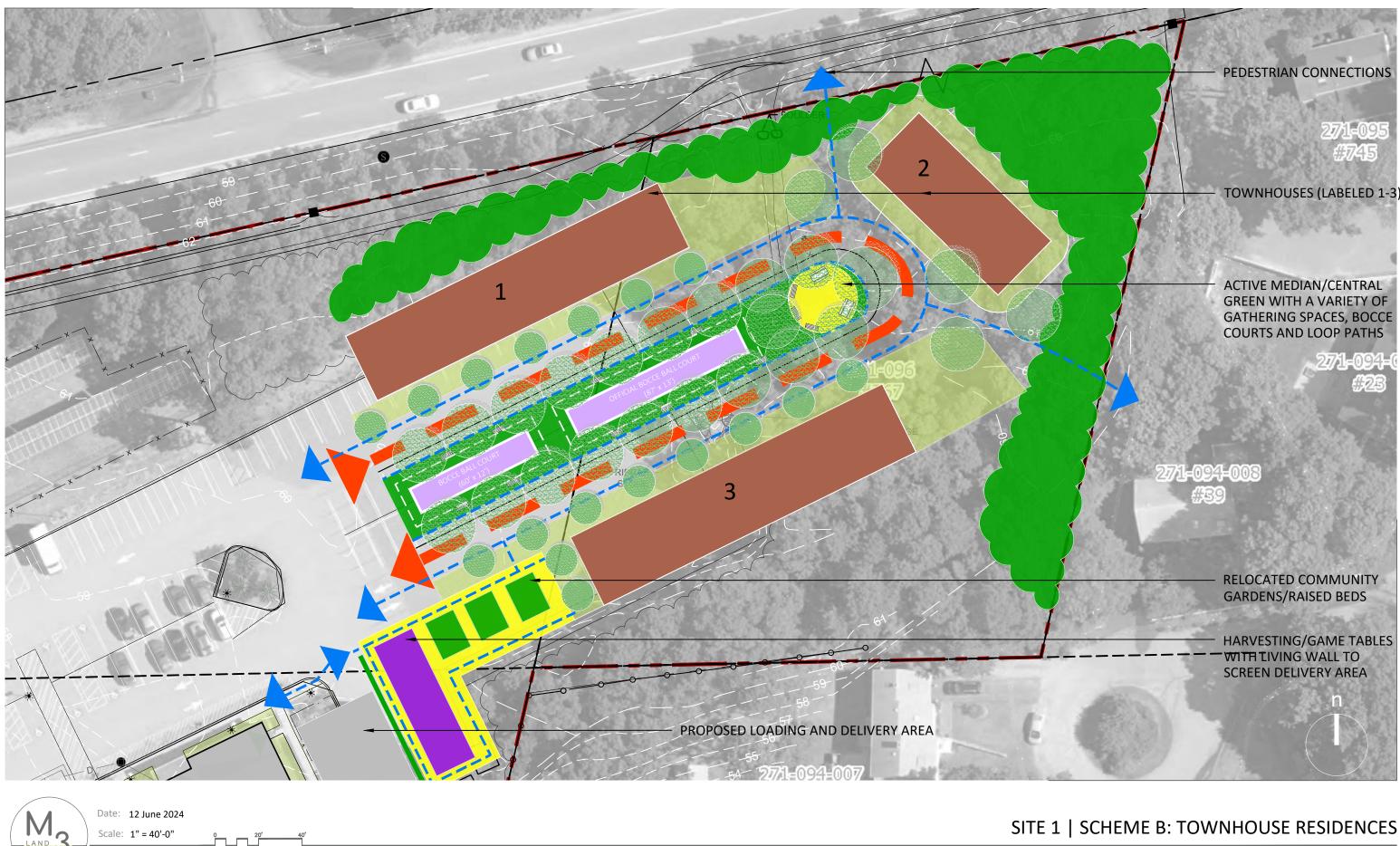


## **SCENARIO B**

# *TOWNHOMES 18-22 UNITS*







LANDSCAPE ARCHITECTURE + LAND PLANNING

Scale: 1" = 40'-0"

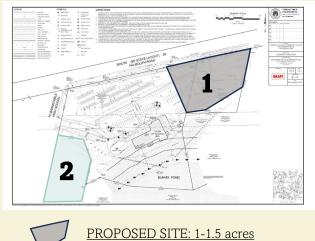
### SITE 1 | SCHEME B: TOWNHOUSE RESIDENCES 825 Falmouth Rd, Hyannis, MA 02601

