ST. LOUIS ARMY ENGINEER DISTRICT

ESPRIT

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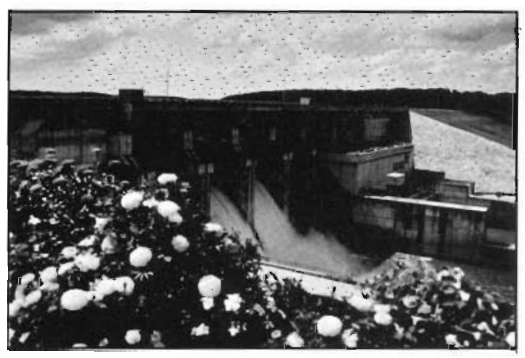
In this issue...

Hydrologic & Hydraulics Branch

by James T. Lovelace, Chief, Hydrologic and Hydraulics Branch

This introductory article is intended to briefly describe what the Hydrologic and Hydraulics Branch is and then to give a general outline of the wide range of missions that are accomplished within this organization. One of the best ways to start this explanation is to provide a brief history of the branch.

The present day Hydrologic and Hydraulics Branch is the result of major restructuring during the last 15 years within the Engineering Division. This branch is a combination of the former Surveys Branch, the River Stabilization Branch and the Hydraulics Branch. These three branches contained seven former sections and more than 90 positions. Today it has only four sections and only 55 positions. This has been achieved even though the mission workload has increased more than 50 percent during this same time period. The Hydrologic and Hydraulics Branch accomplished this by adopting innovative engineering methods, state-of-the-art computer applications and creative approaches to mission accomplishment. In addition to the traditional missions already mentioned, this branch has a large "Work for Others" program that did not exist a few years ago.



Clarence Cannon Dam creates Mark Twain Lake, part of the District's flood control system.

The four sections in the Hydrologic and Hydraulics Branch are the Geodesy, Cartography and Photogrammetry Section, Potamology Section, Environmental Quality Section and Hydrologic Engineering Section. These sections are known for their creativity, innovation and technological expertise throughout the Corps of Engineers. Personnel from the Hydrologic and Hydraulics Branch serve on many regional and national committees and provide their expertise to the overall accomplishment of the water resources mission in this nation.

The articles in this issue of Esprit are devoted to providing information relating to the wide range of missions accomplished by the Hydrologic and Hydraulics Branch. We hope this information will be informative and useful and will provide you with a greater understanding of the type of work accomplished by this group of employees.

Articles about the Hydrologic and Hydraulics Branch are on pages 6 through 14.

Commander's Perspective

COL Thomas J. Hodgini

I hope everyone enjoyed a safe Labor Day weekend. With summer almost over it is time to look forward to the beautiful fall weather and autumn events.

Many of you have asked if I am settled in yet. I'm not sure whether you are asking if I have hung the last picture in my home or if I can identify who does Feasibility Studies in the District. So I will respond to both. Most pictures are up, but don't look in the basement! As I very reluctantly dropped my daughter off at Missouri University on Sunday, 18 August, and saw my four sons off to school on the 23rd of August, I realized that the roots are planted firmly enough to declare that the family is settled. Within the District, although I cannot name each person, I can identify our major project locations on the map and can correctly (at least three out of four times) name what office is responsible for what action. I'm becoming acquainted with the District and I like what I am seeing.

Since my arrival here in Saint Louis I have toured much of the District. I have visited two of the five lakes, Carlyle and Mark Twain and four of the five Locks and Dams, 24, 25, 27 and Melvin Price. I hope to be completing my visits over the next month or so.

I'm becoming acquainted with the District and I like what I am seeing.

As I meet and talk with people I have noticed a number of quality characteristics about the District. There is a great sense of pride in the accomplishments that extends to all of the outlying projects. The District has strong ties to local communities. We have established solid partnerships within our community, an accomplishment that will serve us in years to come.

One of the first things I asked the staff about was the District's battle cry. I guess from the response I received the district doesn't have one. Public Affairs has taken the initiative to establish one for the District so we have an identifier, different from everyone else, something unique. Watch for a flyer with more information and please respond. This can only be a District motto if everyone in the District is involved. I look forward to your input.

The District is preparing for a major change in the way we conduct business within the organization. The Corps of Engineers Financial Management System (CEFMS) will change the way we keep track of the money we spend. The Finance and Accounting Branch, assisted by the technical staff, are actively working on cleaning up the COEMIS-F&A database. Fifteen District and field office employees will attend CEFMS Train-the-Trainer Institute in Huntsville, Alabama, and return to train another group of employees. Together, this cadre will teach the District

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US Army Corps of Engineers
St. Louis District

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News Briefs

Carlyle Lake:

Duck race winner

Becky Wegman of Trenton, Illinois, won $5,000 in the Great Kaskaskia River Duck Race held June 15th. Almost 12,000 plastic ducks raced down the spillway. The race generated $38,000 for the healthcare foundation, of which $12,000 will be set aside for hospice patients in the area.

Armed Forces Day

Between June 29th and July 7th, 170,992 people visited the lake to be part of the Armed Forces Day activities and fireworks display.

Dam inspection

The dam had its periodic inspection on June 25 and 26. Division and district office staff evaluated the operational adequacy and integrity of the project. This was the ninth inspection at the lake and included the main dam and spillway, saddle dams two and three, the Keyesport levee and the pump stations.

Life jacket loan

The Corps, in cooperation with the Carlyle Wal-Mart, has begun a Life Jacket Loan Out at the visitor center. This is a new addition to the lake's water safety program. Often times toddlers do not have life jackets that fit. For this reason, life jackets for toddlers weighing up to 90 pounds will be available to the public for loan for use on the lake

Brood ponds

The Illinois Department of Natural Resources began work on three 10 acre brood ponds in Hazlet State Park. The ponds will be used to stock Carlyle Lake and keep the fish population up.

Hickory Shores

Hickory Shores Resort, just south of Keyesport, formerly known as the All-Seasons, is now open to the public. Fifteen air-conditioned cabins are available. Other facilities include swimming and diving pools, tennis, basketball, volleyball and shuffleboard courts, horseshoe pits and a mini golf course. The resort has a family center with teen center and an over 21 complex. The resort also has camping facilities and a country store.

Hunting blinds

Six blinds are available from September 1 through 8 for physically challenged sportsmen. Hunters are limited to permanently non-ambulatory or semi-ambulatory and must have a non-handicapped assistant who may also hunt. Two six-hour shifts are planned for each blind. The blinds are available by reservation only made through August 16 by calling the project office.

Marina Institute

Ric Golding, manager of West Access Marina, hosted the International Marina Institute Forum on August 3rd. Marina managers from Ohio, Illinois, and New Jersey were briefed at the visitor center by Project Manager Bob Wilkins and City of Carlyle Economic Development Director, Sue Nave. The managers then toured the lake by boat.

Disabled student

Bart Dearborn, hired through the DoD Summer Hire Program for students with disabilities, worked in several lake operations areas from June 10 to August 9. Bart's salary was paid through the Office of the Undersecretary of Defense. Bart was an asset to the lake and did well in all departments in which he worked.

Wappapello Lake:

Disabled fishing

Seventy-five participants and volunteers attended the Disabled Persons Fishing Day on June 9th. This event was partnered with the Wappapello Lions Club and Doctors Regional Medical Center.

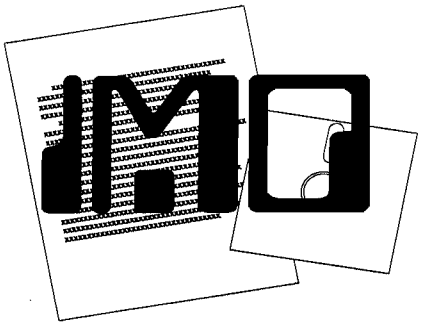
Waterfest '96

Waterfest '96, the annual water safety event, was held at Redman Creek Recreation Area on July 6 and 7. About 400 people attended. Games such as Blind Water Balloon Volleyball, Help Me I'm Dizzy, Water Wheel of Fortune and many others were played.

Rededication

Wappapello Lake plans to rededicate the visitor center on September 20 in memory of U.S. Representative Bill Emerson. Congressman Emerson was instrumental in obtaining approval for many improvements and projects at the lake, including the newly rehabilitated visitor center, which opened on June 15, one week before his death. Because he was a true public servant throughout the region

(Continued on page 5)



Groupwise archiving feature

by Anne Meehan, IM-I

Use Archive to move items from your mailbox to your archive database. You might want to archive items to conserve space on the network server without deleting important information.

