Site Selection Criteria

Federal Requirements

1. The candidate site is a representative estuary in the bio-geographic region or sub-region.
2. The proposed boundaries of the candidate site include sufficient land and water area to maintain the integrity of the ecosystem.
3. The candidate site consists of publicly owned lands and/or demonstrates sufficient potential for land acquisition and adequate land use control to meet NERRS objectives. This could include State government having or obtaining long-term control over key land and water resources in the core lands of the site.
4. The candidate site is accessible by normal modes of transportation.
5. The candidate site is suitable for a broad range of research, monitoring, and resource protection activities.
6. The candidate site is suitable for a broad range of education, training, and interpretation activities.
7. The candidate site is suitable to address key local, state, and regional coastal management issues.

Additional Criteria

8. The site has a high diversity of ecosystem types and physical characteristics.
9. Well-defined gradients present (water motion, salinity, light, temperature) that can support a diversity of educational topics/research (for example, a “salt wedge” type estuary with well-defined marine, estuarine and freshwater ecosystems).
10. Minimally affected by humans (although diverted streams are acceptable).
11. Existing research areas/historical data for the site (in particular, estuary-related data).
12. Accessible or ability to be made accessible to a wide range of the public, including Native Hawaiian groups, residents, and visitors including students of all ages and abilities.
13. Supportive adjacent landowners (letter of authorization about site selection).
14. Existing facilities such as parking, pavilion, ADA trail to marsh and beach, potable water or comfort stations.
15. Access is possible makai to mauka.
16. Potential to generate funds to support NERR activities on site, in order to ensure continuity of services.
17. Site amenable to climate change impact research.

Site Selection Criteria and Process for their application to screened sites

The site selection process involves two committees: the Site Selection Committee (SSC) and the Site Evaluation Committee (SEC). The SSC will decide on a final list of criteria used to score proposed sites. The SEC will then accept proposals for sites and rank them according to the criteria.

Each SSC member should consider the criteria to decide which are most important. If necessary, the scoring within each criterion may be crafted to help better evaluate the proposed sites.

After the SEC members have assessed the proposed sites individually, scores for each criterion would be averaged, then totaled and weighted to form a shortlist to the SSC. The SSC will further evaluate the shortlist and recommend one site to the Governor for him to nominate.

Site proposal forms, instructions and links to other helpful references can be found at http://planning.hawaii.gov/czm/

1. Environmental Representativeness: Ecosystem/Ecological Characteristics

In order to determine the representativeness of a candidate site relative to ecosystem type (as defined in Appendix 2 of NERRS Program Regulations (15 CFR Part 921)), the site will be evaluated using the following suite of ecological, biological, physical, and chemical characteristics that fall under the general category of "Ecosystem/Ecological Characteristics." The first five criteria for ecological and biological characteristics focus primarily on factors concerning a site's diversity and balance in regard to the types of ecosystems and habitats present, as well as any significant and/or unique biotic trait. The remaining criteria for physical/chemical characteristics focus on a site's position within the watershed to which it belongs, geological and salinity characteristics, water quality, and the degree to which it is developed.

Each heading identifies which criteria it corresponds to from page 1. A. Ecosystem Composition, for example, corresponds to site criteria 1 and 8.

A. Estuarine Composition (1, 8). This is a measure of the diversity of ecosystem types and physical characteristics present within the boundaries of the site. This criterion is based on the assumption that sites that have a high diversity of major ecosystem types and physical characteristics are of higher relative "value" for research, education, protection and management than those with low ecosystem or physical diversity. Use the "Ecosystem Type" designations listed in Appendix 2 of NERRS Program Regulations (15 CFR Part 921)
See: http://www.gpo.gov/fdsys/pkg/CFR-2013-title15-vol3/pdf/CFR-2013-title15-vol3-part921.pdf

3 Points	The site has a high diversity of ecosystem composition, i.e., it contains at least one representative habitat from each of the three main ecosystem groups listed in Appendix 2 of NERR Program Regulations (e.g., coastal cliffs, coastal marsh, and subtidal hard bottoms) (15 CFR Part 921).
2 Points	The site has a moderate diversity of ecosystem i.e., it contains at least one representative habitat from two of the three main ecosystem groups and one geologic basin type listed in Appendix 2 of NERRS Program Regulations (15 CFR Part 921).
1 Point	The site has a low diversity of ecosystem composition, i.e., it contains at least two representative habitats from only one of the three main ecosystem groups listed above (e.g., coastal marsh and mud flat) type listed in Appendix 2 of the NERRS Program Regulations (15 CFR Part 921).
0 Points	The site has a very low diversity of ecosystem composition, i.e., it contains only a single habitat type within any one of the three main ecosystem groups (e.g., coastal marsh) listed in Appendix 2 of the NERRS Program Regulations (15 CFR Part 921).

