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## MEMORANDUM

TO: Christian Capizzo--Partridge, Snow,  
and Hahn  
DATE: April 10, 2020

FROM: Payson Whitney, PE  
ESS Project No.: P317-000

SUBJECT: **Technical Peer Review, Segar Cove Aquaculture Permit Application**

COPY TO:

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ESS provides Partridge Snow & Hahn LLP (PSH) with this memorandum describing the findings of a technical peer review of the application materials for a proposed aquaculture lease in Segar Cove, South Kingstown, Rhode Island by Mr. Perry Raso. ESS reviewed the CRMC file at the offices of the CRMC on March 7, 2018 and again in December 2019. A proposed reconfiguration of the area and additional information was submitted to CRMC by Mr. Raso on March 15, 2018. On November 18, 2019, Mr. Raso submitted a collection of photographs of Segar Cove taken in the summer and fall of 2019. ESS site visits to observe conditions in Potter Pond were made on June 29, 2018 and February 10, 2020. The key findings of this review are as follows:

1. The addition of the proposed 3 acre aquaculture facility to Potter Pond, when combined with the other existing aquaculture facility, does not exceed the 5% coastal pond aquaculture occupation threshold specified in Section 1.3.1K [formerly 300.11] of CRMC's regulations.
2. Mr. Raso moved the proposed lease area to the north and the east of the location in the original December 27, 2017 application as noted in the March 15, 2018 revision.
3. The proposed 3 acre aquaculture facility is proposed to be approximately 10 to 65 feet from the shoreline along the eastern boundary of the proposed lease.
4. The position of the proposed 3 acre aquaculture facility near the shoreline would interfere with riparian access to approximately 590 feet of shoreline along Segar Cove with the original proposed configuration. The March 2018 proposed layout would interfere with riparian access to approximately 910 feet of shoreline.
5. The presence of the proposed 3 acre aquaculture facility in Segar Cove would eliminate approximately 10.0 acres from the 30.3 acre watershed presently available to waterskiing and towed watersports when the 200 foot buffer from stationary objects required by the South Kingstown Boats and Waterways Ordinance is applied to the perimeter of the 3 acre layout. This represents an approximately 33% reduction in the Segar Cove watershed area available for these uses. Refer to Figures 3 and 4B. It should also be noted that the buffers for the two docks near the north end of Segar Cove effectively block towed watersports access to the north end of Segar Cove from the south and vice versa, which makes the north end of Segar Cove functionally not usable for towed watersports and further reduces the area available by another approximately 2.5 acres.



6. In the 329 acre Potter Pond, there are only two areas suitable and used for waterskiing and towed watersports because of depth limitations—Segar Cove and the “northern basin”. Segar Cove is approximately 53.5 acres in size and the northern basin is approximately 67.3 acres in size. Of these 120.8 acres, the available watershed for towed watersports is approximately 79.1 acres per the Ordinance. The 10.0 acre reduction associated with the proposed aquaculture facility represents an approximately 12.6 percent reduction in the areas suitable for waterskiing and towed watersports in the entire 329 acres Potter Pond. Refer to Figures 1B and 4B. These estimates do not include the presence of the aquaculture support vessel (refer to photo in Section 1.6.2.2 of this memo) that would service the facility by mooring at various locations around the aquaculture facility, which would further reduce the available watershed beyond the estimates stated above.
7. By reducing the available watershed for waterskiing and towed watersports from approximately 30.3 acres of Segar Cove to approximately 20.3 acres with the presence of the proposed aquaculture facility, the area available for boating, fishing, and swimming (all protected public trust interests) is also compressed and reduced, thus infringing on these protected public trust interests in Potter Pond.
8. The presence of the proposed aquaculture facility would also present potential public safety/navigational safety issues and would be a new commercial facility located adjacent to residences.
9. The collection of photographs submitted by Mr. Raso in November 2019, while showing only limited vessel traffic at the site of the proposed aquaculture facility, only show a single point in time each day and the photographs were typically taken around midday when vessel operators are likely to be off the water for lunch.
10. The sizes of the existing Potter Pond aquaculture lease and the facility itself appear to have changed with time and at times substantially enlarged beyond the area for which Assents were issued by CRMC.

#### **1.0 2017 CRMC APPLICATION FOR SEGAR COVE LOCATION**

ESS reviewed the application materials submitted by Mr. Perry Raso (CRMC 2017-12-086) to develop a proposed aquaculture facility on a requested lease in Segar Cove, which is part of Potter Pond in South Kingstown, RI. This application was submitted by Mr. Raso on December 27, 2017, and initially requested authorization to establish and operate a 3 acre aquaculture facility (215 feet wide by 620 feet long) in the northeast portion of Segar Cove. A subsequent modification submitted by Mr. Raso on March 15, 2018 proposes a new 3 acre configuration. The coordinates submitted for the western boundary of the revised configuration appear to be incorrect based on our mapping performed in early 2019. It is not known to ESS if revised coordinates have since been submitted to CRMC.

The application states that water depths in the proposed aquaculture area are 5 to 7 feet and that the boundaries of the area requested are 20 to 40 feet from the shoreline. Within the aquaculture area, the application states the following will be placed in Segar Cove for growing shellfish:

- 12 rows of 50 submerged lantern nets in the westernmost portion of the area; and

- 12 rows of 30 floating cages in the easternmost portion of the area, each with 2 or 3 black plastic floats that will keep the top of the cage 5 inches above the water line

The application states the requested area is not located near navigation channels, is not used for commercial or recreational shellfishing, is not near any dock, and is not located in an area where eelgrass or aquatic vegetation is present.

The application states that maintenance activities will be limited to the hours of 9AM to 3PM during November 15 to March 15. The application does not appear to state the hours when harvesting or activities related to nurturing the growing bay scallops will take place.

In performing our review, ESS considered relevant parts of the South Kingstown Boats and Waterways Ordinance, the South Kingstown Harbor Management Plan, and CRMC requirements and regulations. ESS reviewed United States Coast Guard regulations, but did not find any relevant to the application. In addition, ESS evaluated the constraints a permitted aquaculture may impose upon recreational users of the waters of Segar Cove. ESS offers the following comments on the application for consideration.

### **1.1 Contents of the Application**

ESS reviewed the application contents, including the December 27, 2017 and March 15, 2018 applications (collectively referred to as the Application herein) against the CRMC State Assent Aquaculture Application Instructions (Rev. 01/17). ESS found the following apparent deficiencies in the CRMC Aquaculture Application:

1. The Application for State Assent and the “Farm Plan View” submitted on December 27, 2017 includes coordinates for the southeast corner of the lease that vary from stated coordinates referenced in three additional portions of the application.
2. The “Farm Plan View” includes measurements of 215’ by 620’ that ESS measured to be 3.06 acres that do not appear to correspond with the coordinates provided in the application.
3. Site Plans submitted in the December 2017 application offer different geographic coordinates than those presented in a RIDEM Fish & Wildlife GIS figure and a hand-drawn figure. While the RIDEM figure depicted a 3.0 acre proposed lease area, the hand-drawn figure includes coordinates for a 1.66 acre area.
4. Site Plans submitted in the December 2017 application filing did not include the nearby shoreline and the requisite distances from the proposed site to the nearest shoreline at the scale depicted.
5. The hand drawn “side view” provided of the proposed aquaculture did not include the full cross-sectional area to be used in the 230-foot lease area, as required by CRMC, instead it depicts approximately 20 feet.
6. The March 2018 submission proposed lease area submitted to CRMC by Mr. Raso corrected some of the deficiencies noted above, but also includes the following apparent deficiencies:
  - a. No reference is made in any of the attached figures as to the proposed acreage of the modification.

- b. A coordinate along the western boundary appears to be incorrect and appears to be a copy of the southwestern corner coordinate.
  - c. No scale, north arrow or nearby shoreline was included in the hand-drawn figure depicting the approximate bounds of the proposed lease.
  - d. A figure (1:2,257 scale, dated 1/31/18, 7:11:28 PM) denoted with a "B" depicts the proposed lease as measuring "Acres 1,828 Feet". This appears to be a measurement of the perimeter of the polygon rather than the area.
  - e. A figure (1:4,514 scale, dated 3/14/18, 1:50:35 PM) depicts a distinctly different lease orientation with a southeast corner different than the "B" figure. The proposed lease is denoted as "Acres 1,795.3 feet". This appears to be a measurement of the perimeter of the polygon rather than the area.
7. The submitted Operations Plan does not appear to include the details of the general gear maintenance (i.e., fouling organism removal methods) as required in the CRMC *Guide to Aquaculture Applications* (page 12, item 7), except to state that it would be "done onboard the boat which accesses the farm".

### **1.2 Area of Occupation within Segar Cove and Potter Pond**

Both the RI Salt Pond SAMP and the South Kingstown Harbor Management Plan state the area of Potter Pond as being 329 acres.

ESS measured the watershed area of Segar Cove and Potter Pond using data available through the Rhode Island Geographic Information System (RIGIS). Refer to Figures 1A, 1B, and 1C. ESS defined the southeastern boundary of Segar Cove as being a line drawn between Ram Point and the northeastern tip of Gardner Island and determined Segar Cove as being approximately 53.5 acres in size. ESS also determined that Potter Pond (not including the 1909 man-made channel<sup>1</sup> that connects Potter Pond to Point Judith Pond) is approximately 329 acres in size.

The proposed 3 acre aquaculture facility would occupy approximately 5.6% of Segar Cove and 0.9% of Potter Pond. (This calculation assumes the March 2018 submission proposes to maintain a 3 acre lease.)

CRMC Section 1.3.1K(4)(f) [formerly 300.11(E)(6)] states that in "coastal salt ponds the area occupied by aquaculture shall not exceed five percent (5%) of the total open water surface area of the coastal pond below MLW." For the 329 acre Potter Pond, the 5% limit equates to 16.45 acres that may be occupied by aquaculture. The proposed aquaculture facility in Segar Cove, if it were the only aquaculture facility in Potter Pond, would meet the requirement of CRMC Section 1.3.1K(4)(f).