You can archive items to an Archive directory on your hard drive or floppy disk.

Archived items are in GroupWise format and can only be read using GroupWise.

Usually you won't want to give proxy users the right to archive items from your In Box or Out Box. If you do, proxy users can archive items from your mailbox to their hard drives and you won't have access to those items again.

DOS ARCHIVING

Specifying the Archive Directory

1. Choose the File menu, then choose Setup to open the Setup dialog box.
2. Choose Location of Files, then choose Archive Directory to open the Archive Directory box.
3. Type the path of the archive directory in the Archive directory box, then choose OK.
4. Choose close to close the Setup dialog box.

Archiving an Item

1. Access your In Box, Out Box, Appointments, Notes, or Tasks.
2. Select an item from the list, choose the Actions menu, then choose Archive.

The item is removed from your Item list box and placed in the Archive directory.

Reading an Item from the Archive Directory

1. Choose the File menu, then choose Open Archive.

All window lists display items you archived. "Archive" is displayed next to your user name indicating that you are viewing archived items.

2. Select the item you want to open, press Enter to read.
3. Choose Close to close the item.
4. When you are finished reading your archived items, choose the File menu, then choose Close Archive to return to your current items.

Retrieving an Item from the Archive Directory

1. Choose the File menu, then choose Open Archive.
2. Select the item you want to open, choose the Actions menu, then choose Unarchive.

The item is moved to you mailbox with your other current items.

3. Choose Close Archive to return to your current items.

Archiving Multiple Items

To archive multiple items in a list, mark each item you want to archive with an asterisk (*), choose the Actions menu, then choose Archive.

If you archive an item that is in a subfolder, the folder is created in the archive directory, and the archived item is placed in that folder.

WINDOWS ARCHIVING

Creating Your Archive Directory

1. Choose File from the Main Window, then choose Preferences.
2. Choose Location of Files.
3. Type the path in the Archive Directory text box.
4. Choose OK, then choose Close to close the Preferences dialog box.

Archiving an Item

1. Double-click In Box, Out Box, or My Calendar in the Main Window, then select an item.
2. Choose the Actions menu, then choose Archive.

The item is removed from your In Box, Out Box, or Calendar, and placed in your archive database.

Reading an Archived Item

1. Double-click In Box, Out Box, or My Calendar in the Main Window.
2. Choose the File menu, then choose Open Archive.

IMPORTANT: While you are in your archive mailbox you cannot send items or create rules.

The contents of the archive database are displayed in the Item list box or Appointment list, Task list, or Note list.

3. Select the archived item, double-click to read the item.
4. Choose Close when you are finished.
5. Choose the File menu, then choose Open Archive to close your Archive and return to your mailbox.

Unarchiving an Item

1. Double-click In Box, Out Box, or My Calendar in the Main Window.
2. Choose the File menu, then choose Open Archive.

Your archived items appear in the Item list box or Appointments list, Tasks list, or Notes list.

3. Select or open the items.
4. Choose the Actions menu, then choose Archive.

IMPORTANT: the previously-archived item will be unarchived.

GroupWise moves the item to the same folder where it was initially placed.

5. Choose the File menu, then choose Open Archive to close your archive and return to you mailbox.

Reference material:

WordPerfect Office v4.0 for DOS Reference Manual

Novell GroupWise for Windows v4.1 Reference Manual

News Briefs cont.

Wappapello Lake serves, it is appropriate that the visitor center be named in his honor.

Center programs

For the enjoyment of the visiting public, the Visitor Center hosts a wide variety of interpretive programs. These programs range from shows on fur bearing animals and taxidermy to a demonstration of bagpipe playing. All the programs are well attended, but the most recent program concerning snakes brought in the most visitors.

Old Greenville Days

The fifth annual Old Greenville Days will be September 28 and 29. Old Greenville Days is a celebration of the history of the city of Old Greenville. Tension and the smell of smoke will be in the air as Civil War reenactments unfold. Demonstrations in the art of wood crafting, glass blowing and blacksmithing will take place. Art and craft booths will also be on hand. Bring your lawn chair and sit and relax to the sounds of bluegrass and gospel music while tasting treats such as open kettle popcorn, caramel apples, homemade ice cream and root beer. As the day winds down and evening sets in, come share in a candlelight tour of the historic Memory Lane.

Trail dedication

On October 5, there will be a meeting of the Ozark Trail Council followed by a formal dedication of the Ozark Trail. The dedication will be held at the Pine Tree access about three miles south of Greenville. Following the ceremony, there will be an opportunity to hike a portion of the trail.

Rend Lake:

Beach Blast

The Rend Lake Beach Blast, held August 3, at the South Sandusky Beach drew an estimated 3,000 people. Water safety demonstrations were held and water safety materials were disseminated. A windsurfing demonstration, canoeing demonstration and a life jacket fashion show were some of the activities. Local radio station WCIL Carbondale conducted a live remote from the event.

New building

Construction of a new combination shower building and restroom facility at the lake's South Sandusky Beach began in July. The new building will replace four older buildings at the site.

Electric hookups

Electric hookups were added to the 41 campsites in the Eagle Creek loop of Gun Creek Recreation Area. This is the first time any of the 100 campsites located here have been equipped with electricity.

Goose blind access

The Rend Lake goose blind for persons with disabilities was recently upgraded with the installation of a three foot wide 200 foot long access sidewalk. The sidewalk replaces a rubber mat that was used to provide access to the blind that sits 75 yards into a corn field. Reservations for the blind may be made by contacting the Rend Lake Project.

Restoration project

The Illinois Department of Natural Resources (IDNR) and Ducks Unlimited have committed to help fund the Rend City Wetlands Restoration Project. The St. Louis District received a letter from IDNR Director Bent Manning pledging $150,000 from the State and Ducks Unlimited for this project.

Mark Twain Lake:

Artifact exhibit

The M. W. Boudreaux Visitor Center was the scene of an archaeological artifact exhibit when exhibitors for the Ralls, Marion and Northeast Missouri Archaeological Society brought in personal artifacts on July 13 and 14. Visitors had the opportunity to hear folklorist Truman Coggswell, Sr. and Eric Gilliland of the University of Missouri Archaeological Survey speak. There was also an "artifact find" for the children.

Interpretive programs

The Interpretive Services Park Rangers gave programs to more than 1,900 students and visiting groups in July. Topics included environmental issues, nature activities, as well as Boudreaux Visitor Center and Powerhouse Exhibit tours.

District headquarters:

Regulatory appreciation

Regulatory Project Managers, Sue Janota-Summers and Keith McMullen, were recently presented certificates of appreciation from the Regional Director, Region 5, U.S. Fish and Wildlife Service, "in recognition of outstanding contributions for the restoration and protection of important fish and wildlife habitats on private lands." Congratulations Sue and Keith.

Environmental River Engineering

by Claude N. Strauser, Chief, Potamology Section

One of the main concerns expressed by river biologists relative to channel improvement structures is the resulting conversion of riverine habitat to terrestrial habitat (water to land) due to sediment deposition. Another concern is the homogeneous habitat that sometimes results after the installation of a new dike or revetment. River biologists believe that a diversity of habitat is necessary to maintain a healthy riverine environment throughout a full range of river conditions.

As a result, river engineers began experimenting with a variety of dike and revetment design concepts. The goal of this effort was to create a diverse riverine environment with a wide variety of habitats. Our mission was then, and is now, to obtain and maintain a safe and dependable navigation channel in an environmentally sensitive manner.

Another important aspect of this environmentally oriented program is the monitoring and/or evaluation phase. The purpose of this phase is to document both the engineering and biological changes that result from these modifications of the standard design criteria previously used for channel improvement structures.

Beginning with the first modified dike structure, which was completed in June 1972, an extensive environmental program was implemented in the St. Louis District. Presently, there are about 200 environmentally modified channel improvement structures functioning in the Mississippi River.

The various design modifications were considered to be an experiment. A wide range of modifications were discussed, designed, constructed and evaluated over time. What changes were successful? What changes were unsuccessful? Should the experiments continue or should other options be explored? These questions and others were evolutionary, as were the changes that were being experienced in the river. Have we developed environmentally sensitive design criteria? The best answers, of course, are provided by the Mississippi River.

