COASTAL SERVICES

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LINKING PEOPLE, INFORMATION, AND TECHNOLOGY

OIL SPILLS:
Preparing for the Worst in Oregon

Planning for Open Space in Massachusetts

Treating Stormwater with an Inner-City Wetland in Texas

From the Director

Hazards that can impact coastal resources are not limited to hurricanes and tsunamis. Oil spills and toxic blooms also are on the list.

In this edition of *Coastal Services* we take a look at the lessons learned at the South Slough National Estuarine Research Reserve when the most serious oil spill in Oregon's recent history occurred a little over three miles north of the reserve boundary.

This incident demonstrated to reserve staff members, and hopefully to other coastal resource managers, the need to be prepared for such emergencies. South Slough staff members also learned the value of their environmental information and the role they could play in the Natural Resource Damage Assessment process mandated as part of the incident response.

Communication is another critical role coastal resource managers can play before, during, and after disaster strikes.

Maryland Sea Grant College took up this mantle after a bizarre organism seemed to be killing fish and causing skin lesions, confusion, and short-term memory loss in humans.

The Maryland incident spurred scientific debate, caused a storm of national media attention, political conflict, and public hysteria, and led to an economic crisis in the state's fishing industry.

With Sea Grant's goal of educating the public about science and marine issues, it was the perfect organization to create a documentary that helped put the environmental and societal issues into a larger context.

Other articles in this edition of *Coastal Services* check into how coastal managers in Massachusetts led a comprehensive coalition to rethink local planning, and how managers in Houston were able to develop a model stormwater wetland project that not only will help clean pollutants from stormwater, but also creates natural habitat and an aesthetically pleasing public space.

We also examine the effort led by Ohio coastal managers to pull together, map, and provide geographically referenced information about the state's coastal environment as a means to ensure that local and state decision makers have the information they need to wisely manage the Lake Erie watershed.

As always, we hope you find these articles interesting and informative.

Margaret A. Davidson

The mission of the NOAA Coastal Services Center is to support the environmental, social, and economic well being of the coast by linking people, information, and technology.

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To subscribe to *Coastal Services*, please direct correspondence to:

Hanna Goss
NOAA Coastal Services Center
2234 South Hobson Avenue
Charleston, SC 29405-2413
Phone: (843) 740-1332
Fax: (843) 740-1313
E-mail: *Hanna.Goss@noaa.gov*

For more information about the Coastal Services Center, call (843) 740-1200 or visit our home page on the Internet: *www.csc.noaa.gov*

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News and Notes

"One NOAA" Serves State and Local Programs

Although the National Oceanic and Atmospheric Administration (NOAA) was formed in 1970, the agencies that came together at that time were among the oldest in the federal government. These agencies included the U.S. Coast and Geodetic Survey formed in 1807, the Weather Bureau formed in 1870, and the Bureau of Commercial Fisheries formed in 1871. These organizations represented America's first physical science agency, first agency dedicated specifically to the atmospheric sciences, and first conservation agency.

Today, NOAA is housed within the Department of Commerce and continues to focus on the condition of the oceans and the atmosphere. Six line offices exist within NOAA: the National Marine Fisheries Service, the National Ocean Service, the National Weather Service, the Office of Oceanic and Atmospheric Research, the National Environmental Satellite, Data, and Information Service, and Program Planning and Integration. These organizations play several distinct roles in the Department of Commerce:

- Supplier of environmental information products
- Provider of environmental stewardship services
- Leader in applied scientific research

NOAA is a trusted source of accurate and objective scientific information about ecosystems, climate, weather and water, and commerce and transportation.

Bringing these considerable powerhouses of expertise and data to the end user is the goal behind the One NOAA concept. "At the NOAA Coastal Services Center, we are doing what we can to ensure that all that NOAA has to offer is available to the coastal resource managers of this nation," says Margaret Davidson, director of the Center.