The other aquaculture facility in Potter Pond (also leased by Mr. Raso) was permitted in 2007 by CRMC at 6.9 acres. Based on Department of Environmental Management records and review of aerial photographs, the lease size and facility size have both varied over time, and at times substantially enlarged beyond the area for which Assents were issued by CRMC. When ESS reviewed DEM records/online GIS data and aerial photographs in 2018, the lease area and the footprint of the facility were each approximately 9.7

<sup>1</sup> South Kingstown Harbor Management Plan, September 2010, page 10

acres. When ESS reviewed the DEM online GIS data for approved aquaculture leases in February 2020, the lease size had changed to approximately 6.9 acres. Figure 2 shows the evolution of the aquaculture lease over time (both the areas permitted and areas measured by ESS using aerial photographs). During our review, we noted the lease area sizes listed in the various lease applications and leases for the existing aquaculture facility do not match the size of area bounded by the coordinates provided in the applications when they are plotted in GIS. During our June 2018 site visit, ESS obtained GPS points at the corners of the existing aquaculture facility, which when post-processed<sup>2</sup> and plotted, are close to the corners of the lease area in the DEM online GIS data reviewed in February 2020 (see Figure 2).

If the proposed 3 acre area in Segar Cove is combined with the initially permitted 6.8 acre existing aquaculture area or the 6.9 acre 2020 lease area, the combined area would represent 3.0% of Potter Pond, which complies with Section 1.3.1K(4)(f). The apparent 9.7 acre occupation by the existing aquaculture facility that was identified during our 2018 review (which did not appear to be authorized by Assents in the CRMC files we reviewed), when combined with the proposed 3 acre facility, would represent 3.9% of Potter Pond, which complies with Section 1.3.1K(4)(f).

### **1.3 Water Depths within Segar Cove**

ESS reviewed multiple data sources for water depths in Segar Cove.

- According to NOAA Chart No. 13219, Segar Cove is between 3 and 7 feet at Mean Lower Low Water (MLLW). Potter Pond water depths on this chart are noted as being from National Ocean Service surveys performed between 1940 and 1969.
- According to GIS data ESS obtained from the USDA, water depths in Segar Cove are reported as between 1 and 12 feet below the NAVD88 vertical datum when measured in 2007. ESS has not been able to reference this bathymetric data to tidal elevations in the pond.

On June 29, 2018, ESS performed a site visit to Potter Pond and spent approximately 3 hours on a boat in the pond during a falling tide. During that time, ESS observed changes in water elevation along the shoreline of pond of only a few inches, which indicates there is likely a relatively small tidal range in the pond when compared to other more open waterbodies in the vicinity.

### **1.4 Proximity to the Shoreline/Interference with Access to Tidal Waters**

The eastern boundary of the proposed lease area is located between 10 and 65 feet from the shoreline in Segar Cove, contrary to what is set forth in the application filed. With the easterly boundary being this close to the shoreline and extending for approximately 913 feet along the shoreline, its presence would interfere with access to and from the tidal waters of Segar Cove by the adjacent landowners. CRMC regulations Section 1.3.1K(5)(a)(3) [formerly 300.11(F)(1)(j)] requires that aquaculture operations be marked in a manner that does not obstruct access to tidal waters such as Segar Cove, which implies that their siting should also not obstruct access to tidal waters.

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<sup>2</sup> Acquired points were differentially corrected using GPS Pathfinder Office software. Estimated accuracies for the differential correction for the acquired points was 0.98 to 1.64 feet (95.93% of points) and 1.64 to 3.28 feet (4.07% of points).

### **1.5 Proximity to Ram Point/Navigational Safety Issues**

The southern edge of the proposed 3 acre aquaculture facility is located approximately 400 feet north of Ram Point. The presence of the aquaculture facility approximately 400 feet from the headland at Ram Point has the potential to present a navigational safety issue for vessels navigating around Ram Point into the northern portion of Segar Cove. When operating a motor boat or personal watercraft, the operator would have approximately 11-15 seconds to recognize the presence of the aquaculture facility, react, and to then adjust course to avoid the aquaculture area. Other factors such as towing a skier, operating in the confined waterway with other users, low light conditions, and fog may reduce this time considerably. It is important to note that the water skier being towed would also need to be able to recognize the presence, react, and adjust his/her course to avoid the aquaculture areas. This potential navigational safety issue can be expected to be increased during the presence of the work boats serving the aquaculture facility.

Speed in Knots (ft/s)	Perception-Reaction Time
15 knots (25.3)	15 seconds
18 knots (30.3)	13 seconds
21 knots (35.4)	11.29 seconds

The CRMC regulations do not include requirements regarding siting aquaculture facilities relative to headlands, but the Executive Director may order removal of any aquaculture facility that is determined to be a navigation or public safety hazard [Section 1.3.1 K(1)(d)—formerly 300.11]. The regulations [Section 1.3.1 D(1)(c)—formerly 300.4] also note that CRMC recognizes that the US Coast Guard is the primary authority over boating safety and these responsibilities are complemented by RIDEM, local harbor masters, and public boating service organizations.

Because of the proximity of the proposed aquaculture area to the Ram Point headland, ESS researched siting criteria from other jurisdictions for guidance. We were not able to find U.S. siting guidance that included navigational effects. ESS did find guidance for siting aquaculture facilities from New Zealand (*Guidelines for Aquaculture Management Areas and Marine Farms*, dated December 2005) that requires such areas be sited greater than 200 meters (656 feet) into bays adjacent to a headland “to ensure safe navigation around headlands”. At a speed of 15 knots, such a distance would provide 25.9 seconds for the mariner to recognize the presence of the aquaculture facility, react, and to then adjust course to avoid the aquaculture area.

This perception-reaction time would obviously decrease with increased vessel speed. This potential navigational safety issue can also be expected to be increased during the presence of the aquaculture support vessel(s) servicing the facility.

### **1.6 South Kingstown Boats and Waterways Ordinance**

The Town of South Kingstown enacted the Boats and Waterway Ordinance (Part III-Chapter 4) to “... balance and manage the diverse uses of the coastal water and waterfront in a manner which protects the resources and minimizes user conflicts” [Sec. 4-1 (1)]. In addition, the ordinance explicitly describes the need “To maintain public access opportunities to the waters of the Town of South Kingstown for the benefit of all user groups.” [Sec. 4-1 (3)].

ESS evaluated Section 4-8 and of the Boats and Waterways Ordinance [Water skiing, swimming and personal watercraft] against existing conditions in Segar Cove and for potential effects on these uses that could result from the presence of the proposed 3 acre aquaculture facility in Segar Cove. In reviewing the potential effects of the ordinance, ESS must assume that mariners engaged in boating and water skiing activities in Segar Cove both act as prudent mariners and abide by applicable ordinances and regulations.

### **1.6.1 Section 4-8 (1)**

*...No water skier or his/her boat shall approach any stationary or moving object **closer than two hundred (200) feet** [emphasis added], except as may be incidental to starting or finishing a run nor shall any water skier ski within any designated channels.*

#### **1.6.1.1 Existing Conditions**

There are numerous dock structures located in Segar Cove, with the majority being located in the southern and western portions of the Cove. Using publicly available aerial photographs and GIS, ESS placed 200 foot radius buffers around the ends of the docks visible in the photographs. The 200 foot ordinance buffer placed around each existing dock mapped in the aerial imagery, results in a loss of approximately 30.3 acres (57%) of the total 53.5 acre Segar Cove watershed being available to towed water sports use under present conditions. It should also be noted that the buffers for the two docks near the north end of Segar Cove effectively block towed watersports access to the north end of Segar Cove from the south and vice versa, which makes the north end of Segar Cove functionally not usable for towed watersports and further reduces the area available by another approximately 2.5 acres. See Figures 1B and 3.

#### **1.6.1.2 Proposed Conditions/Limitations on Recreational Uses**

It is ESS's interpretation that the floating buoys delineating the proposed aquaculture facility's lease bounds and the suspended or floating aquaculture gear would be considered stationary objects under Section 4-8(1), and as such would further reduce the watershed available for towed watersports since the 200 foot ordinance buffer would be applied.

ESS calculated the watershed in Segar Cove that would be available to towed water sports if the proposed 3 acre aquaculture lease area were approved and constructed, as being approximately 20.2 acres, a loss of approximately 10.1 acres of watershed that is presently permissible for towed water sports. See Figure 4A. The modified aquaculture lease area, as identified in the March 2018 submission, results in a watershed available to tow-sports of 20.3 acres, a loss of 10.0 acres permissible for towed water sports. See Figure 4B.

We assume the aquaculture support vessel regularly operating at the 3 acre proposed lease would either set anchor or tie-off to one of the perimeter buoys or lines while performing its work similar to what is done at the existing lease (see photo in Section 1.6.2 below). If so, it would present a stationary vessel from which a water skier and boat would need to maintain a 200 foot standoff distance unless starting or finishing a run, which would further reduce the watershed in Segar Cove that would be available for towed water sports.

During the ESS site visit to Potter Pond on June 29, 2018, a Potter Pond resident that routinely engages in towed water sports in his boat showed ESS the typical route he presently uses in Segar Cove. While transiting this route in Segar Cove, ESS obtained a GPS vessel track and a video recording of the route. Using the marker buoys placed by the Applicant to denote the proposed boundary of the proposed lease (plus a fifth buoy placed by ESS using GPS to note the corner missing in the Applicant's buoys), the Potter Pond resident then followed a towed watersports route to attempt to visually maintain an approximate 200 foot standoff distance from the marker buoys. A GPS vessel track was also obtained for this route. The result was a significant reduction in the area where the boat could travel as shown in Figure 5. It is important to note that these tracks were made while the resident's boat was the only one operating in Segar Cove. Additional vessels operating in Segar Cove, with or without a skier or tuber, would further reduce the area available for towed watersports.

### **1.6.2 Section 4-8(6)**

*No person shall operate a personal water craft within two hundred (200) feet of swimmers, divers, shore, or moored vessels, except at headway speed.*

#### **1.6.2.1 Existing Conditions**

The use of personal watercraft (PWC) faster than headway speed<sup>3</sup> is prohibited within 200 feet of the shoreline around the perimeter of Segar Cove. Figure 1D shows that the 200 foot buffer specified in this section reduces the area of Segar Cove available to non-headway speed use to the center of Segar Cove.

