

# CROSS CURRENTS

## FLOOD FIGHT 2010 EDITION



**US Army Corps of Engineers**  
St. Paul District

**BUILDING STRONG®**



photo by Shannon Bauer

Paul Machajewski, operations, uses the hood of a car as a desk while working in North Dakota's Cass County, while overseeing the building of an emergency levee, March 17, 2010. The U.S. Army Corps of Engineers, St. Paul District, provided emergency response to the communities of the Red River of the North river basin for the 2010 flood.

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- Click on "CROSS CURRENTS" at the bottom of any page to return to this page
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- Look for the  button in articles for links to videos on the subject.

### 3 Command Corner

## FLOOD FIGHT 2010

- 4 Early start for the 2010 flood fight in Red River Valley
- 6 East Grand Forks, Minn., floodwalls stood ready for the Red River flood of 2010
- 7 Water control structures key tool in flood fight
- 10 St. Paul District emergency operations center hums during a flood fight
- 12 Road trip! Engineers go to the continental divide and back

15 Freezing temperatures allow major maintenance on Lock and Dam 5

16 Inspiring girls with foil boats, spaghetti bridges and paper airplanes

17 News & Notes

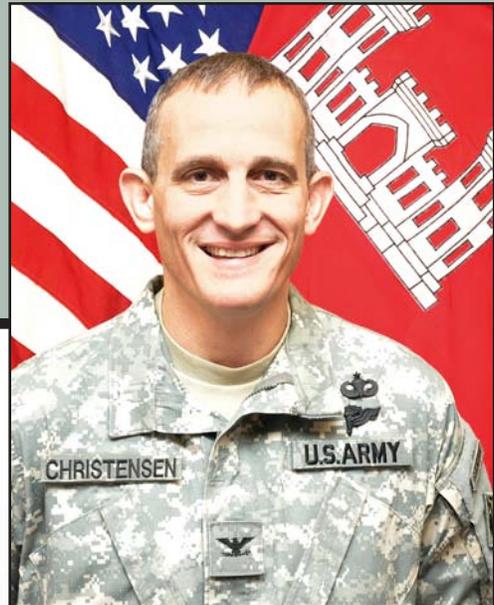
20 Postcards from Iraq

Chasing the Red: Alex Nelson, hydraulic engineer, traveled along the Red River of the North to monitor water levels to help hydraulic engineers and the National Weather Service predict the crest of this year's spring flood.

photo by Shannon Bauer



By Col. Jon L. Christensen  
St. Paul District Commander



## Team,

April has finally arrived, and spring has sprung all around us. March madness is behind us, Twins outdoor baseball has begun, and the football draft is on the horizon. Snow blowers are stored, lawnmowers are out, and the rivers are receding. All is right with the world ... well here in the St. Paul District anyway.

I would like to start off by, once again, thanking all of those involved in the recent flood fight. The district met the challenge and provided emergency support to multiple basins throughout the district. Projections in February were particularly dire – with large probabilities that this year’s event would surpass the record event of last year.

Fortunately ideal weather conditions combined with outstanding preparations at the local, state and federal levels contributed to make this year’s flooding manageable. What has been described by some as almost a “non-event” still managed to produce the second-highest flood of record in Lisbon, N.D., and the seventh highest flood of record in the Fargo, N.D./Moorhead, Minn., area.

The sense of calm that permeated the Red River Basin, despite these record levels, speaks volumes

about the degree of confidence in recent flood risk mitigation efforts and the professionalism of the state, local and federal flood fighting team. The Corps remains a big player on that team. Indeed, Mayor Dennis Walaker of Fargo, N.D., noted that “You don’t enter a gun fight with a knife ... on the other side ... you don’t enter a flood fight without the Corps of Engineers.” Please know that your contributions were valued and appreciated.

We still have much to do in the Red River Basin. While stages have gone down on the Red River and various tributaries, the levels at Devils Lake, N.D., continue to rise. This provides a ‘real world’ impetus which makes it imperative that we deliver the embankment raises on schedule. Bonnie Greenleaf, project management, and her team are dedicated to make that happen. Devil’s Lake remains one of our highest priorities.

Similarly, Aaron Snyder, Craig Evans and the Fargo–Moorhead metro feasibility study team continue to work miracles in moving forward on a plan for a permanent diversion project for this area. This study has significant regional importance and

remains a high district and division priority. I have great faith in both teams and know they will lead these projects to success.

On a different note, I would like to take this opportunity to congratulate four outstanding members of the district for earning Civil Servant of the Year honors.

The winners this year for the district are:

**Tim Bertschi** – Operations Division

**Shannon Bauer** – Public Affairs

**Thomas J. Novak** – Operations Division

**Mike Leshner** – Engineering & Construction Division

A well deserved honor for all four – they exemplify the values and professionalism our stakeholders have come to expect from our workforce.

As always, thanks for all you do. Let’s go A’s ... er Twins!



photo by Jay Field

John Murhpy, right, civil engineer, confers with a contractor on the building of an emergency levee in Breckenridge, Minn., March 22.

## Early start for 2010 flood fight in Fargo, N.D.

By Sonya Goines

The Upper Midwest flood fight began earlier than usual this year in the St. Paul District. Unseasonably warm temperatures in the Upper Midwest in March brought on early melting of snow and ice, causing the Red River of the North to rise. The river is located on the border of Minnesota and North Dakota.

