SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION
50 California Street • Suite 2600 • San Francisco, California 94111 • (415) 352-3600 • FAX: (415) 352-3606 • www.bcdc.ca.gov

March 21, 2007

TO: San Francisco Bay Area Water Trail Steering Committee

FROM: Sara Polgar, Water Trail Project Manager (415/352-3645 sarap@bcdc.ca.gov)

SUBJECT: Water Trail Principles and Strategies
(For individual review. Please provide comments by April 13, 2007)

Introduction

Over the course of the first five water trail meetings, the Steering Committee developed and refined a set of principles and trail head development and management strategies. The principles will guide how the Water Trail Plan addresses access, wildlife, safety and education issues. The strategies offer more specific guidance from the Committee on developing and managing trail heads, as well as recommendations for water trail education and stewardship. Again, this guidance will be incorporated into the Plan.

This report includes the latest versions of the principles and strategies. Staff asks that Committee members review these individually and provide comments and feedback to Sara Polgar by April 13, 2007.

Principles

Principle 1: Critical Areas.

> Identify, or provide criteria for identifying, critical areas of the Bay such as navigational exclusion zones, hazards and unusual boating conditions, sensitive wildlife and habitat areas, sites with poor water quality and other areas, that require providing users with particular information, restricting access or taking other special management actions.

Whereas site assessments (Principle 2) primarily address development and management needs at trail heads, this first principle refers more to areas and conditions located away from trail heads that might not otherwise receive consideration under a standard launch site review process. Unlike land-side trails that have fixed paths, boaters can go anywhere on the water from a launch site. This adds an extra level of complexity to the water trail; managers must anticipate issues that can occur away from launch sites, and come up with ways to address these potential problems as well as on-site issues. This first principle is especially important for identifying critical safety, wildlife and habitat areas on the Bay.

To address wildlife and habitat issues, the water trail plan should identify **sensitive areas** where and times of year when access should be managed or prohibited. Certain environmental regulations and shoreline management policies already designate sensitive areas where NMSB access is managed or prohibited. Staff identified these existing sensitive areas in the previous

background report (Background Report on Wildlife, Habitat and Water Quality Issues, "Areas Specially Designated for Wildlife or Habitat Protection." pp. 14 – 15.) Based on the characteristics of these existing sensitive areas, other information compiled in the last background report and provided by experts, and the discussions Committee meetings, staff identified the following, general types of sensitive areas:

1. Habitat areas that species listed under the Federal or California Endangered Species Acts are using;
2. Bird nesting sites;
3. Harbor seal haul-outs;
4. Certain open water areas used for foraging and resting by wintering waterfowl;
5. Important species-specific feeding and refugia areas;
6. Subtidal habitat that is known to be sensitive to NMSB activities; and
7. Areas in the process of being restored, or that have recently been restored and that are not currently suitable for access.

Seasonality is an important factor in the sensitivity of the areas defined above. In most cases, the habitat areas are only sensitive or are more sensitive during discrete times of year. For example, bird nesting sites are sensitive during nesting seasons which will vary with different species, and sensitive wintering waterfowl areas potentially occur from October through April. At the June 6th water trail meeting, attendees learned from Sarah Allen (Senior Scientist, National Park Service, Point Reyes National Seashore) that harbor seals are sensitive year-round to disturbance at haul outs. These haul out sites also have a seasonality associated with them because the Bay population is especially sensitive to disturbance effects during times of the year when the seals molt and breed.

With development of new access onto the water, trail staff members should work with their partners to avoid siting these in sensitive areas. However, some existing NMSB launch and landing sites are already located in or near sensitive areas (e.g. the launch dock at McInnis Park along Gallinas Creek). If these are incorporated into the water trail, signage and outreach, education and interpretive programs should promote low impact boating practices to minimize current problems as well as those that might develop with the trail. Many of the existing NMSB launch sites near sensitive areas can be improved by these types of management measures. Implementing new access restrictions such as a seasonal closure of a nesting area might also be appropriate and possible depending on NMSB use-patterns at the launch site and the management objectives and resources of the site owner. Determining the suitable management strategies for a trail head in a sensitive area will be part of the site assessment and planning (Principle 2) done by water trail staff in coordination with resource and site managers.