#### **1.6.2.2 Proposed Conditions/Aquaculture Support Vessel/Limitations on Recreational Use**

The presence of the aquaculture facility would eliminate over 3 acres of watersheet from PWC non-headway speed use. We assume the aquaculture support vessel regularly operating at the 3 acre proposed lease, which appears to be about 40 feet long, would either set anchor or tie-off to one of the perimeter lines or buoys while performing its work similar to what is done at the existing lease (see photo below). If so, it would present a stationary vessel from which a personal watercraft need to maintain a 200 foot standoff distance unless operating at headway speed. This would further reduce the area of Segar Cove available for use by personal watercraft as shown by comparing Figure 4D with Figure 1D.

<sup>3</sup> *The Handbook of Rhode Island Boating Laws and Responsibilities* defines headway speed as "the slowest speed at which it is still possible to maintain steering" (page 70). [https://www.boat-ed.com/assets/pdf/handbook/ri\\_handbook\\_entire.pdf](https://www.boat-ed.com/assets/pdf/handbook/ri_handbook_entire.pdf)



Aquaculture support vessel at existing Potter Pond aquaculture facility—June 29, 2018

### **1.6.3 Section 4-8 (12)**

*Water skiing and swimming is prohibited in all designated channels, fairways and mooring areas within the town.*

#### **1.6.3.1 Existing Conditions**

Segar Cove presents a unique public access opportunity not available in a majority of the remainder of Potter Pond. Segar Cove offers numerous public access points, docks, and deep water across a 30.3 acre watershed allowable for waterskiing and swimming far away from "...designated channels, fairways and mooring areas". No designated channels or fairways exist in Segar Cove, and a review of the Harbormaster's 2018 mooring map indicated moorings are concentrated in the southern portion of Segar Cove.

Public access for vessel launching around Segar and Seaweed Coves is present at 4 locations and potentially as many as 8, when considering unverified public access points (refer to Figure 1A). These locations represent the only public access points along the entire shoreline of Potter Pond.

In addition, Segar Cove serves as one of only two basins in Potter Pond where depths are sufficient for towed watersports according to users and a review of water depths. With approximately 28 docks and 18 moorings in Segar Cove, and an additional 35 docks and 25 moorings in the adjacent Seaweed Cove, the southwest portion of Potter Pond is contrasted by the northern basin where approximately 8 docks and no registered moorings exist. This contrast is due in large part to the classification of waters by CRMC that regulates allowable activities. While Segar and Seaweed Coves are Type 2 waters (Low-Intensity Use), the northern basin is classified as a Type 1 water (Conservation). In Type 1 waters, the CRMC prohibits the construction of new recreational boating facilities as outlined in Section 1.2.1(B) [formerly Section 200.1], stating the “ultimate goal is to remove said structures and restore the areas involved to be free of all recreational boating facilities”.

The presence of the proposed 3 acre aquaculture facility in Segar Cove, may lead some of those that use the cove for towed watersports to decide the reduced watersheet is not sufficient for towed watersports and lead them to move elsewhere for such activities. The northern basin reportedly has sufficient water depth for towed watersports, but is approximately 1.25 nautical miles away from the existing docks and public access points in Segar and Seaweed Coves and would require transit times of 15 minutes or more travelling at headway speeds. This added time and fuel consumption would present an increased impact on the users of Segar Cove and the environments.

Adjacent to Segar and Seaweed Coves, Sycamore Cove is the only other waterbody in Potter Pond available for tow sports; however, it has an available watersheet much smaller (13 acres), is overall shallower, and was mapped to have had eelgrass, which fouls motorboat propellers.

#### **1.6.3.2 Proposed Conditions/Limitations on Recreational Use**

The proposed 3 acre aquaculture facility and the associated 200 foot ordinance buffer will significantly limit the size of Segar Cove’s watersheet available for waterskiing and swimming under Section 4-8(1). It is important to note that the watersheet available for other waterborne recreations such as paddle boarding, fishing, and kayaking would also be reduced.

#### **1.6.4 Section 4-10**

ESS reviewed Section 4-10 of the Boats and Waterways Ordinance [Excessive Noise] against existing conditions in Segar Cove and for potential effects on these uses that could result from the presence of the proposed 3 acre aquaculture facility in Segar Cove. In reviewing the potential effects of the ordinance, it is ESS’s understanding that no vessel owners or operators currently operate commercial aquaculture apparatus on Segar Cove.

*... No operator or owner shall cause or allow excessive noise in the operation of a vessel nor shall such owner or operator allow excessive noise aboard such vessel when anchored, moored or docked. Unmuffled sound from engines, outboards or other machinery is not permitted except by permission of the harbormaster.*

#### **1.6.4.1 Existing Conditions**

Segar Cove currently has no regular commercial aquaculture facility operating throughout the year.

**1.6.4.2 Proposed Conditions/Impact of Commercial Operations on Residences**

The proposed aquaculture facility would place a commercial facility within Segar Cove close to the shoreline and adjacent to residences.

It is ESS’s understanding that various pieces of equipment are utilized to haul, sort, and wash the shellfish and maintain the gear. Hydraulic power packs, sorting drums, gasoline engines, power washing nozzles, and associated equipment installed on a vessel would generate noise associated with the aquaculture facility operation that does not presently exist. This noise would be generated at close distances to existing residential dwellings and yards, and would represent an increased noise impact by a new commercial facility proximate to these residential locations.

**1.7 South Kingstown Supplementary Regulations**

ESS reviewed Section 507 of South Kingstown’s Supplementary Regulations [Standards for the Regulations of commercial and industrial uses] to the Code of Ordinances. Agricultural activities are not exempt from the noise and vibration levels of this Section 507.

**1.7.1 Section 507.15**

Section 507.13 states that “No use, process, operation or activity shall cause or create noise in excess of the sound levels prescribed in Section 507.15.

Section 507.15 states the following:

- (A) *No person shall cause or allow the emission of impulse noise in excess of 100 dB peak C-weighted sound pressure level during the daytime (7:00 a.m. to 9:00 p.m.) to any receiving residential land use; and*
- (B) *No person shall create, operate or cause to be operated on private property any source of sound which exceeds the limits set forth in Table 1 for the receiving land use category when measured at or within the property boundary of the receiving land use. Levels emitted in excess of the values listed in Table 1 shall be considered excessive, unnecessary and in violation of this section*

**Table 1. Maximum Sound Levels for Receiving Land Use {dB(A)}**

Time	Industrial Receptor	Commercial Receptor	Residential Receptor
7 a.m. – 9 p.m.	70	65	60
9 p.m. – 7 a.m.	70	65	60

**1.7.1.1 Existing Conditions**

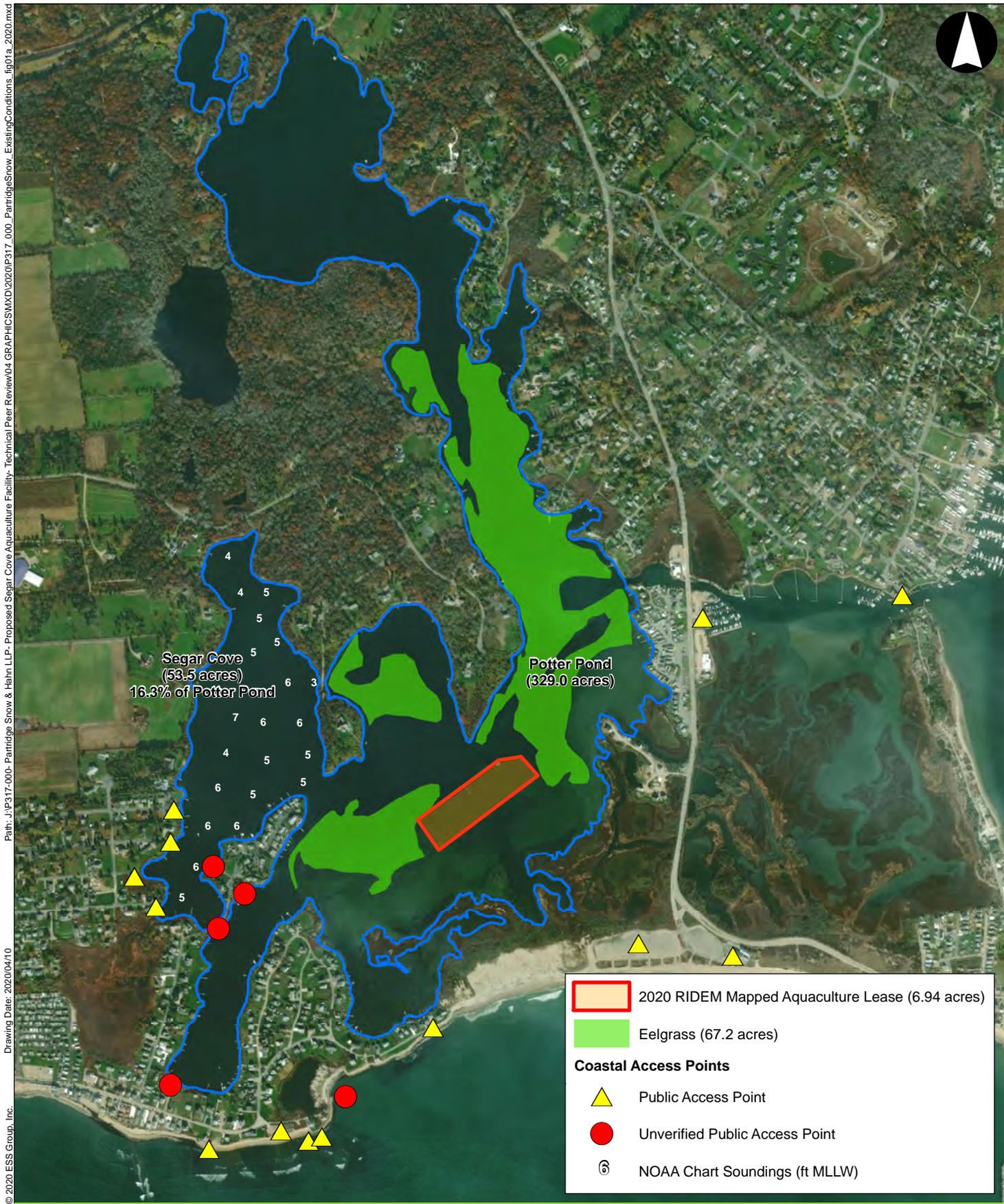
Residential receptors along Segar Cove currently have no commercial aquaculture operations causing or creating noise in excess of 60 dB(A).