Forecasters predicted historic flooding. Then, on the eve of the crest of the Red River and the first day of spring, winter returned with freezing temperatures that helped to slow the thaw and the river's rapid rise. The Red River crested in Fargo, M.D., March 21 at 36.99 feet, almost four feet below last year's record high of 40.84 feet.

But one week prior, the St. Paul District had already activated its emergency operations center and initiated emergency flood fight measures in the basin March 13. The quick response was the result of a combination of partnerships and teamwork.

"There was great support from Corps Headquarters and the Mississippi Valley Division, lessons learned from last year, great relationships with local communities and a spirit of teamwork between state, local and

federal officials," said Col. Jon Christensen, St. Paul District commander. "Also, a great job by locals of doing buyouts and improvements that have made flood fighting much easier this year."

Preparations for the potential flooding began in December, when the district began monitoring three river basins – the Souris River, the Red River of the North and the Minnesota River – and taking snow surveys throughout the valley. The district's readiness branch spent the first two months of 2010 working with the states of Minnesota and North Dakota, as well as local governments, to ensure they had a good understanding of the Corps' role and how to request federal flood fight assistance.

The readiness branch conducted in-house training, participated in six regional webinars led by the State of Minnesota and coordinated with the Corps' Omaha District, which has responsibility for flood response in the Missouri River basin in North Dakota.

With the National Weather Service predicting a greater than 90 percent risk of reaching or exceeding major flood stage in several cities in the Red River basin, the readiness branch was already gearing up for the fight.

– continued on Page 5

Corps flood engineers Kristin Moe and Pat Vickman, both natural resources, confer over the building of an emergency levee in Moorhead, Minn., March 15.



photo by Shannon Bauer

– “Flood fight in Fargo” continued from Page 4

“From day one, this effort was viewed as a big challenge that could be overcome. The team worked enthusiastically to stand up and meet the challenge,” said Mark Koenig, St. Paul District emergency manager.

By late February, the readiness branch was working with state and local officials who had requested assistance from the Corps.

Under Public Law 84–99, the Corps may provide assistance to communities to save human life, prevent immediate human suffering or mitigate public property damage. An imminent threat of unusual flooding must exist and a state must request the Corps’ assistance.

The district supplied all of its staging areas throughout the Minnesota and Red River basins with sandbags, polyethylene plastic sheeting (which is used to cover the emergency earthen levees and sandbag levees) and pumps for distribution for protection of public infrastructure within the district.

In early March, six flood engineers arrived in the Fargo, N.D. – Moorhead, Minn., area, to meet with local officials to determine flood fight needs and to monitor the swell of the Red. The Corps’ emergency operations center had established its

staffing requirements, and the 2010 flood fight was under way.

“Early planning, a dedicated and experienced flood–fight team and ideal weather conditions contributed to the district meeting this year’s flood fight challenge,” said Koenig.

Construction of emergency levees began March 13 in Breckenridge, Minn. Other emergency levee construction followed March 15, in Fargo, N.D., and in Oakport Township, Minn.

In the first full week of the flood fight, the Corps built 15 miles of emergency, temporary levees to protect the cities

and towns in the greater Fargo–Moorhead area, awarded 14 contracts totaling \$4.3 million and provided technical assistance to more than 20 communities.

As the day of the first crest approached in Fargo, the Corps and local communities were well positioned for what was predicted to be another record year. At just short of 37 feet, May 21, the river crested there, making it the seventh flood of record in this city.

Although Mother Nature contributed to the success in the 2010 flood fight, Koenig credited members of the flood fight team as well.

“Despite these favorable conditions, the effort would not have been as successful without the experience and

dedication of the flood fight team in the field and the support staff in the emergency operations center,” said Koenig.

The district commander agreed. “I couldn’t be more pleased with the support of the men and women from the St. Paul District who, once again, answered the call in yet another emergency. The same is true for all the Corps personnel that responded regionally from Mississippi Valley Division and from those outside the division. Their expertise and professionalism has been commented on by communities throughout the valley – it is truly an honor to serve with them,” said Christensen.

The district has a long history of involvement in water resources issues in the Souris, Red River of the North and Minnesota river basins. Current Corps’ activities in the basin include operating flood control and multi–purpose reservoirs, conducting flood risk management and ecosystem restoration studies, conducting and participating in special studies and initiatives, regulating work in navigable waters and other waters of the U.S. and providing emergency assistance and disaster response.

A feasibility study on potential flood damage reduction options for the Fargo–Moorhead Metropolitan area has been completed. The study focus was narrowed to two potential alignment alternatives that could greatly reduce the possibility of

– continued on Page 6

— "Flood fight in Fargo" continued from Page 5

flooding in the Fargo–Moorhead Metropolitan area. These two alternatives include a diversion channel through Minnesota and a diversion channel through North Dakota. More information on these and other district projects at: [www.mvp.usace.army.mil](http://www.mvp.usace.army.mil). ■

Photos and videos of the 2010 Flood Fight efforts at the following links:

[www.flickr.com/photos/usace-stpaul/collections](http://www.flickr.com/photos/usace-stpaul/collections)

[www.youtube.com/watch?v=FroxENUXaxI](http://www.youtube.com/watch?v=FroxENUXaxI)

## East Grand Forks flood walls stood ready for the Red River Flood of 2010

By Mike DeRusha

The East Grand Forks, Minn., "Invisible Floodwalls" were tested for the second year in a row since the project's completion two years ago during the Red River of the North spring floods.