One option for identifying sensitive areas in the final water trail plan is to map them. However, staff recommends using a criteria-based approach instead of mapping. Committee members and other stakeholders have emphasized that the plan must be flexible enough to address changing conditions of the Bay Area. For example, a recent nesting season survey could reveal California Clapper Rails in a new location adjacent to an existing trail head. Working from the policies in the water trail plan, trail managers should be able to identify this newly sensitive area and coordinate with the launch site manager to implement appropriate management actions. This criteria-based approach can only be effective if trail managers are aware of the most current species censuses, habitat surveys and water quality monitoring data, as well as recent research on wildlife disturbance issues. Water trail staff should maintain contacts in the scientific community and with land and resource managers such as U.S. Fish and Wildlife Service, California Department of Fish and Game, U.S. Geologic Survey, NOAA Fisheries and the Regional Water Quality Control Board. In addition to reviewing published

reports, they should actively consult with these agencies and other organizations to learn about recent survey data, and this current wildlife and habitat information should be reflected in water trail project maps.

Critical **safety areas** include navigational exclusion zones (both permanent and temporary) and shipping and ferry routes, sites with known marine debris hazards, as well as regions of the Bay with known natural hazards such as strong currents, winds or waves and areas with extensive low-tide mudflats. Some of these areas can be mapped as fixed locations (e.g. exclusion zones around the San Francisco and Oakland International Airports), whereas others are changing or temporary (e.g. exclusion zones around tankers, and boating conditions such as currents, fog and winds). The trail management role with respect to these critical safety areas is to inform and educate trail users about them. Trail managers will need to consult and coordinate on an ongoing basis with the U.S. Coast Guard, Vessel Traffic Services, the San Francisco Bay Harbor Safety Committee, the National Oceanic and Atmospheric Administration and recreational boating organizations to stay aware of and be responsive to current safety conditions.

In addition to identifying areas where NMSB access requires restrictions or special management efforts, the plan should describe criteria for recognizing **areas well-suited to NMSB access** and trail-related activities. Committee members suggested identifying areas that are safe for less-experienced boaters to practice and participate in classes without risk of disturbing wildlife or other water activities. Other characteristics to look for could include opportunities for historic, cultural or environmental interpretation or education for groups (e.g. school field trips). Focusing development of access near these areas may help avoid problems in some of the critical safety and wildlife areas. Furthermore, this ties back to the experiential aspect of the water trail concept by increasing opportunities for people to have positive and meaningful recreational experiences on the Bay.

Principle 2: Site Assessment and Planning.

> Conduct site assessment and planning for trail heads. The elements of these would include:
>
> - Identify existing and anticipated issues related to NMSB access needs, wildlife, habitat and water quality, boater and navigational safety and security, management needs and available resources, and education and interpretive needs and opportunities.
> - Create a trail head improvement and management plan that identifies legally enforceable strategies that will be implemented to support appropriate use.
> - Develop a plan for trail head monitoring that will enable managers to track potential site-specific issues, such as user conflicts or wildlife disturbance that may require management intervention.

A core component of water trail implementation will be site assessment and planning at NMSB access points. Trail managers need to assess the suitability of existing and potential NMSB launch sites to be part of the water trail, and create site-specific development and management plans for trail heads. Staff originally proposed this principle more narrowly as a means to identify and address site-specific wildlife and access compatibility issues. Feedback on the principles suggested that site assessment is a broader trail planning need. If trail managers are to take an organic approach to developing the trail – one that is responsive to resource managers' objectives and limitations and the characteristics of a site and the surrounding areas – they need to consider a comprehensive set of factors at each potential trail head.

The Committee and other stakeholders also commented on the use of monitoring to allow for flexibility in trail management. In addition to monitoring for wildlife and habitat conditions as described in the originally proposed principle, they suggested that trail heads be re-assessed more broadly on a regular basis to track site conditions and determine if management practices should be altered. Monitoring at some sites might be as simple as a regular check-in between water trail staff and site managers to flag issues that need some type of management intervention. Other sites with complex or potentially significant problems will require closer tracking and more immediate responses. In these cases, site-specific monitoring guidelines should be developed as part of site assessment and planning.

