FINAL EVALUATION FINDINGS
SOUTH SLOUGH NATIONAL ESTUARINE RESEARCH RESERVE

July 2004 through June 2007

Office of Ocean and Coastal Resource Management
National Ocean Service
National Oceanic and Atmospheric Administration
U.S. Department of Commerce

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I. EXECUTIVE SUMMARY

The Coastal Zone Management Act (CZMA) of 1972, as amended, established the National Estuarine Research Reserve System (NERRS). Sections 312 and 315 of the CZMA require the National Oceanic and Atmospheric Administration (NOAA) to conduct periodic performance reviews or evaluations of all federally approved National Estuarine Research Reserves (NERRs). The South Slough National Estuarine Research Reserve (South Slough NERR or the Reserve) during the period from July 2004 through June 2007. The Reserve is administered by the Oregon Department of State Lands.

This document describes the evaluation findings of the Director of NOAA's Office of Ocean and Coastal Resource Management (OCRM) with respect to the South Slough NERR during the review period. These evaluations include discussions of major accomplishments as well as recommendations for program improvement. The fundamental conclusion of the findings is that the State of Oregon is successfully implementing its federally approved NERR.

The evaluation team documented a number of South Slough Reserve accomplishments during this review period. The Department of State Lands has been very supportive of the Reserve and has been able to obtain additional staff position and move positions to state funding. The Reserve completed both its management plan revisions and its site profile. In terms of facilities and infrastructure, the Reserve has completed significant enhancements to several elements (Interpretive Center exhibits, renovations to guest/researcher housing, new paddle access point, and a new hiking trail). South Slough continues to maintain and enhance strong partnerships and has a broad reach throughout the region. The research, monitoring, education, public involvement and outreach, and stewardship programs are all strong elements and have depth and breadth. The Coastal Training Program is an outstanding model of integration with all Reserve programs and with numerous external partners. The Friends of South Slough organization has provided significant financial and volunteer support to the Reserve and its programs.

The evaluation team also identified areas where the Reserve and its programming could be strengthened. Information technology and GIS capacity are areas where additional staffing would be helpful. The Department should continue to support efforts to provide professional development opportunities for staff. The Reserve should complete a training and professional development plan for staff members. The Reserve and the Department of State Lands are encouraged to complete land acquisition or leasing quickly so construction of a co-location facility in Charleston can be completed. The Reserve needs to complete its master facilities plan and wireless connectivity plan as quickly as possible. The Reserve is encouraged to seek opportunities to more fully integrate all of its programs and activities, following the model of the Coastal Training Program. Finally, the Reserve should implement the KEEP needs assessment and market analysis to define its educational priorities for the next five years.

II. PROGRAM REVIEW PROCEDURES

A. OVERVIEW

The National Oceanic and Atmospheric Administration (NOAA) began its review of the South Slough Reserve in April 2007. The §312 evaluation process involves four distinct components:

- An initial document review and identification of specific issues of particular concern;
- A site visit to Oregon, including interviews and public meetings;
- Development of draft evaluation findings; and
- Preparation of the final evaluation findings, partly based on comments from the state regarding the content and timetables of recommendations specified in the draft document.

The recommendations made by this evaluation appear in boxes and bold type and follow the findings section where facts relevant to the recommendation are discussed. The recommendations may be of two types:

> **Necessary Actions** address programmatic requirements of the CZMA's implementing regulations and of the South Slough Reserve approved by NOAA. These must be carried out by the date(s) specified;
>
> **Program Suggestions** denote actions that NOAA's Office of Ocean and Coastal Resource Management (OCRM) believes would improve the program, but which are not mandatory at this time. If no dates are indicated, the state is expected to have considered these Program Suggestions by the time of the next CZMA §312 evaluations.

A complete summary of accomplishments and recommendations is outlined in Appendix A.

Failure to address Necessary Actions may result in a future finding of non-adherence and the invoking of interim sanctions, as specified in CZMA §312(c). Program Suggestions that are reiterated in consecutive evaluations to address continuing problems may be elevated to Necessary Actions. The findings in this evaluation document will be considered by NOAA in making future financial award decisions relative to the South Slough Reserve.

B. DOCUMENT REVIEW AND ISSUES DEVELOPMENT

The evaluation team reviewed a wide variety of documents prior to the site visit, including: (1) South Slough Reserve §312 evaluation findings dated 2005; (2) federally approved Environmental Impact Statement and program documents; (3) financial assistance awards and work products; (4) semi-annual performance reports; (5) official correspondence; and (6) relevant publications on natural resource management issues in Oregon.

Based on this review and on discussions with OCRM, the evaluation team identified the following priority issues:

- major accomplishments during the review period;
- status of Reserve staffing and needs;
- any facilities development and/or land acquisition efforts;
- status of general administration of the Reserve;
- status of implementation of the Reserve's research, monitoring, and education programs;
- the manner in which the Reserve coordinates with other governmental and non-governmental organizations and programs in the state and region;
- South Slough Reserve's progress in addressing the recommendations contained in the most recent Section 312 evaluation findings dated February 2005. The South Slough Reserve's assessment of how it has responded to each of the recommendations in the evaluation findings dated 2005 is located in Appendix B.

C. SITE VISIT TO SOUTH SLOUGH NATIONAL ESTUARINE RESEARCH RESERVE

Notification of the scheduled evaluation was sent to the Oregon Department of State Lands, members of Oregon's congressional delegation, and regional newspapers. In addition, a notice of NOAA's "Intent to Evaluate" was published in the Federal Register on February 27, 2007.

The site visit to the South Slough Reserve was conducted from June 19-21, 2007. The evaluation team consisted of Ms. Chris McCay, Evaluation Team Leader, National Policy and Evaluation Division, OCRM; Ms. Nina Garfield, Program Specialist, Estuarine Reserves Division, OCRM; and Ms. Rebecca Ellin, Manager, North Carolina National Estuarine Research Reserve.

During the site visit, the evaluation team met with South Slough Reserve staff, management from the Oregon Department of State Lands, other state agency staff, members of the Reserve Management Commission, Friends of South Slough, and other non-profit organizations. Appendix C lists people and institutions contacted during this review.

As required by the CZMA, NOAA held an advertised public meeting on Tuesday, June 19, 2007, at 5:30 p.m. at the North Bend Public Library, 1800 Sherman Avenue, North Bend, Oregon. The public meeting gave members of the general public the opportunity to express their opinions about the overall operation and management of the South Slough Reserve. Appendix D lists individuals who registered at the meeting. NOAA's responses to written comments submitted during this evaluation are summarized in Appendix E.

The South Slough Reserve staff members were crucial in setting up meetings and arranging logistics for the evaluation site visit. Their support is most gratefully acknowledged.

III. RESERVE PROGRAM DESCRIPTION

NOAA's Office of Ocean and Coastal Resource Management designated the South Slough National Estuarine Research Reserve (South Slough NERR or the Reserve) in 1974 as the first site in the National Estuarine Research Reserve System. The Reserve is located in the Oregon Department of State Lands (DSL) for administrative purposes. The DSL is also responsible for wetlands and submerged lands management as well as the state's natural heritage program.

The Reserve is located on the south-central coast of Oregon, in Coos County, south of the community of Charleston. The Reserve encompasses approximately 4,800 acres of uplands, tidelands, and open water in the South Slough watershed. The slough is a short, narrow, and shallow sub-system in the southwestern portion of the Coos Bay estuary. Valino Island marks the northern boundary of the SSNERR, with the Long Island Point peninsula dividing Reserve waters into west and east arms. South Slough is a well-mixed system with salinity ranging from 0-34 parts per thousand. Channel depths range from less than one foot to approximately four feet below mean lower low water.