**1.7.1.2 Proposed Conditions/Noise Impacts on Local Residences**

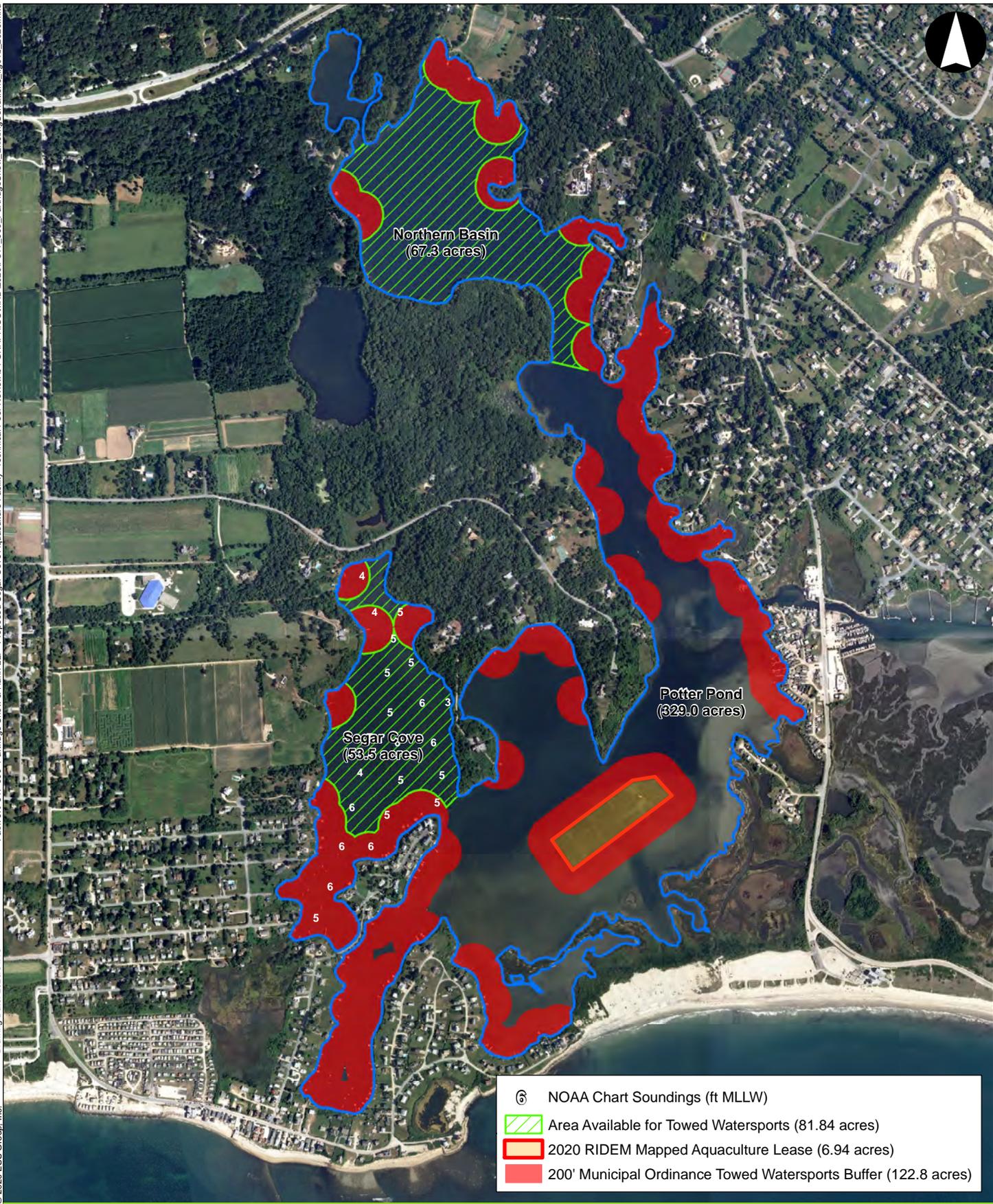
Outboard motors, hydraulic power packs, sorting drums, gasoline engines, power washing nozzles, and equipment associated with the operation of the commercial facility may generate new noise

that is audible at the adjacent property boundaries. In addition, the requisite communications between personnel operating onboard the facility's service vessels may contribute to regular exceedances of the 60 dB(A) threshold since OSHA A-weighted sound level guidance indicates that conversation between persons 3-feet apart is approximately 60 dB(A).

With the presence of the proposed aquaculture facility approximately 5 feet from the mean high water shore, it is reasonable to expect that daily operations of the facility would cause or create noises that are in violation of Section 507.15.



Path: J:\P317-000\_Partridge Snow & Hahn LLP- Proposed Segar Cove Aquaculture Facility- Technical Peer Review\04\_GRAPHICS\MXD\2020\P317\_000\_PartridgeSnow\_ExistingConditions\_fig01b\_2020.mxd  
 Drawing Date: 2020/04/10  
 © 2020 ESS Group, Inc.



**Partridge Snow & Hahn LLP**  
 Proposed Segar Cove Aquaculture Facility  
 South Kingstown, Rhode Island  
 1 inch = 1,100 feet

**Existing Conditions (2020)**  
**Areas Available for Towed Watersports**

Source: 1) NOAA, Sandy Ortho Imagery, 2014  
 2) NOAA, Chart 13219, 1940-1969 Surveys  
 3) ESS, 200' Buffers, 2018  
 4) South Kingstown/Harbor Management Plan, Mooring Field, 2010  
 5) RIDEM, Approved Aquaculture Leases in Rhode Island, 2018



**Figure 1B**

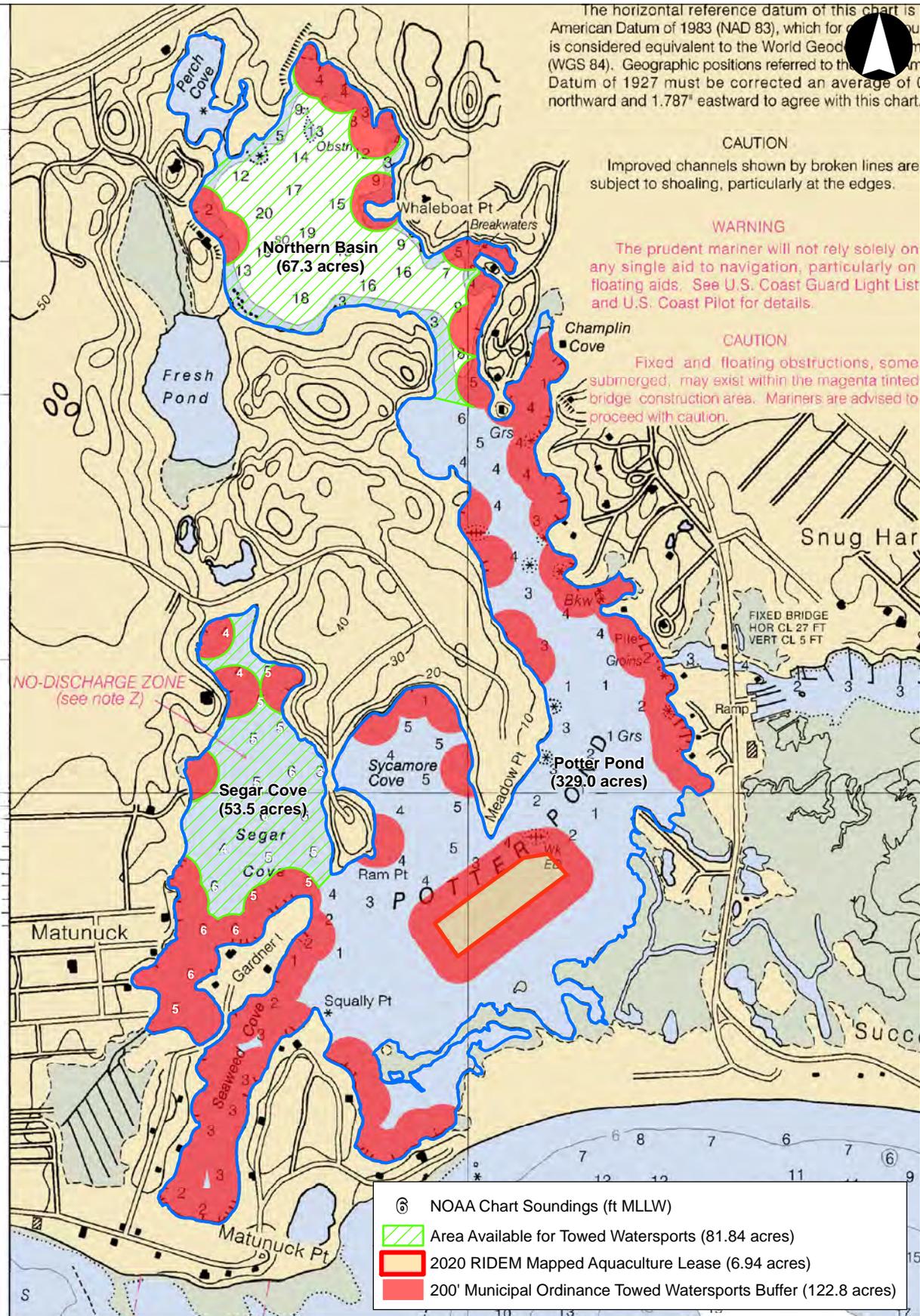
The horizontal reference datum of this chart is American Datum of 1983 (NAD 83), which for all practical purposes is considered equivalent to the World Geodetic System (WGS 84). Geographic positions referred to the datum of 1927 must be corrected an average of 0.1 foot northward and 1.787" eastward to agree with this chart.



**CAUTION**  
Improved channels shown by broken lines are subject to shoaling, particularly at the edges.

**WARNING**  
The prudent mariner will not rely solely on any single aid to navigation, particularly on floating aids. See U.S. Coast Guard Light List and U.S. Coast Pilot for details.