B. Balanced Ecosystem Composition (1). This is a measure of the relative composition of ecosystem types within the boundaries of a site. This criterion is based on the assumption that sites with a balanced proportion of ecosystem types are of higher relative "value" for protection and management. High, moderate, and low values are assigned to sites that contain variations in the proportions of all three ecosystem types. A value of zero is assigned to a site that is dominated by one ecosystem type or contains less than three ecosystem types.

3 Points	The site contains representative upland, intertidal, and subtidal habitats in relatively equal proportions (i.e., aerial cover of any one ecosystem type not less than 25% of the total area).
2 Points	The site contains representative upland, intertidal, and subtidal habitats, with the aerial cover of any one type not less than 10% of the total area.
1 Point	The site contains representative upland, intertidal, and subtidal habitats, with the aerial cover of any one type less than 10% of the total area.
0 Points	The site contains representative upland, intertidal, and subtidal habitats, with the aerial cover of two types being less than 10% of the total area or the site consists of habitats from only one or two of the three major ecosystem types.

C. Habitat Composition/Complexity (1). This is a measure of the diversity of habitat types present within the major ecosystem type found within the boundaries of the site. This criterion is based on the assumption that sites that have a high diversity of habitat types are of higher relative "value" for protection and management than those with a low diversity of habitat types. Major ecosystem type is defined here as that type that comprises approximately 40% of the site. Use the habitat type designations listed above for "ecosystem composition."

3 Points	The candidate site has a high diversity of habitat composition within its major ecosystem type, i.e., it contains three or more habitat types or subtypes within its major ecosystem type (e.g., site consists of a combination of swamps, coastal marshes, and mud flats) or has a combination of multiple coastal marsh types (e.g., high, mid, and low marsh zones).
2 Points	The site has a moderate diversity of habitat composition within its major ecosystem type, i.e., it contains only two habitat types or subtypes within its major ecosystem type (e.g., consists of a combination of swamps and a single coastal marsh type).
1 Point	The site has a low diversity of habitat composition within its major ecosystem type, i.e., its major ecosystem type consist of a single habitat type (e.g., coastal marsh or *Juncus* marsh).

D. Habitat Uniqueness of the Site (1). This criterion is a measure of the presence of rare or unique habitat types within a candidate site. This criterion recognizes the importance of emphasizing unique areas in the selection process, in addition to the representativeness of the candidate site in terms of ecosystem and habitat diversity. Unique habitat is defined here as a habitat type of "limited" known occurrence within the biogeographic region/subregion. This criterion can be a simple "yes/no" question.

3 Points	The site contains one or more "unique" habitat types within its boundaries.
0 Points	The site contains no "unique" habitat types within its boundaries.

E. Significant Faunal and Floral Support (1). This is a measure of the degree to which a site supports significant faunal and/or floral components. This criterion focuses on a site's contribution (i.e., function) toward supporting the activities (e.g., feeding, nesting) of the following suite of significant faunal and/or floral components. The list of components includes groups or organisms that are known to be dependent upon estuarine habitats for the entire or a crucial part of their life cycle.

• Fish and Shellfish Spawning and Nursery Grounds (includes use by either freshwater, estuarine, or estuarine-dependent marine species)

• Migratory Bird and/or Waterfowl Use

• Bird Nesting and/or Roosting Area

• Critical Habitat

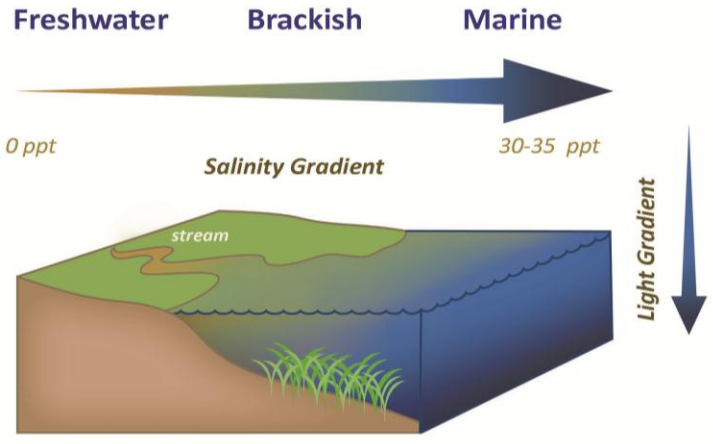
• Non-Game Animals (amphibians, reptiles, etc.)