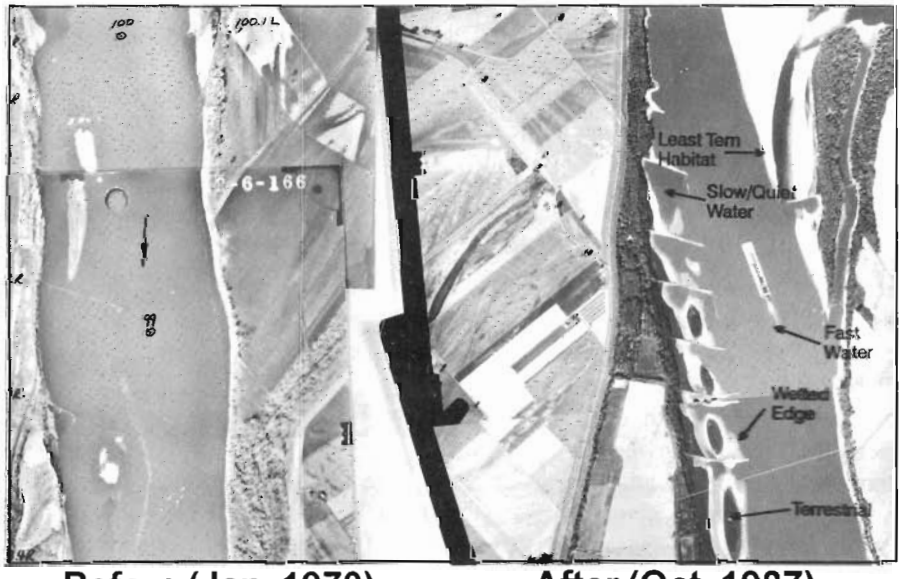
Just as there is no one problem, there is no one solution. The Mississippi River is a dynamic and an ever-changing river. Each unique problem on the river creates the need for a site specific solution. Each solution, in its place, creates the opportunity for a diversity of habitats.

Many innovative and precedent setting structures were tested in movable bed models before being installed in the river. Model testing allows the river engineers to evaluate various alternatives and permits engineers to try nontraditional design approaches without the cost/risk associated with field testing.

Once a modified structure is in place and its navigation effectiveness evaluated, a team of biologists assesses its environmental effectiveness by analyzing the number, size, diversity, health, etc., of species found at each structure. The results of these efforts have been outstanding from both a navigation and an environmental perspective. Improvements to the riverine environment by the creation of a diversity of habitats have exceeded expectations. An increased awareness of environmental opportunities is an important part of today's river engineering program.

Many different concepts are being planned, constructed and evaluated in the Mississippi River. Not all of these concepts have been fully evaluated over a full range of hydrologic events or over long periods of time. However, in almost all cases, an increased understanding of environmental river engineering innovation has evolved. Areas that had been previously thought to be in conflict have now been demonstrated to be mutually beneficial. This effort, over a quarter of a century old, to achieve channel improvement goals and environmental goals has been successfully combined into an area of engineering that can now be rightfully described as "Environmental River Engineering."

Environmentally designed dike field



Before (Jan. 1970) After (Oct. 1987)

Managing sedimentation using micro modeling

by Rob Davinroy, ED-HP

Sedimentation? Micro Modeling? I beg your pardon? Is this any way to talk? Perhaps only if you are a river biologist or a river engineer.

We all know the Mississippi River carries material down its channel every year. Scientists call this material sediment. The sediment is made up of mainly two parts, material flowing on the bottom of the river (called bed sediment) and material flowing in the water column (called suspended sediment). The suspended sediments are what you see every time you gaze out upon the river. These are what give the river its characteristic "dirty" appearance, hence the nickname "Mississ Slopy".

Sedimentation is a derivative of the word sediment, meaning "the action or process of forming or depositing sediment". Sedimentation is an extremely complex natural process. In simple terms, sedimentation may be thought of as bed material depositing or "piling up" to heights that adversely effect man. When different bodies of water (such as rivers, streams, or lakes) become excessively shallow from sedimentation, it's called deposition. When they become excessively deep, it's called scour. Sedimentation keeps us in business here at the Corps. You see, just about everything we build or have built in the District is directly related to sedimentation. For example:

Our dams on our reservoirs were constructed to hold back flowing water for flood control, consumption, recreation, and power. Sediment flows into these reservoirs with the occurrence of each flood event. With the passage of time, sediment within the reservoir can become a problem.

Our Locks and Dams on the Upper Mississippi River were constructed to maintain enough water over the bed sediments in the river channel during low flow periods for navigation purposes. If the dams were not in place, the river would become "clogged" or excessively shallow because of sedimentation. Navigation would just not exist above St. Louis!

Our structures on the Lower River below St. Louis such as dikes, bendway weirs, etc., were constructed to maintain adequate navigation conditions. These structures

Micro model of Sante Fe Chute, Mississippi River.

use the energy of the river to manage sedimentation in a way that ensures adequate channel depths and widths. We also have many areas on the Lower River where we dredge the channel to manage sedimentation as well. Without these measures navigation would not exist below St. Louis!

The biggest challenge we face in designing for and managing sedimentation on the river is to understand this complex process. To do this, the Corps of Engineers has traditionally employed large physical hydraulic models at the Waterways Experiment Station. These models, usually about the size of a standard football field, were made to behave like the real river. This is the type of model we used to develop both Lock and Dam 26 and the Bendway Weir concept on the Mississippi River. These models served as valuable tools for engineers to examine and understand what type of cost effective design parameters would be required for the beneficial management of sediments.

This leads us into the real subject of this article. Recently, right here in the St. Louis District, we have developed an exciting new technology called Micro Modeling. A Micro Model is an extremely small, table top sized model of a river or stream made to behave like the traditional larger models used at WES. The benefits of using these micro models are many. Because of the small scale, engineers can perform sedimentation studies in a matter of a few months. These same studies would normally take years or longer to conduct on the larger models. Also, as with the larger models, engineers can use the micro models as tools to answer complex design problems.

This means substantial cost savings to the District and, ultimately, to the taxpayer. However, probably the most important benefit supplied by this technology is the visual communication tool the models graciously provide to both professionals and nonprofessionals. The micro models show the complex processes of sedimentation to people "right before their eyes". The old adage that "seeing is believing" has been proven time and time again on micro models tested here at the St. Louis District.

Just recently, we performed a micro model study to examine possible ways to manage sediments in

(Continued on next page)

Micro model (cont.)

Sante Fe Chute, a major side channel on the Mississippi River approximately 30 miles south of Cape Girardeau, Mo. Biologists have concluded that side channels play an important role in the overall environmental health of the river. Unfortunately, most of the side channels are quite shallow from - you guessed it - sedimentation!

Biologists and engineers from various State and Federal agencies met at the St. Louis District Applied River Engineering Center at the Service Base. After hours of "experimenting" with the Sante Fe Chute micro model, a structural solution was developed. This solution consisted of implementing nine alternating hard points, or small dikes, in the side channel. These dikes cause the flow in the side channel to "meander" (or to follow a sinuous pattern), thereby rearranging the sediments. Additional needed depth or scour holes are developed as a result of this plan. This creates several different types of outstanding habitat for aquatic life such as fish, invertebrates, etc., hence the term "aquatic diversity".

The plan developed in the micro model is scheduled to be constructed on the River this fiscal year, if river stages permit. The District Avoid and Minimize team will then monitor the changed conditions as predicted by the model.

An open invitation is extended to all District personnel to visit the micro models at the Service Base. Stop by anytime or call us and tell us you'd like to come down. We would be more than happy to let you "experiment" and watch the models in action!

Hydroacoustic fish sampling of bendway weirs

by Jerry Rapp, ED-HP

The success of the Bendway Weir as an innovative and cost effective means to maintain a safe and dependable navigation channel on the Mississippi River has been well documented. The weirs significantly improve navigation conditions around bends by creating desired navigation channel dimensions. There are over 125 of these structures in the Mississippi River between St. Louis and Cairo.

In anticipation of questions and concerns from the environmental community, the Potamology Section initiated a contract with the Waterways Experiment Station (WES) to hydroacoustically survey bends in the Mississippi River. These hydroacoustic surveys are performed with highly sophisticated sonar equipment which collects and records remote detection data on fish. This data can be analyzed to determine density, size and distribution of fishes in bends. Bends with and without weirs were surveyed to determine how weirs were affecting the fish population.

The initial survey was performed in November 1992, with subsequent surveys in 1994 and in 1995. No survey was done in 1993 because of the Great Flood. Data collection has taken place in five different bends.

All the bends surveyed have features commonly found on similar type bends in the Mississippi River. These features include a steep outer bank where the channel runs close to shore and a depositional inner bank, or sandbar, which extends into the river. Price and Dogtooth Bends had weirs during all three surveys. Greenfield Bend and Cape Bend had weirs in the 1995 survey, and Scudders Bend did not have weirs in the 1995 survey.