Thorough site assessment and planning are especially important for addressing **access needs of NMSB users**. Water trail staff should systematically review the existing and potential launch sites around the Bay to determine what facility improvements (if any) are needed or desirable for NMSB access. The Committee identified and discussed trail head improvements that enable NMSB access onto the water during its April 2006 meeting. At the most basic level, sites require some means of launching a boat onto the Bay and most trail heads will need parking, bathrooms and trash facilities. Other site improvements include on-site equipment storage or concessions, equipment cleaning stations and overnight accommodations.

In most cases, the type of facilities and scale of these (e.g. number of parking spaces) significantly affect boater use-patterns and the issues that managers face at a launch site and surrounding areas. Trail and site managers need to identify problems that currently exist as well as those that might evolve if a site is included in the water trail, and use this information to determine the site's capacity. This site capacity is a use-level that the can be accommodated physically (e.g. space for launch facilities) and in terms of development and management resources, while maintaining the highest likelihood that trail users will enjoy a high-quality recreational experience; environmental resources at the site and in surrounding areas are protected; and the safety of water users is not compromised.

To address potentially challenging **wildlife and habitat issues** associated with the trail, staff had proposed using Public Access Policy 4 from the BCDC Bay Plan to guide how site assessments are conducted. The Committee and other stakeholders recommended using a description that is more suitable to the water trail planning context (as opposed to the regulatory context from which the policy was taken). Other feedback suggested that the site assessment definition be modified to reflect that boaters – and potential wildlife and habitat impacts due to boaters – are not confined to the launch site. As a result, trail managers need to look beyond the project site itself to consider a range of potential influence radiating from a launch facility. Additionally, staff received some feedback that this part of the site assessment and planning principle should be distinguished from the environmental review process that will be required for a subset of trail heads that involve facilities development or improvement projects. Assessment of potential wildlife, habitat and water quality issues, as described for this principle, should be done at all trail heads

Site assessment should enable trail and site managers to determine how to locate, develop or improve, and manage a trail head to minimize negative effects on wildlife, habitat and water quality. Information on the sensitive areas (as identified under Principle 1) at, or near, a proposed trail head should be compiled along with the likely NMSB use-patterns at the site and in areas that are easily accessible from the launch. Using this site-specific information, the best available scientific evidence, and expert advice, trail and site managers should assess potential impacts associated with the trail head. The management plan should explain how adverse impacts will be minimized, and, where appropriate, describe a site-specific process for monitor effects of trail head development and trail usage on wildlife, habitat and water quality to determine whether management strategies need to be changed.

Principle 3: Trail Head Development and Management Strategies.

> Articulate a set of feasible trail head development and management strategies that can be implemented to address issues related to NMSB access needs, wildlife and habitat concerns, boater and navigational safety and security, management needs and available resources, and education and interpretive needs and opportunities.

Originally, this third principle only addressed minimizing or avoiding significant adverse impacts to wildlife, habitat and water quality. It remains important to have strategies that can resolve these issues, but they also need to be more broadly applicable to all water trail issues. In the revised principle (above), staff reframed the set of strategies as a toolbox for trail and launch site managers. Not all strategies will apply at all sites, but the suite of trail head development and management strategies should be comprehensive enough to provide solutions for the broad range of trail conditions and situations. The strategies that the Committee developed are provided in the second section of this report.

Principle 4: Water Trail Ethic.

> Develop a water trail ethic that teaches and promotes safe, low-impact boating practices and encourages NMSB users to be stewards of the Bay and water trail.

The fourth principle for the water trail plan stems from the need for a comprehensive and consistent trail outreach program to inform NMSB users about the potential impacts of their recreational activities and proper boating practices to prevent problems, and to encourage a strong ethic among boaters to follow these practices. Staff originally proposed adapting the Leave No Trace (LNT) ethic for this purpose.[1] Overall, the Committee supported the concept of a water trail ethic, but staff received strong objections to applying the LNT ethic in the Bay Area. This ethic targets recreational activities in back-country and wilderness settings, and the "Leave No Trace" name carries this association. Much of the Bay shoreline is highly developed and urbanized. Even the less-developed areas do not fall within the definition of wilderness as addressed by LNT. Stakeholders pointed out that to use the LNT 'brand' name could misrepresent the type of experiences trail users should expect, and even lead to inappropriate behaviors such as camping in undesignated sites. Instead, Committee members suggested taking some of the LNT components – leaving out others – and developing a new, 'urban wilderness' ethic. Table 1 reflects the recommended changes to the previous proposal in the background report on wildlife, habitat and water quality.