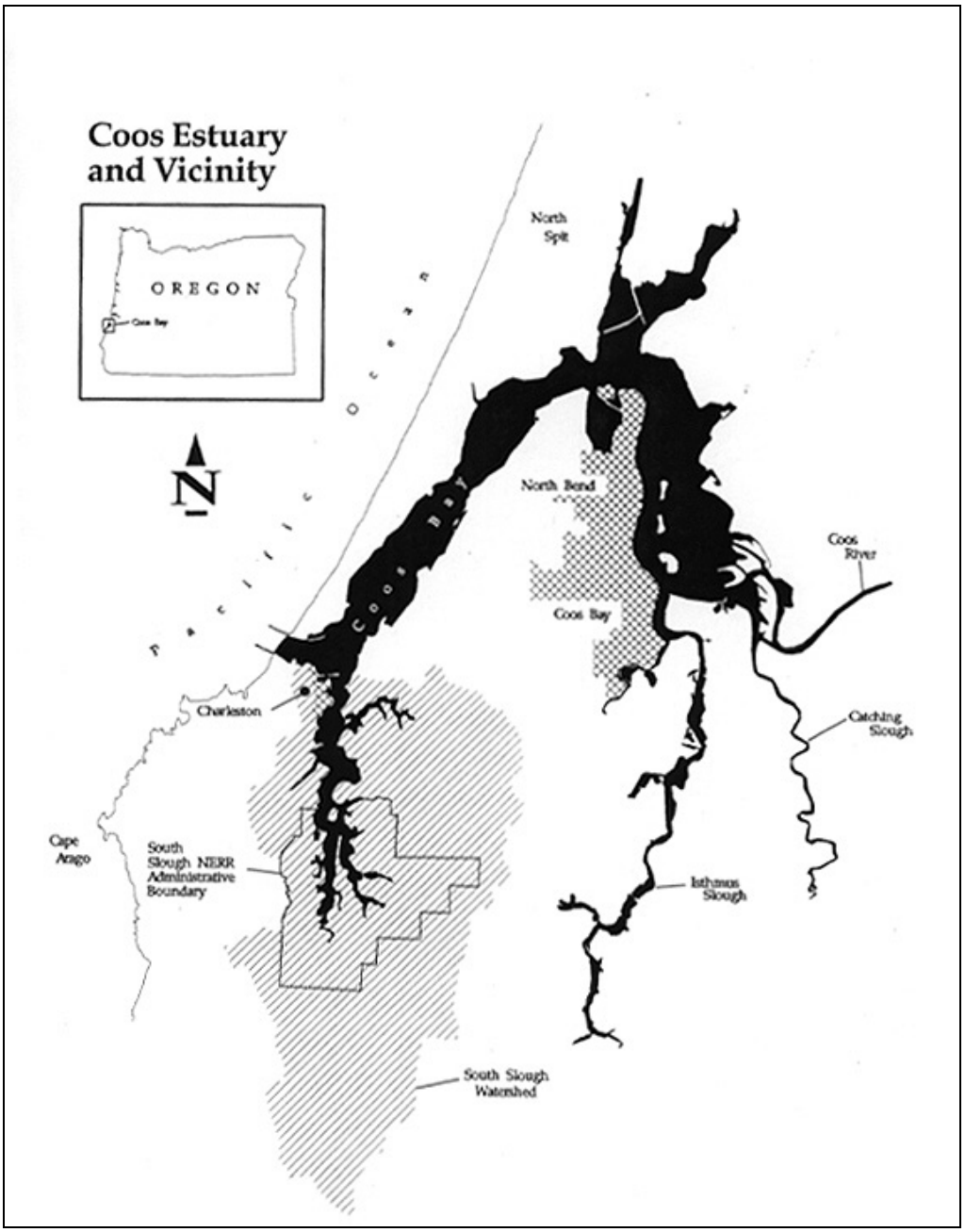
The diverse natural features of the South Slough drainage basin form a complex ecosystem containing numerous upland and wetland habitats. Uplands are dominated by coniferous forests of hemlock, spruce, Douglas fir, cedar, and by hardwood and mixed forest areas. Most of the forested areas have been logged in the past (prior to approximately 1987), and several areas in the Reserve have been clear-cut in the last 25 years. Shrub thickets are scattered throughout riparian areas. There is a small but healthy stand of introduced American chestnut (an Eastern species) on Valino Island. One of the notable plant species found on site is the carnivorous sundew (*Drosera rotundifolia)*, which is not commonly seen in this area.

Estuarine wetlands are found in the northern portions of South Slough, and as tidal influence diminishes, these grade into freshwater wetlands. Great expanses of mud flats support seasonal algal beds, eelgrass beds, and benthic diatom populations. Although South Slough is considered generally pristine, the area has been modified by numerous dikes, many of which have been breached over the years.

A wide variety of bird and wildlife species utilize the South Slough area. Many of these are resident for part of the year; the mudflats are also an important feeding stopover for birds migrating along the Pacific Coastal Flyway. Wildlife found in the Reserve is typical of this part of the Oregon coast. Mammals include elk, blacktail deer, bobcat, mountain lion, black bear, beaver, and harbor seal.

South Slough contains important habitats for myriad fish and invertebrate species. The estuary serves as a feeding and nursery area for salmonids (salmon and trout), flounders, and many other fish. The site also supports large populations of mollusks, crustaceans, and marine worms.

The Reserve and surrounding area have been used historically for a number of commercial and recreational activities. Agriculture once was important locally, but is less so now. Logging remains a major economic activity. Fish and shellfish are locally important economic resources, with the culture of Pacific oysters taking place in Reserve boundaries. Shipping, fish processing, and recreational tourism have become economically significant as outgrowths of the area's rich resources.



IV. REVIEW FINDINGS, ACCOMPLISHMENTS, AND RECOMMENDATIONS

A. OPERATIONS AND MANAGEMENT

The South Slough Reserve faces several new circumstances since the last evaluation that provide a new context for Reserve operations and management by offering some opportunities to work in new directions but also are challenges to the Reserve and the region. Energy extraction has moved front and center into the Coos Bay estuary and region in the form of coal bed methane (natural gas) mining and liquefied natural gas transport. Methane Energy Corporation currently has land holdings totaling approximately 60,000 contiguous acres in the Coos Bay Basin. The Basin has numerous seams of coal, many of which contain methane gas. The Corporation has begun production testing at several well locations. The Port of Coos Bay is planning for a liquefied natural gas carrier station at the Port within approximately the next three years and a container terminal facility approximately five to seven years from now. The container terminal facility would accommodate vessels that will be too large to maneuver through the Panama Canal even after its expansion. Significant channel deepening and widening will be required. Mitigation and restoration requirements will be created by Port development that may provide opportunities for the Reserve in terms of land acquisition, research, and restoration.

The Reserve is beginning to address the energy issues in the region by first looking inward. In 2006 the South Slough Management Commission directed staff to evaluate how the Reserve uses energy to operate buildings and facilities. This includes assessing the energy needs of its research and education programs, and quantifying alternative sources of energy, including solar radiation, wood fiber, and methane extracted from coal deposits that underlie portions of the Reserve. [Since the evaluation site visit, the Reserve has hired its first energy intern to complete those tasks. The Reserve has received funding from the Methane Energy Corporation to fund the internship. NOAA has provided funds to the Reserve to upgrade energy sources for its Interpretive Center, the Estuarine and Coastal Sciences lab, maintenance facility and Spruce Ranch guest house, and to develop an energy management plan for future needs.]

The political climate in Oregon has changed in several ways since the last evaluation. The state legislature now appears to be open to conservation and land acquisition in ways that were previously restricted. Nevertheless, Measure 37, a state ballot citizen initiative passed in November 2004, authorizes the owner of private real property to receive just compensation when a land use regulation is enacted after the owner or a family member became the owner if the regulation restricts the use of the property and reduces its fair market value. In lieu of compensation, the measure also provides that the government agency responsible for the regulation may choose to remove, modify, or not apply the regulation. Although this has no direct effect on lands within the Reserve boundaries, it may have an effect on properties the Reserve may wish to purchase. [Since the site visit, the voters of Oregon passed Measure 49, which amends Measure 37 to tighten parameters that allow for compensation for land use regulations. It closes loopholes in Measure 37 that would allow large-scale development and clarifies the right granted by Measure 37 to develop a few home sites.]

In September 2006 the Governors of California, Oregon, and Washington announced a joint partnership to protect the ocean and coast. Under the collaborative agreement, the three states will create mechanisms for sharing lessons learned from local, urban, county, and statewide conservation and restoration programs (including South Slough Reserve, as well as the NERRs in California and Washington); expand cooperative scientific and educational efforts on issues of regional significance; coordinate management strategies and approaches for coastal and marine resources of regional significance; and engage Congress and the White House on regional ocean and coastal issues that are of national significance. The Director of the Department of State Lands has been tapped by the Governor of Oregon to take the lead for the state.

All of these circumstances provide a new context in which the Reserve operates since the last evaluation. The effects of these circumstances and how they may affect Reserve management decisions remain to be seen.

1. Administration and Staffing

The staff members are the heart of the Reserve's success in research, education, stewardship, outreach, building partnerships, and coordination. They continue to hold leadership roles locally, regionally, and systemwide. The leadership of the Department of State Lands (Department or DSL) has changed since the last evaluation, and the new director and her staff are very supportive of the Reserve. The Department took action on several program suggestions from the 2005 evaluation findings. With regard to staffing, the DSL was able to: convert the research coordinator position to a 100% state-funded position; hire an information technologist in a limited duration position (discussed under the "Facilities, Facilities Plan, and Infrastructure" section); and create a permanent full-time contract and procure assistant position at the Reserve, which is 50% state funded/50% federally funded (discussed in the "Grants Management" section). These are all particularly impressive in light of the state's economic condition generally, and according to the DSL director and assistant director, they would not have occurred without the findings and recommendations from the previous evaluation.

ACCOMPLISHMENT: Staff members remain the strength of the Reserve and are central to its successes. The leadership of the Department of State Lands is commended for its strong support for the Reserve and its success in obtaining additional staff positions and in placing positions on state funding, thus freeing up federal funds for program implementation.