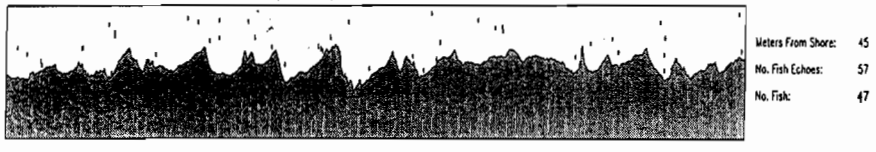
The number of weirs in each bend varies from seven to 13. The weirs are submerged rock dikes that extend from the outside, or steep bank, about 500 feet into the river at an angle of about 30 degrees upstream. They are built to have at least 15 feet of clearance over them at minimum low water.

WES has prepared a detailed report discussing the methodology, results and statistical variations of the surveys. Copies of this report can be obtained by contacting the Potamology Section. An example plot of fish detections at Price Bend is shown on the figure below.

To summarize the findings, the presence of bendway weirs has increased the local abundance of fish. The 1994 data indicated 2.2 times higher density of fish in bends with weirs than in those without weirs. The 1995 survey showed 2.4 times higher fish density in bends with weirs.

The hydroacoustic surveys have provided documentation that the bendway weirs are increasing the numbers of fish present in bends. The weirs are creating a favorable environment for fish in an area that was once not as favorable, thereby increasing the overall fish producing capability of the river.

As one of the Corps' mottos states, "Good engineering enhances the environment."



Sonar transection of the weir field at Price Bend

Water Control Management

by Don Coleman, Chief, Water Control Management

The U.S. Army Corps of Engineers operates more than 500 reservoir and navigation dam projects constructed under the Army's civil works water resources program. The Water Control Management mission for the Corps is to regulate river flow with these projects to provide national benefits of flood control, navigation, hydroelectric power generation, water supply, erosion control, environmental enhancement, recreation and other authorized purposes as mandated in Congressional legislation.

The Water Control Management (WCM) unit of the Potamology Section is the technical element assigned the responsibility of the water control management mission for the St. Louis District. Water control management relates to the hydrologic, hydraulic, meteorologic and environmental aspects of water resource projects. Our mission includes the regulation of five multipurpose reservoirs, five navigation locks and dams and many flood protection projects. This office has the responsibility for planning and coordinating all water control management activities relative to the navigation projects, single and multipurpose reservoir projects, flood protection projects and other pertinent items which require such expertise.

The WCM staff is made up of civil (hydraulic) engineers and hydrologic technicians and, at various times, cooperative engineering students. The responsibilities are highly diversified, from gathering basic information (river levels, rainfall amounts, water quality data and project information) to computer modeling of water resource systems for multiple water control objectives.

LTG Williams, Chief of Engineers, congratulates engineers in Water Control Management during '93 flood.

We devote our efforts to efficient management of water control activities. Some of these include hydrologic and meteorologic data collection and handling; determination of project inflow; scheduling water releases for flood control, navigation, hydropower, water supply, water quality, recreation, and fish and wildlife; and continuous coordination of water management decisions with other Corps offices, with other federal and state agencies, with local government agencies and with private water resource entities and customers.

In conjunction with the many other offices in the St. Louis District, the WCM mission can be considered an engineering success story throughout the years (especially during the Great Flood of '93 and the major floods of '95 and '96 that were experienced in the Mississippi, Missouri and Illinois River basins and tributaries).

Using Mark Twain Lake as an example, the regulation and operation of this project during these and preceding hydrologic events has resulted in benefits of flood damage reduction exceeding $2 billion. All other water resource projects within the SLD have also provided considerable benefits for which they were designed.

We welcome any questions that may arise from reading these articles. Stop by and see us in the WCM room located at Rm 4.103.

Environmental pool management

by Dave Busse, ED-HP

The St. Louis District strives to operate the navigation pools to maximize opportunities for all the users of the river. These users include, but are not limited to, the navigation, recreation and environmental communities.

One of the main concerns expressed by river and wildlife biologists relative to the management of the navigation pools is the overall health of the ecosystem. They believe that the natural water level fluctuation allows for tremendous biological diversity and sustainability of the Upper Mississippi River (UMR) ecosystem. They believe that the annual low water that allows aquatic vegetation to grow naturally is missing.

The Corps' principal focus in ecosystem restoration is on those ecological resources and processes that are directly associated with the hydrologic regime of the ecosystem. Human influence has had, and will continue to have, impact on virtually all ecosystems. This was recognized when developing ecosystem restoration goals and objectives for environmental pool management.

Aquatic macrophytes, or grasses and weeds, are essential to a healthy Upper Mississippi River ecosystem. In simple terms, the aquatic macrophytes benefit waterfowl and fish. However, this project does not target one particular river species as much as it deals with the overall health of the entire ecosystem.

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Pool management (cont.)

Millions of birds use the UMR for their Spring and Fall migration. The North American Waterfowl Management Plan has identified the UMR as one of 34 waterfowl habitat areas of major concern in the United States and Canada. One of the concerns regarding the UMR is long-term viability as a migratory resource related to the shrinking macrophyte community.

During the Fall migration, the birds need high energy food. The macrophytes provide this energy through the seeds they produce. During the Spring migration, the birds (especially the females) are in search of high protein food. The residual vegetation supports invertebrate communities needed to supply the high protein food.

It is commonly accepted that macrophytes are beneficial to waterfowl. In the past, there has been concern that management practices that are beneficial to waterfowl are not necessarily beneficial to (and are even detrimental to) fish in some cases. The Environmental Pool Management program provides benefits to both wildlife and fish.

More than half the fish species of the UMR system use macrophytes to satisfy some habitat need. Aquatic plant communities are used as feeding grounds for primary and secondary consumers, and play a vital role in aquatic food webs. They provide substrate and concealment for reproduction and for larval development. They protect vulnerable organisms from predation and from other environmental hazards.

Pelicans flock to an island habitat in Pool 24.

All three navigation pools within the St. Louis District were closely regulated to provide a drawdown for vegetative growth, as well as to provide a safe and dependable navigation channel, for the past three years. The National Biological Service has determined that more than 3,000 acres of aquatic macrophytes were produced in the three pools each year. These acres of aquatic macrophytes would not have been produced had it not been for this program.

Adaptive Management has been employed on this project due to the relative newness of restoration science in general and of Environmental Pool Management in particular. Under Adaptive Management, restoration measures are implemented and monitored. Then, feedback is provided based on new insights gained on the response of the ecosystem and its resources. Finally, adjustments are made to the project as necessary and if feasible.

Improving the knowledge base regarding a particular restoration approach or ecosystem component is a significant part of adaptive management. This knowledge base will be useful to other Corps districts as they explore the possibility of Environmental Pool Management.

This project has required no additional taxpayer dollars. What was required was a willingness to be innovative and to work in a cooperative manner with a multitude of resource agencies and groups. In addition, this program could not have been accomplished without the skilled employees at the locks and dams who maintain the pool within one inch of the designated pool instruction.

Coordinated water level management represents a true step toward ecosystem management on the Upper Mississippi River System.

Wappapello Lake forecasting

by Ray Kopsky, Jr., ED-HPW

When the level of Wappapello Lake rises as the result of rainfall upstream of it, personnel at the lake management office must take flood fighting actions. These actions include posting high-water warning signs, closing recreation areas and facilities, ceasing electrical power to facilities, notifying commercial and agricultural lessees, coordinating with government and law enforcement officials and notifying the public.

Remote sensor station on the St. Francis River. Note the antenna, the rainfall collector on the pole and the house containing data collection equipment.

The lake management office personnel require a lake level forecast so that they may accomplish their mission. Lake level forecasts are very important since Wappapello Lake has risen 5-15 feet in one day during previous floods, primarily because of the topography near the lake. ED-

(Continued on next page)

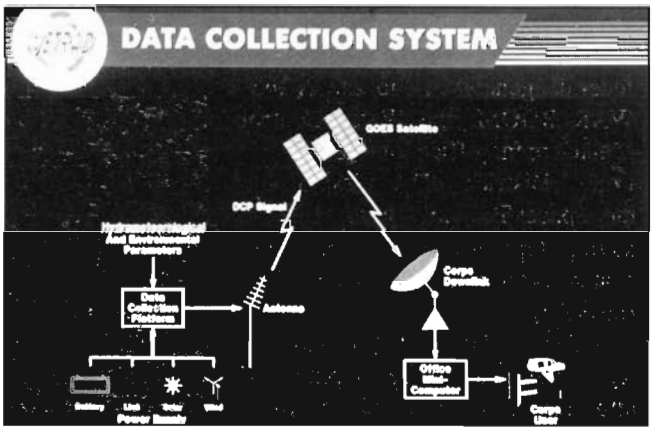
Water control data system

by Don Coleman, Chief Water Control Management

What would you do with hundreds of thousands of pieces of data that are acquired every day, seven days a week, 365 days a year? How would you use and present this data in a real-time informative way in support of water control decision making processes? Well, the answer is the Water Control Data System (WCDS).