Principle 5: Safety.

> Promote personal boating safety and navigational safety and national security through a water trail education program, active coordination among NMSB groups, other mariners and regulatory agencies, and appropriate launch facility design and site management.

---

[1] Leave No Trace Center for Outdoor Ethics. n.d. "Leave No Trace Programs." Retrieved on May 12, 2006 from http://www.lnt.org/programs/index.html

> Leave No Trace is an national and international program designed to assist outdoor enthusiasts with their decisions about how to reduce their impacts when they hike, camp, picnic, snowshoe, run, bike, hunt, paddle, ride horses, fish, ski or climb. The program strives to educate all those who enjoy the outdoors about the nature of their recreational impacts as well as techniques to prevent and minimize such impacts. Leave No Trace is best understood as an educational and ethical program, not as a set of rules and regulations.

Personal boating safety and navigational safety and national security are key concerns for trail users, other mariners and shoreline managers. The Committee felt that promotion of safe boating practices was a key part of the education program that the trail would implement (e.g. through signage, the trail guidebook, website information, brochures and other materials). However, this is not the only component of promoting safety on the trail. At meeting 5, safety experts and Committee members emphasized that the water trail project staff need to maintain good communication with NMSB groups/clubs, other mariners (e.g. Bar Pilots) and agencies and organizations (e.g. USCG and VTS) to stay abreast of safety issues. Furthermore, the water trail project needs to coordinate with NMSB groups, trail head managers, tour operators, equipment outfitters and other businesses that promote the trail to disseminate safety information to trail users. Lastly, NMSB users and shoreline launch site managers emphasized the importance of appropriate facility design to reduce land-side accidents, and recommended management solutions for trail head security issues (e.g. a system for identifying which cars in a trail head parking lot belong to boaters on an overnight trip).

Principle 6: Water Trail Education.

> Coordinate with and augment existing education programs around the entire Bay and develop, as needed, trail-specific educational materials to create a comprehensive water trail education program that increases environmental education and interpretation and promotes consistent and accurate educational messages in all outreach efforts.

The last principle is a water trail education program. In part, this program will involve creating and disseminating new, trail-specific educational materials -- maps, a guidebook, a website, a trail head signage program and trail brochures. Project staff will be responsible for coordinating and consulting with other education programs, stakeholders and experts in developing these materials. Additionally, the project must work with existing education programs to increase opportunities for education and interpretation on the trail. Because the Bay is so large and regionally diverse, the project staff will need to leverage these existing local education efforts to build a comprehensive, trail-wide education program.

Table 1. Revised Water Trail Ethic.

Plan ahead and prepare	**Educate yourself.** Equip yourself with the necessary skills to safely complete your planned trip. Know your destination, navigational and other regulations, hazards, topography, and trail head facilities. Know your wildlife, and whether sensitive or closed wildlife areas are on your route. Consult VTS to learn about ship traffic, ferry routes and schedules, permitted events and other potential traffic sources. **Plan for yourself and your group.** Match skills, behavior and group size with the type of destination and expected boating conditions. **Schedule your trip in advance.** Check tide tables, study the nautical charts and trail head maps, learn about hours and fees at trail heads, and if necessary obtain permits and make reservations. Give someone on shore your float plan: what your boat looks like, who you will be boating with and where and when you plan to launch and land. **Use proper gear.** Be prepared for weather, hazards and emergencies. Bring appropriate attire and gear, food, water and emergency equipment such as a VHF radio and recommended night lighting.
Use designated trail heads	**Launch, land and camp in designated locations.** To avoid damaging fragile habitat along the Bay shoreline (e.g. pickleweed and cordgrass) or getting stuck in thick mud, launch, land and camp only at designated sites, and stay on marked paths and in campsites at the trail heads.
Dispose of waste properly	**Use trash and bathroom facilities.** If none are available, pack out trash and other wastes.
Leave what you find	**Leave natural features undisturbed.** Take only photos and memories with you. One visitor picking plants or taking a souvenir may seem harmless but the cumulative effect of many visitors doing so is quite damaging. **Preserve the past.** Do not excavate, disturb or remove cultural or historic structures or artifacts.
Respect wildlife	**Avoid sensitive times and habitats.** Learn about local marine wildlife and where and when to avoid paddling to minimize impacts. Pay attention to posted information at trail heads and abide by boating restrictions to protect wildlife and habitat. **Observe from a distance.** Avoid approaching wildlife. Use binoculars or a zoom lens on your camera to get an up-close view. If the wildlife is watching you or moving away (flushing) from you, you're too close.
Boat safely and be considerate of others	**Know and follow navigational rules.** Read and learn the US Coast Guard Rules of the Road. Make use of bright colors to make yourself more visible on the water. Assume, though, that larger vessels cannot see you. **Respect other visitors.** Be aware of other visitors' activities and try to avoid user conflicts. For example, try not to block boat launch facilities.