The invisible floodwalls were built as part of a \$500 million flood damage reduction project for the cities of East Grand Forks, Minn., and Grand Forks, N.D., after both cities were heavily damaged by a major flood in 1997. The project was completed by the

district in 2008 and includes 30 miles of levees; three miles of floodwall set back from the river, forming three "rings" around both communities; two diversion channels; 23 pump stations; 24 miles of recreational trails; and seven trailheads.

The invisible floodwall is erected only when a flood threatens. The rest of the time, the river is visible from the downtown area. The wall is erected on a permanent concrete base. When a flood threatens, the vertical columns

— continued on Page 7

Local area contractors remove the invisible floodwall in East Grand Forks, Minn., March 23.

photo by Mike DeRusha



— “Flood walls” continued from Page 6

are inserted in holes in the concrete base, and the interlocking horizontal planks are stacked between the columns. The supports are then erected behind the floodwall, resting on concrete pads. As floodwater rises against the outside of the wall, floodwater fills the hollow horizontal planks, strengthening the wall.

East Grand Forks, faced this spring with a potential crest at the same levels as in 1997, erected the invisible flood walls along the riverbank in front of local businesses on March 15. Although the crest did not meet predictions and water never reached them, they did hold back record flooding during the 2009 floods.

“The floodwall provides more than just flood protection, it provides peace of mind. We put the floodwall and the closures in place based on predictions. This year, the river happened to crest lower than originally forecasted. Last year, there was water against the closure,” said Greg Boppre, East Grand Forks city engineer. “Installing the floodwall has safety benefits as well. It keeps people away from the river and out of harm’s way.” ■

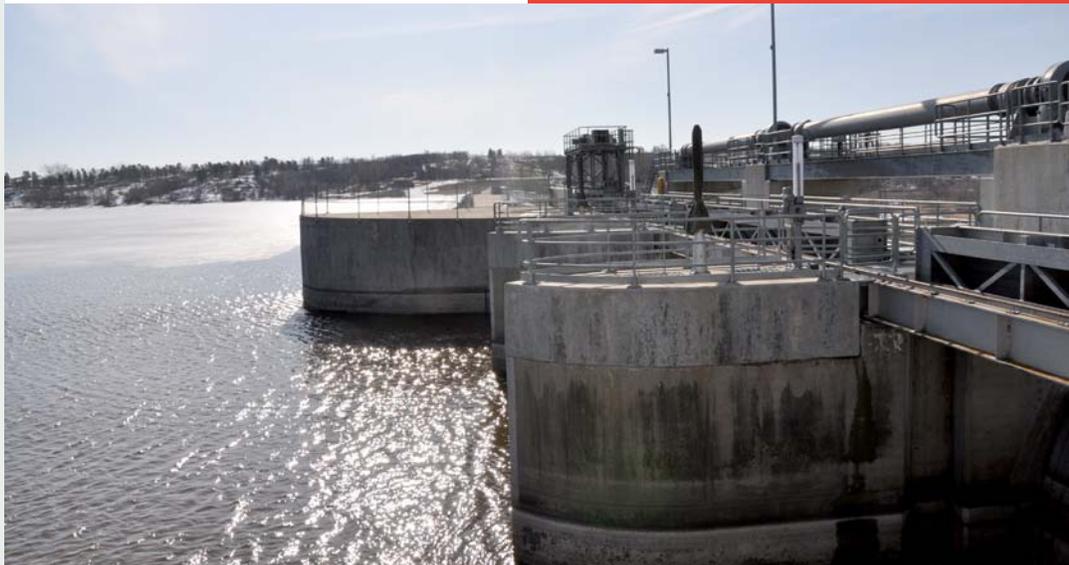


photo by Shannon Bauer

A view of Baldhill Dam, located at Lake Ashtabula, Valley City, N.D. Baldhill Dam was completed in 1950 primarily as a water supply structure. It also provides important flood risk-reduction along the Sheyenne River.

## Water control structures key tool in flood fight

By Sonya Goines

One of the Army Corps of Engineers’ primary missions is to provide assistance when natural disasters or other emergencies occur. Every year floodwaters race through communities destroying property and placing lives in danger.

According to the National Weather Service, flooding remains the deadliest severe weather hazard in the United States, killing an average of 93 people a year.

When imminent threat of unusual flooding exists, the goal of the Corps’ flood risk management program is to reduce the risk of flooding by saving lives and reducing damage to property.

For two consecutive years now, the St. Paul District has waged flood fights during record-setting flood events.

In addition to building temporary clay levees when the risk of flood is imminent,

the St. Paul District operates area dams and reservoirs to prevent or reduce downstream flooding.

Projects like the Baldhill Dam at Lake Ashtabula or the Lac qui Parle project in Western Minnesota are more widely known for their recreational or water supply uses, but these projects have critical roles in a flood event.

Prior to and during a flood event, a team of hydraulic engineers, lock and dam operators and others work behind the scenes, making determinations about when to draw down lakes; opening

— continued on Page 8

– “Water control” continued from Page 7

gates at a lock and dam; and monitoring lake levels, precipitation and weather forecasts. But for most of them, this is just another day at the office. And in a state known as “the land of 10,000 lakes,” managing water has to be an every day job for some.

“Three hundred and sixty–five days a year someone is here monitoring the locks and dams on the Mississippi River, even on Christmas Day,” said Ferris Chamberlin, St. Paul District water management chief.