There are still some additional staffing needs which the Reserve and the DSL should look for appropriate opportunities to address. OCRM recognizes that the DSL has been quite successful with regard to staffing for the Reserve and these additional needs may have to be prioritized with other DSL staff position requirements. However, OCRM has included a suggestion for these Reserve staff capacities because of the needs and because of the DSL's strong support for the Reserve and its success in obtaining positions. These are discussed under several subsequent sections but are consolidated into a single recommendation here. The "Facilities, Facilities Plan, and Infrastructure" section examines a need for continued information technology staff support

that will not end when the limited duration information technologist position ends. The "Geographic Information System (GIS) Program" section details the Reserve's need for dedicated GIS management capability, which is not something that an information technologist can provide. Finally, the "Education and Outreach" section discusses the benefit of including an educational aide/assistant at the new co-location facility with the Reserve's management/administrative staff, the Coos Watershed Association, and possibly Sea Grant.

PROGRAM SUGGESTION: The Department of State Lands and the Reserve should consider additional positions or staffing capacity for information technology, GIS, and education functions. The education need is specifically for the new co-location facility when it is completed.

Because of its relative geographic isolation and rural setting, it has been and will probably continue to be a challenge for staff members to find and participate in training and development opportunities and to stay abreast of changes and developments in professional fields. This holds true for long-time staff members as well as new or younger staff members. One particular theme heard throughout discussions with individual staff members was a desire for GIS training. Issues involving this are included in the "Geographic Information System (GIS) Program" section. Based on discussions between Reserve staff and the evaluation team throughout the site visit, the Reserve indicated it will develop a training/professional development plan to focus attention on this need. The existence of such a plan might help to support these needs and provide the Reserve and the Department with the documentation to seek any necessary funding for appropriate opportunities like conferences or training.

PROGRAM SUGGESTION: The Department of State Lands should continue to support efforts to provide professional development opportunities for Reserve staff. The Reserve should complete a training and professional development plan for its staff members as it has proposed to do.

2. Grants Management

The 2005 evaluation findings contained a program suggestion recommending that the State explore ways to support the Reserve's accounting and contract management needs. At the time of the issuance of the 2005 evaluation findings, one staff member was responsible for all accounting, grants and contract management tasks and activities for the Reserve, including NOAA cooperative agreement awards, contracts to complete facilities and infrastructure expansion and renovation, and other contracts associated with the assumption of new Reserve activities such as the Coastal Training Program. This activity was but one part of the staff member's responsibilities, and the associated tasks increasingly involved more detailed knowledge and expertise in financial management as the grants management process continually changes among funding agencies.

Since that time, the Department of State Lands sought to include a staff position to address this need, and the state's approved 2007-09 budget included a full-time contract and procurement

assistant position. A permanent full-time contracts assistant is now employed at the Reserve.

ACCOMPLISHMENT: The Department of State Lands supported the Reserve's need for contracting and accounting assistance, and the State approved and funded a position that has now been filled by the Reserve.

3. Management Plan

Reserves are required by Federal regulation to have a current NOAA-approved management plan (15 C.F.R. Part 921.13). The plan should describe the reserve's goals, objectives and management issues, as well as strategies for research, education and interpretation, public access, construction, acquisition and resource preservation, and, if applicable, restoration and habitat manipulation. A management plan so written has four valuable functions: (1) to provide a vision and framework to guide reserve activities during a five year period; (2) to enable the reserve and NOAA to track progress and realize opportunities for growth; (3) to present reserve goals, objectives, and strategies for meeting the goals to constituents; and (4) to guide program evaluations. Regulations also require that a reserve's plan must be updated every five years.

The 2005 evaluation findings included a Necessary Action requiring the completion of the Reserve's revised management plan. The management plan has been revised, completed, and is posted and available for review and downloading on the South Slough Reserve web site.

ACCOMPLISHMENT: The Reserve has successfully completed revisions to its management plan.

4. Facilities, Facilities Plan, and Infrastructure

The Reserve has made significant progress on several facilities and infrastructure issues and projects since the last evaluation site visit. A storage facility at the Reserve's Estuarine and Coastal Sciences (ECOS) lab on the Oregon Institute of Marine Biology (OIMB) campus was completed. Prior to this evaluation period, the size of the Interpretive Center had been increased, creating a new exhibit gallery. During this evaluation period, new exhibits were planned and completed. A dedication and celebration of the new exhibits was held a few weeks after the site visit. Renovations to Spruce Ranch and the placement of two yurts on permanent wooden pads adjacent to the Spruce Ranch house were also completed. Spruce Ranch and the yurts are used to house visiting investigators.

The North Creek Trail, the Reserve's newest hiking trail, has been completed. Construction began on the trail in 2000. The trail includes more than a dozen bridges that have been built across North Creek and its tributaries. The Reserve's two-man maintenance team was responsible for construction and supervised a variety of work crews (e.g., Americorps, Oregon Youth Conservations Corps, a correctional institution crew) during the completion of the over one-mile-long trail.

The Reserve also built a fairly unique new paddle access point adjacent to the Hinch Road Bridge on Winchester Creek. It is part habitat improvement and part public access project. The access point is framed by two large hemlock logs protruding 20 feet into the creek with root wads intact. Flowing water around the roots scours holes in the streambed, which are favored by fish for cool water and refuge from predators. The access point is a sloping rock apron that is stabilized by underlying geotextile and smaller cross logs. Steel anchors keep the tree trunks from floating away at high tide. The Reserve plans to develop interpretive materials about the ramp.

ACCOMPLISHMENT: The Reserve has completed significant enhancements to its facilities and infrastructure, providing greater opportunities for visitors, staff, and researchers.

The 2005 evaluation findings noted that the Reserve was planning to co-locate the Reserve's administrative offices (now located at the Interpretive Center) with the Charleston Visitors Center at a location that had not been determined at the time of the last evaluation. Although this would split Reserve staff among three locations, it would free up more space at the Interpretive Center for educational staff and activities. It would also provide a more visible and accessible "first contact' location than the Interpretive Center and provide an opportunity to direct visitors to the Reserve and the Interpretive Center.

During the period of this evaluation, however, events and the local economic outlook prevented Charleston and the Charleston business community from following through on this plan. Since then the Coos Watershed Association has expressed strong interest in co-locating with the Reserve in a Charleston location. Sea Grant has also expressed interest in locating an extension agent or coastal specialist in such a shared facility. The partnerships that now exist among the three parties would only be enhanced by such an arrangement. Funds have already been awarded to the Reserve for the building. Finally, the situation with land acquisition in the state may also more favorably support a co-location facility for the Reserve.

The Legislature appears to be more willing now to authorize the purchase of lands by the state. The changed situation should now benefit the Reserve and the Department of State Lands and allow the use of Gustafson estate funds to be used to purchase a parcel of property for a co-location facility. (In 1994 Chalmer Gustafson bequeathed his estate worth approximately $1.6 million to the Oregon Department of State Lands for the sole use and purpose of acquiring land to be added to and become a part of the South Slough NERR.)

PROGRAM SUGGESTION: The Department of State Lands and the Reserve are encouraged to complete land acquisition or land leasing as quickly as possible so a co-location facility can be constructed with funds already awarded.

The Department of State Lands (DSL) and the Reserve have made significant progress since the last evaluation in addressing another area of the Reserve's infrastructure needs. In the 2005 findings it was noted that staff are physically separated from each other, making face-to-face

meetings and communication harder, and placing a greater emphasis on electronic communication. The physical location and geographic isolation of the Interpretive Center causes problems with electronic communication (computer, e-mail, radio), and the multi-component campus design of the Reserve as it expands its facilities compounds the problem. The findings included a program suggestion recommending that DSL and the Reserve identify funding, staff positions, or other means to address electronic communication problems and new technology requirements.

During the period covered by this evaluation, the Reserve received $90,000 from NOAA to address wireless connectivity issues. The DSL and Reserve successfully created a 'first time ever' chief information technologist position as a direct result of this program suggestion to address the remainder of the program suggestion. The information technologist has developed a two-phased wireless connectivity plan for the Reserve, the first of which is being implemented now.

ACCOMPLISHMENT: The Department of State Lands and the Reserve created a limited duration position for an information technologist and have developed a wireless connectivity plan to address the IT technology issues the Reserve faces because of its geographic location, isolation, and separated facilities.

The first step involves getting power to an internet tower site. The Interpretive Center and the ECOS lab will be connected wirelessly; the ECOS lab at OIMB is the point of internet contact. The maintenance facilities and Spruce Ranch will also be linked into the wireless network. Second steps will involve getting internet connectivity to an administrative co-location site in Charleston. Eventually the Reserve could be able to communicate with the wireless telemetry on the data sondes and change the frequency of monitoring remotely based on changing environmental conditions.

PROGRAM SUGGESTION: The Reserve should complete implementation of the wireless connectivity plan as quickly as possible.