To accomplish this task, the Center has established an unusual management structure for its organization. All the NOAA line offices have at least one employee who works at the Center. This helps Center staff members be fully aware of the capabilities and offerings of the other NOAA offices and makes it easier to engage all the applicable parts of NOAA when addressing local coastal resource management issues.

Furthermore, the Center has embraced a regional concept of operations, which places Center employees in the various coastal regions. This move not only helps the organization focus on products and services that are aligned with local needs and priorities, but also helps the state and local coastal programs gain easier access to NOAA services.

"Working together, through partnerships with NOAA and with the client community, is the best way to make a difference," reports Davidson. ❖

NOAA Coastal Services Center Regional Services

Regional Branch Chief
Bill Thomas:
Bill.Thomas@noaa.gov

Regional Coordinator
Rachel McEvers:
Rachel.McEvers@noaa.gov

West Coast Representative
Becky Smyth:
Rebecca.Smyth@noaa.gov

Great Lakes Representative
Tricia Ryan:
Tricia.Ryan@noaa.gov

Pacific Islands Representative
Bill Thomas:
Bill.Thomas@noaa.gov

Mid-Atlantic Representative
Peyton Robertson:
Peyton.Robertson@noaa.gov

Gulf of Mexico Representative
Becky Allee:
Becky.Allee@noaa.gov

New England Representative
Betsy Nicholson:
Betsy.Nicholson@noaa.gov

Planning for Open Space in Massachusetts

In many communities, even if a residential developer wants to preserve natural areas and protect the environment, existing laws can at best present daunting permitting hurdles and at worst can prohibit the effort. Recognizing this conundrum, coastal resource managers in Massachusetts led a comprehensive coalition to rethink local planning.

"We finally agreed that nobody was happy or satisfied with the current regulatory system. It really was a turning point because we finally agreed on something."

Andrea Cooper, Massachusetts Office of Coastal Zone Management

"When we really took a look at the threats to coastal resources, it came down to development and how development is designed," says Andrea Cooper, coastal smart growth coordinator for the Massachusetts Office of Coastal Zone Management. "While there were a lot of other issues, it really became clear that our coastline was being threatened by sprawl."

The coastal program's response was to help bring together a group of local planners, environmentalists, state and local officials, lawyers, developers, and real estate agents to form the Green Neighborhoods Alliance. Together the group created and works to promote a model zoning bylaw that not only allows, but also provides incentives to developers to conserve open space in new residential subdivisions.

Since 2001, about 30 communities have adopted Open Space Residential Design, and more are in the adoption process. While continuing to promote the model bylaw, the alliance has expanded its membership and purview to include low impact development best management practices.

Turning Point

When the 30-member Green Neighborhoods Alliance began meeting in 1997, Cooper says she was surprised its members kept coming back to the table.

"It took six months of contentious meetings for the group to agree on anything," she recalls. "We finally agreed that nobody was happy or satisfied with the current regulatory system. It really was a turning point because we finally agreed on something."

Over the next two years, the group hammered out the Open Space Residential Design model bylaw.

"Everybody put their issues on the table, and then we had to prioritize the issues because everybody couldn't get everything they wanted," Cooper says. "We had to build something that was more economically attractive for the developer but at the same time was flexible for the community."

Finding the Value

Under the model bylaw, the number of homes that can be developed on a piece of property is the same as in a conventionally zoned subdivision. The difference is that at least 50 percent of the site's natural areas must be saved. To help developers meet this goal, every lot size, frontage, and setback can be different.

Another difference is that open space is set aside according to resource value, not by formula.

"You start out with GIS [geographic information system] data on the site, and the regulatory agency, developer, and any interested parties can sit down and look at the site and the surrounding context and decide what areas have the most conservation value and what should be protected," Cooper explains.

Step by Step

Designating the open space is the first step in the bylaw's four-step planning process. Only when the open space is designated are house sites selected, roads and trails planned, and, finally, lot lines drawn—the reverse order of conventional subdivision planning.

The bylaw, Cooper says, was written to ease the approval process, making it on par with or even less time-consuming and costly than the approval process for conventional subdivisions. It is set up to be a "design partnership" between the planning board and the developer.

