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AQUATIC RESOURCES NEWS

A REGULATORY NEWSLETTER

Headquarters, U.S. Army Corps of Engineers, Regulatory Branch

A Note from Headquarters

I hope everyone had a good Christmas and happy New Year. I would like to personally welcome readers to the second issue of the Aquatic Resources Newsletter. This newsletter, developed jointly by Headquarters and the Institute for Water Resources (IWR), will be published on a quarterly basis and will provide important technical information and summaries of upcoming issues that may affect our work. While it is primarily designed to provide updates on matters important to the Corps regulatory family, it will also provide another avenue for getting our message out to the public. Pass it along to your contacts in the resource agencies, the development community, environmental groups, and the general public. Take the time to read articles that may not deal with issues from your local area; it may provide a different insight into procedural questions that do affect your District. Expect this newsletter to change with the face of Regulatory. We will be soliciting articles and welcoming suggestions for future issues. If you have any questions or suggestions, contact myself, Bob Brumbaugh, or Katherine Trott.

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Regulatory Developments: A Note from the Editor

This issue focuses upon compensatory mitigation, looking at examples of field efforts to improve upon compensatory mitigation performance and information transfer. Compensatory mitigation continues to be important to the Corps regulatory program and has recently received considerable attention. The National Research Council (NCR) Report, *Compensating for Wetland Losses Under the Clean Water Act* (2001), certainly caught the public's interest. That interest was sustained when the Corps issued the compensatory mitigation Regulatory Guidance Letter (RGL-01-01).

Regulatory Guidance Letter 02-2, which rescinds and replaces RGL 01-1, was issued on December 24, 2002. Copies were sent to the District Branch Chiefs and can also be found on the HQ website.

The NRC Report and the RGL both call for a watershed perspective for making compensatory mitigation decisions. However, the NRC Report admits that few formal watershed plans are available. Also, a report just released by The Environmental Law Institute that inventories off-site mitigation (see *Current Events and Articles of Interest* on page 11 of this newsletter) states that few consolidated mitigation efforts, such as banks and in-lieu fee arrangements, use formal watershed plans to determine their locations.

Distribution of Aquatic Resources News

The *Aquatic Resources News* will be distributed to field staff by email. The Newsletter will also be available on the IWR website within the month at:
http://www.iwr.usace.army.mil/iwr/regulatory/regulintro.htm
Or you may contact the Editor, Bob Brumbaugh, CEIWR-PD (703) 428-7069 Robert.w.brumbaugh@usace.army.mil. HQ point-of-contact for the newsletter is Katherine Trott, CECW-OR (202) 761-4617 Katherine.l.trott@usace.army.mil

This newsletter begins with one perspective on the NRC Report and what it means to the Corps followed by two articles that examine informal watershed plans showing how they fit in with other programs to yield ecological benefits otherwise difficult to achieve. to achieve. In both southeastern Virginia and along the southeastern margins of Great Salt Lake, Utah, agencies have conducted an array of inventories and identified priorities, such as providing habitat corridors for endangered species that otherwise, would have been difficult to string together. Of course, formally developed wetland plans are especially useful for assisting Corps regulatory decisions. Therefore, another article looks at the use of formally developed plans. These articles are followed by observations offered by the vice chair of the NRC mitigation study committee who reflects upon the intent of the NRC recommendations and the case examples discussed in this newsletter.

Readers will note that several of the examples discussed in this newsletter do not include complete watersheds. The Great Salt Lake case appears to be more oriented toward ecoregions than complete watersheds. The three local government wetland plans focus on politically defined planning areas. However, all of these cases move well beyond the permit-by-permit perspective and can take into account watershed factors.

This newsletter also reviews Corps district regulatory websites to see what is available with respect to tools, documents, and website approaches. This newsletter also lists recent journal articles, reports, or notes that may be of interest to district regulators. HQ encourages field regulators to write to the editor on their perspectives on the articles and suggestions for future articles.

The next issue of this newsletter will focus on stream impact assessment. Topics in upcoming issues will include stream and riparian mitigation.

The NRC Report on Compensatory Mitigation: What It Means to the Corps

Jack Chowning

The Corps Section 404 regulatory Research Council (NRC) Committee on Mitigating Wetland Losses issued its report on the current state of mitigation practices and their effect on the Nation's wetland resources. During that time, Corps Districts developed numerous approaches for obtaining compensatory mitigation in return for favorable permitting decisions. While the Corps practices were developed in response to the national policy goal of no overall net loss of wetlands, the policy of requiring all kinds of mitigation predates that goal. This suggests the NRC reviewed a fairly young program, with compensatory mitigation as only one component.

The NRC report findings and recommendations came as no surprise to those familiar with the regulatory program's policies and practices. As a matter of fact, the Corps Headquarters staff agreed in general with the NRC findings and was working on, or adopted some of the recommendations made as a result of those findings. The Committee's five general conclusions are observations that have also been reported in one form or another in other program reviews carried out by the U.S. General Accounting Office and the Army's Audit Agency. Because of the NRC committee members' expertise and familiarity with wetlands and the Corps regulatory program, the NRC report has the potential for forming the basis for improving the wetland compensation practices that are currently in use.

The NRC recommendations should be viewed as general suggestions to guide improvement of wetland compensatory mitigation, not as specific solutions. The recommendation that wetland mitigation planning and implementation should be done with a watershed perspective is key to understanding the report's recommendations. Sections of the report that deal with watersheds do so from a wetlands and water quality point of view. While water quality is a critical element in land use planning, it is not the only one. Waterways, impoundments and wetlands must complement and, ideally, be in balance with other planning forums.

This means that the recommendations dealing with quantification and qualification of wetland resources are of priority in any move to improve practices. The Corps wetland delineation methodology continues to be the model for describing a wetland in terms of areal extent on the ground. An adequate picture in terms of quantification might result in a GIS that uses wetland data layers based on local ground survey revisions to NWI mapping products. Determining the quality of wetlands, including their local importance, is a more difficult task. As recognized in the report, what is recommended is consistency in using a tool, rather than relying on best professional judgment, or areal extent as surrogates for rational scientific methods. Again, local GIS data layers, based on consistent assessment practices would be adequate.

Finally, the report points to continuing inconsistent policy as a problem that needs resolution. In this regard, it is difficult to see a single solution. Policy statements must reflect identified needs. Permitting decisions, especially those that include compensatory requirements, must be based on fair, reasonable policies. Policies that require consistent process can result in timeliness and fairness for those seeking a decision. Speed results from the applicants knowing what is required; fairness results from an identifiable practice being challenged in the academic, administrative, or legal arena, and being validated or overturned. Where wetlands compensatory mitigation is concerned, the report can only speak to the need for consistency. Over the last 25 years there have been few periods where controversy did not result in change in

most aspects of the Corps regulatory program. Perhaps the best example of a consistent practice has been the use of the wetland delineation method. Agree with its method and outcome on a particular tract or not, its consistent national use has resulted in time being available for the consideration of other issues. The practice of accepting compensatory mitigation as a condition for permit is also longstanding. What the NRC report provides is a view to improving that practice.