The Reserve and the Department of State Lands have ongoing needs for IT support. The term-limited information technologist position is an excellent start, but server maintenance and ongoing needs related to wireless connectivity for multiple locations throughout the Reserve and the town of Charleston will not end when the position does. Any support at the Reserve from an IT position physically located at the DSL in Salem is problematic because of the distances involved. The evaluation team discussed with the DSL Director the possibility of a state-funded FTE information technologist position created within DSL but stationed at the Reserve. This would both free up additional Reserve federal funding for other uses and provide a source of state dollars as match. A recommendation to consider seeking additional IT staffing capacity is included in a general staffing program suggestion under the Administration and Staffing section.

The 2005 evaluation findings included a program suggestion to update its facilities plan and noted that a contractor had been hired. However, priority efforts to complete the management plan and site profile updates, the changing situation with regard to a co-location facility, and

other circumstances hindered the facilities plan update. At the time of the site visit, a Request for Proposals was pending for the facilities plan update. The opportunity to purchase land in Charleston for a co-location facility provides the focus this effort needs, and funds from an outstanding NOAA award from 2002 are still available and should be expended before the award extension expires December 31, 2007. An updated facilities plan could also be helpful if needed to support information technology needs of the Reserve.

PROGRAM SUGGESTION: The Reserve should complete its master facilities plan update as soon as possible. The plan should identify who and how the operation and maintenance costs of three facilities will be covered by non-federal funds and not by the limited NOAA grant award funding.

5. Coordination and Partnerships

The Reserve has a number of long-term, well established partnerships, and staff members are eager to coordinate with numerous external groups and programs. They understand that, given the relative geographic isolation of the Reserve, integrated efforts and partnerships increase the capabilities of all and ensure the success of everyone involved. Many of these coordinated efforts and long-term partnerships are discussed in greater detail throughout other sections of this document.

The Coos Watershed Association (CWA) has been a partner in many of the CTP workshops and other projects. One of these projects also involves a partnership among the Reserve, the CWA and the Oregon Watershed Enhancement Board (OWEB) to track the effectiveness of placing large woody debris in estuarine wetlands for juvenile salmon. The OWEB also worked with the Reserve (and others) to study the effects of in-stream gravel extraction on fish habitats, the environmental effects of tide gates, and to develop an estuarine habitat restoration assessment module. The Oregon Coastal Management Program and the Reserve have worked together on providing coastal management training to local planning staff and property managers and on revising Oregon's estuarine habitat classification system. The Port of Coos Bay is a significant partner with the Reserve in dealing with ship recycling; the Reserve research coordinator serves on the Port's technical advisory committee and there is a port representative on the Reserve's management commission; and both will continue to work together on emerging energy issues and port development related to that. The Oregon Sea Grant has worked with the Reserve on various CTP workshops and seminars during this evaluation period. Sea Grant has expressed an interest in co-locating one of its educator/extension agents or coastal specialists in a single facility with the Reserve and the CWA in Charleston. Such co-location would require some type of agreement with regard to cost-sharing construction, operation, and/or maintenance. Should this occur, it will present additional opportunities to collaborate on education and outreach activities and may enhance CTP opportunities with Sea Grant extension agents along the Oregon coast.

ACCOMPLISHMENT: The Reserve continues to maintain and enhance strong partnerships and coordinate well with external stakeholders and groups. The Reserve sees these partnerships as vital to maintaining its integral role in the local community and region. Reserve programs have a broad reach throughout the region.

Internal coordination and integration among research, stewardship, monitoring, education and outreach, and the Coastal Training Program occur to varying degrees. Some of these outcomes are discussed in other sections of this document. The Coastal Training Program and stewardship activities that resulted in the production of the series of case histories about the Winchester Tidelands Restoration Project are indicative of these integration efforts and are discussed in the "Coastal Training Program" section. The Reserve's initial draft communications plan is a coordinated effort between the CTP, stewardship, and public involvement coordinators. The CTP coordinator participated in the research conducted by Reserve researchers on board the NOAA vessel McArthur II. This provided an opportunity for the researchers and the CTP coordinator to learn about each other's work and resulted in hours of video footage. The footage is being used to develop a variety of video products for webpage viewing, auditorium presentation, use in exhibits, etc., and will emphasize various research topics (e.g., vertical migration and planktonic feeding; research vessel sampling techniques used aboard the McArthur II; exploring the relationship between the inshore estuarine environment and the nearshore ocean). The shared experience onboard the McArthur II also resulted in a lengthy article about the research work in the Reserve's quarterly newsletter.

The CTP component is a model of integration with the activities of the Reserve's other sectors. Because the Reserve's traditional education programs have been geared towards K-12, there is somewhat less integration of education and outreach programs with research and stewardship programs. The Reserve should look for more opportunities to integrate research, monitoring, and stewardship activities with educational and outreach programs and activities. The education and outreach staff can help with the translation of science and Reserve research to the general public and complement the translation that the researchers, CTP, and others are sharing with more specific audiences like watershed councils, local governments, shellfish growers, or port officials.

PROGRAM SUGGESTION: The Reserve is encouraged to seek opportunities to more fully integrate all of its programs and activities. The integration of the Coastal Training Program with the other programs at the Reserve is an excellent model upon which to build.

6. Volunteer Support and Friends of South Slough Support

The Reserve has a well-developed public involvement and volunteer support program and has been developing the administrative architecture for this. The Reserve has a full time public involvement coordinator and has an average of about 30 active volunteers. The public involvement coordinator has developed a formal application for volunteers, produced training materials, and coordinates/conducts volunteer training. The Reserve recognizes its volunteers in a number of formal and informal ways. The South Slough NERR Management Commission publicly recognizes volunteers at a Commission meeting and presents letters of thanks, certificates, or inscribes names on a permanent plaque at the Interpretive Center based upon levels of service. The Friends of South Slough recognizes volunteers at its annual meeting based on hours of service. The public involvement coordinator personally thanks volunteers with a written thank you note or phone call. The Reserve also engages volunteers through Marshfield High School, which provides extra credit opportunities for volunteers, and the Southwest Oregon

Community College internship program. Other aspects of public involvement are closely allied with the Reserve's education and outreach programs and are discussed there.

ACCOMPLISHMENT: The Reserve has a well organized volunteer support program with dedicated volunteers.

The Friends of South Slough, Inc., (FOSS) was formed in 1988 as a volunteer non-profit organization to promote the Reserve and its programs. FOSS members provide educational and interpretive services to the public. Members operate a book and gift shop at the Interpretive Center as part of the group's mission to raise funds for Reserve activities and programs. The Reserve's public involvement coordinator serves as a liaison to the FOSS.

In 2005 FOSS received a grant from the University of South Carolina to produce an invasive species booklet. FOSS published "A Field Guide to Identifying and Controlling Invading Species" in 2007 with additional funding from the NOAA Aquatic Nuisance Species Task Force. The FOSS received a restricted donation for new trail construction, which was expended on the North Creek Trail. Several restricted grants to FOSS as well as $5000 of its discretionary funds were committed to provide matching funds for the new exhibits in the Interpretive Center. In 2006 the Friends of South Slough also provided funds for a new computer and software to support financial accounting, to print and mail the South Slough NERR newsletter, and for temporary services for attendant support at the reception desk during the summer period when the Interpretive Center is open seven days a week. The Friends plan to continue to provide funds for the newsletter and for a part time attendant at the reception desk during the summer at the Interpretive Center.

ACCOMPLISHMENT: The Friends of South Slough organization has provided significant financial and volunteer support to the Reserve and its programs and activities.

7. Geographic Information System (GIS) Program

The Reserve's geographic information system capability is still somewhat weak. This same concern was discussed in the 2005 evaluation findings. The Reserve's response to the 2005 program suggestion indicates that Reserve and agency staff have greatly increased the development, maintenance and use of a geographic information system; that staff members are creating databases of information that has been collected in regard to restoration, boundaries, weather and water data, and other research categories; and that the level of expertise of staff has increased substantially. Nevertheless, several staff members indicated to the evaluation team that they have a need for GIS training and asked whether the NOAA Coastal Services Center considers the Reserve a 'client' and could do on-site training for Reserve staff. (The Coastal Training Program held a four-day workshop of ESRI-certified GIS introductory and coastal applications specialized training for municipal planning staff and watershed councils, but this did not include Reserve staff because of the strong demand from local decision-makers and limitations of computer equipment. The instructors were from the Coastal Services Center.) The Reserve could contact the Coastal Services Center to discuss the staff's need and desire for GIS

training. Creating databases of information is a necessary step in a GIS program, but more needs to be done, and existing staff members have neither the time nor capacity to develop and maintain a GIS, even if they are able to gain more hands-on knowledge and experience with GIS applications.