"One of the biggest surprises was that the developers agreed that the flexibility of design and reduced infrastructure was incentive enough for developers to choose this planning method," she says. Density bonuses kick in only if developers go above 50 percent open space, or provide affordable housing.

Team Approach

Once the model bylaw was drafted and agreed upon by group consensus, teams representing the various stakeholders began presenting it to local officials, developers, and planning boards across the state.

"They were stunned that this model was drafted by the various groups that are normally antagonistic," Cooper says. "When they start to tell you that a developer would never go for this, and then a developer stands up who was a part of the process, they're just bowled over."

Since beginning to learn of the bylaw in 2001, close to 30 towns have adopted the model or important sections of it. Another 15 communities are in the process of adopting the bylaw.

Above and Beyond

Numerous case studies demonstrate that the planning process is helping to protect natural areas. Cooper points to the community of Newbury, where a developer was able to save 100 of 125 acres that were of "global significance because they were on the Atlantic flyway."

With the success of Open Space Residential Design, the Green Neighborhoods Alliance expanded its membership from 30 to 100 to include engineering firms, watershed associations, and other public and private organizations. The group meets monthly to develop ways to promote low-impact-development best management practices, such as environmentally sensitive site design, green roofs, and using pervious surfaces, for both commercial and residential development.

"We're plugging away at changing the design of commercial and residential development to reduce the impact on our coastal resources in terms of loss of open space and its effect on aquatic habitat and water quality," Cooper says.

She adds, "It's been challenging but at the same time exciting. When you have success like that, it keeps you motivated to stay on track and build on that success." ❖

For more information on the Green Neighborhoods Alliance and Open Space Residential Design, point your browser to www.mass.gov/czm/smartgrowth/. To read the Newbury Open Space Residential Design case study, go to www.mass.gov/envir/smart_growth_toolkit/pages/CS-osrd-newbury.html. You may also contact Andrea Cooper at (617) 626-1222, or andrea.cooper@state.ma.us.

Under Open Space Residential Design, homes are creatively situated to maximize open space and views, and create a sense of community.

Photo and graphics courtesy of Massachusetts Office of Coastal Zone Management

OIL SPILLS:
PREPARING FOR THE WORST IN OREGON

"Coastal resource managers shouldn't shy away from participating in emergency response."

Steve Rumrill, South Slough National Estuarine Research Reserve

On February 4, 1999, the most serious oil spill in Oregon's recent history occurred when the 639-foot freighter called the *New Carissa* ran aground about 150 yards off a stretch of remote beach three miles north of Coos Bay. Over the next 106 days, as salvage operations were hindered by severe winter storms, the *New Carissa* would leak between 70,000 and 140,000 gallons of oil, killing about 3,100 shorebirds and seabirds.

Potential environmental risks from the grounding included impacts to the nearby South Slough National Estuarine Research Reserve (NERR), which is within Coos Bay near Charleston, Oregon.

"Oil released by the *New Carissa* provided a serious wake-up call," says Steve Rumrill, the research coordinator for South Slough Reserve. "We were unprepared for an oil spill in the estuary."

Over the following three months, the reserve staff provided important environmental information to and learned how to work within the Incident Command System, labored to prevent spilled oil from entering the estuary, and participated in the Natural Resource Damage Assessment process.

Although the reserve escaped severe environmental damage in this instance, the spill made staff members keenly aware of the estuary's vulnerability. The reserve is now prepared to respond immediately to an oil spill and is part of the state's oil spill response plan. The reserve's readiness was tested recently when a small spill occurred.

Oregon Water Quality Specialist Bryson Twidwell (left) and Steve Rumrill (right) collect sand and water samples during the Natural Resource Damage Assessment for the New Carissa grounding.

"Coastal resource managers shouldn't shy away from participating in emergency response," Rumrill says. "Our role is clear, and there is a place for us."