Strategies

The strategies in Table 2 are intended to be tools that can be implemented to address trail-related issues such as NMSB access needs, wildlife and safety concerns and education needs and opportunities. Not all strategies will apply at all sites, but the suite of trail head development and management strategies should be comprehensive enough to provide solutions for the broad range of trail conditions and situations. The strategies are guidance for a diverse audience that includes water trail staff and trail head managers, local, regional and state agencies, non-governmental organizations and the public. Implementing agencies will use the recommendations to guide funding decisions, and resource managers and regulatory agencies will look to them for direction on access-related policies. Other organizations and members of the public will use the strategies as a basis for advocating for development and improvement of trail heads.

Table 2. Proposed strategies.

TRAIL HEAD LOCATION AND DESIGN		
STRATEGY	**ADVANTAGES**	**CHALLENGES**
1. Trail Head Location Seek opportunities to increase use capacity at existing launches, or create new NMSB access. Prioritize efforts at sites that are in close proximity to desirable NMSB conditions and trip destinations, and in areas where trail-related adverse impacts to wildlife and habitat are less likely. In all cases, new and expanded access should be sited to avoid or minimize significant adverse impacts to wildlife and habitat. Location strategies to accomplish these objectives could include: a. Locate new trail heads away from sensitive wildlife and habitat areas, and avoid increasing capacity at existing sites in these areas b. Create new or increased access at sites that can draw trail users away from identified critical wildlife, habitat or safety areas c. Locate new trail heads or increase capacity at existing sites in areas that are good for training new boaters d. Relocate launch sites that have verifiable significant impacts on wildlife or habitat	• Can reduce trail impacts near trail heads • May limit number of users visiting sensitive wildlife and habitat areas and critical safety areas because reaching these areas is more difficult • May increase opportunities for new boaters to enjoy the trail	• May limit utility of some areas as educational or recreational resources • May limit wildlife viewing opportunities

Table 2. Continued.

TRAIL HEAD LOCATION AND DESIGN (cont.)		
STRATEGY	**ADVANTAGES**	**CHALLENGES**
2. Linking Access Points Seek opportunities to link trail heads to each other and with access to other regional trails (e.g. the Bay Trail) and create linkages that serve different trail users' needs and interests (e.g. different skill levels, viewing nature, learning about cultural or historic features of the Bay Area, etc.)	• Facilitates point-to-point trips on the water • Facilitates varied and interesting access experiences, including multi-use experiences on the region-wide trail system • Promotes safe boating conditions	• Greater density of trail heads may increase the chances of sites being near sensitive wildlife and habitat areas, or critical safety areas
3. Improvements Consistent With Site Characteristics Match the type and design of trail-related improvements to the site conditions (e.g. shoreline morphology, habitats, predominant wind and wave conditions, other uses of the site, etc.) and likely NMSB user groups Ensure that the level of use that the site accommodates is consistent with providing a high-quality recreational experience, protecting environmental resources at the site and in surrounding areas, and preserving the safety of water users	• Helps preserve the character of the trail head setting • May increase the quality of boaters' experiences • Ensures access is available to a broad spectrum of NMSB recreational users • Avoids uses of the site that are incompatible with safe boating, wildlife, habitat and water quality protection • Can avoid user conflicts	• Accommodating activity-specific requirements can require additional site development and cost more than other options • Site manager may not have flexibility in spending project funds for facilities
4. Consistency With Policies and Plans Coordinate plans for trail head activities to be consistent with existing policies and plans of land and resources managers at and around trail heads	• Facilitates development of trail heads at a diversity of shoreline areas (e.g. parks, marinas, wildlife refuges and protected areas, private lands, etc.)	• Existing policies and plans may not address access needs for NMSB users
5. Design Standards Develop and update design standards for trail-oriented access improvements	• Can result in consistently durable, accessible and functional facilities • Can assist local governments and others striving to improve NMSB access	• Requires staff to prepare and update guidelines

Table 2. Continued.