**CAUTION**  
Fixed and floating obstructions, some submerged, may exist within the magenta tinted bridge construction area. Mariners are advised to proceed with caution.



	NOAA Chart Soundings (ft MLLW)
	Area Available for Towed Watersports (81.84 acres)
	2020 RIDEM Mapped Aquaculture Lease (6.94 acres)
	200' Municipal Ordinance Towed Watersports Buffer (122.8 acres)

Path: J:\P317-000-Partridge Snow & Hahn LLP-Proposed Segar Cove Aquaculture Facility- Technical Peer Review\04\_Graphics\MXD\2020\P317\_000\_PartridgeSnow\_ExistingConditions\_fig01C\_2020.mxd  
 Drawing Date: 2020/04/10  
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**Partridge Snow & Hahn LLP**  
 Proposed Segar Cove Aquaculture Facility  
 South Kingstown, Rhode Island  
 1 inch = 1,100 feet

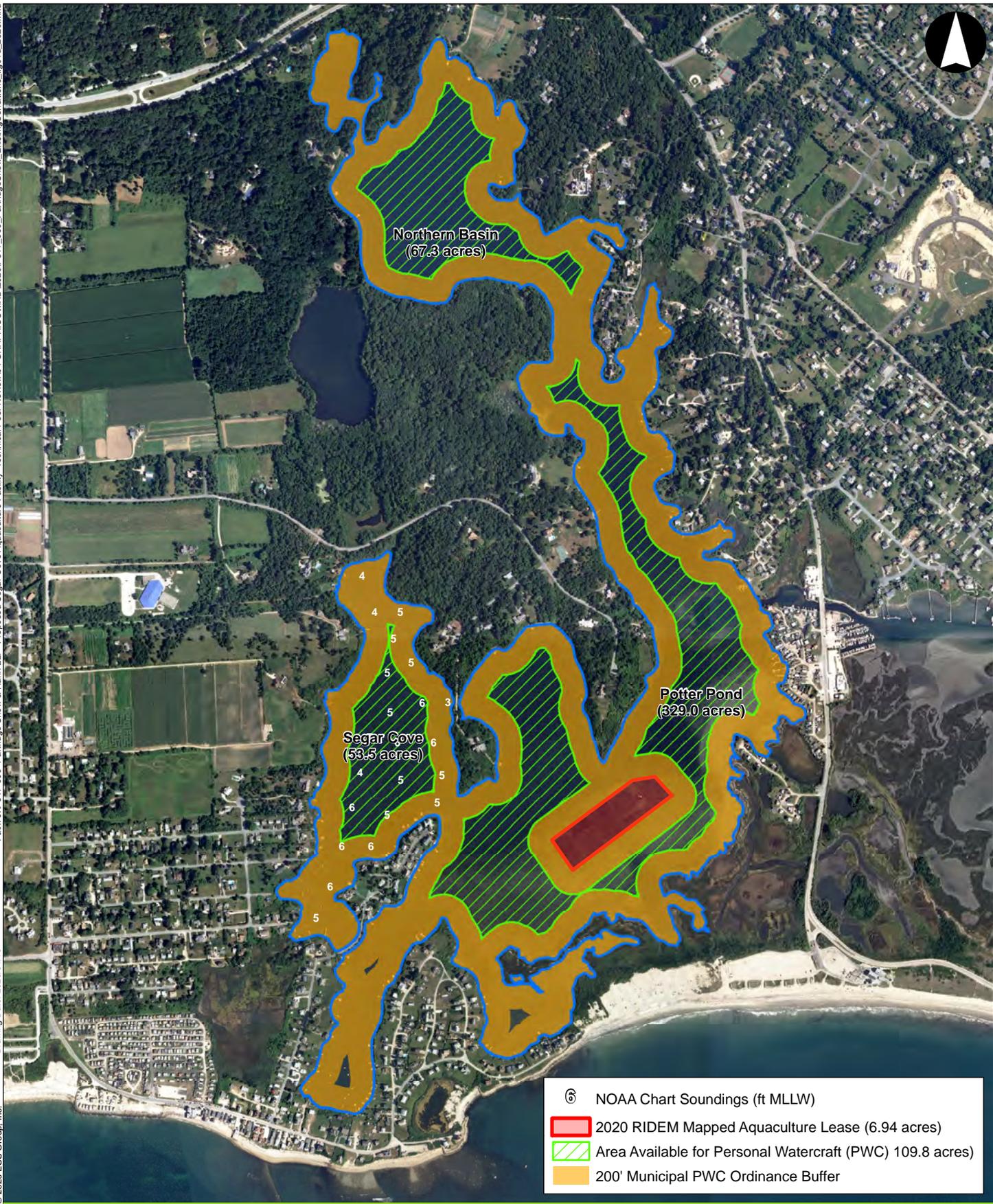
**Existing Conditions (2020)**  
**NOAA Chart 13219**

- Source: 1) ESRI, World Imagery, 2018  
 2) NOAA, Chart 13219, 1940-1969 Surveys  
 3) ESS, 200' Buffers, 2018 and 2020  
 4) South Kingstown/Harbor Management Plan, Mooring Field, 2010  
 5) RIDEM, Approved Aquaculture Leases in Rhode Island, 2018



**Figure 1C**

Path: J:\P317-000-Partridge Snow & Hahn LLP-Proposed Segar Cove Aquaculture Facility- Technical Peer Review\04 GRAPHICS\MXD\2020\P317\_000\_PartridgeSnow\_ExistingConditions\_fig01d\_2020.mxd  
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 Proposed Segar Cove Aquaculture Facility  
 South Kingstown, Rhode Island

1 inch = 1,100 feet

Source: 1) NOAA, Sandy Ortho Imagery, 2014  
 2) NOAA, Chart 13219, 1940-1969 Surveys  
 3) ESS, 200' Buffers, 2018  
 4) South Kingstown/Harbor Management Plan, Mooring Field, 2010  
 5) RIDEM, Approved Aquaculture Leases in Rhode Island, 2018

**Existing Conditions (2020)**  
**Areas Available for Personal Watercraft Use**

**Figure 1D**

Path: J:\P317-000- Partridge Snow & Hahn LLP - Proposed Segar Cove Aquaculture Facility - Technical Peer Review\04 GRAPHICS\MXD\2020\P317\_000\_PartridgeSnow\_AquacultureEvolution\_2020.mxd  
 Drawing Date: 2020/04/10  
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- 2002 CRMC Assent (1.33 Ac Authorized ; ESS measured as 1.63 Ac)
- 2004 CRMC Assent (3.8 Ac Authorized ; ESS measured as 4.98 Ac)
- 2007 CRMC Assent (6.9 Ac Authorized ; ESS measured as 8.44 Ac)
- 2018 RIDEM Mapped Aquaculture Lease (9.68 acres)
- ▲ ESS GPS Points-Facility Corners (June 29, 2018)
- 2020 RIDEM Mapped Aquaculture Lease (6.94 acres)



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 Proposed Segar Cove Aquaculture Facility  
 South Kingstown, Rhode Island

**Evolution of Potter Pond  
 Aquaculture Lease**

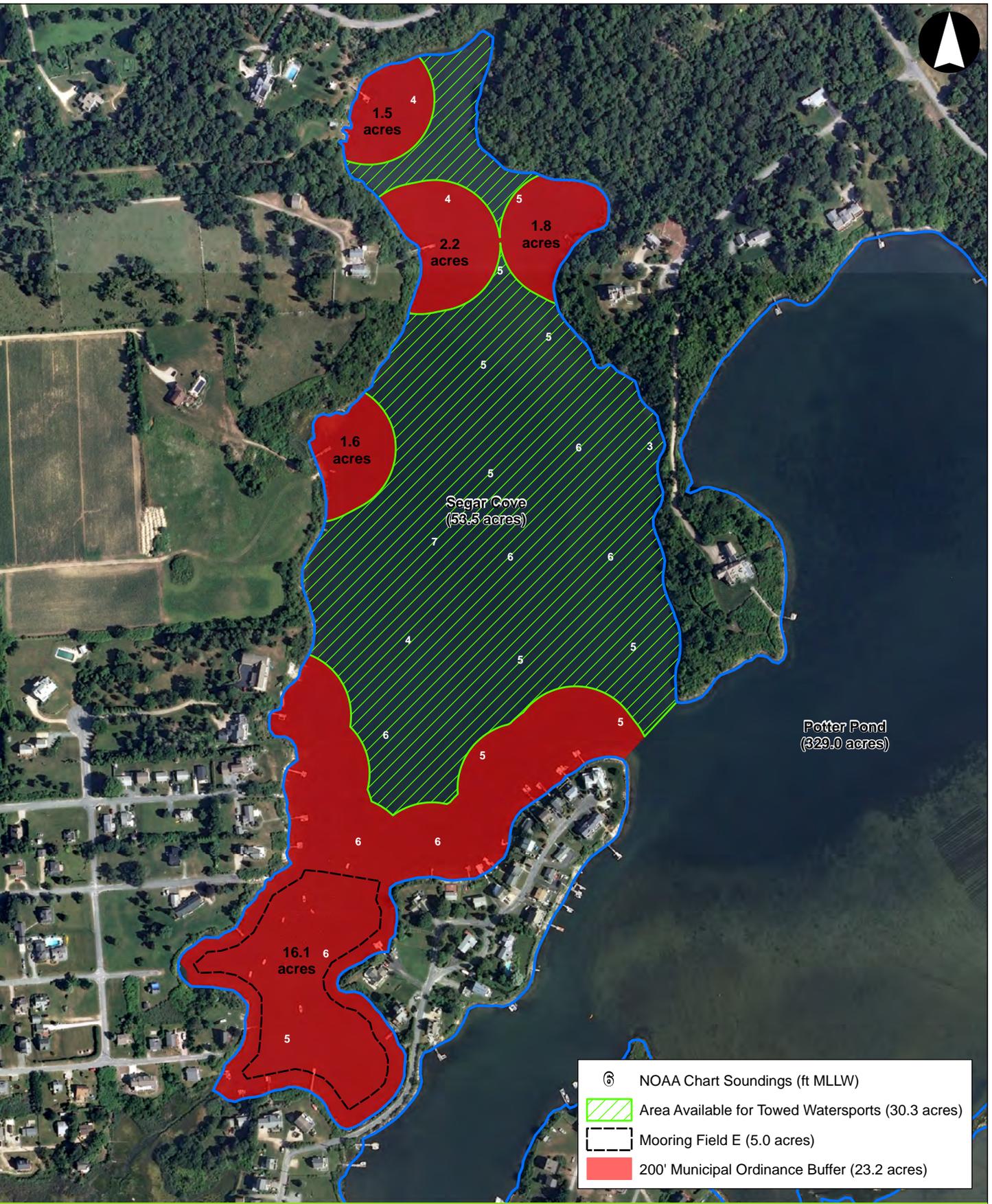
1 inch = 200 feet



Source: 1) NOAA, Sandy Ortho Imagery, 2014  
 2) CRMC, Permit File B2002-05-034/2012-03-106/2014-04-072, 2018  
 3) RIDEM, Approved Aquaculture Leases in Rhode Island, 2002 - 2020