Months before the start of flood season, engineers in the water management section are gathering data that will provide them with information for managing the district’s dams and reservoirs.

**“If you get a no rainfall event like this and some sunny days so that snow melts during the day and freezes at night, that’s an ideal melt. We were very close to an ideal melt this year.”**

**–Ferris Chamberlin**

By January this year, engineers were already prepared for what was predicted to be record–setting floods.

The 2010 spring flood event in the Upper Midwest did set some records but without the damage of the 2009 event. However, some conditions going in to both seasons were similar.

“Snow – water equivalent last year and this year were almost the same,” said Chamberlin. “The difference is they got hit with a rainstorm last year.”

This year, March 2010 will go in modern records as the least snowiest March in the Twin Cities. The lack of snowfall coupled with unseasonably warm temperatures in March brought on early melting of snow and ice, triggering the rapid rise of the rivers. A sudden cold snap just before the crest of the Red River, however, helped to slow the rising waters.

Two other factors created favorable conditions this year lack of rainfall and what Chamberlin called “an almost ideal melt.”

Chamberlin said, “If you get a no rainfall event like this and some sunny days so that snow melts during the day and freezes at night, that’s an ideal melt. We were very close to an ideal melt this year.”

Even with an almost ideal snow melt, no rainfall and sunny days, there was still a need for aggressive operation of the Corps’ flood control structures in two of the three river basins the district manages.

This year, both the Minnesota River and the Red River of the North experienced major flooding. While some flooding occurred from the Mississippi River in St. Paul, Minn., the locks and dams on the

Mississippi are operated for navigation and not flood control.

Corps of Engineers flood control projects are designed to hold excess water gradually to prevent or reduce downstream flooding. Reservoirs, artificial lakes created by dams, provide water supply storage for communities and



photo by Tim Meers

Liz Nelsen, hydraulic engineer, and Ferris Chamberlin, water management chief, along with St. Paul District Emergency Manager Mark Koenig attend an emergency operations briefing on 2010 flood fight at the district office March 21. Operating the Corps dams and reservoirs is a critical part of a flood fight.

protect ecosystems for fish and wildlife. These flood control structures also have recreational uses as many are used for swimming, boating and fishing.

To effectively and safely serve all these functions, the structures must be monitored daily and operated using regulations and guidelines specific to each.

“Each reservoir is unique,” said hydraulic engineer Liz Nelsen.

The St. Paul District maintains a system of more than 100 water gauges on its rivers and flood control projects. All

— “Water control” continued from Page 8

gauges measure water levels and some also record water and air temperature, wind speed and direction. This information, or data collection platforms, or DCPs, is sent to the Corps’ water management system via satellite. This data is used in determining when to make changes to the dam gates. In addition to DCPs, other information is required for making determinations about the reservoirs. The Corps monitors the water levels and water quality at each of its projects daily.

“Each reservoir has its own regulations on when it is to be drawn down and what conditions trigger a drawdown,” said Nelsen. She manages the western flood control projects – Baldhill, Orwell, Homme, Lac qui Parle and Traverse – all of which played a role in reducing the risk of flooding in the two affected basins during this flood event.

For flood control purposes, most reservoirs are drawn down in the winter months to increase their capacity to hold water from spring rains and snowmelt. The Corp’s water management

staff collects data on current lake elevations, weather forecasts from the National Weather Service and modeled inflow hydrographs which indicate what the inflow into the reservoir may look like.

Chamberlin said inflow hydrographs are extremely important. The information from the inflow hydrograph is run through a model to determine what the pool elevation could potentially rise to given the current conditions, such as the amount of snow in the basin and forecasted rain.

“Pool elevations determine how much you’re going to release,” Chamberlin explained.

But the information changes and must be collected daily. “Inflow at our sites is calculated daily

based on change of storage in the pool over the past 24 hours and current outflow,” Nelsen added.

Inflow is calculated by using a reservoir storage–inflow–outflow formula, where inflow equals outflow plus the change in storage. Hydraulic engineers use the known outflow (discharge from the dam) and the known increase or decrease in the amount of water stored in the reservoir (based on changes in pool elevation) to calculate the inflow.

The Corps also conducts annual snow surveys usually during the last week of February. Some years, a smaller snow survey is also conducted earlier as was the case this year.

— continued on Page 10



Scott Tichy, park ranger at Baldhill Dam in Valley City, N.D., demonstrates opening the gates of the dam March 23.

photo by Shannon Bauer



– “Water control” continued from Page 9

Snow–water equivalent, or SWE, in a basin is a critical piece of information going in to the spring floods. Data for determining the SWE comes from two sources: the National Weather Service and snow surveys.

“Maximum drawdown occurs when there is a large amount of snow water equivalent in the basin,” Nelsen said.

For instance, excessive snow in the Red River basin this winter required the maximum drawdown of four of the district’s reservoirs.

In January, snow above Baldhill Dam indicated that a maximum drawdown would be needed. Engineers began to draw down Lake Ashtabula at the Baldhill Dam in October in order to meet the target lake elevation of 1,262.5 feet. By the end of January, Lake Ashtabula was almost five feet above the new target elevation of 1,257.0 feet (maximum drawdown).

The Orwell and Homme reservoirs and Lake Traverse all required maximum drawdown prior to the spring runoff.

Whether in a flood event, for navigation or recreation, there are many factors used in making decisions about the operation of rivers and projects of the district.