The St. Louis District's WCDS comprises the hardware, software and data collection system that supports the accomplishment of the water control mission. The system's primary goal is to support the informational needs for water control decisions in the SLD and is linked to the Corps-wide system.

Our system includes the collection, verification, storage, display, dissemination, interpretation and archiving of data and information needed to carry out our mission for the District. Typically this data and information includes hydrologic, meteorologic, water quality and project related data.



Initially, the WCDS automatically collects data continuously from sensors that are remotely located at streamgaging sites throughout the District. (See sensor picture on previous page.) These sensors collect water levels, rainfall amounts, water quality parameters, wind speed data, etc. This data is transmitted to the GOES satellite, which in turn retransmits the data to a satellite receive dish on the roof of the RAY Building. Our water control office is connected to this satellite dish by a computer which can access the data within seconds of it being transmitted from the sensors.

The system also gathers and stores weather radar imagery, other weather related graphical products and lab and field analysis of chemical, physical and biological samples. The system also has access to the National Weather Service and other federal and state agencies for the exchange of data.

The system, through its software, incorporates data and information into various products and system outputs. Corps software allows the water control personnel the ability to store, display, interpret and disseminate this data for use in modeling of reservoir regulation, forecasting water levels on rivers, simulation analysis and reporting activities.

As a decision support system the WCDS allows the water control personnel to make intelligent, informed decisions in a real-time manner. This provides us the capability to convey current water information to other Corps organizational elements, to other cooperating agencies and to many other local partners, customers and the general public.

Currently, the St. Louis District's WCDS is being used as a test site for the Corps' nationwide modernization effort in water control management.

We have a water control homepage on the World Wide Web that demonstrates some of the system's capabilities. We are continually adding information to our homepage. See for yourself by accessing through the District homepage or at address http:\\lms61.lms.usace.army.mil. Come visit our site.

Forecasting (cont.)

HPW hydraulic engineers developed a computer model for lake level forecasting which makes use of hydrologic principles and hydrologic data collection equipment.

The watershed upstream of Wappapello Lake contains the rivers and the creeks which flow into the lake. A generalized computer program for streamflow and lake level forecasting, which was developed by a Corps research facility, was applied to this watershed by ED-HPW hydraulic engineers in order to develop the computer model. This generalized computer program was designed to use up-to-the-minute information acquired from many remote sensor stations located within the watershed. These sensors collect rainfall data, river level data and lake level data. They then transmit the data through a satellite to collection sites on earth. These sensors are strategically located throughout the watershed to provide a high degree of hydrologic information.

This computer model was developed during late 1994 and was used extensively in the Spring of 1996 since the watershed upstream of Wappapello Lake had many storms. A future improvement to this model will be incorporating rainfall data taken from the NEXRAD weather radar. Lake level forecasts are also developed for the other lakes in the District in a similar manner.

Leveraging technology for real-time civilian disaster response

by Jule Bartels and Don Coleman, ED-HPW

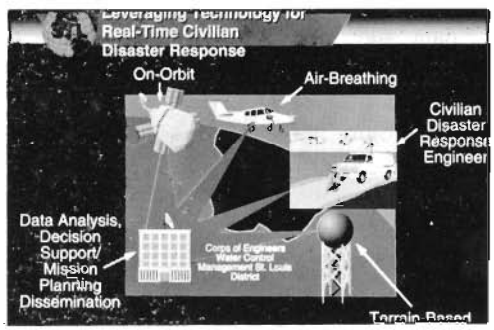
Flood fighting technology is moving into the 21st century. The goal is to provide flood fighters with critical information and to provide decision support for real-time emergency response. The benefits are minimizing civilian casualties and losses. The tools include terrain-based, air breathing and on-orbit remote-sensing resources applied to flood emergencies. The players include military and civilian research and development facilities, Corps and other federal agencies. The site is the WAR ROOM, the Water Control Management office of the St. Louis District. The mission is the Space Technology for Life-saving Operations Utilizing Integrated Solutions (STLOUIS) Initiative.

The St. Louis District has taken the lead in developing and applying weather radar products for Corps of Engineers' river forecasts and project regulation. Next Generation Weather Radar (NEXRAD) is the most advanced terrain-based method of collecting spatial (over an area) and temporal (over a period of time) rainfall distributions in real-time (minutes).

A decision support system (WETRAD) incorporates radar imagery, fuses it with gauged ground truth for input to forecast models and provides for user visualization. The system aided in reducing the impact of the "Great Mississippi River Floods of '93, '95 and '96."

Though routine tasks such as data collection and management are automated, the STLOUIS Initiative focuses on providing the humans in the loop with useful information in real-time. Humans use their intuitive judgement to determine practical solutions and to be sensitive to political realities.

While the WETRAD near real-time hydrologic information system is operational, significant work is necessary to develop it into a real-time national asset which incorporates horizontal and vertical technologies. To integrate existing and future technologies, the St. Louis District has "branched out" and has become partners with USACE laboratories in the civil works arena as well as specialized laboratories in the military works arena.



One current development effort uses a Geographic Information System (GIS) to manage more spatial information and improve visualization. This partnership with the Remote Sensing/GIS center at the Cold Regions Research and Engineering Laboratory has produced a GIS link with water control management applications and forecast models including testing/developing an object-oriented all-weather hydrologic model (GAWSER). As the demonstration site for the research, this project was funded through research dollars. The WAR ROOM is the demonstration site for much of the Corps' remote-sensing, GIS and water control research nationwide.

Dual-use of technology can leverage military works concepts and benefit the civil works sector in flood warning/preparedness activities. Flood warning/preparedness includes: flood threat recognition, warning dissemination, emergency response, post-flood recovery and re-occupation and continuous plan management.

River engineers fighting floods, like combat engineers in warfare, must mobilize, deploy and sustain forces effectively. Survivability translates into minimizing civilian casualties and losses. Like their battlefield counterparts, flood fighters need to know hydrologic, meteorologic and surface conditions over vast spatial and temporal expanses.

Military works advancements in topography such as rapid mapping and terrain visualization are being investigated to meet this need. Other developments must be evaluated and useful products linked into an Integrated River Management and Emergency Response System. Flood fighters need sophisticated modeling tools to forecast future conditions and to test alternative solutions. Most importantly, the raw data and tools must be integrated into an information system providing visualization and decision support for real-time emergency response.

Flood fighters need data sources and information tools that integrate the collection, analysis, fusion and display of disparate data types for visualization and use in river management. These data sources and information tools shorten the decision cycle and provide real-time response. With its skilled flood fighting team and proven experience in weather remote sensing, the St. Louis District Water Control team is an eager and future-oriented partner leveraging technology for real-time civilian disaster response.

HTRW Design Center

by Beth Brown, ED-HQ

The Environmental Quality Section heads the Hazardous, Toxic and Radioactive Waste (HTRW) design group. The HTRW team is a compilation of Environmental Quality personnel with technical assistance from personnel in Geotechnical Branch and Project Management. The objective of the HTRW design team is to provide technical expertise to other districts within LMVD.

Since September 1995, the St. Louis District has completed three HTRW Phase II sampling projects for New Orleans District. These projects included sampling of groundwater, surface water, soil and sediment to determine if hazardous wastes exist. A determination is then made to either avoid these hazardous waste sites or to develop disposal procedures for removal of the contaminated wastes.

On each project, the St. Louis sampling teams were assisted by New Orleans personnel who provided information on the sites, arranged right of entries to the sites and provided assistance to the sampling team. These projects included two flood control projects in the Baton Rouge, Louisiana, area and a lock project in New Orleans. The total cost was about $1,150,000.

The team uses guidance from the Division HTRW regulation, DIVR 1165-2-9, to ensure this and other Corps and Federal regulations are followed. The responsibility of the team is to review the geographic district's Phase I environmental assessment, prepare sampling analysis plans, prepare site safety and health plans, conduct sampling and compile final reports for each project.