Several Reserves and coastal management programs have discovered that having a dedicated GIS position (sometimes shared with each other or with another entity in their lead agencies) is both time- and cost-effective. In talking with DSL management, they indicated the Department has an increasing need for GIS capability as well. As noted in the 2005 evaluation findings, the Reserve and the Coos Watershed Association (CWA) each has a GIS capacity and a need that are mutually complementary. A collaboration to support the complementary capacities of both could enhance access to information for a broad range of stakeholders within the Coos watershed and would enhance the existing GIS data layers both entities already have. This collaboration is more likely to occur and could be pursued when the Reserve and the CWA are co-located in a single facility. The "Administration and Staffing" section includes a Program Suggestion to address the Reserve's GIS staff capacity.

B. RESEARCH AND MONITORING

1. Research Activities

During the period covered by this evaluation, the Reserve's researchers have been involved in approximately 20 projects. The Reserve's management plan identifies 11 research priority topics, the highest dealing with bioinvasions and ecological impacts of aquatic non-indigenous species. This is a high priority for not only the Reserve's research and management, but for Coos Bay and for this region of the state's coastal management program. The research conducted by Reserve researchers, Reserve graduate research fellows (GRFs), and others bears out this priority. Such projects have included:

- Experimental eradication of Japanese eelgrass in the Coquille Estuary
- Population assessment of European green crabs in Coos Bay and South Slough
- Distribution, abundance, and ecological interactions of non-indigenous isopods
- Ecosystem impacts of freshwater and estuarine invasive grasses
- Import, persistence, and life history of bull kelp advected into the South Slough estuary

The Reserve's research also seeks to address another high priority in the region – sources of bacterial contamination in the estuarine tidal waters. Research projects have been conducted to determine the spatial and temporal patterns of bacterial contamination in Sunset Bay; and the distribution of bacterial contamination in the South Slough Estuary and contributions from seafood processor wastewater discharges.

Other research projects have addressed the history, restoration, and recovery of native Olympia oysters in Coos Bay and South Slough. Eelgrass is also a focus of Reserve research and stewardship. The Reserve staff transplanted eelgrass to mitigate for damages associated with activities conducted by the Oregon Department of Transportation at the North Fork of the Siuslaw River Bridge. Research staff are now conducting a multi-year assessment of the

transplant technique. They have also carried out ground-truthing activities associated with the spatial distribution and mapping of eelgrass in Coos Bay and South Slough.

The Reserve's researchers have a long-standing tradition in participation in the research conducted on board the NOAA research vessel McArthur II. During this evaluation period, seven Reserve staff members spent four days in spring 2007 collecting water and plankton samples in an attempt to better understand coastal upwelling, development, and spatial extent of hypoxia events (dead zones) along the Oregon coast. South Slough's system-wide monitoring program has often documented episodes of low concentrations of dissolved oxygen in the tidal channel, a condition which is harmful to marine and estuarine organisms. Reserve researchers are unsure whether the hypoxic waters are generated in South Slough itself or whether they occur as a result of already hypoxic waters flooding into the Slough from ocean waters. South Slough researchers posted the data compiled during the trip on the hypoxia research section of the Oregon Coastal Ocean Observing System's data monitoring website.

ACCOMPLISHMENT: The Reserve's researchers continue to play a leadership role in research programs involving estuarine and coastal processes. The research conducted by the Reserve meets the high priority needs of multiple local and regional partners and stakeholders.

The 2005 evaluation findings contained a Necessary Action requiring the completion and distribution of the South Slough site profile. The site profile has been completed and made available in both hard copy and on the Reserve's web site.

ACCOMPLISHMENT: The South Slough NERR site profile has been completed and made available to the public.

2. Monitoring

The Reserve's system-wide monitoring program (SWMP) staff consists of the estuarine monitoring coordinator, estuarine monitoring assistant, and biomonitoring assistant. The SWMP has four permanent monitoring stations deployed along the Slough's estuarine gradient and now has eight datasondes, so that four can be switched in and out easily, which increases program efficiency. The Reserve has purchased the necessary equipment to monitor chlorophyll as part of its SWMP nutrient monitoring. Staff will be able to do its own analysis and will not be dependent upon the University of Washington lab for that analysis, as has been necessary to this point. The monitoring program has acquired a florometer and collects water samples from the back of a boat with GPS capability as it moves through water. This provides the Reserve with the capability to conduct surface water quality monitoring throughout the estuary and not just at fixed locations. South Slough Reserve served as a pilot project site to test protocols for system-wide monitoring of salt marshes and submerged aquatic vegetation.

The Reserve is currently being considered as a site for one of NOAA's 100 permanent stations in

the climate reference network. It also is a partner in the development of, and an observatory site in, the northwest regional coastal component of the Integrated Ocean Observing System (IOOS) (called the Northwest Association of Networked Ocean Observing Systems (NANOOS)).

ACCOMPLISHMENT: The Reserve's System-wide Monitoring Program has become more self-reliant with the acquisition of chlorophyll monitoring/analysis equipment. The Reserve has served as a pilot project site for system-wide monitoring of submerged aquatic vegetation and salt marsh vegetation.

C. EDUCATION AND OUTREACH

1. Education Programs

The education program at the South Slough Reserve, including new and existing curricula and new exhibits at the Interpretive Center, have increased the average annual number of people reached by education and outreach from 6,500 to 8,500. The Reserve's education programs have been geared primarily to students. The 3rd-6th grade classes are the largest group of students who visit South Slough for field trips due to the flexibility in their scheduling for full day field trips, historic interest, and the Reserve's new focus on the MARE (Marine Activity and Resource Education) curriculum, which introduces wetlands and estuaries in 3rd grade. The Reserve also serves middle and high school students, both on and off site, with the TIDES (Teaching Investigation and Discovery through Estuary Study) curriculum, which was designed to address the needs of middle school classes that are interested in studying South Slough and other estuaries in Oregon. The Reserve often customizes its programs for high school classes, drawing from activities within both the existing but rarely used "Estuary: An Ecosystem and A Resource" curriculum and the TIDES field activities modified for high school audiences.

The overall "Estuary Study Program" is the comprehensive set of offerings provided by the Reserve. The curriculum components are a standards-based program design that meets national and Oregon science benchmarks. Its specific components are the suite of curricula, including Treasures of the South Slough (grades 4 and 5), Secrets of the Medallion (grade 6), "Tide of the Toddlers," which offers a set of activities to introduce the estuary to pre-K/Head Start age children, and the TIDES curriculum.

All of this is taking place as the NERRS is developing the Estuaries 101 curriculum, which will initially target high school students. The curriculum will be piloted later this year in Oregon and around the country, with three teachers piloting the curriculum in the South Slough area.

Another component of the national education program is KEEP (K-12 Estuarine Education Program) – a toolbox of educational approaches that target K-12 educators using standardized methods. The South Slough NERR plans to implement a needs assessment and market analysis, two of the KEEP tools, within the local region to help define a niche for the Reserve in Oregon's educational landscape. The Reserve will convene its Education Advisory Group later this year to seek its input on the direction the Reserve should take to pursue program development.

PROGRAM SUGGESTION: The Reserve should implement the KEEP needs assessment and market analysis to define its educational priorities for the next five years.

The previous evaluation findings contained a Necessary Action requiring the completion of the TIDES curriculum. The TIDES curriculum has been completed and is now being field tested by classes and teachers. It will then be made available through the Reserve's website. The South Slough NERR developed the TIDES curriculum, which consists of 14 distinct units to assist students in grades 6-8 and their teachers in the investigation and discovery of estuaries and their connection to watersheds and the ocean.

ACCOMPLISHMENT: The Reserve has completed development of the TIDES (Teaching Investigation and Discovery through Estuary Study) curriculum and is field testing it with teachers and classes.

Because about three-quarters of the Reserve is forest and uplands, Reserve staff members have begun to use the national curriculum called "Project Learning Tree." South Slough staff have partnered with the Oregon State Forestry Department, the U.S. Bureau of Land Management, Oregon State University Extension Service, and the Coos Chapter of the Society of American Foresters to teach about forestry and wildlife to fifth graders.

In 2005 the Reserve began to offer three distinct summer science camps, which are four days of field and classroom experience for elementary, middle, and high school level students. It has participated as a host site or supporting site for the NERRS EstuaryLive program each year during this evaluation period. And South Slough has facilitated teach training for the Estuary Study Program, Project Learning Tree, and MARE (Marine Activity and Resource Education) programs in addition to training adult volunteers for participation in the educational programs.

In 2005 and 2006 the Reserve hosted Americorps volunteers in 11-month internships that provided substantial support for the education program and for a variety of projects at the Reserve. During each year of the period covered by this evaluation, the Reserve participated as a sponsoring site of the Apprenticeships in Science and Engineering (ASE) program. The competitive two-month-long apprenticeships allow high school students to conduct scientific research with the guidance of a NERR staff mentor. Student research has addressed, for example, the interpretation of historic changes in the spatial extent of coastal wetlands in Coos Bay; physical and biological assessment of water quality in the South Slough Estuary; and planning of the North Creek Trail.