• Native Species (animal or plant)

3 Points	The candidate site supports or serves as an important site for a wide range of the faunal and floral components listed above (4 of 6) and/or is an extremely important site for any native species.
2 Points	The site supports or serves as an important site for a moderate range and diversity of the significant faunal and floral components listed above (3 of 6).
1 Point	The site supports or serves as an important site for one or two of the significant faunal and floral components listed above.
0 Points	The site does not support significant faunal and floral components.

F. Salinity/Light/Temperature/Turbidity/Water Motion Gradients (9). This is a measure of the range of environmental gradients within and across a candidate site's boundaries. This criterion recognizes the effect of salinity and other physiochemical parameters on the biotic structure of estuarine habitats (including the plant communities and faunal components that inhabit them). It also recognizes that sufficient area and depth within the site's core are necessary in order to adequately study and interpret the resources. It makes the assumption that a site with a greater range of values across a broad area (horizontal attributes) and depth (vertical attributes) will support a diversity of observable habitat types and organisms.

9 Points	The site encompasses broad gradients of temperatures, light, water motion and 25 part per thousand (ppt) or greater range of salinity within an area and depth sufficient to fully observe, research and interpret these characteristics.
6 Points	The site encompasses a medium gradient of temperatures, light, water motion and a 15-24 ppt range of salinity within its boundaries within an area and depth sufficient to observe, research and interpret these characteristics. Or the site encompasses a wide gradient of characteristics and a wide gradient of salinity (25 ppt or greater) that occur in areas that offer limited opportunities to fully observe, research and interpret them.
1 Point	The site encompasses a medium or wide gradient of temperatures, light, water motion and range of salinity (15-25 ppt) but they occur in an area or depth insufficient to observe, research and interpret them. Or, the site encompasses a moderate gradient of temperatures, light, water motion and a 6-14 ppt range of salinity within its boundaries within an area or depth sufficient to observe, research and interpret these characteristics.
0 Points	The site encompasses a narrow gradient of temperatures, light, water motion and a 5 ppt or less range of salinity within its boundaries. Or the range of physiochemical parameters occur in an area or depth that is highly challenging to observe, research or interpret.



G. Degree Developed and Potential Impacts to Water Quality (10). This is a measure of the degree to which the site and its surrounding area are developed and the relative impacts to surface waters from human activities. This criterion is based on the assumption that human impacts to a site are directly proportional to the degree of development. Exceptions to this assumption may need to be considered where development at a site and its surrounding area have been subject to high levels of control. Data on land use and water quality measurements from local, county, and state government agencies should be used to judge this criterion.

3 Points	The site is relatively undisturbed and the watershed contains low intensity development (e.g., few residences, minimal agricultural or silvicultural activity) and/or the land is in protected status.
2 Points	The site is relatively undisturbed and the watershed contains moderate development (e.g., relatively few residences, moderate agricultural or silvicultural activity, minimal commercial development).
1 Point	The site has been moderately disturbed and the watershed contains relatively intensive development (e.g., moderate density of residences, and/or the presence of industrial activity).
0 Points	The site has been extremely disturbed and the watershed contains very intensive development (e.g., high density residential, and/or commercial or industrial activity).

2. Value of the Site for Research, Monitoring, and Resource Protection

A. Value of Site for Research (5): This is a measure of the opportunities offered by characteristics of the site for research, such as a high diversity of ecosystems/habitat types, a balanced habitat composition, a wide salinity range, biotic or geologic representativeness of the site, known cultural uses, historic uses or archaeological sites, and unique opportunities to conduct applied research regarding important local, state, and regional coastal management issues (including past and potential management activities). It is also a measure of previously established research. The assumption is that a site with representative, unique, and highly diverse characteristics will provide greater research, monitoring, and resource protection opportunities than one lacking these characteristics. Ratings generated for these factors under previous selection criteria can be used as a guide for rating this overall factor.