**Figure 2**

Path: J:\P317-000-Partridge Snow & Hahn LLP-Proposed Segar Cove Aquaculture Facility-Technical Peter Review\04 GRAP\HCS\WXD\2020\P317\_000\_PartridgeSnow\_SegarExistingConditions\_fig03.mxd  
 Drawing Date: 2020/04/10  
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⑥	NOAA Chart Soundings (ft MLLW)
	Area Available for Towed Watersports (30.3 acres)
	Mooring Field E (5.0 acres)
	200' Municipal Ordinance Buffer (23.2 acres)



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 Proposed Segar Cove Aquaculture Facility  
 South Kingstown, Rhode Island

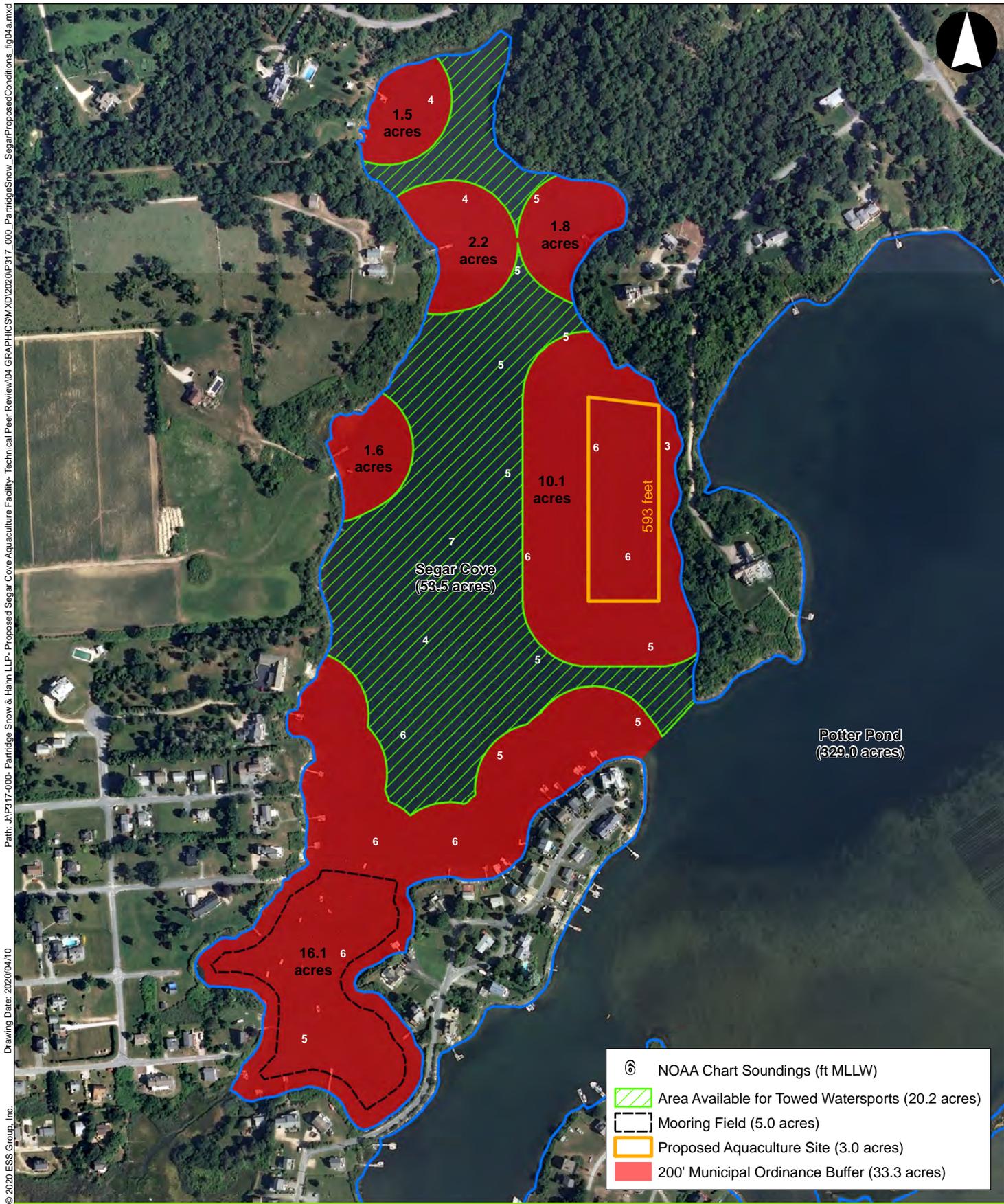
1 inch = 400 feet

- Source: 1) NOAA, Sandy Ortho Imagery, 2014  
 2) NOAA, Chart 13219, 1940-1969 Surveys  
 3) ESS, 200' Buffers, 2018  
 4) South Kingstown/Harbor Management Plan, Mooring Field, 2010



**Segar Cove Existing Conditions**  
**Water Sheet Available for Towed Watersports**  
**in Segar Cove**

**Figure 3**



Path: J:\P317-000-Partridge Snow & Hahn LLP-Proposed Segar Cove Aquaculture Facility-Technical Peer Review\04 GRAPHICS\XD\2020\P317\_000\_PartridgeSnow\_SegarProposedConditions\_fig04a.mxd  
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	NOAA Chart Soundings (ft MLLW)
	Area Available for Towed Watersports (20.2 acres)
	Mooring Field (5.0 acres)
	Proposed Aquaculture Site (3.0 acres)
	200' Municipal Ordinance Buffer (33.3 acres)



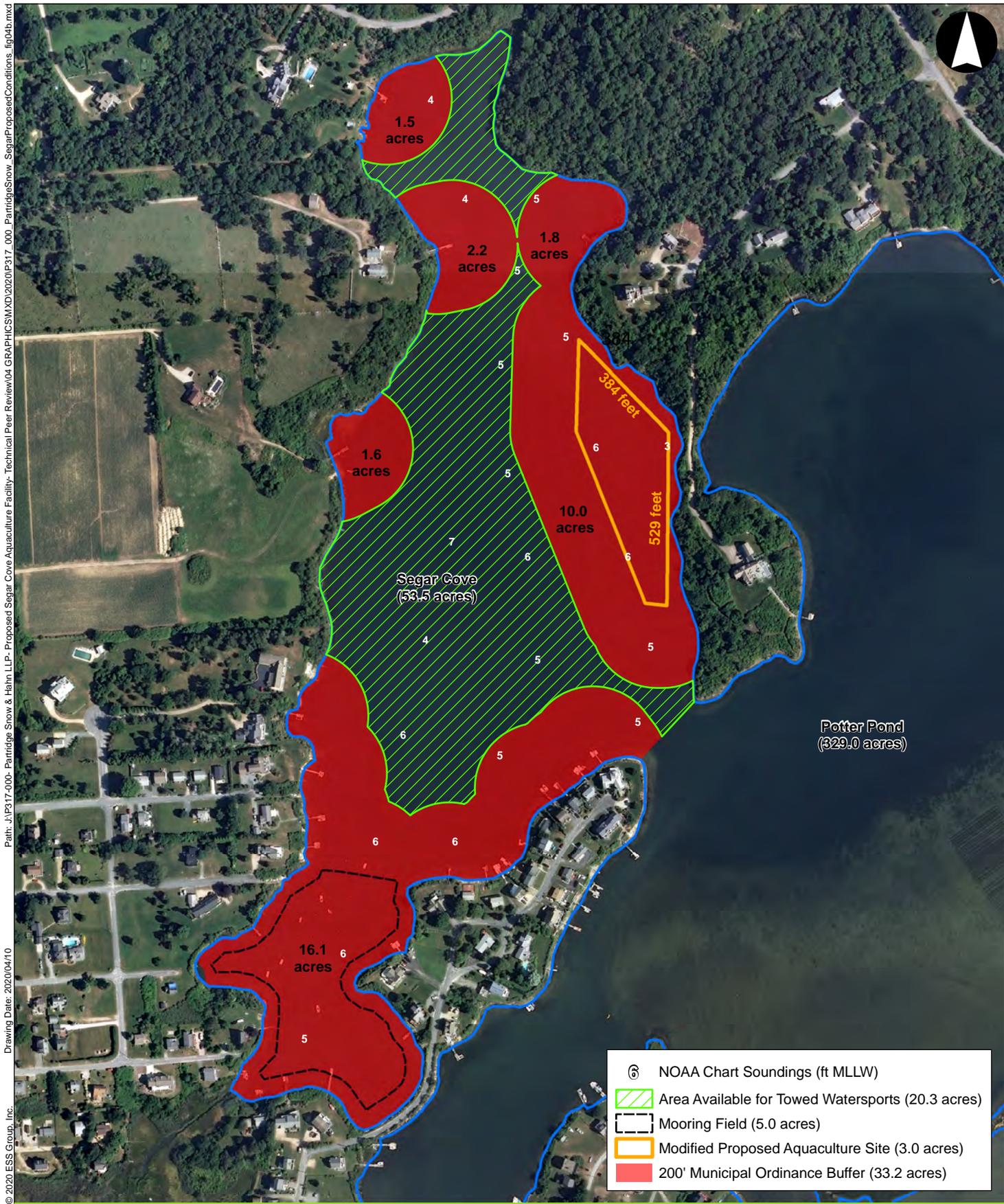
**Partridge Snow & Hahn LLP**  
 Proposed Segar Cove Aquaculture Facility  
 South Kingstown, Rhode Island  
 1 inch = 400 feet