All members of the HTRW team have completed the 40 hour Occupational Safety and Health Administration (OSHA) training, annual eight hour refresher and annual HTRW medical surveillance required by OSHA. The members are also required to be certified in CPR and first aid. These requirements are to ensure the safety and health of the personnel conducting the sampling.

HTRW Phase II sampling procedures are specified by EPA and Corps regulations. Failure to follow these procedures could make the data collected questionable, or even invalid, if taken to court over a dispute. Therefore, the sampling team is also highly trained in proper sampling procedures and sample handling as required by the sampling plan.

Within the St. Louis District,

Roger Myhre and New Orleans drill assistant collecting groundwater sample near the Comite River.

the HTRW Design Center has recently performed Phase II investigations on the Metro East District, Valley Park Levee and St. Peters Levee. Currently, the team is involved in determining where hazardous materials exist at the Chain of Rocks levee project.

All projects, active or in the planning stage, are required to have a Phase I initial assessment of potential sources of contaminants through a literature records search, on site survey and land owner interviews. These Phase I assessments are an integral and equal part of all planning studies. Those Phase I assessments that provide positive findings of potential hazardous wastes must then proceed to a Phase II effort.

All Phase II investigations for the four LMVD districts are performed by the St. Louis District HTRW Design Center. In lieu of more stringent regulations, the importance of proper HTRW investigations will increase within the Corps. The Division HTRW Design Team is ready for the challenges ahead.

– *Earth Notes* –

Solar power at night

Solar Two, a 100-megawatt power plant near Dagget, California, soaks up the sun's heat during the day, then releases it at night or over the course of several cloudy days. If it works as planned during a three year shakedown, solar power will be far more dependable.

Solar Two uses sun-tracking mirrors to focus sunshine on the top of a central tower. There, the concentrated sunlight heats a mix of sodium and potassium nitrate. That melts the salts, and the steamy liquid flows into a giant thermos bottle which is tapped to boil water and produce the steam for a generator. The system should be very attractive to countries that import oil to generate power.

ED-HG contributes to explosive ordnance project

by Alan Foreman & Dave Kreighbaum

EXPLOSIVE ORDNANCE FOUND IN STATE PARK !!! We see the headlines too often. Injury and death have resulted from people picking up unexploded ordnance (howitzer or mortar shells, grenades, land mines, etc.) in areas which were once used by the Military. Hunstville Division's Mandatory Center of Expertise for Ordnance and Explosives has tasked St. Louis District to research and publish the findings concerning possible locations of unexploded ordnance on lands once owned by the U.S. Military. St. Louis District's Geodesy, Cartography and Photogrammetry Section (ED-HG) plays a major role in the preparation and dissemination of the Corps' reports.

Site Location and Chart Markup

ED-HG's Photo Analysts use Inventory Project Reports to determine site locations. After the site has been located, Geologic Survey (USGS)1:24,000 (or larger) scale topographic maps are obtained from the St. Louis Public Library. Sources of photos are the National Archives in Washington D.C., the USGS, the War College in Carlisle, PA., and the Agricultural Stabilization and Conservation Service.

Demographics

Demographic information is obtained from the St. Louis Library, Census Bureau on the Internet, and the local Chambers of Commerce. Demographic information consists of total population for both city and county, types of employment, housing, and age.

Photo and Map Interpretation

In order to determine the location of former areas of ordnance use, maps and photography from years past are reviewed by ED-HG's Photo-Analysts (the Sherlock Holmes in the process). Aerial or ground photography and maps may give clues to areas where ordnance was used, stored, or buried. Sequential photography gives the pictures a 3-D effect, allowing analysts to see the land as if they were in the airplane flying over the site. Photographs are also compared to, and are overlain on, past maps of the area to locate sites where ordnance may have been used.

The authors review maps and aerial photographs.

Computer Drafting

Computer-Aided Design and Drafting (CADD) provides excellent graphics with which to display the report findings. ED-HG's computer cartographers take historical maps and photographs and overlay them onto recent maps with a high degree of accuracy. The resulting data shows the modern locations of areas which may contain unexploded ordnance. Photographs taken by St. Louis District personnel during site visits, or historical aerial photos taken years ago, can be scanned into the computer system. Copies of the report have been put on the Internet so that the American public can be informed of the high quality, environmentally responsible work being done by the Corps for our Army customer. Call or see Danny McMurphy in ED-HG if you would like a firsthand look at the quality and the content of the reports.

Internship great opportunity

by Diane Lewis, IM-I

Employment with the U.S. Army Corps of Engineers, St. Louis District, has been quite an educationally uplifting experience. For a college student, the government is one of the best opportunities to achieve a working knowledge of the business and an excellent way to earn a competitive wage.

While studying telecommunication engineering, I have been exposed to an unending source of technical experience and exposure to cutting edge technology. Office automation, local area networking, the World Wide Web, fiber optic telecommunication hardware, technical computer software and much more are the wave of the future and I have been given the opportunity to "ride the board" at the Corps.

It would be my strongest recommendation to any college student to participate in some sort of internship, co-op, or other educational program with a professional agency. The wealth of knowledge gained can never be replaced.

PROMIS

by Jerry Barnes, DP

PROMIS (Programs and Project Management Information System) is now scheduled for deployment in the months of October and November in SLD. This system was developed as part of the Corps' vision to replace all the stovepipe databases with a single Corporate Data Base (CDB). PROMIS will provide the interface to the Programs, Project and Technical managers to enter and retrieve data to the CDB. When PROMIS is implemented, we expect to see the gradual elimination of redundant systems.

PROMIS is a Windows based application and will support the following NAS programs: MS Project (Windows), Open Plan Professional and PRIMAVERA Project Planner. The exchange of data from the NAS and PROMIS is through the use of .MPX file format. The District will be using MS Project (Windows). This will require the training of users in the use of MicroSoft Windows (3.1) and MS Project. This training is scheduled in Aug.-Sept.

PROMIS is able to schedule and monitor project funds and program execution by using a Work Breakdown Structure (WBS). PROMIS is capable of delegating project tasks by assigning a "Responsible Employee" who is in charge of executing their specific task. The goals for the final production of PROMIS are that data should be input only once; it should be front end loader to CEFMS cost/obligations and be able to do resource leveling for the District workload.

Bill Sutton and Ed Ewing are the deployment coordinators for PROMIS. Robert Bringer and Steve Dvorak are the System administrators. Major technical and admin offices have one point of contact who will coordinate the deployment within their respective office. The following are the points of contact: Nancy Conner, Pat Conroy, Ron Singleton, Dave Kirkpatrick, Debbie Trimble, Mary Heberer, Stan Zurweller/Tracy Butler. Train the trainers for PROMIS will be held at WES in October. The trainers are Robert Bringer, Steve Dvorak, Pat Conroy, Dave Berti, Tracy Butler and Dave Kirkpatrick. These trainers will train the remainder of the District. About 105 District personnel have been identified for detailed training.

9th Annual Wildlife Endowment Camp

by Gene Morgan, Rend Lake Park Ranger

They came from one end of Illinois to the other. They came to learn hunting skills, to shoot trap and skeet and to learn how to shoot 22 gauge rifles. They came to win a fishing contest, to learn how to save someone's life and to eat crawdads. They came to be a Junior Ranger and, yes, they came to have fun. This was the scene last month as 32 junior high youth attended the 9th Annual Illinois Wildlife Endowment Camp at Rend Lake's Dale Miller Youth Area.

With the help of the Illinois Department of Natural Resources, the Illinois Wildlife Endowment and the Corps of Engineers, Camp Director Bill Murry of Sesser, Illinois, said this was the "most successful camp of all." Under absolutely perfect weather conditions all week, the campers became week-long residents of the cabins at the Dale Miller Youth Area.

During a nonstop week of programs and activities, each camper had the opportunity to learn skills not available to most their age.

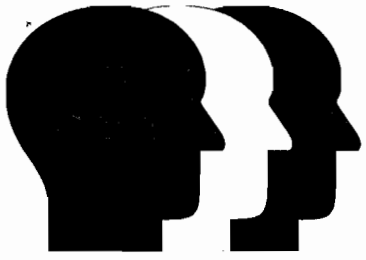
Rangers captained the work barge behindthe IDNR fish shocking boat. Campers dipped up fish for analysis

One of these opportunities included joining an Illinois Department of Natural Resources Fisheries Biologist and electro-shocking sections of Rend Lake and then analyzing the overall condition of the fish of Rend Lake. After the short stun time, the fish are released back into the lake.

Campers also became Junior Rangers during the week. During this time, the kids get to patrol with a Rend Lake Ranger. This year, campers patrolled the beaches and took surveys concerning the attitudes visitors have about Rend Lake.