3 Points	The site has (1) a high diversity of ecosystem/habitat types, and, (2) moderate salinity range, and, (3) moderate light, temperature and water motion range, and, (4) representative biotic and geologic sites or characteristics, and, (5) native species, and, (6) historic and archaeological significance, and, (7) opportunities to address important habitat or resource management issues, and (8), previous research data is available.
2 Points	The site has four or five of the eight above.
1 Point	The site has two or three of the eight above.
0 Points	The site has one or none of the eight above.

B. Suitability of Site for Environmental Baseline Monitoring (5): This is a measure of the suitability of the site as a reference area for assessing long-term resource trends and/or ecological characteristics, based on the degree to which the site has been altered by land use practices on or near the site. The assumption is that a site that has relatively pristine land areas and waters will be a more valuable reference area to generate baseline monitoring information than a site that has been extensively altered.

3 Points	The site has outstanding areas to generate environmental baseline data to assess long-term resource trends or ecological characteristics for a wide range of needs.
2 Points	The site has adequate areas to generate environmental baseline data to assess long-term resource trends or ecological characteristics for many needs.
1 Point	The site has marginal areas to generate environmental baseline data to assess long-term resource trends or ecological characteristics.
0 Points	The site has been so extensively altered by past activities that it is unsuitable for generating environmental baseline data.

C. Ability to Address Key Local, State, and Regional Coastal Management Issues (7): This is a measure of the degree to which the site is appropriate for investigating issues relevant to coastal management at the local, state, and regional levels. Solutions to these issues may require either the application of land management practices or habitat manipulations in order to perform meaningful research and assessment. As such, the site should offer both adequate control areas plus areas where demonstration projects and habitat manipulations can be accommodated in order to study many of the issues of concern. The assumption is that a site where coastal management issues arise and can be addressed will be of greater value from a resource protection standpoint than sites where these issues do not arise. The significant issues and may include:

- beach and dune management
- native aquatic plant restoration
- impacts to native streams
- juvenile fish habitat
- impacts to coral reefs
- wetlands development
- wetlands mitigation/restoration/creation
- dredging and spoil disposal
- beneficial uses of dredged materials
- shoreline erosion
- commercial and/or recreational fisheries
- waterfowl and other wildlife management
- best management practices for habitat protection and/or management (e.g., fire management)
- best management practices to limit impacts from agricultural, silvicultural, or development activities
- best methods to control pestiferous insects or undesirable vegetation
- effects of pollutants from point and non-point sources on water quality and living resources
- impacts of sea-level rise
- prehistoric and early historic settlement and land use

3 Points	The site is highly appropriate for investigating coastal zone management issues.
2 Points	The site is appropriate for investigating coastal zone management issues.
1 Point	The site is minimally appropriate for investigating coastal zone management issues.
0 Points	The site is not appropriate for investigating coastal zone management issues.

3. Suitability of the Site for Training, Education, and Interpretation

A. Diversity and Quality of Training, Education, and Interpretation Opportunities (6): This is a measure of the variety and quality of training, education, and interpretation opportunities (i.e., ecological, archeological, cultural, historical, etc.) provided by the site for the different target audiences. The assumption is that a candidate site with a diversity of such opportunities of high quality will be utilized to a greater extent than one with fewer opportunities.

3 Points	The site has numerous different training, education, and interpretation opportunities of high quality. The site also contains at least one especially unique ecological, geologic, hydrographic, or cultural feature that can serve to inspire and excite educational activities.
2 Points	The site has several significantly different educational opportunities of good quality and a unique ecological, ecological, geologic, hydrographic or cultural feature that will augment educational activities.
1 Point	The site has few significant educational opportunities.
0 Points	The site has insignificant educational opportunities.

B. Diversity and Availability of Target Audiences (12): This is a measure of the diversity and availability of target audiences (e.g., user groups, resource managers, residents, environmental groups, decision makers, teachers and students, the general public) which may routinely utilize the site for training, education, and interpretation. The assumption is that a candidate site with a variety of available target audiences will be utilized to a greater extent than one with fewer target audiences.

3 Points	The site is proximate to a variety of target audiences.
2 Points	The site is proximate to a moderate number of target audiences.
1 Point	The site is proximate to a few target audiences.
0 Points	The site is so remote or inaccessible that it is not suitable for most audiences.