TRAIL HEAD LOCATION AND DESIGN (cont.)		
STRATEGY	**ADVANTAGES**	**CHALLENGES**
6. Management Resources Match the facility improvements to the management resources (including staff and funding) available for long-term maintenance of facilities and signage, and provision of other site-specific management needs such as, enforcement, monitoring, and education and outreach programs	• Helps ensure that the managing organization can successfully operate and maintain the site long-term • Good site management prevents most problems • Avoids creating too much use-capacity at a trail head such that available management resources would be insufficient to protect natural and historic resources and safety	• Almost all parks and other public lands are severely limited in terms of management resources; if improvements are limited at every site by management resources, many types of public access onto the Bay would be severely curtailed
7. Maintenance Establish maintenance and operations plans for trail head facilities that specify the entities responsible for maintaining improvements	• Maintains public safety • Maintains public satisfaction with access opportunities and decreases creation of informal access	• Requires long-term staff and funding resources
8. Parking Provide parking or drop-off zones as close as possible to launch points (e.g. ramp, dock, etc), and extend parking time limits to a minimum of 4 hours Provide overnight parking where possible Where and when appropriate, limit vehicle parking in the site design to effect use capacity limitations for a launch site.	• Facilitates utilization by people in NMSBs for single and multi-day trips on the Bay • Drop-off spots and parking near to the launch reduce the distance that boaters need to carry their gear • Parking is usually a limiting factor for number of users at a site. Offering a limited amount of parking is one tool for preventing over-use of a site	• Launches may not have space to expand parking to accommodate additional demand from trail users • Extending the parking time limits may reduce overall visitorship to a site because available spots remained filled with long-term visitors

Table 2. Continued.

TRAIL HEAD LOCATION AND DESIGN (cont.)		
STRATEGY	**ADVANTAGES**	**CHALLENGES**
9. Restrooms Provide restroom facilities where feasible and appropriate	• Avoids degradation of water quality at trail heads • Protects visitors and wildlife from exposure to human waste	• May be costly • Requires regular maintenance
10. Accessibility Develop and improve launch facilities to be universally accessible	• Makes the trail accessible to trail users with disabilities and of all abilities	• Requires careful design of launches to ensure that accessibility features do not make launching an NMSB more difficult • Accessibility features may be costly
11. On-Site Equipment Storage Where feasible and appropriate, provide storage areas and facilities for NMSB equipment (e.g. boat house, modified shipping container, fenced areas, inside ties at marinas)	• May decrease economic barriers to participation • May facilitate trail usage among urban residents • If the site is accessible by public transportation, can obviate need for access to the site via care and reduce demand for scarce parking	• Depending on the type of storage, construction may be costly • Can increase liability risks for site owner • Insurance for equipment may be costly or difficult to obtain • Storage structures may be unattractive or incompatible with the site characteristics and block visual access to the Bay
12. On-site Equipment Rental Provide on-site equipment concessions where feasible. Concessionaires should contribute to funding for the launch site and to development and maintenance of the site in a manner that is consistent with the water trail vision, and provide outreach information and education to clients on site-specific safety and security, and wildlife and habitat issues.	• Facilitates trail usage by beginners and visitors • Makes the Bay more accessible to residents in urban areas for NMSB activities • If the site is accessible by public transportation, can obviate need for access to the site via car, and reduce demand for scarce parking • May help with launch facility management, thereby reducing staffing needs at the site	• Concessions can be disruptive to other activities at a site • Concessions can over-run site facilities • May require support structures (e.g. for equipment storage) that may be unattractive, incompatible with the site characteristics and block visual access to the Bay

Table 2. Continued.