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# **SCENARIO C**

4-STORY BUILDING w/ COMMUNITY CENTER



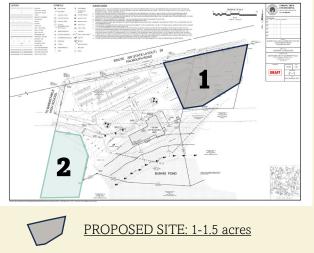




# **SCENARIO C**

4-STORY BUILDING w/ COMMUNITY CENTER









Ma Date: 12 June 2024 Scale: 1" = 40'-0"

LANDSCAPE ARCHITECTURE + LAND PLANNING

GLADE PARK; A VARIETY OF GATHERING SPACES, COURTS, PLAYGROUND ELEMENTS AND LOOP PATHS. PICKLE BALL AND BOCCE COURTS SHOWN FOR SCALE REFERENCE ONLY.

**APARTMENTS UNITS** 

HARVESTING/GAME TABLES OR SEASONAL FARM STAND/ CRAFT SALE TABLES

> **RELOCATED COMMUNITY** GARDENS/RAISED BEDS. LIVING WALL TO SCREEN DELIVERY AREA

### SITE 1 | SCHEME C: APARTMENT RESIDENCES WITH STOREFRONTS

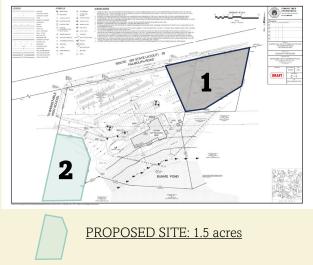
825 Falmouth Rd, Hyannis, MA 02601

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# *COMMUNITY CENTER w/ RESIDENCE*

PROGRAMATIC CONNECTIONS TO COMMUNITY









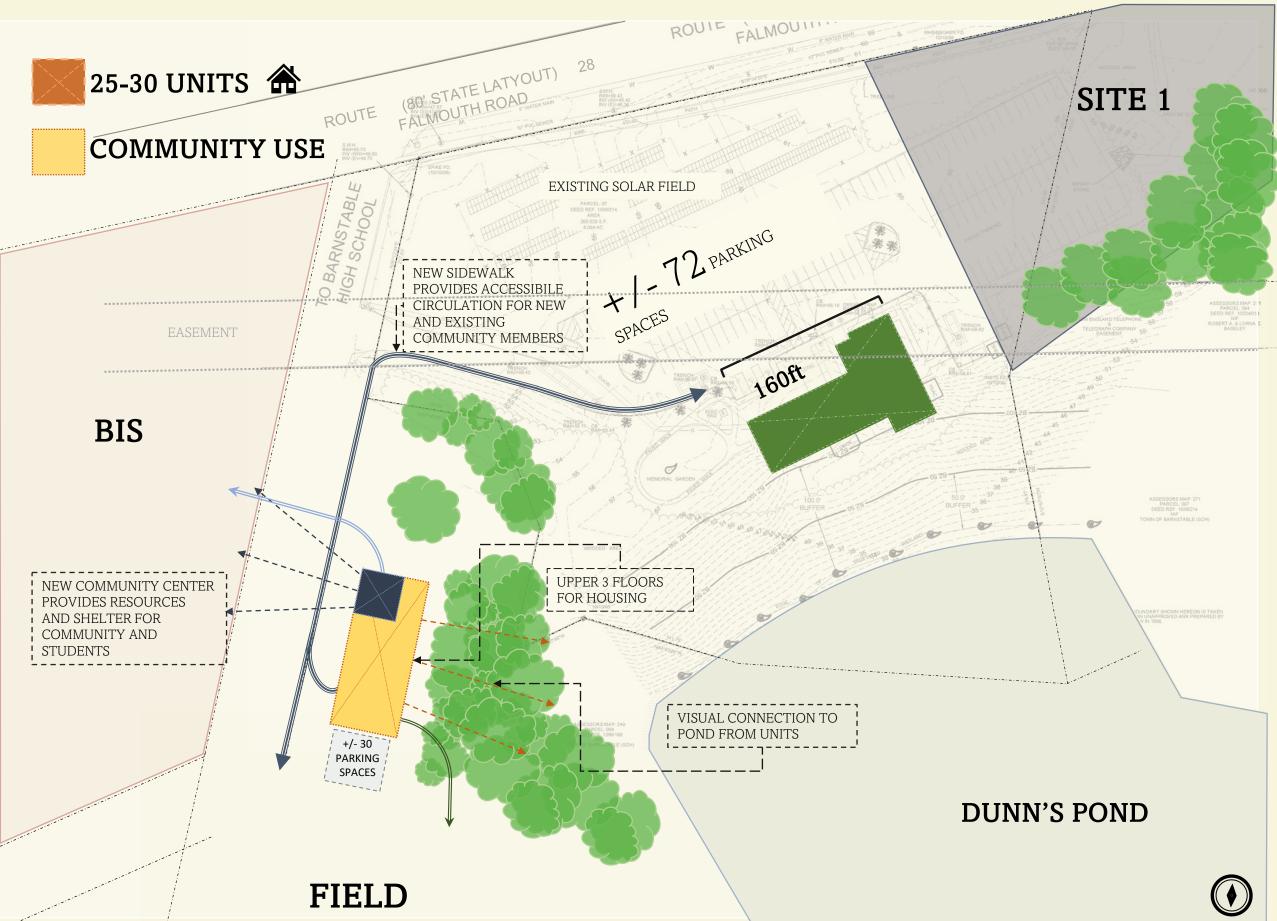
#### PROGRAMATIC CONNECTIONS TO COMMUNITY