“We do our best to balance everything,” Chamberlin said. ■

## St. Paul District emergency operations center hums during a flood fight

By Tim Meers

The St. Paul District has faced many flood fighting challenges through its history and this year was to be no different. Unusually warm temperatures brought early flooding to three of the four major river basins in the district. The Fargo, N.D.–Moorhead, Minn., area set a record for the earliest 10–day period of no freezing temperatures during the day or night.

This meant that on short notice, the emergency operations center, or EOC, was put on alert and had to ramp up quickly to meet the challenge. The EOC team, lead by Mark Koenig and Teri Alberico, provided the district with overall coordination of personnel, supplies, equipment and expertise during the flood fight.

Michael Setering, normally a project manager in the regulatory branch, worked his first flood fight as the EOC materials manger. “I helped to coordinate and process requests for materials and supplies needed by

communities currently affected by the floods in three river basins,” he said.

Setering also worked on development of an application that displayed the district resources on a map. When shared with the district senior leadership, they knew where the resources were located, he explained.

Alberico, the EOC manager, said that employees like Setering epitomize the spirit of the EOC team by their willingness to plug themselves into whatever the need is even though it isn’t their normal duties or expertise.

Bryanna Linscheid just started a new job in resource management office as a management analyst. “While serving in the EOC I was responsible for timekeeping and assisting employee with their travel arrangements,” she said.

Judy Parker, who normally works in project management supporting project managers with financial issues in CEFMS and P2, worked as a

Michael Setering, regulatory branch, worked his first flood fight in the emergency operations center as the materials manager.

photo by Tim Meers

– continued on Page 11



— “EOC hums” continued from Page 10

budget analyst in the EOC during the flood fight.

Lynnette Gandl is the district environmental resource guide for operations or ERGO person. “During this flood event I worked in the EOC as the historian, responsible for tracking and documenting significant events,” she said. Gandl will also be preparing the after-action report, or AAR, and the summary report for the entire flood fight.

The EOC message center coordinator was Carol Johnson, resource management. “I coordinated and directed incoming communications to the proper subject matter expert, inputted FEMA funding and sent funding to other districts that are deploying their personnel,” she said.

Johnson’s regular job is manpower coordinator, preparing the district annual work plan, doing monthly full-time employee reports and coordinating manpower allocation process with project management for the upcoming fiscal year.

Koenig, the district’s emergency manager, said, despite the favorable conditions, the effort would not have been as successful without the experience and the dedication of the flood fight team in the field and the support staff in the EOC.

As the EOC manger, Alberico’s job is to ensure that the field flood fighters get all the support they need in terms of human and material resources. “To that end, I recruit for the Crisis Action Team, a group of individuals that ensures all of the funds and material comes in and goes out without delay. My team ensures that



photo by Tim Meers

Bryanna Linscheid, resource management, and Judy Parker, project management, at work in the emergency operations center during the 2010 flood fight March 21.

the deployees are prepared to deploy safely, and that they understand the administrative processes required for their deployment,” said Alberico.

At the district office, she said, “We coordinate the contract work, ensuring contracting gets the requisitions quickly and that the quality assurance staff in the field get the appropriate forms for their daily logs to monitor construction. We also ensure materials, including pumps, bags and poly, are stocked in our staging areas, are in good working order and are available for distribution to communities as needed and requested through their state EOCs.”

Brett Coleman and Joe Schroeder, project management, worked the materials desk in the EOC, processing requests from the flood area engineers for sand bags, poly sheeting and pumps. “The most important aspect of this position is coordinating with city, state EOCs and staging areas so the cities receive the

materials in a timely manner,” said Schroeder.

Lupe Santos—Jensen usually works in the district as an EEO specialist. During emergency operations Santos—Jensen deployed to Fargo, N.D., to support the EOC, doing a little bit of everything. She said, “I in-processed employees, issued equipment and made reservations for vehicles, airline tickets and hotel rooms.” She also input data in ENGLINK verifying Excel spread sheets and helped employees out-process when their duty was done.

Alberico said the next time you are passing through the emergency operations center, “please give

— continued on Page 12

# Road Trip!

By Sonya Goines

*Flood reconnaissance takes two engineers from the mouth of the Mississippi River to the northern continental divide and back.*

*NOTE: To watch the engineers “drive” the car, select “option” from the yellow bar that appears at the top of the page and “trust this document always.” Then click on image.*



graphic by Emily Blanton

Reconnaissance is an important aspect of the Corps of Engineers' flood fight. Having boots on the ground as the eyes of the hydraulic engineers, emergency responders and other agency personnel, supplies critical information that cannot come from technology.

Terry Zien, an engineer with the St. Paul District and project manager on the National Committee on Levee Safety, described this function in the flood fight as being the “the eyes and ears of the decision makers.”

Zien and Brett Palmberg, engineering, deployed in support of the 2010 flood fight as flood reconnaissance engineers. Their job was to gather information and observe the

— continued on Page 13

— “EOC hums” continued from Page 11

them some recognition for the great support they give the rest of us, even if not on the front lines.”

Staff that provided support to the EOC during the 2010 flood fight included Kris Fairbanks, Kristen Kosterman, Lynnette Gandl, Brett Coleman, Michael Setering, Joe Schroetter, Rick Magee (and his wife, Betsy Magee!), Byranna Linscheid, Judy Parker, Theresa Thury, Shua Xiong, Kim Bahls, Carol Johnson, Sue Robinson and Shawn McClary.