TRAIL HEAD LOCATION AND DESIGN (cont.)		
STRATEGY	**ADVANTAGES**	**CHALLENGES**
13. Overnight Accommodations a. Develop new campsites at or near trail heads where consistent with land managers' plans and resources b. Coordinate with organizations and businesses to provide overnight accommodations on the trail in motels, hostels, historic ships, etc.	• Facilitates multi-day trips • Provides opportunities for the water trail to partner with businesses • May increase the tourism value of the trail	• Requires ongoing management and maintenance • May lead to site security problems • Camping facilities may encourage improper use • If accommodations are available to all, trail users may not be able to utilize the site because demand is too high • Restricting use of accommodations to NMSBs might unfairly exclude the other members of the public from enjoying the site
14. Habitat Restoration/ Enhancement/ Creation Seek opportunities to coordinate trail head development, improvement or management with habitat restoration, enhancement or creation	• Potentially provides benefits for both habitat and access goals • Can enhance critical habitat for specific species • Can retain/increase habitat diversity to help alleviate competition with human uses	• Requires extensive site specific knowledge • May reduce wildlife viewing opportunities • Potentially controversial • May be costly and difficult to maintain
15. Monitoring and Research a. Conduct, coordinate or sponsor pilot projects to monitor trail impacts in different habitats to develop and test effective and consistent monitoring methods and learn about impacts b. For trail heads in identified critical areas, monitor wildlife, habitat and/or water quality conditions prior to, during and after inclusion of the site as part of the trail	• Establishes baseline data and enables staff to track efforts to protect wildlife and make changes if needed • Can assist in mapping habitat for specific species that can then be avoided • Better understanding of potential NMSB impacts can help trail and site managers develop effective management policies and education and outreach information	• Requires significant staff resources over an extended period of time to directly monitor or plan and coordinate volunteer monitoring efforts • May be costly if consultants are needed to do monitoring and analysis

Table 2. Continued.

TRAIL HEAD LOCATION AND DESIGN (cont.)		
STRATEGY	**ADVANTAGES**	**CHALLENGES**
16. Site Review Conduct, coordinate or sponsor periodic reviews of trail heads to assess site-specific issues such as user conflicts, overuse of facilities or non-compliance with rules Use information from these reviews to improve site management	• Helps water trail staff and site managers recognize problems that need intervention, and take action in a timely manner	• Requires significant staff resources over an extended period of time to conduct or coordinate site reviews, assessment of gathered information and management changes
17. Outreach, Educational and Interpretive Signage Provide signage and materials at and near trail heads that are both consistent with other trail outreach and education and specific to the sites in terms of their user groups, natural, cultural and historic resources, safety issues and rules. For example, a trail head could have a kiosk with multi-lingual, site specific tide/current information, and interpretive panels and take-away materials on wildlife and habitat in the area	• Increases knowledge of users (regarding implications of users actions) decreases damaging or unsafe user behavior • Explanation of reasons behind trail policies increases compliance with regulations • May foster public support for the trail and specific trail heads • Educated users may educate others	• May be costly and difficult to maintain • More effective in areas with high number of local/habitual users • Casual trail users may not be interested in signage
18. Outreach and Training Develop and provide outreach and training for NMSB teachers and guides, outfitters, other businesses and agencies and organizations involved in the trail to educate them about boating practices that are consistent with the water trail ethic that they should convey to their customers or the public	• 'Training the trainers' offers an efficient way to reach a broad audience of trail users • Explanation of reasons behind trail policies increases compliance with regulations • May foster support for the trail among businesses • May provide opportunities to learn from trainers about education techniques that are effective in achieving positive behavior changes among trail users	• For a variety of reasons, it may be difficult to engage these businesses, agencies and organizations for training • Customer/client audience may have limited tolerance for outreach and educational programming in conjunction with paid-for services • May be difficult to ensure that correct information is consistently conveyed to trail users • Requires commitment of staff resources to keep current with outreach and trainings

Table 2. Continued.