First Response

On the day of the *New Carissa's* accident, Rumrill was en route to a conference in Washington State. "I was traveling between Coos Bay and Portland when I got the word," he recalls. "I knew this was significant, and I turned around and came back."

Rumrill and other reserve staff members were immediately thrust into the unfamiliar Incident Command System, which was being led by the U.S. Coast Guard.

"It took us a few days to understand how the system worked," he says. "The Incident Command System is well tested and well designed, and it's the responsibility of the NERR to understand how it works."

Rumrill quickly brought himself up to speed on Incident Command System protocols by looking up information on the Internet.

"At first you feel like an outsider," Rumrill says, "but as you gain understanding you recognize that they need our help, they want our help, but there is a proper avenue to work through, and you need to know what that is."

Working in the System

Backing up Rumrill's view is a U.S. Coast Guard report, "'Crisis on the Coast': Federal On Scene Coordinator's Report and Assessment of M/V *New Carissa* Oil Spill Response."

"Ideally," the report says, "participants in a response should have prior training in ICS [Incident Command System] or at a minimum receive some orientation to ICS upon their arrival at the incident in order to help them function most effectively within the response organization."

The report notes that before the incident ended, "58 different agencies and groups and approximately 700 people would lend their expertise and resources to the response."

Under lessons learned, the Coast Guard suggests exercises should be conducted that engage, among others, leaders in the environmental community.

"My advice to other NERRs," Rumrill says, "is to take responsibility to get up to speed on the command system."

Damage Assessment

During the first few days after the grounding, winter currents were moving south to north, meaning that any leaked oil should be moving away from the estuary.

"This was a good scenario in a bad situation, but with our local knowledge of the surf currents, we knew that some of the water in the surf zone would make its way down into the Coos Bay estuary," Rumrill says.

Rumrill saw the need to begin collection of samples inside Coos Bay and the South Slough as part of the Natural Resource Damage Assessment process. "We were welcomed into the decision-making process at that point," he says.

The estuary assessment required a team of about eight to ten people, mostly reserve staff members, to be trained in collecting environmental samples that would be admissible in court. Samples of sediments, water quality, and all living resources needed to be taken both before and after oil impacted natural resources to determine the level of contaminant exposure, Rumrill explains.

Rumrill and his team worked for two months to complete the assessment.

Part of Rumrill's responsibilities in undertaking the assessment was coordinating with the Oregon Departments of Fish and Wildlife and Environmental Quality, the U.S. Bureau of Land Management, the U.S. Fish and Wildlife Service, the National Oceanic and Atmospheric Administration, and the state's tribes.

Protecting the Estuary

By day five of the incident, small tarballs began to appear on ocean beaches. Beach cleanup and "booming" of sensitive habitats and marinas in the estuary were getting underway.

Reserve Manager Mike Graybill and other reserve staff members helped place oil-catching booms around at-risk areas of the 4,700-acre reserve. As Graybill monitored a flooding tide, he observed that oil was getting past the booms into the estuary.

"At that time, we didn't have accurate GIS [geographic information system] maps, so we had to help [the responders] understand where important areas were, such as sensitive eelgrass beds, recreational clamming areas, and salt marsh restoration sites," Rumrill says.

Fortunately, relatively little oil reached the sensitive areas in the slough. While oil was documented in eelgrass beds, the reserve detected no long-term resource damage.

"The spill occurred north of us, and if we hadn't had those few days to gear up, we would have been caught flat-footed," Rumrill says. "The lesson for us was, 'be prepared.'"

The Aftermath

The reserve now has a special oil spill cabinet that contains necessary materials to conduct sampling for a Natural Resource Damage Assessment. This includes sealable glassware for sampling with chain-of-custody strips, acetone, latex gloves, aluminum foil, and cameras.

"We could be moving with five minutes warning," Rumrill says.

Since the *New Carissa* grounding, the reserve staff has worked with the Coast Guard, U.S. Environmental Protection Agency,

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Photo courtesy of South Slough National Estuarine Research Reserve

Creating a Coastal Atlas in Ohio

"The very first thing we did was go out and contact all kinds of organizations and find out what kind of information they had."