Editor's note: Jack Chowning retired from HQ Regulatory in October where he helped prepare the Compensatory Mitigation RGL and participated in the Interagency Wetlands Working Group that developed the Federal Mitigation Banking Guidance as well as the Interagency In Lieu Fee Guidance.

Southeastern Virginia: An Informal Regional Approach

Steve Martin

Many watershed conservation plans are based on deliberate and coordinated design. This article reports on an example of one that was not. The actions of many people with diverse interests and a common concern for conservation of threatened natural resources resulted in a de facto watershed conservation plan, one that has only recently been formalized.

Southeastern Virginia is a sprawling assemblage of cities (Virginia Beach, Norfolk, Suffolk, and Portsmouth) that are collectively referred to as Tidewater or Hampton Roads. It is an area where slow and relatively shallow waters meet low-lying land and is often no more than a few feet above sea level. Topographic relief is often measured in inches. At 1,160 square miles, this area is nearly the size of Rhode Island. It is bounded by the Atlantic Ocean to the east, the James River and Chesapeake Bay to the north, the Currituck and Albemarle Sounds of North Carolina to the south, and to the west the Suffolk Scarp, an ancient shoreline. The Great Dismal Swamp National Wildlife Refuge, a remnant of what was once between 500,000 and 2 million acres of wetlands, dominates the western end of the region. The Dismal Swamp is a source for several rivers. Two, the Nansemond and Elizabeth Rivers, drain north to the Chesapeake Bay. Two others, the Northwest and the Pasquotank drain south to North Carolina's Albemarle Sound. One river, the North Landing originates in what was once the Dismal Swamp, though it is nearly 10 miles east of the Great Dismal Swamp National Wildlife Refuge. It too drains to the Albemarle Sound.

This landscape shows the signs of 300 years of European settlement. Many of our nation's founders left their marks on this landscape. William Byrd's party first surveyed and established the boundary between Virginia and North Carolina in the early 18th Century. Patrick Henry and George Washington speculated on the value of this low swampy land for agriculture. Washington participated in a failed effort to grow rice in the Dismal Swamp. He pushed for a canal that would connect the Chesapeake Bay and Albemarle Sound. That 200-year-old Dismal Swamp Canal is part of the Atlantic Intercoastal Waterway and has altered the hydrology of much of the wetlands east of the canal.

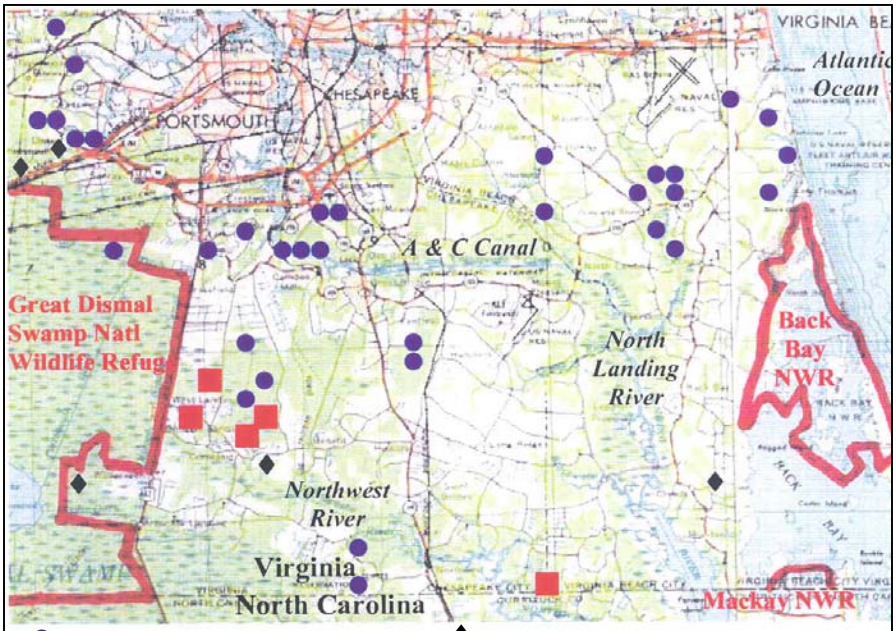
The extensive woodland and swamps that dominated southeastern Virginia have been timbered repeatedly. Cypress and Atlantic white cedar were largely replaced by fast growing red maple and sweet gum. Cities, towns, and suburbs have developed in the more northern portions of this area, making southeastern Virginia one of the fastest growing regions in the state. Much of the remaining land has been drained for agriculture. In many areas organic soils have oxidized, leaving drier mineral soils. Only the wettest areas remain forested.

The ranges of many northern and southern species overlap in this region. It is the northern distributional limit for many southern species and is close to the southern limit for many northern species. Plants such as the giant cane (*Arundinaria gigantea),* Spanish moss (*Tillandsia usneoides*), and titi (*Cyrilla racemosa*) are near their northern limits here. Animals including the chicken turtle, southern cricket frog, the canebrake rattlesnake, and the cottonmouth are also near their northern range limits. Species near the southern limits of their range include the least trillium (*Trillium pusillum* var. *virginianum*), red-backed salamander, and the northern water snake. A number of rare or endemic species occur in the pocosins near the North Landing River and in the Dismal Swamp. The Dismal Swamp also acts as a refugium for many mammal species. It hosts the most northerly population of black bears on the Atlantic Coastal Plain.

Conservation efforts took shape slowly, first with the establishment of the Great Dismal Swamp National Wildlife Refuge in 1974 through the efforts of many including the timber company, Union Camp, The Nature Conservancy (TNC), academia, politicians, historians, and other citizens. Since then, the refuge has grown from 47,000 to 107,000 acres.

Field studies from the early 1970's until the present in southeastern Virginia conducted by the Virginia Division of Natural Heritage, TNC, and a number of universities underscored the importance of the Dismal Swamp and the river corridors in this region.

Research in the mid 1980's on the black bears of the Dismal Swamp highlighted the potential threat of genetic isolation of this population due to continuing habitat loss and fragmentation and pointed to the importance of establishing and maintaining corridors or connections between the Dismal Swamp and bear populations to the south. Potential corridors or linkages had to be relatively free of human disturbance, which meant essentially wetland areas like those associated with the Northwest, North Landing, and Pasquotank Rivers.