+/- 10,000SF OF COMMUNITY SPACE or YOUTH CENTER @ GROUND LEVEL

### LANDMARK ELEMENT

SIDEWALK TO BACC





PROPOSED SITE: 1.5 acres



OPEN GREEN/PLAZA WITH PERFORMANCE AMPHITHEATER, SHADE TREES AMONG LAWN TERRACED WALLS FOR SEATING AND GATHERING. PERVIOUS PAVING FOR SEASONAL OUTDOOR EVENTS. COURTS SHOWN FOR SCALE **REFERENCE ONLY** 

PEDESTRIAN CONNECTIONS TO MEMORIAL, BACC AND PARKING LOT

### INTERMEDIATE SCHOOL

NEW COMMUNITY CENTER PROVIDING RESOURCE AND SHELTER FOR STUDENTS AND COMMUNITY. UPPER FLOORS WITH RESIDENTIAL UNITS OVERLOOKING THE POND

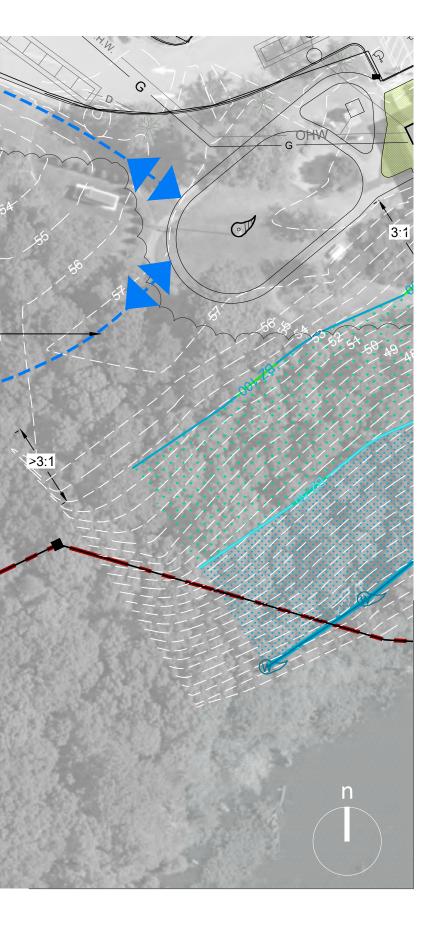
NATIVE TREE ALLEE WITH POTENTIAL SIDEWALK CONNECTION TO SCHOOL

PARKING LOT SCREENED WITH SHADE TREES AND LOW SHRUBS



Date: 12 June 2024 Scale: 1" = 40'-0"