David Mackey, Ohio Department of Natural Resources' Office of Coastal Management

If you don't know what natural resources are in a coastal region, you'll find it difficult to manage them successfully. To make sure that local and state decision makers have the information they need to manage the Lake Erie watershed wisely, Ohio coastal resource managers led an effort to pull together, map, and provide geographically referenced information about the state's coastal environment.

The resulting Ohio Coastal Atlas was distributed free in May 2005 to local and state decision makers. A second, expanded and refined version will be published this summer.

"We needed to identify our resources and present it in a format where you could easily digest all the information," says David Mackey, chief of the Ohio Department of Natural Resources' Office of Coastal Management. "This is an excellent vehicle for other decision makers to learn more about the resources and aid in their daily decision making."

The 11-by-17-inch atlas includes county profiles, as well as maps and data on geology, sand resources, habitat, land use and protected areas, soils, groundwater, flood hazards, ports and transportation, and boating access.

"The very first thing we did," says Mackey, "was go out and contact all kinds of organizations and find out what kind of information they had."

Data were collected from various state agencies, federal agencies, local and county planning departments, and nonprofit organizations. In some cases, resource data were mapped for the first time.

The 160-page Ohio Coastal Atlas uses maps to illustrate data, such as sand resources.

With one staff person assigned to the project full time, it took seven-and-a-half months to collect the data, do all the mapping, put the atlas together, write and edit the text, and design the publication and get it ready to print, notes Patrick Ernst, coastal lands manager for the Office of Coastal Management.

Close to 500 copies of the 160-page atlas were printed. Coastal program staff members then met with legislators, local planning commissions, county auditors, engineering offices, and other decision makers across the state to present them with copies, explain the publication, and get feedback and additional data for a second version.

The response was tremendous, says Ernst. "With this atlas, you can look at two resources together and start seeing how the decisions you make for one affect the other." Once decision makers saw the publication, they began providing additional data they thought would be useful.

As a result, the coastal program is working on a more robust second edition, which has grown to 225 pages.

"We've gotten nothing but positive feedback on this atlas," Mackey notes. "It's been a great vehicle to generate a lot of discussion and communication with all kinds of groups." ❖

To view a portable document format (PDF) version of the Ohio Coastal Atlas, point your browser to www.ohiodnr.com/coastal/gis/. For more information on the atlas, you may contact David Mackey at (419) 609-4111, or David.Mackey@dnr.state.oh.us. You may also contact Patrick Ernst at (419) 609-4118, or patrick.ernst@dnr.state.oh.us.

Map courtesy of Ohio Department of Natural Resources

Treating Stormwater with an Inner-City Wetland in Texas

Flood control often consists of shunting a city's stormwater to the nearest large body of water as quickly as possible, taking along with it pollutants from cars, streets, and yards. A new model stormwater wetland project in Houston promises not only to help clean pollutants from stormwater, but also to create natural habitat and an aesthetically pleasing public space.

"This will be a signature wetland in this area," says John Jacob, director of the Texas Coastal Watershed Program. "It's a real jewel."

"The impact has also been in bringing all these different parties together."

John Jacob, Texas Coastal Watershed Program

The Brays Bayou Urban Stormwater Treatment Wetland project features both a stormwater treatment wetland and a tidally influenced wetland adjacent to an existing flood control channel. Students from nearby inner-city schools are participating in growing the native plants to be used in the wetland. Planting should be complete this spring.

The project started four years ago after the Texas Coastal Watershed Program, which is part of Texas Sea Grant and Texas Cooperative Extension and is affiliated with the national Nonpoint Education for Municipal Officials (NEMO) program, received a grant from the Galveston Bay Estuary Program to develop a stormwater demonstration project.

Volunteers and high school students developed a nursery stock of native plants to be used in the Brays Bayou wetland.