● Mitigation sites associated with permit ◆ Mitigation Banks ■ Trust Fund-TNC
Does not represent full extent of each mitigation project nor all conservation projects

In 1986, the U.S. Fish and Wildlife Service (USF&WS) listed the Dismal Swamp southeastern shrew (*Sorex longirostris fisheri*) as a threatened species. This insectivore was associated with forested wetlands, particularly seasonally inundated/ saturated systems. Though this species was eventually found to be more widespread than originally thought and subsequently delisted, early drafts of the recovery plan recommended acquiring, restoring, and preserving habitat of at least 15,000 acres outside of the Dismal Swamp. Suitable habitat was thought to include the river corridors in southeastern Virginia.

In light of this area's diversity, the conservation needs identified by research, and the threats to these resources posed by development activities, many agencies and individuals began to acquire and restore wetlands in the historic Dismal Swamp and the adjoining Northwest and North Landing River corridors. The Virginia Department of Conservation and Recreation and the Cities of Virginia Beach and Chesapeake acquired lands along these waterways. TNC, alone and in conjunction with the Virginia Wetland Restoration Trust Fund (an in-lieu fee mitigation program operated by TNC and administered by the Corps) leads in the acquisition, conservation, and restoration of lands at risk throughout this watershed. A number of commercial wetland mitigation banks and mitigation sites are located in the historic Dismal Swamp and along the Northwest River. NRCS's Wetland Reserve Program has restored wetlands on farmland in the headwaters of these systems. The Corps through its permitting process has also encouraged wetland restoration and preservation as compensatory mitigation in the historic Dismal Swamp, including the Northwest and North Landing River corridors. In addition to the Great Dismal Swamp National Wildlife Refuge, more than 19,000 acres of wetlands or about 2.5% of the total land area has been conserved in this watershed through this informal conservation strategy. At least 3,000 acres of this total are associated with compensatory mitigation.

Many of the Virginia Wetland Restoration Trust Fund sites are located near other TNC properties or other protected lands as part of a strategy to help it achieve its overall conservation goals. Trust Fund sites are not always contiguous with reserve lands, but they do fit into the overall conservation plans.

Other efforts have an effect on conservation in the larger region including the Virginia Beach Agricultural Reserve Program. While intending to preserve agricultural lands and land use, lands accepted into the program include woodlands and wetlands.

In 2001, many public and private agencies began to develop a formal conservation plan, known as the Southern Watershed Area Management Program (SWAMP). In 2002, a Memorandum of Agreement was signed by 12 different federal, state, local, and private agencies that put into place a formal watershed conservation plan. Some of those participants (e.g., the Corps, the Virginia Division of Natural Heritage, the USF&WS) were involved in the recovery team for the Dismal Swamp Southeastern Shrew. New participants include TNC and various city governments and commissions. During development of the SWAMP, a number of conservation scenarios were considered. Time will tell whether the formal plan will work as well as the informal conservation efforts that preceded it.

For more details on this subject, please contact Steve Martin (757) 441-7787.

Editor's note: Steve Martin is a project manager in the Norfolk District Eastern Regulatory Section focusing on mitigation banks, Endangered Species issues, and most recently on stormwater management issues.

The Margins of Great Salt Lake: Towards a Larger Contiguous Ecosystem

Mike Schwinn

In 1824, Jim Bridger of the Rocky Mountain Fur Company was encamped in Cache Valley, Utah. Exploring the Bear River, which drains out the west side of the valley, Bridger came upon a vast expanse of saltwater. It was immense. Bridger was convinced that he was on the shores of the Pacific Ocean` It wasn't the Pacific Ocean that

Jim Bridger saw but the fourth largest terminal lake basin in the world and the largest body of water, outside of the Great Lakes, in North America.

At a water surface elevation of 4,200 feet, Great Salt Lake covers 2,500 square miles. As large as Great Salt Lake is, its parent was a monster. Lake Bonneville in its heyday was over 1,000 feet deep, and it swallowed-up 20,000 square miles of Utah, southern Idaho and eastern Nevada in one gulp. Sixteen thousand years ago, Lake Bonneville burst out of the valleys that imprisoned it, and water at a rate exceeding 10 million cfs ripped a gorge out of Red Rock Pass in southern Idaho. The water plunged into the Snake River in one of the greatest floods recorded in geologic history. Within months, Lake Bonneville's water surface dropped an astounding 350 feet. By 8,000 BC, the present-day Great Salt Lake landscape was in place. Lake Bonneville left behind four distinct shorelines, the lowest and most recent being the Gilbert Shoreline (4,275 feet, msl).

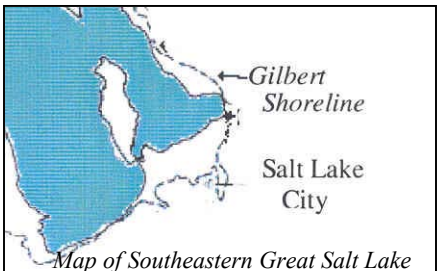
Great Salt Lake continues the legacy of its parent's extremes. It pulsates like a living thing. In 1963 after a prolonged drought, Great Salt Lake shrunk to its lowest recorded level, and its eventual demise seemed certain. Nearly a quarter century later, the lake rebounded to its highest recorded level ever—4,212 ft. msl—and caused an estimated $240 million in damages. Extraction industries on its shores wring $230 million worth of minerals from its waters—everything from ordinary table salt to high quality magnesium that is 99.9 percent pure. A $40 million brine shrimp industry provides food for aquacultures as far away as Southeast Asia.

Great Salt Lake is known for its ecological extremes as well: the largest staging population of Wilson Phalaropes in the world; the worlds largest breeding populations of snowy plover, white-faced ibis, and California gulls; and the third largest breeding population of white pelicans in western North America. In 1992 Great Salt Lake was formally recognized for its ecological significance and dedicated as part of the Western Hemisphere Shorebird Reserve Network.

Over eighty percent of Utah's population lives in a five-county area from Box Elder County on the lake's northern shore to Tooele County on its southern one. Hemmed in by the Wasatch escarpment to the east and Great Salt Lake to the west, a narrow bone of land stretches 60 miles from Brigham City to Salt Lake City and averages only 15 miles wide. Five million birds compete for living space with 1.5 million people, and the battle between development and wetland preservation is intense. Habitat loss, habitat fragmentation and hydrologic modification are impacts the Corps of Engineers grapples with as a balance between reasonable development and the protection of a globally important resource is sought. Early in the 1990s the Corps knew that, in order to keep Great Salt Lake's ecosystem intact and functioning, a broader planning perspective was necessary. A myopic approach to evaluating development projects would not provide the level of protection needed nor provide for logical, predictable growth in the communities. The Corps didn't know it at the time, but the seeds of watershed planning were being sown.