Lupe Santos–Jensen, Jan Pream, Kathy Halverson, Nathan Wallerstedt,

Miguel Cedena and Roland Hamborg supported operations at the satellite EOC and construction office in Fargo.

Kevin Sommerland, Ken Peterson and Shawn McClary provided real estate support.

All of the Office of Counsel staff provided legal support for real estate actions and policy.

Brad Perkl served as the liaison to the State of Minnesota.

Keith LeClaire, Mike Walker and Holly Zillmer provided geographic information systems support and helped develop a division–wide flood database called Freeboard.

Shannon Bauer, Mark Davidson, Mike DeRusha, Tim Meers and Peter Verstegen, all St. Paul District, as well as Jay Field, Los Angeles District, and Sonya Goines, Jacksonville District, provided public affairs support.

Kevin Hendricks, Tina Guillot, Lisa Draves, Dawn Linder, Carol Olson and Shannon Matthews all contributed from contracting.

Mike McGarvey, logistics and Mark Theis, Dave Himmerich, Dave Keyser and Bryan Dolan, information technology, provided assistance as needed. ■



photo by Brett Palmberg

Terry Zien, lead flood reconnaissance engineer, at the Otter Tail River bridge near Fergus Falls, Minn., a major tributary to the Red River of the North.

— "Road Trip!" continued from Page 12

conditions in the Minnesota and Red River of the North basins. They began their trip March 15 from the St. Paul District headquarters. The first day took them to the Red River of the North basin where major flooding was expected.

For the next seven days, Zien and Palmberg spent 12 to 14 hours in a Chevy Tahoe, traveling about 300 miles a day.

"The first thing we were asked to investigate was the Otter Tail River upstream of Breckenridge, Minn., near Fergus Falls, Minn. The first night we looked at the river flowing in towards Orwell reservoir. We tracked the flow in the Otter Tail River to Breckenridge, and the water surface was down about a foot."

Zien said this information is important because there are no gauges or other means of collecting data there, and it is a major tributary to the Red River of the North.

"It is important to have people out in the field doing this work even though many of the river gauges are automated and transmit their data by satellite," said Zien. "Instruments sometimes malfunction, and you need to have people taking manual readings."

Zien and Palmberg also gathered information on snow cover, progress of the snow melt, river ice conditions and river stage measurements and then documented their observations and measurements in a daily report that included photographs.

"We would write a very detailed memo each night on what we saw and where. We would e-mail or memo to the district and the National Weather Service every night," Zien said. The National Weather Service's North Central River Forecast Center would use this information to aid in the prediction of peak river crest elevations.

The first day landed them in Fargo, N.D., for the night. They began the next day observing the Minnesota side of the Red River from Fargo down past Breckenridge and into the Wheaton, Minn., area.

"On the Minnesota side is where most of the water comes from that goes to Lake Traverse, which is actually the headwaters for the Bois de Sioux which becomes the Red River at Wahpeton—Breckenridge," Zien said.

He said as they continued heading south, there was more and more water. "As we got to Wheaton, and south of Wheaton, there were many areas where the water was a half-a-mile to a mile wide just standing in the fields or flowing in ditches, but it couldn't go anywhere because there was so much of it," Zien said.

This, too, is the kind of information that gauges can't provide. Their trip would take them next to Brown's Valley, on the continental divide, crossing into South Dakota on the west side of Big Stone Lake.

"There was a lot of snow on the western side of Big Stone Lake in

— continued on Page 14

Terry Zien, project management, and local law enforcement officials observe ice jams at the Whetstone River in Big Stone City, S.D. Zien and his field partner, Brett Palmberg, engineering, traveled about 300 miles a day as flood reconnaissance engineers.

photo by Brett Palmberg



– “Road Trip!” continued from Page 13

eastern South Dakota, and the streams were starting to flow pretty heavily and there was lots of standing water,” Zien said.

He said this is the kind of information that is important to forecasters, because they can use it to tell what’s going to happen in the next few days.

“For instance, if there was still snow cover and there wasn’t any water running in the creeks and the tributaries to the Big Stone reservoir, then they know there is still a lot of water that has to get through the system. But we saw it when there wasn’t much snow left in most places, and there was a lot of standing water in the fields and it’s just starting to get in the ditches. This tells them where they are in the forecast.

They know there will be a few more heavy days of flow coming in from the tributaries,” he said.

By the end of day two they made their way to Montevideo, where they would lodge for the next seven days.

Along the way, they carried out another function of the flood reconnaissance engineer – monitoring the St. Paul District’s projects in the Minnesota River headwaters: Big Stone Dam (designed and built by the Corps but not owned by the Corps ), Highway 75 Dam, Marsh Lake Dam, Lac qui Parle Dam and Chippewa River Diversion



Brett Palmberg, flood reconnaissance engineer, measures water surface elevation with wire weight gauge at the Diagonal Street Bridge at the Lac Qui Parle River March 22.

photo by Terry Zien

structure to make sure the structures were functioning properly. Zien noted that at the Lac qui Parle dam, an ice jam caused some damage to the structure.

Typically where there’s flowing water, the ice melts faster; so right by the dam, the ice breaks up in big flows and comes down the dam. In this case, there was nothing to stop it, and it slammed in to the structure and actually bent a steel beam that holds

the gates so that one gate could not be closed.