The Reserve has developed interpretive programs offered into three distinct seasonal calendars with a variety of predefined activities. Staff members are continuing to develop an "estuary explorer" approach to trail design and loan "explorer backpacks" to visitors. Summer programs, for example, include an evening birdwalk, summer story time for young children, paddling tours (requests for these have increased), and 'walkabouts.'

ACCOMPLISHMENT: The Reserve provides an excellent complement of estuary-oriented educational programs and has creatively increased the reach of these programs (e.g., explorer backpacks loaned to visitors). It is also addressing other Reserve ecosystems not traditionally covered by educational programs through the "Project Learning Tree" curriculum.

As discussed in an earlier section of this document, plans for a shared facility in Charleston to include Reserve management/administrative staff, the Coos Watershed Association, and possibly Sea Grant are moving forward. This will provide a more visible and accessible 'first contact' location than the Interpretive Center and provide an opportunity to direct visitors to the Reserve and the Interpretive Center. However, it is possible that the Reserve staff at the facility could be overwhelmed answering questions and providing information to visitors. Placing an educational aide or assistant at the facility would greatly assist with that function. It would also respond to the DSL's role in education as the steward of state-owned lands, wetlands, and waterways to benefit the Common School Fund. Finally, with the possible presence of a Sea Grant specialist at the facility, opportunities for coordination and collaboration on educational, outreach, and even CTP activities will be enhanced. The "Administration and Staffing" section includes a Program Suggestion to address this opportunity and need.

2. Coastal Training Program (CTP)

The South Slough Reserve's Coastal Training Program provides training, outreach and information to coastal decision-makers related to six priority topics: marine protected areas, invasive species, water quality, habitat restoration, coastal hazards, and visitor impacts. These topics are closely tied to research and stewardship objectives at South Slough. Both the CTP and the Reserve staff are flexible in terms of addressing new priorities as circumstances arise, and since the strategy was originally approved, energy development has become a topic of increasing concern. Initial activities involving coal bed methane mining operations and port development activities involving liquefied natural gas are already occurring or are proposed to occur within the watershed in the next several years. Staff anticipates that the CTP will provide further training, outreach, and information on energy development topics in the next several years.

During this evaluation period the CTP held numerous successful training workshops addressing, among other topics, tsunamis, ship recycling, gravel extraction, and tide gates.

Following the Indonesian tsunami in 2004, the CTP partnered with the National Weather Service, Coos County, the cities of Coos Bay and North Bend, Southwest Oregon Community College, Bay Area Hospital, and others to develop workshops to help home and business owners and emergency service providers prepare for and respond to tsunamis. These workshops fulfilled a portion of the public outreach requirements for designating Coos County as a "Tsunami-ready Community" under NOAA guidelines. If validation of the need for such workshops and public outreach is necessary, it may have been provided by a trans-Pacific tsunami generated in November 2006 by an undersea earthquake centered in the Kuril Islands that was felt in South Slough. Disruptions in water levels in the Slough were approximately 3.5 inches and continued for about 12 hours. The Reserve also has exhibited a core sample in the Interpretive Center's

new exhibit gallery showing evidence of a tsunami that struck the South Slough estuary in January 1700.

The Reserve partnered with the Port of Coos Bay and the Oregon Institute of Marine Biology to develop a series of seminars and public meetings about the risks and benefits of ship recycling (also known as ship breaking) in Coos Bay. According to "Frequently Asked Questions about Ship Recycling" on the Reserve's web site, a ship recycling firm located on the Oregon coast would provides jobs requiring skills commonly found in shipyards, and ancillary jobs in subsidiary business could also develop. Oregon could also benefit by setting an example of how socially-acceptable ship recycling might be accomplished under stringent standards to protect workers and the environment. There are currently six ship-breaking facilities in the U.S.; four in the Gulf of Mexico and two on the eastern seaboard. (*Source: U.S. Maritime Administration (2005). Report to Congress on the Progress of the Vessel Disposal Program.)* There is renewed interest in recycling ships domestically, although there are significant health, safety, and environmental concerns.

After these information seminars and public meetings were held, the CTP coordinator participated in a panel of Oregon regulatory agencies to develop a white paper identifying regulatory gaps in Oregon's environmental regulations related to ship breaking and assisted the Governor's environmental staff in further defining certain terms. As a direct outcome of the CTP seminars, public meetings, and creation of the white paper, the Oregon Legislature passed legislation restricting ship recycling to dry docks.

The CTP hosted a three-day regional symposium in 2006 in partnership with Oregon Sea Grant, Oregon State University Extension Service, the Oregon Department of State Lands, Department of Environmental Quality, and the Oregon Watershed Enhancement Board on in-stream gravel extraction and its effects on fish habitats. The Reserve had received requests from local counties and agencies for information about in-stream gravel extraction, because it is an issue of concern as it relates to salmon spawning habitat throughout the region, but it also affects navigation and flooding. Over 75 participants and 12 presenters came from California, Oregon, Washington, and British Columbia, and people had to be turned away. A CD of the proceedings of the symposium has been made available. Based on post-meeting surveys, the CTP and partners are considering convening a smaller group of regulators and researchers to develop a test method/case study for some environmentally friendly method of extraction or adaptive management techniques.

The Reserve, Oregon Sea Grant, Oregon State University Extension Service, Oregon Watershed Enhancement Board, and Coos Watershed Association partnered on another three-day conference to address the use, design, and management of tide gates. Approximately 90 attendees and 13 speakers from Oregon, Washington, California, the Gulf of Maine, and Oregon and Washington Native American tribes participated to discuss topics including tide gate design, West Coast fish passage criteria, use of tide gates in salt marsh restoration projects in New England, social dynamics of managing, removing, or replacing tide gates, and designing biological assessments for tide gates.

The work of the Coastal Training Program is well integrated with other groups and supports the

work of other sectors of the Reserve. The CTP works closely with the Coos Regional Trails Partnership to assist public land agencies with management of their visitor impacts. The Reserve's CTP, stewardship, and public involvement coordinators provided informal training in visitor impacts, invasive species management, basic watershed restoration principles, and other topics during a trip through restored marsh and stream habitat in the Reserve.

Working with the Reserve's stewardship program, the CTP developed case study/history documents for three restoration projects (Kunz Marsh; Cox, Dalton, and Fredrickson Creek Marshes; and Anderson Creek) as part of the Reserve's Winchester Tidelands Restoration Project. The case histories are posted on the Reserve's web site and are designed to share concepts, methods, and lessons that have been learned from the experimental wetland restoration projects with landowners, watershed councils, wetland managers, and others. The CTP coordinator served with the Reserve's science team aboard the NOAA scientific vessel McArthur II and provided a videotape of the scientific and ship's operations for use in the Reserve's education, research, and communications efforts related to 'dead zones' (regions of low oxygen) off the Oregon coast. In cooperation with the Reserve's education staff, the CTP produced a training video for adult volunteers who assist in delivering education programs to school groups.

ACCOMPLISHMENT: The Reserve's Coastal Training Program has held numerous successful workshops and symposia that have met local, state, and regional needs, resulted in state legislation, or led to planning for additional test methods or case studies. The CTP is well integrated with numerous external partners and has supported and partnered with the Reserve's other sectors extremely well.

3. Public Involvement and Outreach

The Reserve has a public involvement coordinator whose work with volunteers has been discussed under the section entitled "Volunteer Support and Friends of South Slough Support." The Reserve reaches out to the public through other mechanisms as well. It produces a newsletter three time a year in both paper and electronic formats. The Reserve is a frequent participant at a local farmers' market, providing information about South Slough. The South Slough Reserve web site is also a mechanism to provide varying levels of information about its activities and programs.

The Reserve's education programs, Coastal Training Program, volunteer activities, and other public involvement and outreach activities all compete for staff resources and try to reach various segments of the local and regional population. The 2005 evaluation findings included a Program Suggestion recommending that the Reserve consider the development of a communications strategy to target and prioritize outreach to specific user groups and to standardize operating procedures and messages with respect to the numerous education and outreach mechanisms used by staff.

The Reserve has now begun to develop a communication plan, which was in draft form at the time of the site visit. It has begun to identify goals, key audiences, and key messages. OCRM

hopes that the Reserve will further refine and finalize the plan with objectives, the identification of appropriate mechanisms to reach specific audiences, ways to identify the effectiveness of those mechanisms, and other elements the Reserve believes should be included.

ACCOMPLISHMENT: The South Slough Reserve has initiated development of a communications plan.

D. STEWARDSHIP AND RESOURCE MANAGEMENT

The Reserve's primary stewardship activities are focused on habitat restoration and monitoring. It has done long-term restoration in the Winchester tidelands, as was discussed in the previous findings. During this evaluation period, the stewardship and coastal training programs worked together to prepare case histories on three projects within the larger Winchester Tidelands Restoration Project. Restoration monitoring at the three projects has continued throughout this evaluation period.