MANAGEMENT OF TRAIL USE (cont.)		
STRATEGY	**ADVANTAGES**	**CHALLENGES**
19. Trail Guidebook Provide a comprehensive and up-to-date guide for using the water trail	• Facilitates better trip preparation; provides site-specific information prior to arrival • Increases knowledge of users (e.g. personal and navigational safety, protection of wildlife, implications of users actions) Decreases damaging user behavior • Explanation of reasons behind trail policies increases compliance with regulations • May foster public support for the trail	• Requires ongoing commitment of time and resources to keep up to date
20. Trail Website Provide a comprehensive and up-to-date website for the water trail Post (or link to) current information on trail –related wildlife, habitat and water quality, boating safety and security conditions	• Same as Trail Guidebook • Enables water trail staff to inform trail users of current trail conditions (e.g. weather conditions, currents and tides) and usage guidelines or requirements (e.g. marine events, areas to avoid due to sensitive wildlife or poor water quality)	• Requires ongoing staff time commitment to keep up to date
21. Guided Trips, Docents, Rangers Provide guided trips led by docents or rangers	• Increased educational experience for some members of public • Better control over undesirable user behavior • Personal contact with users can be particularly effective for education and compliance • Educated users may educate others	• Requires extensive staff resources to lead trips or organize and train docents • Some public objectives (e.g., solitary access experience) may be lost

Table 2. Continued.

MANAGEMENT OF TRAIL USE (cont.)		
STRATEGY	**ADVANTAGES**	**CHALLENGES**
22. Boater-to-Boater Education a. Train volunteers and~~/or~~ water trail staff as trail stewards to conduct boater-to-boater education and outreach at and near trail heads, especially during high-use times of year b. Coordinate with existing boating organizations to facilitate boater-to-boater outreach and education that conveys trail-supported information and messages	• Decreases damaging or unsafe user behavior • Water trail ethic provides source of outreach material • Active education approach more likely to lead to positive behaviors • Explanation of reasons behind trail policies increases compliance with regulations • Educated users may educate others	• Requires commitment of staff resources to conduct boater-to-boater education or train and organize volunteers to do this • May reach only a small portion of trail users • More effective in areas with high number of local/habitual users
23. Enforcement Provide training to local law enforcement on wildlife and environmental regulations (e.g. Endangered Species Act, Migratory Bird Act) in order to identify or prevent violations of these regulations at trail heads	• May help protect wildlife, habitat and water quality as well as promote safe NMSB practices by leveraging existing enforcement efforts • Can help trail managers form partnerships with local law enforcement, and could be a starting point for developing additional, volunteer-based enforcement capabilities through the trail	• Enforcement of wildlife and environmental regulations is not necessarily a priority issue for local law enforcement • Requires establishing a long-term program to provide ongoing training on consistent basis
24. Limits on Number of Users Establish limits on the number of NMSB users at a site to prevent identified problems such as significant impacts to wildlife and habitat, or damage to facilities Use parking restrictions (e.g. limited number of parking spaces and/or time limits) as a means of limiting number of users at a site	• May increase the quality of boaters' experiences • May reduce adverse effects on wildlife, habitat and water quality • Decreases wear and tear on facilities • Parking is usually a limiting factor for number of users at a site. Limiting parking is one tool for preventing site over-use	• Limits access • Requires ability to monitor/manage visitor numbers (staffed entrance, permitting, etc.) • May not substantially reduce impacts, particularly if targeted impacts are at sites that are accessible from multiple launches or non-trail-related vessels

Table 2. Continued.

MANAGEMENT OF TRAIL USE (cont.)		
STRATEGY	**ADVANTAGES**	**CHALLENGES**
25. Restrictions on Boating Activities Limit activities at a trail head or on the water to specific types of NMSB uses or establish site-specific rules for visitors using NMSBs (e.g. a boating corridor) to prevent identified problems such as significant impacts to wildlife and habitat, or damage to facilities	• Direct and easily implemented management tool • Can reduce conflicts among different user groups • Can promote safety • May avoid or reduce negative impacts to wildlife and habitat	• Enforcement of regulations is desirable for maximum compliance • Restrictions along may be ineffective unless users understand the rationale(s) behind them • Requires adequate staff resources to implement
26. Closures To protect sensitive wildlife or habitat resources at trail heads or locations accessible from trail heads, establish periodic closures based on time of day, season or tidal regime	• May avoid or minimize significant impacts of trail use on certain wildlife species during sensitive periods (e.g., during breeding seasons) • May allow for habitat recovery	• Requires site-specific knowledge of species • Some public objectives may be lost • Requires staff management and enforcement • Demarking and maintaining boundaries of on-water closures could be difficult in many locations • Enforcement of on-water restrictions would be challenging and costly