Flood control district officials were already planning a stormwater channel widening project in a local park that called for building wide streamside shelves that would be barely above sea level. "It was the perfect location for a stormwater wetlands project, says Marissa Sipocz, the Coastal Watershed Program's wetland restoration team leader.

The first step was for the Coastal Watershed Program to facilitate a partnership between numerous local, state, and federal agencies and organizations, including the Harris County Flood Control District, Texas Parks and Wildlife Department, and City of Houston Parks and Recreation Department.

The group worked together to provide project funding, hire engineers to design the project, work with contractors for its construction, and organize area high school students to develop a nursery stock and do the planting.

"We've kept everybody talking," says Sipocz. "Everybody agreed on their roles, and we met regularly to make sure we were still on target."

The 3.5-acre wetlands project is located within the city's Mason Park. It consists of a freshwater tidally influenced wetland that will provide habitat for fish and wildlife, a stormwater treatment wetland, and various public use facilities, such as a new pedestrian bridge. A kiosk and amphitheater will be used to display project information and provide an area for group interpretation of the area's plants and wildlife.

While the project will be mostly complete this spring, Jacob notes that "it's already had an impact." The flood control district is experimenting with other stormwater wetlands in other areas.

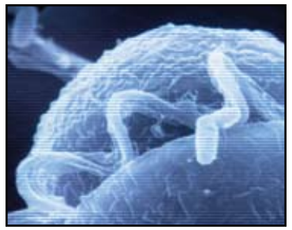
He adds, "The impact has also been in bringing all these different parties together. The path has been laid for future collaborative work." ❖

For more information, point your browser to www.urban-nature.org. You may contact John Jacob at (281) 218-0565, or jjacob@tamu.edu. You may also contact Marissa Sipocz at (281) 218-6253, or m-sipocz@tamu.edu.

Photo courtesy of Texas Coastal Watershed Program

Documenting an Ecological Mystery in Maryland

It was like an episode from *The X-Files* television series—a bizarre organism in Maryland seemed to be killing fish and causing skin lesions, confusion, and short-term memory loss in humans. While the scientific and medical community rushed to try to solve this ecological mystery, a maelstrom of national media attention stirred political conflict and public hysteria, and led to an economic crisis in the state's fishing industry.



When the toxic marine organism Pfiesteria was suspected of killing fish in Maryland, it set off a public crisis documented in The Pfiesteria Files.

With Sea Grant's goal of educating the public about science and marine issues, a writer and film producer with Maryland Sea Grant College produced an Emmy-award-winning documentary that followed the unfolding real-life drama.

The Pfiesteria Files examines how the regulatory, scientific, and environmental communities, as well as the media, reacted to the fish-kill episode and helped put the environmental and societal issues into a larger context.

> ***"It was important after the episode to connect all the dots and put a whole picture together so that people could understand."***
>
> ***Michael W. Fincham, Maryland Sea Grant College***

"Sea Grant programs have a real role to play in these types of situations," says Michael W. Fincham of Maryland Sea Grant College, who wrote, edited, and produced the one-hour documentary. "We are an honest broker of scientific information and can examine and explain controversial scientific findings from all sides."

This was valuable for Sea Grant to do for Maryland's 1997 *Pfiesteria* episode, Fincham says, because "*Pfiesteria* invaded people's living rooms."

The media was "competing like mad to stay on top of this," Fincham explains. "The overall effect was to blow it out of proportion, I think."

"It was important after the episode," he says, "to connect all the dots and put a whole picture together so that people could understand—the theory being that if you could help people understand what had happened, then they will be better prepared when later news comes out about *Pfiesteria* or other toxic blooms."

Fincham believes this was accomplished by the documentary, just not as quickly as had been planned. *The Pfiesteria Files*, co-produced by Maryland Public Television, had the unfortunate timing of first being scheduled for broadcast on September 11, 2001.

The documentary was re-released a year later and won a 2002 Emmy for best documentary.

Since its original broadcast, the documentary has received numerous airings on Maryland Public Television and several other major awards. Maryland Sea Grant has used the documentary for education purposes and plans to update the documentary next year to mark the 10th anniversary of the state's *Pfiesteria* episode.