The Hinch Road Bridge paddle access point mentioned in the "Facilities, Facilities Plan, and Infrastructure" section is part of a habitat restoration project in which the Stewardship program staff were involved. Related to the restoration aspects of the access point, the Reserve partnered with the Coos Watershed Association, the Oregon Watershed Enhancement Board, the Siletz Tribes, and others on a project placing large woody debris in estuarine channels. Almost 40 large trees, including branches and root wads, were flown by helicopter from a highway reconstruction project where they were removed to make way for highway improvements. They were placed in locations in Winchester Creek by helicopter in an experiment to improve habitat for spawning coho salmon. Staff have been monitoring how the fish and other creatures use the structure and shelter the trees provide.

In partnership with the CTP, Coos Watershed Association, Oregon Sea Grant and Oregon State University (OSU) Extension Service, the Reserve hosted a four-month "Master Watershed Stewards (MWS) Program" developed by OSU and targeted to watershed councils. The Reserve served on the MWS advisory committee, provided tuition benefits for training materials, hosted a field trip, and staff taught some classes.

To effectively restore an ecosystem requires an understanding of what its condition was like before it was developed or disturbed. However, building datasets to provide that information requires the close and continuous monitoring of habitats, which is cost-prohibitive over large geographic areas. South Slough Reserve has received funding from the Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET) for a project, coordinated by the Reserve's Stewardship Coordinator, which will combine wireless networks and ibutton temperature logger arrays to develop baseline data within a network of the least disturbed tidal wetlands on the Oregon coast. Researchers will monitor and log data on tidal inundation, groundwater flow, and salinity fluctuation, and then develop a web portal to provide easy access to this data by restoration practitioners. Evaluation of these innovative and cost-effective technologies should allow practitioners to more efficiently and accurately design restoration projects in the context of local inundation regimes. The Reserve and its partners also intend to

pilot a new Oregon tidal wetland reference condition database for a proposed NERR/NOAA regional restoration reference site program.

The Reserve recently was awarded funding from the NOAA Restoration Center to monitor reference sites for natural and restored marshes within South Slough and evaluate associated restoration projects outside the Reserve. This project implements a component of the NERRS restoration science strategy and implements biomonitoring of reserve wetlands for three years, which supports SWMP monitoring goals.

The stewardship coordinator was involved in the Reserve's partnership efforts with the Oregon Coastal Management Program to revise the state's estuarine habitat classification system; worked as part of the Reserve team in transplanting eelgrass at the North Fork Siuslaw River bridge; participated in development of the Reserve's communication plan; and has worked with the research coordinator and other researchers on a native oyster restoration project.

ACCOMPLISHMENT: The Reserve's stewardship program is well focused and has enhanced its habitat restoration and monitoring goals with projects to address new and creative technologies.

V. CONCLUSION

For the reasons stated herein, I find that the State of Oregon is adhering to the programmatic requirements of the Coastal Zone Management Act and the regulations of the National Estuarine Research Reserve System in the operation of its approved South Slough National Estuarine Research Reserve.

The South Slough Reserve has made notable progress in: Administration and Staffing; Grants Management; Management Plan; Facilities, Facilities Plan, and Infrastructure; Coordination and Partnerships; Volunteer Support and Friends of South Slough Support; Research Activities; Monitoring; Education Programs; Coastal Training Program; Public Involvement and Outreach; and Stewardship and Resource Management.

These evaluation findings also contain seven (7) recommendations. All of the recommendations are in the form of Program Suggestions. There are no Necessary Actions. The Program Suggestions should be addressed before the next regularly-scheduled program evaluation, but they are not mandatory at this time. Program Suggestions that must be repeated in subsequent evaluations may be elevated to Necessary Actions. Summary tables of program accomplishments and recommendations are provided in Section VI.

This is a programmatic evaluation of the South Slough National Estuarine Research Reserve that may have implications regarding the state's financial assistance awards. However, it does not make any judgment about or replace any financial audits.

/signed/ David M. Kennedy — 1-22-08

David M. Kennedy
Director, Office of Ocean and Coastal
Resource Management

Date

VI. APPENDICES

Appendix A. Summary of Accomplishments and Recommendations

The evaluation team documented a number of the Oregon Department of State Lands' and Reserve's accomplishments during the review period. These include:

Issue Area	Accomplishment
Administration and Staffing	Staff members remain the strength of the Reserve and are central to its successes. The leadership of the Department of State Lands is commended for its strong support for the Reserve and its success in obtaining additional staff positions and in placing positions on state funding, thus freeing up federal funds for program implementation.
Grants Management	The Department of State Lands supported the Reserve's need for contracting and accounting assistance, and the State approved and funded a position that has now been filled by the Reserve.
Management Plan	The Reserve has successfully completed revisions to its management plan.
Facilities, Facilities Plan, and Infrastructure	The Reserve has completed significant enhancements to its facilities and infrastructure, providing greater opportunities for visitors, staff, and researchers.
Facilities, Facilities Plan, and Infrastructure	The Department of State Lands and the Reserve created a limited duration position for an information technologist and have developed a wireless connectivity plan to address the IT technology issues the Reserve faces because of its geographic location, isolation, and separated facilities.
Coordination and Partnerships	The Reserve continues to maintain and enhance strong partnerships and coordinate well with external stakeholders and groups. The Reserve sees these partnerships as vital to maintaining its integral role in the local community and region. Reserve programs have a broad reach throughout the region.
Volunteer Support and Friends of South Slough Support	The Reserve has a well organized volunteer support program with dedicated volunteers.

Volunteer Support and Friends of South Slough Support	The Friends of South Slough organization has provided significant financial and volunteer support to the Reserve and its programs and activities.
Research Activities	The Reserve's researchers continue to play a leadership role in scientific and research programs involving estuarine and coastal processes. The research conducted by the Reserve meets the high priority needs of multiple local and regional partners and stakeholders.
Research Activities	The South Slough NERR site profile has been completed and made available to the public.
Monitoring	The Reserve's System-wide Monitoring Program has become more self-reliant with the acquisition of chlorophyll monitoring/analysis equipment. The Reserve has served as a pilot project site for system-wide monitoring of submerged aquatic vegetation and salt marsh vegetation.
Education Programs	The Reserve has completed development of the TIDES (Teaching Investigation and Discovery through Estuary Study) curriculum and is field testing it with teachers and classes.
Education Programs	The Reserve provides an excellent complement of estuary-oriented educational programs and has creatively increased the reach of these programs (e.g., explorer backpacks loaned to visitors). It is also addressing other Reserve ecosystems not traditionally covered by educational programs through the "Project Learning Tree" curriculum.
Coastal Training Program (CTP)	The Reserve's Coastal Training Program has held numerous successful workshops and symposia that have met local, state, and regional needs, resulted in state legislation, or led to planning for additional test methods or case studies. The CTP is well integrated with numerous external partners and has supported and partnered with the Reserve's other sectors extremely well.
Public Involvement and Outreach	The South Slough Reserve has initiated development of a communications plan.
Stewardship and Resource Management	The Reserve's stewardship program is well focused and has enhanced its restoration and restoration monitoring goals with projects to address new and creative technologies.

In addition to the accomplishments listed above, the evaluation team identified several areas where the program could be strengthened. Recommendations are in the forms of Program Suggestions and Necessary Actions, although there are no Necessary Actions from this evaluation. Areas for improvement include:

Issue Area	**Recommendation**
Administration and Staffing	PROGRAM SUGGESTION: The Department of State Lands and the Reserve should consider additional positions or staffing capacity for information technology, GIS, and education functions. The education need is specifically for the new co-location facility when it is completed.
Administration and Staffing	PROGRAM SUGGESTION: The Department of State Lands should continue to support efforts to provide professional development opportunities for Reserve staff. The Reserve should complete a training and professional development plan for its staff members as it has proposed to do.
Facilities, Facilities Plan, and Infrastructure	PROGRAM SUGGESTION: The Department of State Lands and the Reserve are encouraged to complete land acquisition or land leasing as quickly as possible so a co-location facility can be constructed with funds already awarded.
Facilities, Facilities Plan, and Infrastructure	PROGRAM SUGGESTION: The Reserve should complete implementation of the wireless connectivity plan as quickly as possible.
Facilities, Facilities Plan, and Infrastructure	PROGRAM SUGGESTION: The Reserve should complete its master facilities plan update as soon as possible. The plan should identify who and how the operation and maintenance costs of three facilities will be covered by non-federal funds and not by the limited NOAA grant award funding.
Coordination and Partnerships	PROGRAM SUGGESTION: The Reserve is encouraged to seek opportunities to more fully integrate all of its programs and activities. The integration of the Coastal Training Program with the other programs at the Reserve is an excellent model upon which to build.
Education Programs	PROGRAM SUGGESTION: The Reserve should implement the KEEP needs assessment and market analysis to define its educational priorities for the next five years.