LANDSCAPE ARCHITECTURE + LAND PLANNING



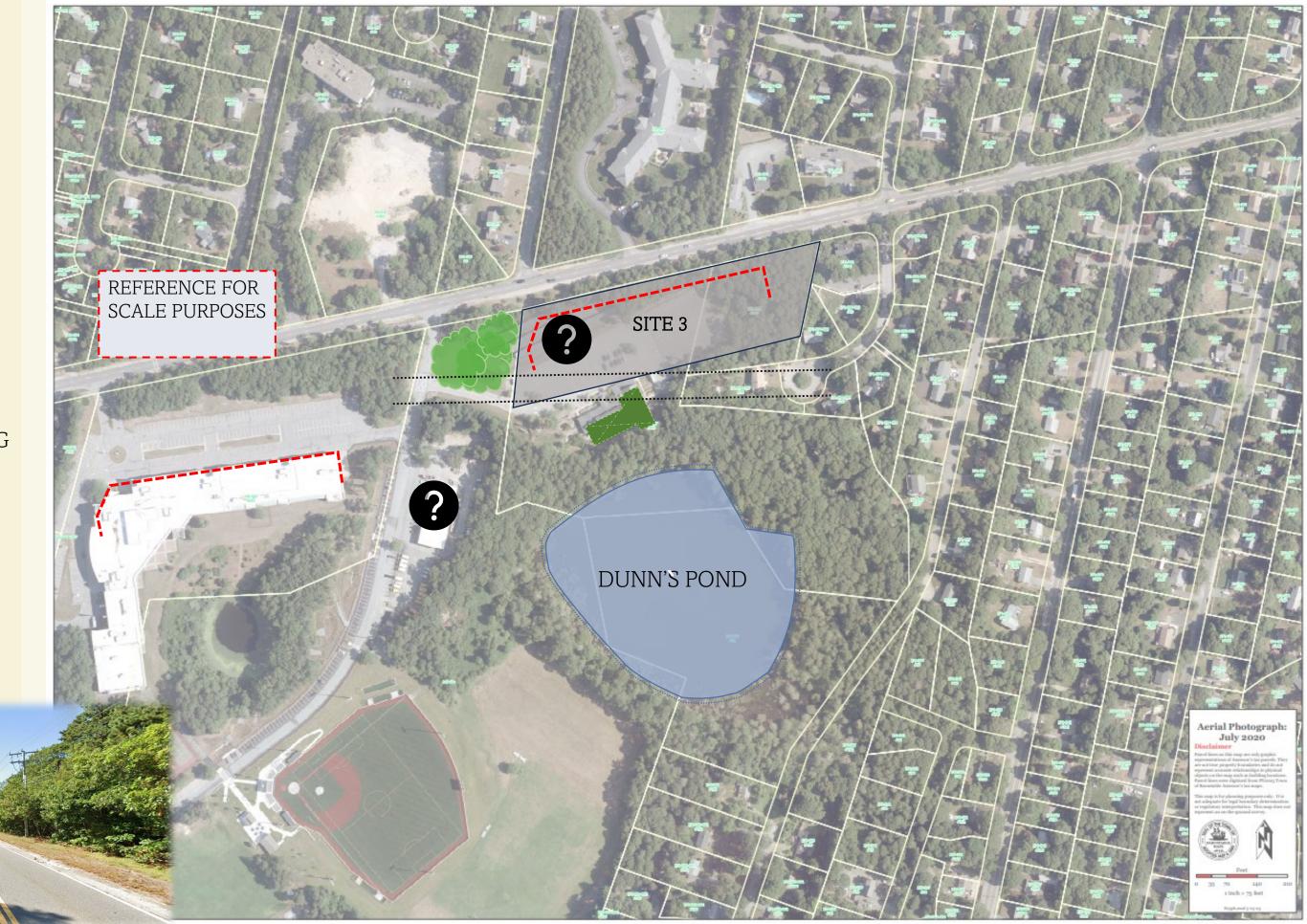
### SITE 2 | SCHEME D: COMMUNITY CENTER WITH UPPER FLOOR RESIDENCES 825 Falmouth Rd, Hyannis, MA 02601

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*RELOCATE SOLAR PANELS* 

SINGLE & LARGE COMPACT DEVELOPMENT FACING FALMOUTH ROAD





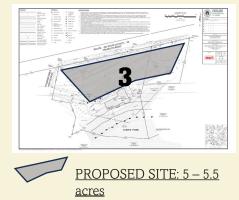
SCENARIOS X&Y PROPOSE THE RELOCATION OF THE EXISTING SOLAR FIELD TO A PARKING CANOPY LIKE THE ONE SHOWN