4. Acquisition and Management Considerations

Acquisition, Facilities, and Proximity

A. Land Ownership (3): This is a measure of the degree to which the property is divided (e.g., divided into only a few parcels or owned by many individuals). The assumption is that a candidate site with fewer property owners will be easier to acquire or control.

3 Points	The property is relatively undivided.
2 Points	The property is divided with few property owners.
1 Point	The property is divided with many property owners.

B. Publicly Owned Lands and Feasibility of Land Acquisition (3, 13): This is a measure of the degree to which the land within the site is currently owned by the state, federal government or local governments and/or environmental interest groups, and the degree to which there is interest in donating or selling property by its owners. The assumption is that the degree of control needed to maintain the site in relatively pristine conditions increases with publicly owned land and lands controlled by environmental groups, and that the chances of purchasing additional areas increase with private property owners who are willing to sell.

3 Points	A large percentage (more than 50%) of the candidate site is currently owned by the state, federal, or local governments and/or environmental groups, and these entities have an interest in participating in a NERR.
2 Points	State, federal, or local governments and/or environmental groups own 25-50% of the candidate site with the remainder in the hands of a few owners who have an interest in participating in a NERR.
1 Point	State, federal, or local governments and/or environmental groups own less than 25% of the site with the remainder in the hands of a few owners who have an interest in participating in a NERR.
0 Points	The site is owned by a large number of owners with little potential interest in sale or donation.

C. Availability of Facilities (14): The degree to which there are existing facilities or potential sites for future facilities that can be used by staff, researchers, classes and training groups (e.g., administrative building space, dormitories, labs, interpretive centers, trails and boardwalks, boat ramps, etc.). The assumption is that, due to limited NERR construction funds, a candidate site with existing facilities can meet the objectives of the NERRS Program sooner and more completely than a site without existing facilities. The availability of other sources of construction funds should be considered as part of this criterion.

3 Points	The site has established structures and facilities that can be used for reserve activities.
2 Points	The site has limited established structures and/or facilities that can be used for reserve activities.
1 Point	The site has excellent potential for the development of facilities for reserve activities.
0 Points	The site has limited potential for the development facilities for reserve activities.

D. Proximity and Accessibility of Site to Researchers, Educators, and Resource Management Decision Makers (4, 15): This is a measure of (1) the relative proximity of the site to urban centers, K-12 schools, research and education institutions, and resource management agencies which may routinely utilize the site and (2) the adequacy of the roads and/or points for boat access at the site. The underlying assumption is that the proximity and accessibility of the site will enhance its utilization for education, research, monitoring, and resource protection purposes.

3 Points	The candidate site can be utilized by the above listed entities during a single day trip. There are good roads and/or points for boat access at the site.
2 Points	The candidate site is relatively isolated and utilization would require an overnight stay from any of the above listed entities, but accommodations are readily available. There are adequate roads and/or points for boat access at the site.
1 Point	The candidate site is relatively isolated and reasonable accommodations for an overnight stay to utilize the site are limited. There are limited roads and/or points for boat access at the site.
0 Points	The candidate site is extremely isolated and accommodations to utilize the site are not available. There are inadequate or no roads and/or points for boat access at the site.

Management Considerations

E. Controlled Land and Water Access (2): This is a measure of the degree to which land and water access to the candidate site's core area can be controlled and limited. It is based on size, geography, proximity to adjacent development, and historical controls. The assumption is that the integrity and security of a potential NERR site can be better maintained with a higher level of controlled land and water access.

3 Points	The candidate site is relatively contained and of a size that can be controlled. Historically, access has been controlled, and can easily be controlled in the future due to the presence of limited access points by boat or vehicle.
2 Points	The candidate site is not very contained, but has a limited number of access points. Historically, site access has not been controlled, but the site is of a size that it can be controlled in the future.
1 Point	Site access will be difficult to control due to the large number of access points and/or the size of the area. Historically, site access has not been controlled and it is unclear whether it can be controlled in the future.
0 Points	Site access cannot be controlled due to the large number of access points, lack of historical controls, the size of the area, and/or dense adjacent development.

F. Compatibility with Existing Management Practices and Consumptive and Non-Consumptive Uses (7): This is a measure of the degree to which existing management practices (e.g., habitat manipulations, best management practices) and historic and current consumptive and non-consumptive uses might be in conflict with foreseeable management practices implemented under a NERR Program. The assumption is that sites with fewer conflicts are more likely to maintain both public support and the integrity of the site.