"The *Pfiesteria* story is not finished," Fincham says. "*Pfiesteria* remains in the public and media memory as an example of a major toxic episode that had major health implications."

He adds, "We captured an episode in our history that people will turn to. . . Our focus is to explain the implications and applications of current research to contemporary marine issues." ❖

To order a copy of The Pfiesteria Files, point your browser to www.mdsg.umd.edu. For more information on how the documentary was produced, contact Michael Fincham at (301) 405-6382, or fincham@mdsg.umd.edu.

Photo courtesy of Maryland Sea Grant College

Continued from Page 5

and Oregon Department of Environmental Quality to help develop and update the state's Geographic Response Plan.

"This planning takes place on a regional scale," Rumrill explains. "We were included for our knowledge of the natural resources." Rumrill is now on the state's oil spill emergency call list.

A year after the *New Carissa*, reserve Education Coordinator Tom Gaskill headed up a workshop on lessons learned from the grounding and community preparedness for future oil spills.

Quick Response

The reserve's oil spill response was tested early last December when Rumrill received word that a spill had occurred near the town of Brookings, about two hours south of the reserve.

The message was that "50 to 100 gallons of oil" had spilled into the harbor. "But it was unclear if that was 5,200 gallons of oil or 50 to 100 gallons. We responded as if it was 5,200 gallons until we could get clarification."

While serious oil spills are rare, the grounding of the *New Carissa* brought the point home for the South Slough Reserve that it's important to be ready for such emergencies.

"Another lesson," Rumrill says, "is that the coastal management community has intimate knowledge about resources and the way water moves along our coastline. That knowledge is really valuable."

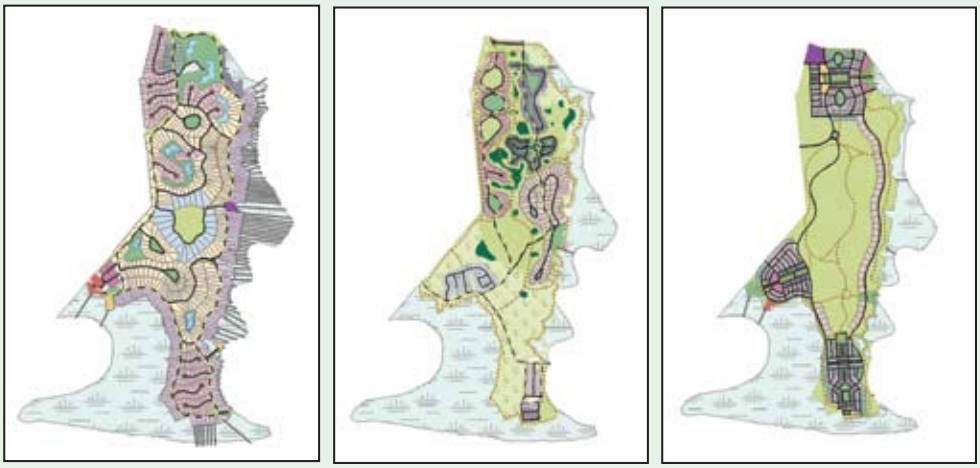
For information about the Natural Resource Damage Assessment process, point your browser to www.darp.noaa.gov/library/1_d.html. For information on the Incident Command System, go to www.uscg.mil/hq/g-m/mor/Articles/ICS.htm. To read the U.S. Coast Guard's report on the New Carissa response, go to www.akrrt.org/Archives/Response_Reports/AAR_NewCarissa_Vol-I_1999.pdf. For information on South Slough NERR's oil spill response, contact Steve Rumrill at (541) 888-2581, ext. 302, or Steve.Rumrill@state.or.us.

Paved roads? Community docks? How much green space do we need?

A Smart Growth Outreach Tool

One Site, Three Scenarios

Use this Web site to help people understand smart growth concepts. Users can explore various development options and see the potential financial costs, environmental ramifications, and other impacts.



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