COMMUNITY HOUSING

60-80 UNITS

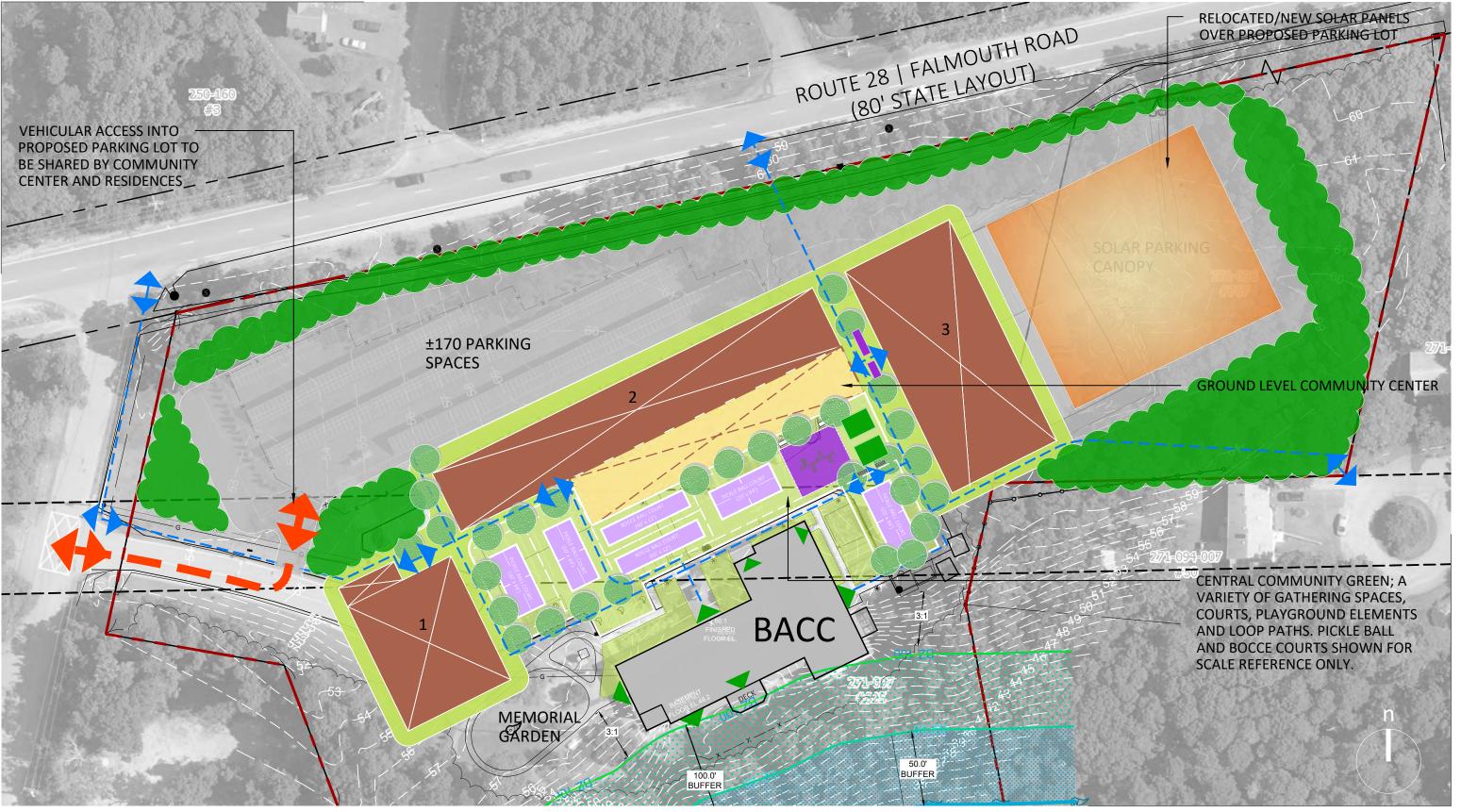














### SITE 3 | SCHEME E: ELEVATOR BUILDING WITH COMMUNITY CENTER 825 Falmouth Rd, Hyannis, MA 02601

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