Few tools existed. In the early 1970's, the Salt Lake County Flood Control had completed a wetland inventory in the Northwest Quadrant, a vast undeveloped area of Salt Lake City on the southeastern shore of Great Salt Lake where herdsman still guarded sheep and cattle and coyotes and red fox orchestrated their deadly games. With help and input from resource agencies and nonprofit organizations, the Corps of Engineers began meeting with city and county planners to discuss the need for advanced wetland identification. West Valley City, Davis County, Tooele County, Brigham City and Box Elder County began to see the merits. Each was struggling with planning and managing a burgeoning population. Each was wrestling with ways and means to preserve open space and their quality of life. West Valley City, which shares a common border with Salt Lake City's Northwest Quadrant, became the first community to complete a wetland inventory and functional assessment. Davis County completed a similar planning document, a *Wetlands Preservation Plan,* while Box Elder County and several localities, including Brigham City, pulled together a broad-based coalition to address development and wetland planning. The Davis County Plan was spearheaded by the Davis County Flood Control, which saw the value in identifying areas at risk from flooding by Great Salt Lake and the need to route floodwaters from developed areas of the county to the lake. Corps planning and engineering elements were involved in studies supporting plan development. State, federal, local and private interests, including businesses and conservation organizations, were represented from the start.

While many localities lack administrative ordinances to implement effective land use planning, the advance wetland inventories have become valuable regulatory tools. The inventories give the Corps the ability to do use a watershed perspective even though no formal planning document exists. The inventories and maps provide the Corps a broad overview of Great Salt Lake's wetlands. Working informally, but intentionally, the Corps has used the inventories to strategically guide mitigation efforts so that large contiguous tracts of important wetlands can be protected in perpetuity. For example, the Davis County Plan identified lands to preserve, such as through purchase, conservation agreement, or management agreement in order to preserve the option in future years of habitat restoration. The Plan also identified wetlands retaining the highest complement of functions or potential functions keeping in mind the growing need and demand for planned urban expansion. A protection zone consisting of a band of wetlands along the shore of Great Salt Lake was identified, including riparian corridors that provide water and a few pockets of wetlands that provide critical wetland function and values of sufficient size.

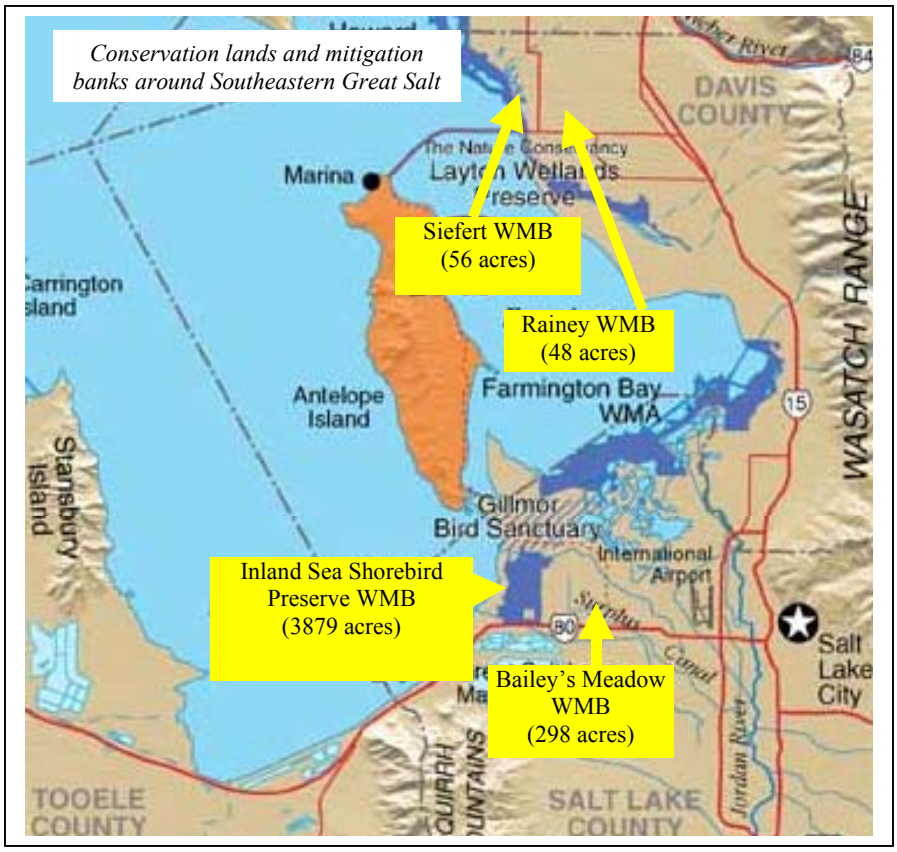


Map of Southeastern Great Salt Lake and Gilbert Shoreline

To come up with habitat priority zones and conservation zones, the National Wetland Inventory (NWI) maps were first layer of information used. The Utah Division of Wildlife Resources then defined a zone where habitat protection for wildlife had a high priority, taking into account changes to wetlands since the NWI mapping.

Audubon and The Nature Conservancy (TNC) had also identified areas around Great Salt Lake as having ecological significance and begun acquisition of properties. With an eye towards having Audubon and TNC eventually taking over management of some of the compensatory mitigation areas, the Corps pushed for locating mitigation banks in areas that would enhance ongoing Audubon and TNC efforts.

Mitigation for several large-scale projects, such as Salt Lake City International Airport's new runway, expansion of Kennecott Utah Copper's tailings impoundment, and the proposed Legacy Highway have added or will add thousands of acres of key wetlands and uplands. In addition, the Corps has used the wetland inventories to guide the location of several mitigation banks. The Warner, Rainey, Bailey's Meadow and others are private commercial banks (entrepreneurial) that have been situated adjacent to lands owned by TNC, state managed waterfowl areas and other mitigation banks. The Kennecott mitigation site (Inland Sea Shorebird Reserve) also is available to satisfy other permit applicant mitigation needs if approved by the Corps. Coupling mitigation banks with other large conservation areas ensures long-term functionality and minimizes habitat fragmentation.



Primary service areas for the mitigation banks are those in the county where the impact occurred, as long as the impact was below the Gilbert Shoreline, that is, those wetlands below that elevation essentially influenced by the lake ebb and flow. Wetlands above the Gilbert Shoreline are of a different wetland type influenced by different hydrogeomorphic factors. Impacts in those areas would only use the below-Gilbert Shoreline banks for compensation if opportunities were unavailable and approved by the Corps on a case-by-case basis.