The 2010 flood fight, Zien’s fifth and Palmberg’s first, presented moments of concern, like when they came upon flooded roads or the bridge at the Yellow Medicine River, south of Granite Falls, Minn., that could no longer accommodate vehicular traffic, and they had to walk across it to access the gauge. But there were amusing moments as well.

On the last day of their reconnaissance, Palmberg found himself in a bind over the Lac qui Parle River. To access the river gauge, Palmberg had to squeeze between the concrete bridge and the metal pipe running through the guard rail then unlock the wire weight box with a key on a lanyard attached to his belt.

“I took the final wire weight reading at the Diagonal Street Bridge and locked the box. I did not notice that my key had been hanging over the bridge and was now locked in the wire weight box, effectively tethering me to the locked box with no key,” said Palmberg.

# Freezing temperatures allow major maintenance on Lock and Dam 5

By Shannon Bauer

The St. Paul District emptied 9 million gallons of water from Lock and Dam 5, located in Minnesota City, Minn., in December to complete major maintenance on the lock chamber, while the navigation season was on hold for the winter.

Lock and Dam 5 was placed into service in 1935. Major maintenance happens every 15 to 20 years on each Mississippi River lock and dam, and Lock and Dam 5 had not been dewatered since 1990.

Scheduled maintenance on the lock chamber during the dewatering

Kim Wenger, maintenance and repair, changes out oxygen and acetylene bottles as part of maintenance Feb. 18.

photo by Shannon Bauer



included the Corps' maintenance and repair section from Fountain City, Wis., repairing and/or replacing parts of the miter gates, tainter valve guides, bubbler system and staff gages and vertical concrete joint, as well as making surface repairs on the land wall and the concrete floor under the bulkheads. They also renovated the weep holes on the chamber floor, as well as sandblasted and painted the miter gates.

At the same time, a contractor, Engineering and Construction Innovations, Inc., from St. Paul, Minn., made repairs on the vertical concrete joints and surfaces of the lock chamber.

Work was completed in two shifts, with crews working around the clock, in all kinds of weather including below zero temperatures and a day where 13 inches of snow fell. Joe Schroetter, project manager, said the work was completed on schedule by March 15.

“Overall, the project has been pretty amazing to see,” he said. “There’s a tremendous amount of work and planning that has to go into this before you even dewater the chamber and know what you’re up against. Add to this the extreme weather conditions and you get an understanding of what the crew is up against.

“It is reassuring to have our maintenance and repair crew,” he continued. “Their experience on past dewaterings is invaluable, because we know they will do a great job and the project will get done in time.” ■



# Inspiring girls with foil boats, spaghetti bridges and paper airplanes

By Virginia Regorrah

“My sister did this three years ago. Her boat held 51 marbles,” one little girl informed me as she started folding her foil square into something resembling a flat bottomed barge. “I just want to make sure I beat my sister.”

For the past six years, the Grand Forks Project Office in North Dakota has been making presentations for Introduce a Girl to Engineering Day at

## FLOOD FIGHT 2010

— “Road Trip!” continued from Page 14

Luckily, the team carries two keys, and Zien was able to detach Palmberg from the locked box. The two shared a good laugh afterwards.

This is only one reason why it’s a good idea to travel in pairs. In addition to safety, Zien said it is also good to have a second set of eyes validating the findings.

“We always work in teams of two for safety and verification of what we are seeing,” said Zien. ■



photo by Mark Krenelka

Virginia Regorrah, construction, hoped to spark some interest for engineering in female students at South Point Elementary School in East Grand Forks, Minn.

South Point Elementary School in East Grand Forks, Minn. Beginning with a small group of presenters from the Corps of Engineers, the program has blossomed to include representatives from four of the architecture and engineering firms in Grand Forks, N.D., as well as engineering students from the University of North Dakota.

Each year, 60 to 70 fifth grade students participate in the hour-long program, which includes a 10-minute introduction to what engineering is, the different engineering disciplines and why the presenters chose the engineering field as their profession.

“Why do you think it’s called Introduce a Girl to Engineering and not Introduce a Boy to Engineering?” I always ask the fifth grade audience. Someone always gives the right answer, “Because girls don’t usually choose to be engineers and boys do.” That’s absolutely right – the statistics are dismal. Twenty-five years ago, only 12 percent of engineering students were female.

Now, a quarter century later, there has been little improvement with that figure increasing to just 19 percent. To encourage girls to consider careers in engineering, as well as the other STEM (science, technology, engineering, math) disciplines, the National Society of Engineers annually sponsors Introduce a Girl to Engineering Day.

When we first ask the young ladies, “what is an Engineer,” we get some very tentative answers, said Regorrah. “They build things ... That’s the person that drives the train.” So, we draw them into all the exciting opportunities that engineering has to offer. “How many people here have

— continued on Page 17



# NEWS & NOTES

## Dan W. Renfro Partnering Award

From Mississippi Valley Division/Public Affairs Office

The St. Paul District and L.W. Matteson, Inc., of Burlington, Iowa, were the recipients of this year's Dan W. Renfro Partnering Award. This is the tenth year that awards have been presented to contractors and Corps personnel as part of the annual meeting of the Associated General Contractors and the U.S. Army Corps of Engineers. The award was presented for the Pool 8 Phase III Stage 2B Habitat Rehabilitation and Enhancement Project. The project is being designed and constructed as part of a cooperative effort between the Corps, the U.S. Fish and Wildlife Service, the Wisconsin and Minnesota Departments of Natural Resources and



U.S. Army Corps of Engineers photo

From left: Mellisa Gulan, engineering and construction; Col. Jon Christensen, district commander; Jon Nieman, L.W. Matteson; and Jim Peak, engineering and construction, accepted the Dan W. Renfro Partnering Award on March 24 presented by Gen. Michael Walsh, division commander.

local interests. This cooperative effort across federal agencies, state agencies and local interests made this a project that would realize great benefits from successful partnering.