**Originally Proposed Aquaculture Lease  
 Watersheet Available for Towed Watersports  
 in Segar Cove**



Source: 1) NOAA, Sandy Ortho Imagery, 2014  
 2) NOAA, Chart 13219, 1940-1969 Surveys  
 3) ESS, 200' Buffers, 2018  
 4) South Kingstown/Harbor Management Plan, Mooring Field, 2010

**Figure 4A**



	NOAA Chart Soundings (ft MLLW)
	Area Available for Towed Watersports (20.3 acres)
	Mooring Field (5.0 acres)
	Modified Proposed Aquaculture Site (3.0 acres)
	200' Municipal Ordinance Buffer (33.2 acres)



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 Proposed Segar Cove Aquaculture Facility  
 South Kingstown, Rhode Island

1 inch = 400 feet

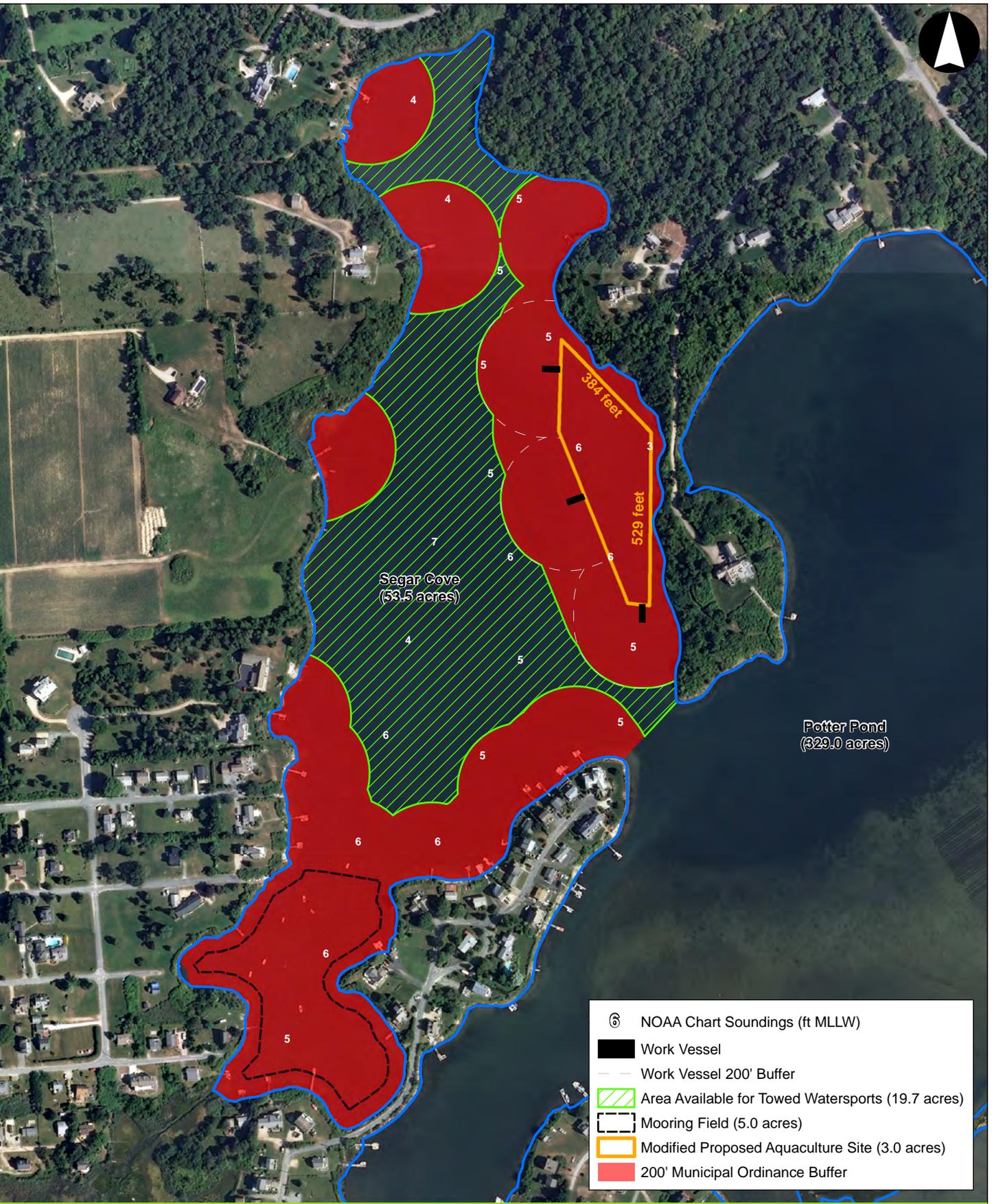
**Modified Proposed Aquaculture Lease  
 Areas Available for Towed Watersports  
 in Segar Cove**

**Figure 4B**

Source: 1) NOAA, Sandy Ortho Imagery, 2014  
 2) NOAA, Chart 13219, 1940-1969 Surveys  
 3) ESS, 200' Buffers, 2018  
 4) South Kingstown/Harbor Management Plan, Mooring Field, 2010



Path: J:\P317-000-Partridge Snow & Hahn LLP-Proposed Segar Cove Aquaculture Facility- Technical Peer Review\04 GRAPHICS\MXD\2020\04\10\_PartridgeSnow\_SegarProposedConditions\_fig04c.mxd  
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	NOAA Chart Soundings (ft MLLW)
	Work Vessel
	Work Vessel 200' Buffer
	Area Available for Towed Watersports (19.7 acres)
	Mooring Field (5.0 acres)
	Modified Proposed Aquaculture Site (3.0 acres)
	200' Municipal Ordinance Buffer



**Partridge Snow & Hahn LLP**  
 Proposed Segar Cove Aquaculture Facility  
 South Kingstown, Rhode Island  
 1 inch = 400 feet

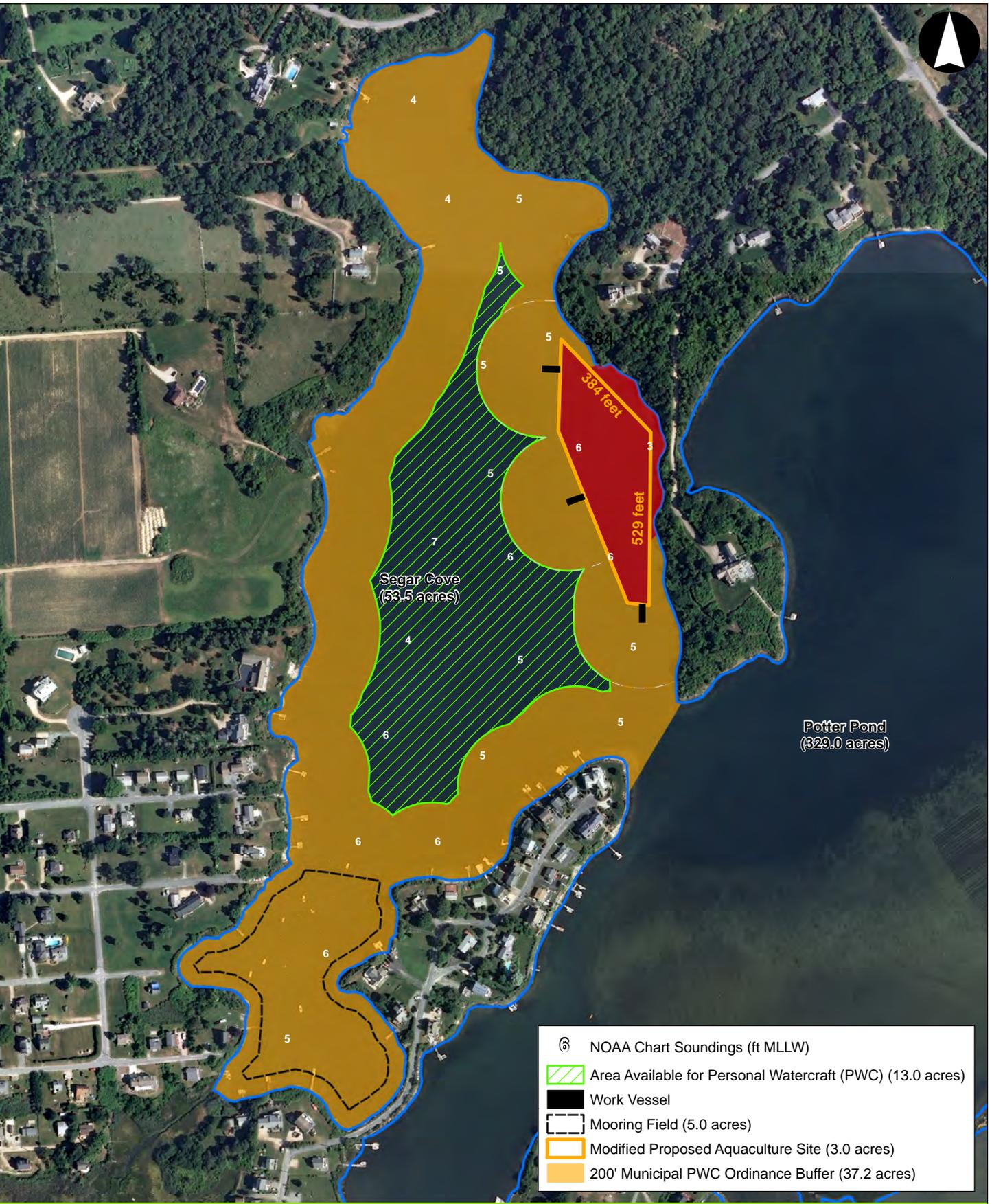
**Modified Proposed Aquaculture Lease  
 Areas Available for Towed Watersports  
 in Segar Cove**



Source: 1) NOAA, Sandy Ortho Imagery, 2014  
 2) NOAA, Chart 13219, 1940-1969 Surveys  
 3) ESS, 200' Buffers, 2018  
 4) South Kingstown/Harbor Management Plan, Mooring Field, 2010