The creative and resourceful staff of the Utah Regulatory Office never thought that what they were doing was watershed planning. Rather, it was recognition of Great Salt Lake's importance and a vision for its preservation. It was the intentional pursuit of that vision that perhaps translated into a watershed approach, although at the time the goal was simply to ensure that Great Salt Lake and its wetlands continued to function as demands on its limited resources increased. Realizing what was at stake, having a vision and assembling a few tools accomplished informally what, perhaps, a watershed plan could formally have achieved.

For more details on this article, contact Mike Schwinn (757) 441-7182

Editor's note: Mike Schwinn is now Chief of the Western Virginia Regulatory Section in the Norfolk District. Prior to this, he was in the Utah Field Office of the Sacramento District where he was a regulatory team leader. We also thank Jim Thomas, Sacramento District Utah Field Office for his assistance in preparing this article.

Use of Formal Watershed Plans: Local Government Planning

Paul Scodari and Bob Brumbaugh

Municipalities have taken the lead in developing formal area-wide plans for wetlands management that, among other objectives, are designed to ensure

that compensatory mitigation for authorized wetlands impacts serves local priorities for wetlands protection and restoration. The planning efforts and associated mitigation programs of three cities--Logan, Utah, Superior, Wisconsin and Eugene, Oregon—are briefly reviewed below. While the scope and comprehensiveness of these city plans vary considerably, they are characterized by common planning themes and elements. Each city plan employs some level of wetlands categorization designed to reconcile and relate wetlands management goals with development goals for the planning area according to a local watershed vision. Wetlands categorization schemes specify which wetlands parcels should be protected from development, which wetlands can be used for development purposes, and where and how compensatory mitigation must proceed for unavoidable wetlands impacts. Each city plan is implemented through an alternative permitting approach for the area guided by the plan's wetlands categorization scheme and compensatory mitigation strategy.

Logan, Utah. A Special Area Management Plan (Plan) developed in the mid-1990s by the city of Logan, Utah and the Corps focused on the 1000 West Industrial Corridor, a ½ mile wide by 4 miles long area that had been identified by the City Master Plan as the only feasible location for industrial development within the city. The Plan was initiated to facilitate and control new development while ensuring ecologically sound management of jurisdictional wetlands dispersed throughout the corridor. Participants in the planning process included the city, the Corps as the lead federal agency, and the U.S. Environmental Protection Agency (EPA) in an advisory role. Plan development culminated in a General Permit issued in 1995 and re-issued in 2000 that authorizes wetlands permitting within the area consistent with the Plan.

The planning process began with wetlands mapping and functional assessment to inventory and identify the relative value of wetlands in the corridor in terms of water quality protection and enhancement functions (sediment stabilization, sediment/ toxicant retention, and nutrient removal and transformation) as well as flood attenuation and aquatic diversity. From this assessment it was concluded that the ponds, marshes and the most frequently flooded wet meadows within the corridor provide the widest range of wetlands functions and values on the most consistent basis, represent the rarest wetlands types in the area, and are of significant value to terrestrial wildlife species. The Plan designates these wetlands types as unsuitable for development due to their diversity, site-specific functions, and hydrologic and terrestrial connectivity with other wetlands and wildlife corridors. Wetlands designated as unsuitable for development and required upland buffers around these wetlands are protected by city prohibitions on the granting of local building permits. The Plan designates remaining wetlands within the corridor as suitable for fill subject to required compensatory mitigation.

The Plan as implemented by the General Permit includes mitigation priorities for guiding the location and methods for providing compensation for unavoidable wetlands impacts. First priority is given to the restoration and enhancement of wetlands designated as unsuitable for fill within the same property to be developed, including the planting of screening vegetation in buffer areas for these wetlands. Second priority is given to the restoration and enhancement of other wetlands within the property to be developed that are not designated as unsuitable for fill. Third priority is given to the restoration and enhancement of off-site wetlands. Fourth and final priority is given to off-site wetlands creation, which includes city-run wetlands creation efforts in a designated area within the corridor that are coordinated with EPA, the U.S. Fish and Wildlife Service (FWS), and the state wildlife agency.

Superior, Wisconsin. The City of Superior, Wisconsin, the Corps and EPA initiated a Special Area Management Plan (Plan) in the early 1990s to ensure orderly development within city limits while reducing impacts to wetlands, which cover approximately 25% of the city's land area. To achieve the desired balance between development and wetlands management, the Plan Steering Committee members, which included the city as the lead agency, the Northwest Regional Planning Commission (NWRPC) and several local agencies, engaged in a planning process to 1) identify wetlands within the city, 2) identify realistic and reasonable development needs of the city over the next ten years, 3) avoid and minimize wetlands impacts of such development, and 4) provide appropriate compensatory mitigation for unavoidable wetlands impacts. The Corps, EPA, FWS and the state resource agency were involved through participation in a Technical Advisory Committee that advised local planners on technical issues such as wetlands mapping and functional assessment. Following an environmental assessment by the Corps, five General Permits—covering residential, commercial, industrial, public use, and institutional development, respectively —were issued for the city in 1996 and re-issued in 2002 to implement the final Plan.

Plan development began with an inventory of the city's wetlands which were then evaluated in terms of water quality, flood control, storm water management and wildlife habitat functions and associated values considering wetlands location in the landscape. Concurrent with wetlands evaluation, the NWRPC and city staff developed several alternative land use scenarios representing different possible development and wetlands preservation patterns for the city. Following an evaluation of the wetlands impacts of the different land use scenarios, the Steering Committee made an initial determination of a preferred plan alternative. Several rounds of Plan refinement were subsequently used to avoid and minimize wetlands impacts further. The final Plan as implemented by the

General Permits allows for about two percent of the city's wetlands acreage potentially to be filled for development, subject to mandatory compensatory mitigation within city limits, but does not designate the remaining wetlands as unsuitable for fill. Thus, developers are free to apply for individual permits authorizing fills in the city's wetlands not designated as suitable for fill under the General Permits.

The Plan identifies locations and acceptable methods for compensatory mitigation actions that were reviewed and approved by the Corps, EPA and other members of the Technical Advisory Committee. The Plan concluded that on-site mitigation is impractical and undesirable for the city since allowable wetlands development primarily involve wildlife habitat impacts that are best compensated for in areas that can ensure habitat contiguity. Accordingly, mitigation sites identified by the Plan are located within or adjacent to the city's 4,500-acre Municipal Forest. Further, the Plan establishes a suite of acceptable mitigation methods, including restoration, enhancement (e.g., exotics removal) and creation. The last method is well suited for providing compensatory mitigation in Superior because the impermeable red clay soils found there allow new wetlands to be successfully created by carving-out shallow scrapes that saturate or pond with precipitation. The Plan also allows for the preservation of one wetlands site containing a high concentration of rare vegetation designated as important by the state to be used to provide compensation.