NOTE: This factor should be measured in light of special circumstances (such as the presence of unique habitats or of listed species) that might cause the state to limit what is now unlimited use or practices by groups or individuals and, in the process, cause some conflict in regard to designation of a NERR site. It should also be measure in light of the same special circumstances (such as presence of listed species) that would limit NERR research or educational activities. It should be measured with an eye toward balancing protection of critical sites or resources against reasonable access to other parts of the site as well as ability to conduct NERR activities.

3 Points	Existing management practices, NERR activities and consumptive and non-consumptive uses would not be in conflict with any foreseeable management policy of a NERR.
2 Points	Due to the presence of proportionately small areas of unique habitat/endangered species or threats to the integrity of the ecosystem, there is the potential for limited restrictions on existing management practices, NERR activities and/or consumptive and non- consumptive uses of a site.
1 Point	Due to the presence of areas of unique habitat/endangered species and threats to the integrity of the ecosystem, some restrictions on existing management practices, NERR activities and/or consumptive and non-consumptive uses of a site are likely.

0 Points	Large areas of unique habitat and threats to the integrity of the ecosystem will require restrictions on existing management practices, NERR activities and/or consumptive and non- consumptive uses of a site.

G. Compatibility With Adjacent Land Use (13): This is a measure of the potential conflicts between management practices on a NERR site with land use practices on adjacent lands. It is also a measure of the adequacy of land use regulations, plans, or other controls to sustain the site's resources for long-term research, education, and resource protection. The assumption is that a candidate site with compatible land use practices on adjacent lands is more likely to maintain the integrity of the reserve.

NOTE: As with the previous factor, this issue should be evaluated with an eye toward the potential for present and/or future conflicts with adjacent lands and the potential to designate buffer zones around a site.

3 Points	A large percentage of the land adjacent to the site is not currently used for activities that might impact the site's core (and may be obtainable as a buffer) and/or the land use practices on adjacent lands would not have any negative impacts on a possible NERR.
2 Points	A large to moderate percentage of the land adjacent to the site is not currently used for activities that might negatively impact the site, and/or the land-use practices on adjacent lands either could be negotiated or would have only minor impacts a possible NERR.
1 Point	Some of the land adjacent to the site is currently used for activities that would have negative impacts on a possible NERR and may not be negotiable.
0 Points	A large percentage of the land adjacent to the site is currently used for activities that would have negative impacts on a possible NERR and would lead to conflicts.

H. Future Development Plans (7): This is a measure of the potential level of future development in areas on or adjacent to a candidate site which would impact the site. The assumption is that a candidate site with minimal to no development plans on-site and on adjacent lands is more likely to maintain the integrity of the reserve.

NOTE: Even more so than the previous factor, this issue involves the degree to which adjacent lands are currently being used and/or may be attainable as buffer areas for the NERR.

3 Points	A large percentage (more than 50%) of the land adjacent to the site is currently undeveloped and/or is, for whatever reason, very unlikely to be developed in the near future (e.g., consisting of marginally developable property, such as wetlands, which could be obtained as buffer).
2 Points	A moderate percentage (between 25-50%) of the land adjacent to the site is currently undeveloped and/or is not likely to be developed in the near future.
1 Point	A small to moderate percentage (10-25%) of the land adjacent to the site is currently undeveloped and/or is not likely to be developed in the near future, with limited levels of development on other lands.
0 Points	A large percentage (more than 50%) of the land adjacent to the site is developed and the area is likely to continue to be developed in the future.

I. Funding: Potential to generate revenue (16): This consideration is important for the NERR site in order to support NERR activities such as research and education.

3 Points	The site can be used for a large variety of revenue-generating activities.
2 Points	The site can be used for a variety of revenue-generating activities.
1 Point	The site can be used for a few revenue-generating activities.
0 Points	The site can be used for no revenue-generating activities.

5. Coastal Resiliency Research

Suitability of site for coastal resiliency research (17): This consideration is important for the NERR site in order to be able to assess climate and coastal change impacts on the area.

3 Points	The site's ecological resources will be affected by climate change impacts including erosion, sea level rise, etc. and these impacts will be able to be well-documented.
2 Points	The site's ecological resources will be affected by climate change impacts including erosion, sea level rise, etc. and these impacts may be able to be documented.
1 Point	The site's ecological resources will be affected by climate change impacts including erosion, sea level rise, etc. and these impacts will probably not be able to be documented.