Rend Lake's Illinois Wildlife Endowment Camp received special recognition this year as WSIL-TV in Marion, Illinois, produced a segment on the founder and main organizer of the event over the last nine years, Bill Murry. Mr. Murry was honored as the area's "Unsung Hero" for the week because of his involvement with the camp and other conservation activities. The segment featured footage from the week's activities.

If you know a youngster who might want to attend next year's camp, contact Bill Murry in Sesser, Illinois, at (618) 625-5454.



EEO matters

By Jean Stephens, EEO Officer

National Hispanic Heritage Month has been observed annually since it was established by Public Law 90-498 in 1968. Public Law 100-402 extended the week-long observance to a full month each year, beginning September 15 through October 15.

This background paper traces some of the years of Hispanic heritage by listing highlights from the history of Hispanics in the development and continuing prosperity of the United States of America.

1492-1504 - King Ferdinand and Queen Isabella of Spain provided the financial material backing for Columbus to make all four of his expeditions.

1539 - Hernando de Soto landed in Florida, Georgia, Alabama, Mississippi, and Tennessee, eventually discovering the Mississippi River.

1540 - Francisco Vasquez de Coronado began an expedition from Mexico to the present-day southwestern United States, and as far north as central Kansas.

1565 - Pedro Menendez da Aviles founded St. Augustine, Florida, the oldest city in the United States.

1595 - Juan de Onate began colonization of New Mexico and established a permanent settlement. He was the governor of New Mexico.

1610 - Santa Fe, the capital of New Mexico, was founded by Pedro de Peralto, on the site of a prehistoric Indian village.

1776 - Bernardo de Galvez, governor of the Louisiana Province, provided cattle from Spanish herds in Texas and sold forearms and other supplies to American agents during the American Revolution.

1836 - Mexicans under Santa Anna besieged the Alamo in San Antonio. Seven Hispanics fought with other Texans at the Alamo. Although six of the seven died, they all assisted in winning independence for Texas.

1845 - The Texas Congress voted for annexation and the United States Congress admitted Texas into the union.

1848 - The Treaty of Guadapupe Hidalgo ended the Mexican War. Mexico ceded California and New Mexico to the United States, and the Rio Grande was established as the border between Mexico and the United States.

1861 - As many as 9,900 Hispanics fought in military units in the American Civil War, on both the confederate and union sides, including units from states as far apart as California and New York.

1898 - The United States entered the Spanish-American War to help liberate Cuba from Spain. After this Spain ceded Puerto Rico to the United States, along with Guam, Philippines, and Cuba was given independence.

1919 - Twenty-three New Mexico Hispanics were killed in France during World War I, there was no clear record of how many Hispanics actually fought in this war. It was estimated that there were many thousands.

1941 - It was estimated that up to half a million Hispanics served in the Armed Forces during World War II, many of whom were in National Guard units from Texas, New Mexico, Arizona, and California. Another large group was in the Infantry Regiment, which was comprised almost entirely of Hispanics from Puerto Rico.

1953 - The House of Representatives of New Mexico terminated a policy of conducting sessions in both English and Spanish. For the first time since becoming a state, all Spanish-speaking members were bilingual.

1964 - Lieutenant Everett Alvarez, Jr. , was the first American pilot shot down and captured in North Vietnam. He was released by the North Vietmanese in February 1973.

1973 - During the war in Vietnam, thirteen Hispanic members of the military were awarded Medals of Honor for conspicuous bravery.

1977 - The Congressional Hispanic Caucus was formed.

1982 - By this date there was 40 congressional districts in the United States with a Hispanic population of over 20 percent.

1985 - Rodolfo Neri Vela, of Mexican heritage, was the first Hispanic astronaut, followed by Franklin Chang-Diaz, a Puerto Rican, in 1986.

1989 - There are over 88,500 Hispanics in the DoD and an additional 1,400 in the Coast Guard.

CONCLUSION

Hispanic contributions, over the years celebrated by this Hispanic Heritage Month, genuinely demonstrate involvement in the commitment to the ideals and principles of the United States of America. As Hispanic involvement grows in the future, the continuing adventure identified by this month's theme should provide even greater contributions to America's greatness. As a society, we have been, and continue to be, enriched by Hispanic involvement.

*Hispanic -Americans are persons of Mexican Puerto-Rican, Cuban, Central or South American, or other Spanish cultures or origins, regardless of race.

Coming Events

Carlyle Lake:

Sept. 23	Conservation Day
Oct. 20&21	Haunted Trail
Dec. 1	Christmas Tree Lighting

Mark Twain Lake:

Sept. 22	Environment EducationDay
Sept. 23	Astronomical Adventure
Sept. 30	Missouri Mule Day

Rend Lake:

Sept. 16	Rend Lake Cleanup
Sept. TBA	Children's Arts Festival

Wappapello Lake:

Sept. 19	Renaming of Visitor Center
Dec. 14-22	Festival of Lights Auto Tour

Is "Jay Roy" Lix *Old Man River*?

by Oney Pruett, Office Assistant, M/V Mississippi

Upon first meeting Captain Geroid Albert Lix, Master of the Dredge Potter, many years ago, I was struck by his professional manner with underlining tones of slyness, good humor and savvy. What I thought I knew about old man river was minuscule compared with the 45 years of knowledge Capt. Lix has gained with the St. Louis District, Corps of Engineers. Quick with a joke, a smile or the correct answer to a complex question or problem, Capt. Lix is truly one of LMVD's most valuable and dedicated employees.

Capt. Lix demonstrates speed signalling for District historian Cecily Jones.

Capt. Lix started with the Corps of Engineers on June 26, 1951, as a deckhand aboard the old paddle wheel dredge Ste. Genevieve. He held the positions of Launch Operator, Deckhand Leader, 2nd and 1st Mate, Pilot and finally, through many years of hard work, became Master of the Ste. Genevieve in 1974. When the Ste. Genevieve was retired in 1985, he was reassigned to the Dredge Potter as Master. The position he still holds today.

I have listened to Capt. Lix tell his many, memorable river stories for years. I asked him to tell a few for this article. With a twinkle in his eye, he said, "When I was a young man... like most people... there are some tales I'd rather not tell. But you would be surprised at what is dredged up with the mud, gravel and sand. I guess the most interesting things to me were finding old artifacts and fossils. We once found a mastodon jaw bone with two teeth, four and one half inches wide by eight inches long, in 1962. We also found skulls, Indian artifacts, and once a car with a shotgun in the back seat."

I asked Capt. Lix how much longer he was planning on working. He said, "As long as my health is good, I enjoy my work and I continue to contribute to our mission." I told Capt. Lix that if he worked much longer he would truly turn into old man river. To which he replied, "I will have 45 years this June. You may retire before I do."

To which I replied, "Captain Old Man River I pray I live that long. Happy birthday on your 45th and many re.urns."

Corps partner to construct building at Mark Twain Lake

The Tri-City Commission, Inc., of Perry, Missouri, honored the Mark Twain Lake Project Office for its 10 years of support and cooperation. At a combined celebration at the Warren G. See South Spillway Recreation Area, the Tri-City Commission held a celebration congratulating the Corps' Mark Twain Lake Project Office for receiving the Project of the year award for 1995.

In conjunction, the Corps and the Tri-City Commission will hold a ground-breaking ceremony for one of the first major cost share agreements in Corps history. The Commission will construct a building at the Warren G. See South Spillway Recreation area and donate it to the Corps. The building will be used to serve food at area functions.

To your health

Fight CTS with carpel tunnel exercises

If you exercise your hands and wrists for a minute or two before beginning to use your keyboard, you are taking a big step toward avoiding carpel tunnel syndrome (CTS). CTS is a condition that may develop when repetitive wrist motions, such as typing, creates pressure on the median nerve in the wrist.

At the Orthopedic and Reconstructive Center in Oklahoma City, researchers teach people with CTS hand and wrist exercises. They found that after just one minute of exercising, pressure on the median nerve was reduced, in some cases for several hours.

Stimulating the wrists and hands helps move the fluid that causes pain and pressure on the nerve. Here are their five recommended exercises:

1. Flex and stretch the wrists and fingers as if in a head stand position. Hold for five seconds.
2. Straighten the wrists and relax the fingers. Hold for five seconds.
3. Make a tight fist with both hands and hold for five seconds.
4. Bend your wrists down, keeping tight fists. Hold for five seconds.
5. Straighten your wrists and relax your fingers. Hold for five seconds.