Under the terms of the Plan as implemented by the General Permits, the city is responsible for undertaking and managing compensation projects for unavoidable wetlands impacts. Corps district representatives indicate that the city's wetland creation efforts are working—establishing wetland hydrology at wetland creation sites has not been a problem. The primary challenge facing mitigation efforts relates to creating wetland diversity.

City planners and the regulatory agencies are currently working with representatives of Douglass County (the county in which Superior sits), and other local planning partners on a new, more comprehensive Special Area Management Plan for the city expected to be completed in 2003. The motivation for the new planning effort is to establish a more comprehensive wetland categorization scheme that identifies wetlands to be designated as unsuitable for fill as well as wetlands that are suitable for fill under general permit authority. The new Plan includes more comprehensive mapping and functional assessment of wetlands. It should also be noted that the General Permits were reissued on May 14, 2002, which points to some success of the Special Area Management Plan.

West Eugene, Oregon. The West Eugene Wetlands Plan, covering a 16 square mile area within the city limits of Eugene, Oregon, was initiated in 1989 after the city learned that a significant amount of jurisdictional wetlands are located in the city's primary growth area that had been zoned for industrial use. The city decided to purse a wetlands conservation plan to facilitate and control industrial development while ensuring appropriate wetlands management towards a net gain wetlands goal. Although the planning effort began with a focus on wetlands management, it adopted a watershed vision to address multiple objectives, including storm water management, water quality improvement, and flood plain management. The city contracted with the Lane Council of Governments. The planning process was greatly influenced by advice from a Technical Advisory Committee that included that the Corps, EPA and representatives from other agencies as well as by intensive public outreach and participation. The EPA facilitated the planning process by providing approximately $250,000 in planning funds. The final Plan was completed in 1994, and following approval by the Oregon Division of State Lands (ODSL) giving the city assumption of state permitting authority, was written into city ordinance having the effect of local land use law. The Plan is being implemented with a streamlined permitting process approved by the Corps in 1994 whereby permit requests are first reviewed by the city for compliance with Plan conditions and then forwarded to the Corps for abbreviated processing resulting in the issuance of Letter of Permission authorizations for allowable wetlands fills.

The planning process began with an EPA-funded and implemented "Advanced Identification" (ADID) project to inventory and assess the functions of wetlands within the planning area. Information from the ADID and other watershed studies conducted during the planning process was used to categorize wetlands parcels to be developed, protected and restored, as well as uplands to be protected as buffers. About 1000 acres were identified for protection or restoration and 300 acres identified for development subject to compensatory mitigation requirements. Wetlands categorizations were made using ecological criteria relating to water quality and storm water runoff, among others, as well as socio-economic criteria such as the provision of recreational services, and the city's economic development objectives. The city also developed an acquisition program for wetlands areas designated for protection and restoration that is funded by Federal Land and Water Conservation Funds channeled through the U.S. Bureau of Land Management (BLM).

The categorization process also resulted in guidelines for compensatory mitigation that imposes varying compensation requirements according to the characteristics of the wetlands parcels slated for development and their location in the watershed. However, the overall mitigation program is guided by a restoration strategy that considers the broader ecological characteristics and needs of the regional landscape. To ensure mitigation success and achievement of a connected system of wetlands and waterways, mitigation efforts are targeted for areas classified as

"disturbed agricultural wetlands" for which ecological functional values can be significantly improved through restoration efforts.

The Plan's mitigation program is implemented primarily through a city-run regional mitigation bank from which applicants for wetlands permits can purchase credits to satisfy their compensation requirements. The bank operates under a Memorandum of Agreement signed in 1995 by city, ODSL, the Corps, EPA and BLM. Bank sites are located within a connected system of existing degraded wetlands that are managed by the West Eugene Wetlands Partnership that includes the Corps, BLM, and the Nature Conservancy, among others. Under the Partnership, the city is the lead coordinating agency, the BLM acquires and manages bank sites, and the Nature Conservancy provides technical assistance. Staff from each of these organizations form the Field Operations Group that is responsible for planning, designing and implementing mitigation efforts funded using revenues from the sale of bank credits. For more information on the West Eugene's mitigation, see http://www.ci.eugene.or.us/wewetlands/mitigation.htm.

Summary. The three planning efforts reviewed above illustrate how some local governments have developed formal plans for managing wetlands and guiding compensatory mitigation following a larger perspective than permit-by-permit. But municipal use of watershed-based plans for wetlands management, while likely increasing throughout the country, is still relatively rare. No doubt this largely reflects the many difficulties and costs of plan development. In each of the city cases reviewed above, plan development was pursued as a response to a perceived "crisis" between city development goals and wetlands regulations. In the future, more and more local governments may eventually decide that the costs of not having formal area-wide plans to reconcile and relate city development and wetlands management goals are greater than the costs of plan development.

Editor's note: Thanks go to Steve Eggers, St. Paul District and Jim Thomas, Sacramento District Utah Field Office for their assistance in the preparation of this article.

Moving Forward With the Watershed Approach: Thoughts From the Vice Chair of the NRC Committee on Mitigating Wetland Losses

Leonard Shabman

The authors of the NRC report, *Compensating for Wetland Losses Under the Clean Water Act* were concerned by the frequent failure to adopt what I will call a "watershed approach" to decisions on fill permitting and compensatory mitigation. Many of our recommendations were made to advance a watershed approach to wetlands management. Unfortunately, some have dismissed our focus on a watershed approach as being too costly and politically difficult. These readers incorrectly assumed, despite what we wrote, that we were calling for formally prepared and approved watershed plans. We recognized, as the article by Paul Scodari and Bob Brumbaugh shows, that formal wetlands management plans can be, and have been, developed and implemented. However, we also were encouraged by the informal watershed planning efforts around the country, such as those reported by Steve Martin and Mike Schwinn. Both formal and informal watershed approaches work to benefit the resource and the regulated community.

Operationally, a watershed approach means that wetlands management decisions are made with a regional perspective, involve multiple agencies, scientists, and nonprofit organizations, draw upon multiple funding sources and are integrated with other regulatory programs—for example, storm water management or habitat conservation—and non-regulatory programs—for example, conservation easement programs.