**Figure 4C**

Path: J:\P317-000-Partridge Snow & Hahn LLP-Proposed Segar Cove Aquaculture Facility-Technical Peer Review\04 GRAPHICS\XD\2020\P317\_000\_PartridgeSnow\_SegarProposedConditions\_fig04d.mxd  
 Drawing Date: 2020/04/10  
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	NOAA Chart Soundings (ft MLLW)
	Area Available for Personal Watercraft (PWC) (13.0 acres)
	Work Vessel
	Mooring Field (5.0 acres)
	Modified Proposed Aquaculture Site (3.0 acres)
	200' Municipal PWC Ordinance Buffer (37.2 acres)



**Partridge Snow & Hahn LLP**  
 Proposed Segar Cove Aquaculture Facility  
 South Kingstown, Rhode Island  
 1 inch = 400 feet

**Modified Proposed Aquaculture Lease  
 Areas Available for Personal Watercraft Use  
 in Segar Cove**

**Figure 4D**



Source: 1) NOAA, Sandy Ortho Imagery, 2014  
 2) NOAA, Chart 13219, 1940-1969 Surveys  
 3) ESS, 200' Buffers, 2018  
 4) South Kingstown/Harbor Management Plan, Mooring Field, 2010

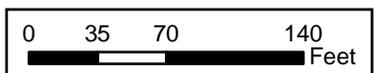
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South Kingstown, Rhode Island

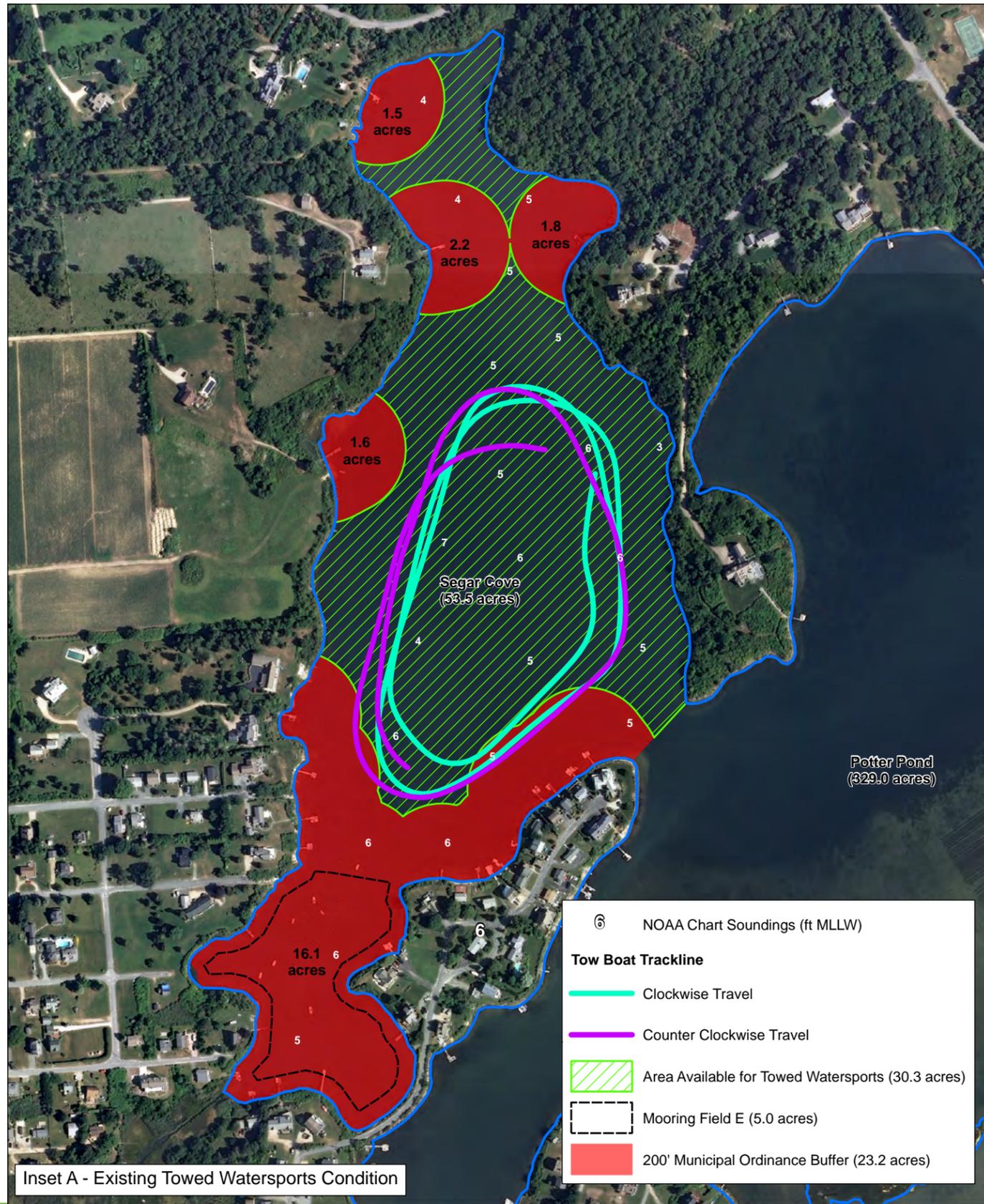
1 inch = 98 feet

**Modified Proposed Aquaculture Lease  
Distance to Shoreline**

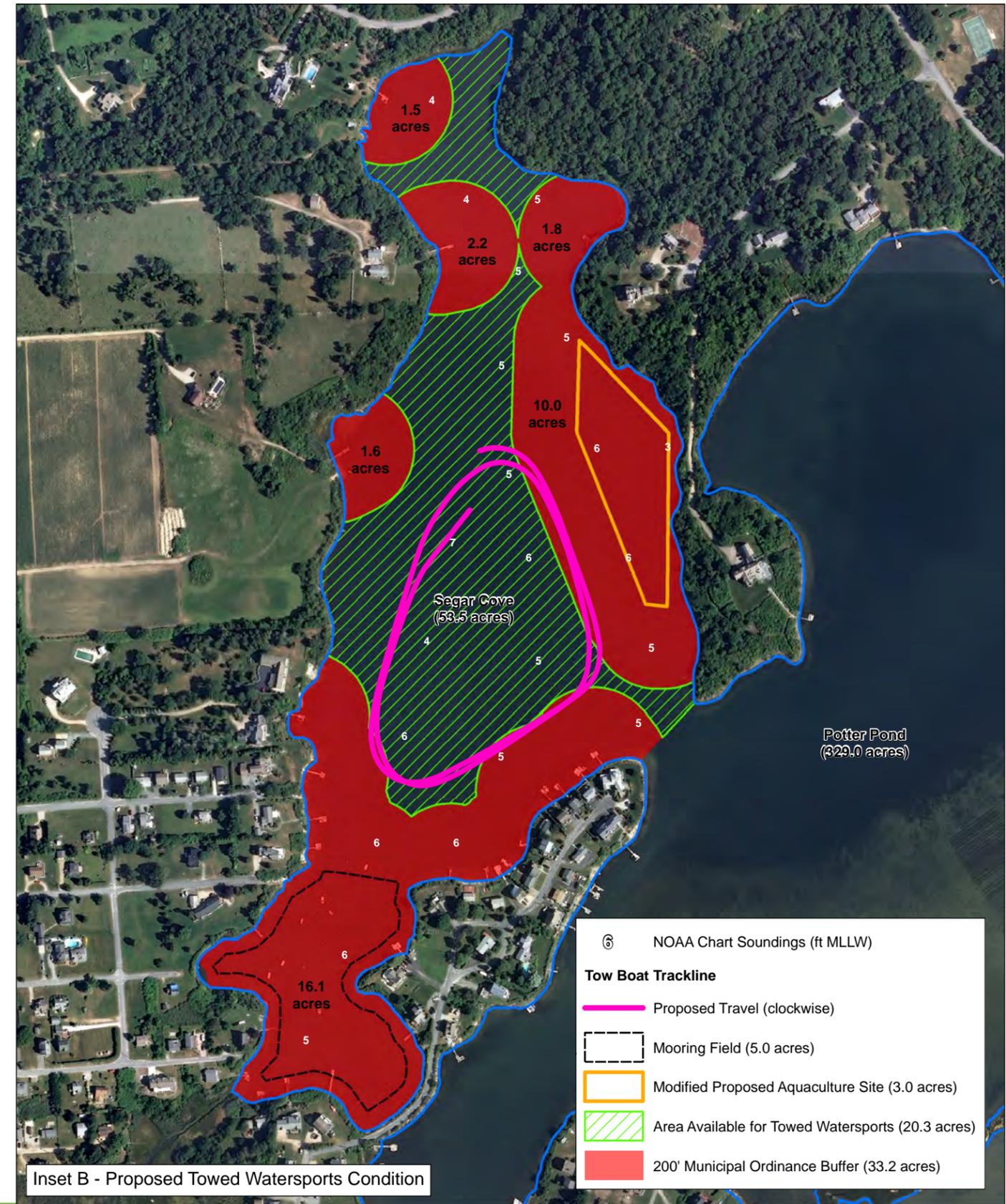


Source: 1) NOAA, Sandy Ortho Imagery, 2014  
2) NOAA, Chart 13219, 1940-1969 Surveys  
3) ESS, 200' Buffers, 2018  
4) South Kingstown/Harbor Management Plan, Mooring Field, 2010

**Figure 4E**



**Inset A - Existing Towed Watersports Condition**



**Inset B - Proposed Towed Watersports Condition**



**Partridge Snow & Hahn LLP -**  
 Proposed Segar Cove Aquaculture Facility  
 South Kingstown, Rhode Island

1 inch = 400 feet

Source: 1) NOAA, Sandy Ortho Imagery, 2014  
 2) NOAA, Chart 13219, 1940-1969 Surveys  
 3) ESS, 200' Buffers, 2018  
 4) South Kingstown/Harbor Management Plan, Mooring Field, 2010  
 5) ESS, Tow boat GPS data, 2018

Source: 1) MassGIS, Half-Meter Resolution, 2001  
 2) ESS, GPS Locations, 2003



**Segar Cove**  
**Towed Watersports Demonstration**

**Figure 5**