Typing is an athletic activity for the hands and fingers, according to Ergonome, a New York ergonomic software publisher. Hands need a quick warm-up before typing just as legs do before a long run.

They recommend that typists take short breaks frequently instead of waiting for long ones. Dropping the hands to the lap for just five seconds can be helpful.

More demand for vitamin E supplements

Pharmacies and health food stores report so many consumers buying vitamin E that it's hard to keep it in stock.

Why the almost sudden interest? A stream of scientific research points to evidence that the vitamin attacks agents that cause cell deterioration and aging. Other studies conclude that vitamin E may help ward off heart disease, cancer and stroke.

The studies, as reported in the *Journal of the American Medical Association*, are not definitive, and many doctors prefer that patients get their vitamins naturally from a balanced diet. But research indicates that a daily vitamin E dosage of 100 to 400 IU is needed to reap E's benefits. That's far more than can be consumed in a normal diet.

Vitamin E's move into the mainstream of medicine would have surprised early researchers, who were mocked for their faith in its benefits. Among the pioneers were two Canadian doctors, Evan Shute and his brother Wilfrid, who treated heart patients with vitamin E in the late 1940s at their clinic in London, Ontario. Both were frowned upon by the medical profession.

Denham Harmon, a University of Nebraska medical professor, provided the framework to explain why vitamin E works against free radicals in the 1950s. Harmon, now 80 years old, says he was ridiculed and could get little money for research until the '60s and '70s.

Vitamin research was stimulated by the health-food movement of the late 1960s. More recently, growing consumer interest in preventive health care has prompted the use of vitamin E supplements.

The richest sources of naturally occurring vitamin E are high-fat foods such as vegetable oils and nuts, so to reach 400 IU daily and not gain weight, you would have to take a supplement.

Estrogen may save teeth

Women who choose estrogen replacement therapy get a dental bonus: Besides reducing gingivitis and dry mouth, estrogen helps preserve teeth by preventing bone loss, according to Harvard Medical School.

Retiree Review

by the Retiree Correspondent

August 15, 1996, was a great day, weatherwise, and about 12 retirees attended the monthly retiree's luncheon. Although there were just a few, they carried on the tradition. They talked about all of you who were not in attendance, some good and some just talk.

Bill Hoff was there with his "niece." You all know Bill. He's always got an eye for the ladies. He stated that he was taking a river cruise on the Mississippi River - leaving Sunday and sailing down to New Orleans and arriving on the following Sunday. He'll enjoy a week of river luxury.

Gordon Davis, our resident bee keeper, state that he read somewhere that our Dick Armstrong has been assigned to some position as Assistant Secretary of the Army for Manpower. If this is true, another of the St. Louis boys has made good. Congratulations Dick.

The Puricelli's were back. They had a guest with them - their granddaughter, Megan, from New Jersey. Not knowing what Elmer said about why Pete was absent for the last two-months, Pete did not give any reason. In fact, he just avoided the subject.

George Clapp had a few stories to tell, but declined until there was a more "mature" group. This brought some questions from those in attendance as to how much more "mature" they had to be. George will probably have some appropriate stories next month.

Kate Stiles was not in attendance and missed. Latest known information is that she is still on the mend, either at Delmar Gardens South or at home. I'm sure she would appreciate some cards or calls at her home. Her daughter indicated that she looks forward to being with us again.

Information has been received that the Huizengas are on the move. They were not in attendance, but sent word that they were "closing" on property in Jackson, Missouri, on the day of the luncheon. There is some question as to the size of the property - anywhere from one to 187 acres. Hopefully, they will send word as to the exact size of the property, when they will move and their address, just in case the retirees decide to have a welcoming picnic there. Maybe Elmer and Bill Douglas can start a retiree's South group.

The Cullens are also leaving us shortly. Their home in Florida should be near completion and they should be closing very soon.

With Elmer and Mike leaving the area, the source of good golf stories will dry up. Someone will have to step forward to fill the void.

Let's mark our calendars for the 3rd Thursday of September, the 19th, at the Salad Bowl, about 11 a.m.

Commander's Perspective (cont.)

how to use CEFMS. CEFMS will be implemented in May/June 1997. This is an exciting time for the District, but a lot of work needs to be done to make the transition go smoothly.

There is good news and bad news about FTE (a term meaning full-time-equivalent or people). The District has received 13 additional civil manpower FTE and may receive an additional 10 military manpower FTE. The bad news is the District may not have enough money to fund all of the additional FTE we have received.

To the credit of our team members, we are experiencing another successful year of program execution. For the third quarter, we have exceeded our CMR goals in three major appropriations (General Investigations 120%, Operations and Maintenance 97%, and MR&T Maintenance 100%). For the first time this fiscal year, we have slipped to amber (90%) in our Construction, General program. However, with continued emphasis being placed in this area, I am confident we will meet or exceed the year-end goals of 95% for GI and CG and 96% for O&M and MR&T.

As we begin focusing on FY97, it is critical to our customers and partners that we maintain this high level of execution. In addition to our ongoing studies and projects and the additional $9M for Chain of Rocks emergency work, we have the potential for four new reconnaissance studies. I believe our continued success is the result of our study and project managers developing realistic, achievable schedules by working closely with their respective team members. It is important that we proactively manage our studies and projects to achieve the highest level of organizational efficiency and effectiveness to meet our customers' needs. I am sure we will meet this challenge and enjoy another successful year in FY97.

Riverlands hosts Wetlands Prospect Course

Growing from the increased environmental awareness in the late sixties and early seventies, the Corps of Engineers began to evaluate more closely ways in which it could improve its stewardship of public lands. Many opportunities were realized including the need for wetland restoration and development. As a result, the first wetland restoration and development training was conducted about twenty years ago at the Wave Energy Research Center in North Carolina. Today the national Corps of Engineers wetland prospect course training program has grown to include ten separate wetland subject areas, each with multiple sessions. Those subject areas include topics such as Wetland Restoration and Development, Fundamentals of Wetlands, Wetland Evaluation Methods, Construction of Wetlands, Wetland Executive, Wetland Delineation, Wetland Functions and Values and Wetland Environmental Compliance.

Bob Lazor, National Wetland Training Program Manager from the Waterways Experiment Station Wetlands Research and Technology Training Center, Vicksburg, Mississippi, said, "In the 1996 calendar year the wetland prospect course program will have trained more than 1000 Corps of Engineers, Fish and Wildlife Service and Environmental Protection Agency personnel." In addition, special onsite training can be requested by a district to meet special wetland training needs for specific geographical areas. Bob commented that they had spent two weeks in both Anchorage, Alaska, and Missoula, Montana, fulfilling special training needs for Corps personnel. Since the early 1970s, many acres of wetlands have been built or restored using dredged material, or as mitigation for dredge and fill activities. These sites total well in excess of 400,000 acres.

The Rivers Project, in the St. Louis District, is designated as a Remote Wetland Training Site for the Wetland Restoration and Development, Inland Waterways and Fresh Water Wetland Prospect Course. During the two week period June 17-21 and 24-28, about 60 natural resource, regulatory and other individuals from various related professions and agencies participated in the two training sessions conducted this year.

The course draws on the knowledge and experience of leading national experts, such as

Dr. Robert Johnson, retired from the USDA Forest Service, Southern Hardwoods Laboratory, Stoveville, Mississippi, specializing in reforestation of bottomland hardwoods, and Dr. Gary Pierce, Southern Tier Consulting, Portville, New York, specializing in herbaceous and woody plant establishment in constructed and restored wetlands.

In addition to classroom lectures, the course combines hands-on field activities. Dr. Johnson oversees bottomland hardwood restoration along the Chain of Rocks Canal and Dr. Pierce provides guidance for herbaceous plant restoration in the Environmental Demonstration Area. Doug Whitaker, Ph.D. candidate and contract student with WES, directs the hands-on restoration demonstrations in which the class participants get a chance to apply bioengineering restoration techniques to shoreline portions of the Environmental Demonstration Area. In addition to providing practical hands-on experience and increasing participant knowledge, the bioengineering demonstrations provide useful data on how various restoration techniques are compatible with the environmental forces and ecology of the mighty Mississippi.

The Rivers Project is now in its fifth year of hosting the Wetland Restoration and Development Course. Pat McGinnis and John Cannon serve as the St. Louis District's points of contact, guiding and facilitating this National Wetlands Training Program effort with the Waterways Experiment Station. The Rivers Project looks forward to this and other partnering opportunities which increase professional as well as public knowledge of our nation's natural resources.

Students constructing a willow mat to stabilize the shoreline along Ellis Bay