A watershed approach means anticipating when prospective development patterns will compromise the future viability of a compensatory mitigation project and moving the compensation to another area, despite the preference for on-site mitigation. When permitting a fill, a watershed approach means tempering adherence to avoidance during sequencing if prospective future development will compromise the avoided wetlands; this was one result of the advanced identification planning that was done in Salt Lake, Logan Superior and West Eugene.

A watershed approach means identifying desired wetland functions, types and locations in the landscape and securing compensatory mitigation projects to serve those goals instead of replacing in-kind what is permitted for fill. As illustrated by the situation in Southeastern Virginia, existing wetlands may have been degraded and the mix of wetlands types in the watershed may simply be the result of historical development patterns. In such cases it may make little sense to always replicate the particular wetlands types and locations that were in this altered system. A watershed approach forces a consideration of this possibility.

A watershed approach clarifies the use of wetlands preservation and/or incorporation of upland areas as compensation. It may appear that preservation does not offset the permitted loss to the wetland base. However, when the goal of a wetlands program is viewed from a watershed perspective, and over a long time horizon, the purpose is to secure a desired matrix of wetland types and locations to achieve watershed goals. If, in the future, certain wetlands deemed central to that goal might be compromised purchase and protection as a part of compensatory mitigation requirement might be warranted. A

related argument, endorsed by taking a watershed approach, is that uplands might be accepted as compensation for filling a wetland because terrestrial connections are especially critical among small wetlands in a regional landscape.

A watershed approach will require new attitudes toward permitting and mitigation, reliance on always developing scientific understanding, new partnerships and new implementing mechanisms. The cases in this newsletter show that these requirements for a watershed approach can be met. (Suggested reading: P. Scodari and L. Shabman, "Rethinking Compensatory Mitigation", *National Wetlands Newsletter,* Jan/Feb 2001.)

Editors' Note: Professor Leonard Shabman has recently moved from the Directorship of the Virginia Institute for Water Resources Research at Virginia Tech University to the Resources for the Future in Washington, DC.

Compensatory Mitigation on District Websites

Rudy Nyc and Meg Smith

The purpose of this article is to let Corps district staff know what is available at other districts with respect to tools, documents, and website approaches. This article does not examine local or regional policy or practices and focuses primarily on Corps websites.

All Corps districts have websites and all Regulatory websites are contained, as hotlinks, on a one page Regulatory Offices At-A-Glance site at www.usace.army.mil/inet/functions/cw/cecwo/reg/district1.htm. Simply click on the District of your choice and the hotlink will take you directly to their Regulatory website.

All but a few districts provide information about compensatory mitigation. The most prevalent information deals with national guidance to which a hotlink is often provided. The next level of information discusses technical and regional aspects of compensatory mitigation, such as how to design a successful mitigation plan, mitigation banking and in-lieu-fees.

Technical Aspects of Compensatory Mitigation. Corps project managers make mitigation decisions on a case-by-case basis and in accordance with national policy available at www.usace.army.mil/inet/functions/cw/cecwo/reg/index2.htm. Additional technical and policy information is available at the Engineering Research and Development Center (ERDC) and IWR websites. For example, the following IWR website http://www.iwr.usace.army.mil/iwr/regulatory/regulintro.htm provides a model mitigation banking instrument and a document that was intended to provide technical and procedural support for the Federal Mitigation Banking Guidance issued in December 1995. ERDC has information on wetland technology available at it's website http://www.wes.army.mil/el/wrap/program.html. Perhaps more importantly, technical and policy information is becoming increasingly more available on district websites. For example, some districts provide information on developing mitigation plans, impact assessment and resulting compensatory mitigation requirements, and monitoring and success. District mitigation policies may cover wetland and stream mitigation topics. For example, Charleston and Savannah district websites contain procedures for conducting impact analysis, predicting mitigation credits, and developing mitigation plans. These documents cover activities in all waters of the U.S. including streams and open waters. San Francisco district's website includes policy guidance for monitoring riparian mitigation projects.

Mitigation guidelines and checklists that provide applicants with a list of information necessary for inclusion in their compensatory mitigation plan are available on many districts websites. For example, the New England district provides guidelines and a detailed checklist of information to be included in a mitigation plan. San Francisco and Sacramento websites contain *Habitat Mitigation and Monitoring Proposal Guideline,* which provide information on mitigation and monitoring to assist permit applicants in the development of their plans. Los Angeles has a comprehensive document on compensatory mitigation and monitoring which includes information on wetland habitat types within the district, guidance on functional assessment and determining minimum compensatory mitigation requirements, policy on mitigation options (e.g., mitigation banks, in-lieu fees, creation, restoration, enhancement, and preservation), an outline of the information required in a mitigation plan, and the criteria for monitoring and determining mitigation success. Several other districts including Fort Worth, Jacksonville, and St. Louis post mitigation information on their websites.

Mitigation Banks. While project specific on-site mitigation continues to be the prevalent form of compensating for adverse impacts caused by a permit action, mitigation banking has become increasingly more widely used over the past decade. Mitigation banking offers convenience, because the entire compensatory mitigation burden can be transferred relatively quickly to the bank. There is at least one mitigation bank in most districts. Several districts have ten or more active or pending mitigation banks. Those Districts that have mitigation banks have them listed, or are in the process of having them listed, on the Internet. Many of the districts provide a detailed procedure for developing compensatory mitigation banks in their region. Presentation of mitigation bank information on websites varies among the districts but generally includes much the information prospective permit applicants may need to understand what is available for addressing their compensatory mitigation requirements. For example, permit applicants can identify mitigation bank locations and banks sponsors on the Memphis district website. Galveston provides a list of approved banks and the number of

available credits. St. Louis provides bank sponsor and Corps project manager information as well as a map depicting the actual location of the mitigation bank site. Wilmington district has had extensive mitigation bank information posted on their website, however their site is currently under reconstruction. We expect an even better site in the near future. Mobile District has an innovative integration of graphics and banking information (see article in this issue of *Aquatic Resources News*).

Procedures for establishing and operating mitigation banks. Several districts have posted information or standard operating procedures for developing mitigation banks on their websites. This information is useful for any potential bank sponsors. Charleston district has an interagency document for establishing and implementing mitigation banks available on it's website. Jacksonville has draft mitigation bank review team guidance developed by an interagency MBRT process. Sacramento, Fort Worth, Galveston, Los Angeles and Mobile districts have developed guidelines for the development and operation of mitigation banks. Information on mitigation banks may be gathered from individual district websites. Some district information on banks is hotlinked to the Regulatory Offices At A Glance page of the headquarters home page.