Appendix B. Response to Previous Evaluation Findings Dated 2005

Program Suggestion: If the research coordinator position is not shifted to 100% state funding during the 2005-2007 biennium, the Reserve and the Department of State Lands should continue efforts to accomplish the transfer.

Response: The research coordinator was shifted to 100% state funding during the 2005-07 biennium.

Program Suggestion: To support Reserve staff, the State is urged to:
1) convert limited duration positions to full-time permanent positions (regardless of funding source) where appropriate and possible;
2) support opportunities for staff professional training and development;
3) explore ways to support the Reserve's accounting and contract management needs;
4) improve information management and communications technology.

Response:
1) Limited duration positions have been prioritized should reassignment be possible. The state uses limited duration positions for grant funded work, which fluctuates in duration. There are no state funded limited duration positions at the Reserve, they have all been made permanent.
2) The agency has a target for hours of training per staff member. The Reserve strives to provide opportunities for staff to reach those targets, and has been largely successful in doing so.
3) The 2007-09 budget, currently before the legislature, includes a full-time contract and accounting assistant position.
4) Rural isolation is a factor in the lack of sound communications technology. An award from NOAA and support of agency staff are in place to meet this program suggestion in the coming months.

Program Suggestion: The Department of State Lands and the Reserve should work together to identify sources of funding, staff positions, and/or other means to address the electronic communication and computer access problems, new technology requirements, any hardware/software needs, and maintenance of the communications technology at the Reserve as a result of facilities expansions.

Response: A first time ever position was developed because of this program suggestion, and a chief technologist now works to successfully address the remainder of this program suggestion.

Program Suggestion: The Reserve should complete the facilities plan update as quickly as possible in conjunction with the management plan revisions.

Response: A Request for Proposals is pending to initiate the facilities master plan revision.

Necessary Action: The Reserve must complete, finalize, and submit the revised management plan to NOAA according to the following schedule:
a) By April 1, 2005, submit a final draft to the OCRM Estuarine Reserves Division for review.
b) Within two months of the receipt of OCRM's comments, the Reserve must finalize the management plan. NOAA will publish a Federal Register notice regarding the management plan revision and authorize the Reserve to have the document printed. The Reserve is responsible for printing and distributing the revised management plan. The Reserve must provide NOAA with: 1) documentation that the document has been submitted for printing, and 2) a copy of the final document on a compact disc. The document must also be posted electronically on the Department of State Lands/South Slough Reserve web site at this time. Failure to meet this Necessary Action could result in the withholding of supplemental funding for biomonitoring and/or IOOS projects in FY 06.

Response: While the management plan was delayed past the three month requirement, some extenuating circumstances were involved. The Reserve's Program Officer at NOAA was contacted and remained informed of progress. The Management Commission has formally adopted the management plan and staff are working to integrate it into daily work performance as well as near term and long term strategy development.

Program Suggestion: NOAA supports and urges the Reserve to continue its efforts to attract research to Coos Bay and the Reserve. The Reserve should also pursue partnership opportunities to analyze data collected during "McArthur" ship time and pursue placement of a PACOOS transect line at Coos Bay.

Response: Reserve staff continue work on this ongoing suggestion.

Program Suggestion: The South Slough Reserve is urged to investigate and pursue opportunities with the Coos Watershed Association, the Oregon Coastal Management Program, or other entities with regard to further development, maintenance, and use of its geographic information system.

Response: Reserve and agency staff have greatly increased the development, maintenance and use of the geographic information system. These staff members are creating databases of information that has been collected in regard to restoration, boundaries, weather and water data, and other research categories. The level of expertise of staff has increased substantially. Work is ongoing.

Necessary Action: Within five months of the date of these findings, the South Slough site profile must be printed and distributed. If the printing is not completed at the end of five months, the Reserve must provide NOAA with documentation that the document has been submitted for printing and with a copy of the final document on a compact disc. The document must also be posted electronically on the Department of State Lands/South Slough Reserve web site at this time. Failure to meet this Necessary Action could result in the withholding of supplemental

funding for biomonitoring and/or IOOS projects in FY 06.

Response: The site profile project encountered unusual delay, as well. It has been published, printed and distributed. Management Commissioners will receive a CD version of the profile at the March 15 meeting.

Necessary Action: Within one month of the date of these findings, the Reserve must submit a work plan to OCRM for approval, detailing the necessary steps and deadlines for completing the revisions to the Estuary Study Program curricula and completing the TIDES curriculum. Failure to meet the deadlines established in the work plan may result in financial consequences with regard to the Reserve's future financial awards.

Response: A work plan was developed and submitted to OCRM. The outcome of that plan is detailed below.

The Reserve has made necessary modifications to the relevant parts of the Estuary Study Program focusing primarily on the Level II "In Search of the Treasures of South Slough" curriculum. A training film to accompany the revised curriculum is currently in development and will be finished by March, 2007.

The final 1st draft of the TIDES curriculum is currently under internal review by education staff and will receive final edits by the end of March. Activities and resources are currently being used with visiting school groups and will continue to be tested and evaluated during the coming months. A final on-line and printed version of the TIDES curriculum will be available for schools to use in April, 2007 and a teacher training activity is being planned for the summer 2007 NAME conference.

Program Suggestion: To bring focus to the education program, prioritize education activities, and utilize staff time and expertise efficiently, the Reserve is strongly urged to develop a strategy to consolidate and prioritize the many and varied activities and elements that are used for education and outreach. The ESP and TIDES curricula and any revisions and updates should be considered as part of this effort. The Reserve should consider appointing or convening an Education Advisory Group to assist in this endeavor.

Response: Education program staff work together on a continuing basis to successfully implement this program suggestion. Clearly, this suggestion has improved the efficiency and effectiveness of programming. An Education Advisory Group has been created and has met to assist Reserve staff.

Program Suggestion: The Reserve should consider development of a communications strategy or plan to target and prioritize outreach to specific user groups and to standardize operating procedures and messaging with respect to the numerous education and outreach mechanisms used by staff. The strategy should address the role of the Reserve's web site in outreach, how to

renew investment in the web site, and whether to seek external assistance or develop staff capacity to improve and support web based communication and outreach.

Response: Staff have responded to this suggestion and a strategy is "under construction" with some pieces in place. The website suggestion is under consideration; however, the Reserve operates with limited ability to develop capacity specifically for the website. This suggestion is on a priority list with ongoing dialogue to identify where and how web based communication and outreach can occur.

Program Suggestion: The Department of State Lands and the Reserve should continue efforts to seek legislative authorization to implement the Reserve's Cooperative Plan for Watershed Conservation and also to explore less traditional mechanisms for implementation, such as less-than-fee simple acquisition, land swap opportunities, etc.

Response: The Reserve has always sought support for implementing the Cooperative Plan for Watershed Conservation and will continue to do so. Changes in elected state leadership may assist with this effort in the coming biennium.

Appendix C. Persons and Institutions Contacted

Oregon Department of State Lands
Louise Solliday, Director
Jeannette Holman, Assistant Director, Finance and Administration Division

South Slough National Estuarine Research Reserve
Mike Graybill, Manager
Robin Elledge, Operations Manager
Craig Cornu, Stewardship Coordinator
Steve Rumrill, Research Coordinator
Alicia Helms, Estuarine Monitoring Coordinator
Ben Grupe, Biomonitoring Assistant
Adam DeMarzo, Estuarine Monitoring Assistant
Tom Gaskill, Education Coordinator
Joy Tally, Education Program Specialist
John Bragg, Coastal Training Program Coordinator
Deborah Rudd, Public Involvement Coordinator
Tom Elledge, Information Technologist

State Agency Representatives
Bob Bailey, Manager, Oregon Coastal Management Program, Oregon Department of Land Conservation and Development

Academic/Educational Representatives
Bob Malouf, Director, Oregon Sea Grant
Guillermo Giannico, Department of Fisheries and Wildlife, Oregon State University

Friends of South Slough
Rich Hamel
Jody Hamel

Other Organizations and Representatives
Jeff Bishop, Executive Director, Port of Coos Bay
Michael Gaul, Deputy Executive Director, Port of Coos Bay
Ron Stuntzner, Stuntzner Engineering and Forestry, LLC, and member of South Slough Management Commission
Steve Pappajohn, President, Methane Energy Corporation
Peggy Halferty, Environmental Manager, Methane Energy Corporation
Jon Souder, Coos Watershed Association

Appendix D. Persons Attending the Public Meeting

The public meeting was held on Tuesday, June 19, 2007, at 5:30 p.m. at the North Bend Public Library, 1800 Sherman Avenue, North Bend, Oregon. The following attended the meeting:

Rich Hamel, Friends of South Slough and South Slough NERR Management Commission
Jody Hamel, Friends of South Slough

Appendix E. NOAA's Response to Written Comments

NOAA received no written comments regarding the management or administration of the South Slough National Estuarine Research Reserve.