In-lieu-fees. Accepting payment towards future mitigation has grown in importance and sophistication in recent years. About 30 districts have at least one in-lieu fee program and all are unique due to the diversity of sponsors. Norfolk, Los Angeles, Fort Worth, Huntington, Louisville, Nashville, and Savannah districts all have information on in-lieu fee arrangements on their district website. There is tremendous diversity regarding what organization administers the in-lieu fee programs. Corps districts have partnered with a number of organizations including the Fish and Wildlife Foundation, The Nature Conservancy, and State and Local agencies (e.g., Kentucky Department of Fish and Wildlife and the Santa Ana Watershed Association of Resource Conservation Districts). More information on in-lieu compensation can be found in the U.S. General Accounting Office and IWR reports mentioned in the last newsletter and a recently released report from the Environmental Law Institute (see Current Events and Articles of Interest Section of this newsletter).

Other Information. The Charleston District website includes a standard special condition for Conservation Restriction. A Model Conservation Easement is also available on the Charleston District Website under the Office of Council's page. To aid those looking to identify companies to satisfy financial assurance special permit conditions, the Los Angeles District website links to the Department of the Treasury's listing of Approved Sureties (Department Circular 670). The Los Angeles District also has a performance bond form and identifies several organizations that accept in-lieu fees for mitigation of impacts.

Mobile District Develops Mitigation Bank Information Tracking System

The Mobile District, in partnership with the Environmental Protection Agency and Corps Environmental Research and Development Center (ERDC) in Vicksburg, Mississippi has developed a Regional Internet Bank Information Tracking System (RIBITS) to facilitate the developing new mitigation banks and increase the efficiency of the District's oversight of existing private and commercial mitigation banks. The RIBITS system will improve the District's mitigation banking efforts by providing the public with an Internet site containing comprehensive mitigation banking information and the regulatory agencies with a mitigation bank status tracking system.

The RIBITS public information section promotes the development of new mitigation banks by improving public access to comprehensive mitigation banking guidance, information and data. The public information section provides the Districts mitigation banking guidance and review process, information on the location of current mitigation banks including maps of their service areas, habitat types that can be mitigated for at each bank, and contacts for each bank. This information can be queried by watershed, county or habitat type. The public can also find information on wetland functional assessment methods, photographic examples of the various wetland habitat types and links to other mitigation sites.

RIBITS increases the efficiency of the Mobile District's Mitigation Bank Review Team (MBRT) oversight of existing private and commercial mitigation banks by providing an Internet access tracking system that allows quick review of most current data on credit availability, credit sales, and credit releases for each mitigation bank. RIBITS also increases the efficiency of the MBRT by centralizing and allowing quicker access to the mitigation banking documentation, including ecological progress reports, annual mitigation bank compliance inspection reports, and the electronic copies of Mitigation Banking Instruments and Conservation Easements.

For more information on the RIBITS software, contact Mrs. Kelly Burkes-Copes, Corps Environmental Research and Development Center (ERDC) in Vicksburg, Mississippi at (601) 634-2290, or by e-mail: Kelly.A.Burks-Copes@erdc.usace.army.mil. A user's perspective will be presented in a future issue of this newsletter.

Current Events and Articles of Interest

Changes at HQ. Since the last newsletter, HQ bid *adieu* to Mike Smith and Jack Chowning. The first newsletter was issued under Mike Smith's lead. HQ welcomes David Olson from IWR (earlier at the

Baltimore District and TDY at HQ) and Theresita Crockett-Hardy from the New Orleans District. Finally HQ welcomes a new branch chief, Mark Sudol from the Los Angeles District, where he was chief of the regulatory branch.

ELI report: *Banks and Fees: The Status of Off-Site Wetland Mitigation in the United States*

The Environmental Law Institute released a report on the study of off-site compensatory mitigation in September 2002. They reported that wetland mitigation banking has become "a nationwide commercial enterprise dominated by entrepreneurs". The report inventories and describes wetland mitigation banks, in-lieu-fee mitigation, and umbrella banks, and makes recommendations for improving their effectiveness.

Beyond the published report, ELI has posted its compiled data on banks (including umbrella banks) and fees in a comprehensive database at http://www2.eli.org/wmb. The database can be searched by bank/in-lieu fee title, state, or Corps district. The report summary can also be accessed at the website. The study may be ordered from ELI for $24.99 plus shipping by calling (800) 433-5120 or online at http://www.eli.org

NRC/TRB Report: *Mitigation of Ecological Impacts: A Synthesis of Highway Practice*

Earlier this year, the National Cooperative Highway Research Program—of the Transportation Research Board (TRB) and National Research Council (NRC)—released this report, which provides an overview of department of transportation (DOT) agency practices with regard to mitigation. It also reviews recent literature findings, and research in progress addressing ecological mitigation. Corps project managers involved in the evaluation of DOT permit applications may find the information contained in this report useful. The report summarizes impact assessment tools and methodologies used by DOTs, cites recent reports evaluating the success of DOT mitigation efforts, and discusses DOT costs associated with implementing mitigation efforts, noting that mitigation approaches, successes and costs vary regionally. The report also examines four case study initiatives identified by the DOTs that illustrate collaborative mitigation efforts, viewed by the DOTs to be successful efforts—New Jersey DOT Route 206.215, California DOT Beach Lake Mitigation Bank, North Carolina DOT North Carolina Wetland Restoration Program and Full Delivery Contract Mitigation Banks, and New York DOT Environmental Initiatives Program. Finally the report identifies a number of Internet addresses that provide information on mitigation. This report (32 pages plus appendices) was prepared by Edward Sammans of The Louis Berger Group Inc. and may be ordered on-line at http://www.nationalacademies.org/trb/bookstore.

Yet Another NRC/TRB Report: *Guidelines for Selecting Compensatory Wetlands Mitigation Options*

The National Cooperative Highway Research Program released yet another report in 2002 (Report 482) dealing with strategies to mitigate the effects of transportation projects. Early in the project, the study team evaluated the relative effectiveness of small, dispersed mitigation sites versus consolidated mitigation strategies, but reported no clear formula to identify the ideal mitigation options for a given compensatory project. They reported that data that would allow comparing mitigation options is incomplete and highly subjective. The report examines case studies to illustrate the mitigation processes used by eight state DOTs-California, Florida, Louisiana, Maine, North Carolina, Pennsylvania, Washington, and Wisconsin-to provide guidance on how to select the mitigation strategies most effective as per the given situation. Thus the report discusses obstacles and factors key to successful implementation of consolidated mitigation options. The report outlines the steps necessary to develop a wetland banking program and provides examples of banking agreements. This report (47 pages) was prepared by the A.D. Marble & Company, Conshohockan, PA and may be ordered at the same site as the previous report in this section.

Newsletter Communication

To comment on the newsletter, suggest topics, submit an article, or suggest events or articles of interest, please contact Bob Brumbaugh at:

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