The Dan W. Renfro Partnering Award is presented to a project partnership that best exemplifies the principles and success of project partnering between the Corps of Engineers Mississippi Valley Division and private enterprise. ■

— "Inspiring girls" continued from Page 16

a car? Well, cars are designed by mechanical engineers." And, "How many of you would like to help the environment? You can do that by becoming an environmental engineer and designing wetland restoration projects or recycling centers."

This year, a geography quiz was added to the introduction, asking the girls to shout out the locations to pictures of famous landmarks, like the pyramids in Egypt, the Eiffel Tower in Paris and the Golden Gate Bridge in San Francisco. By this time, the girls are quick to respond when asked what all these sites have in

common. "They were designed by engineers." they shout.

After the introduction, the fun begins. The girls are separated into three groups: civil engineers, marine engineers and aeronautical engineers. The civil engineers construct marshmallow and spaghetti bridges, which are loaded with stacks of pennies until they break to see which bridge holds the most. The aeronautical engineers build paper airplanes to see whose will fly the farthest, and the marine engineers build foil boats to see whose will hold the most marbles. The girls rotate through each of the stations; and at the end, the girls whose bridges held the most, boats stayed afloat the

longest and plane flew the farthest receive hard hats.

As to the little girl who wanted to beat her sister's record ... She didn't receive a hard hat for the most marbles, but she let out an excited squeal when her marble count passed her sister's. She got to go home and brag, "My boat held 68 marbles!"



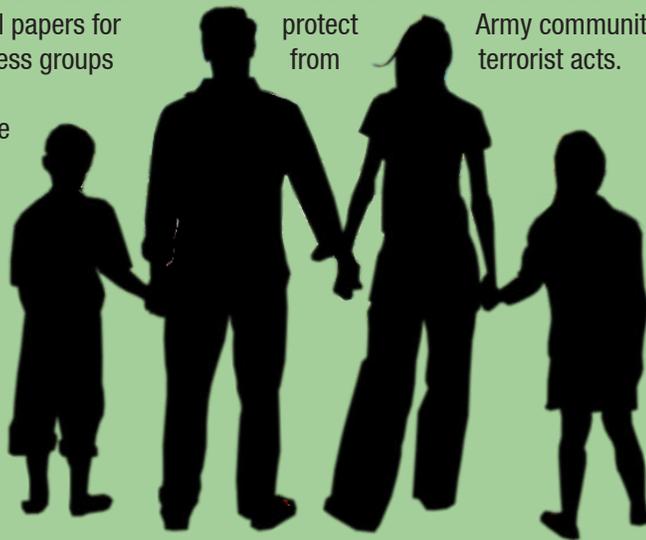
## Army: “Family Awareness” delivers antiterrorism message

From the St. Paul District safety office

The Army’s antiterrorism theme for April through June 2010 is “Family Awareness.” Products to support family awareness include posters and pocket cards depicting potential terrorist activity, as well as information on how to report suspicious activity. Materials also include informational papers for use by family readiness groups and military family members to reinforce personal safety, security and prevention of terrorist acts. Training and education resources include briefings on individual awareness, as well as videos

and public service announcements highlighting antiterrorism awareness and security.

The purpose of the theme is to focus and encourage Army-wide community awareness and out-reach efforts to protect Army communities from terrorist acts.



The Department of the Army’s Office of the Provost Marshal General, in conjunction with the deputy chief of staff, approved the Army’s antiterrorism awareness themes.

Information and products to assist the local installations and units to conduct family awareness out-reach is available to unit AT Officers on Army Knowledge Online (user must log in) at <https://www.us.army.mil/suite/page/605757>. ■

## NEW FEATURE!

### Employee of the month

In upcoming issues of CROSS CURRENTS be on the look out for a new employee of the month section featuring employee of the month information including a link to a Web page which displays current and past winners and their citations.

## Corps to the rescue

By Mark Davidson

A deckhand working on the Motor Vessel Gene Neal slipped and broke his ankle while his tow boat was tied up in the

Corps’ Lock and Dam 6 chamber near Trempealeau, Wis., on April 15.



photo by Jim Rand

An injured deckhand, assisted by Lock and Dam 6 staff and EMTs from Trempealeau, Wis., is placed in a Corps rescue boat for transportation to lower landing to await ambulance to La Crosse, Wis., April 15.

Kraig Berbeich, lock and dam operator, and Jim Rand, head lock and dam operator, were on duty. Rand observed the deckhand fall and get assistance from his fellow tow boat mates. The deckhand said that he thought his ankle was broken.

Knowing that they could help, the two Corps employees sprang into

action. Berbeich descended the lower guide wall and secured the head of the tow boat with the assistance of another deckhand. Rand went to the lock and dam’s central control station to contact emergency responders. Meanwhile, the tow boat crew applied ice to the injured ankle.

Lock operators concluded the safest way to get the deckhand off the tow boat was to use the Corps’ lock and dam rescue boat. Corps’ personnel communicated to emergency responders the rescue boat would meet them at the downstream launch. Berbeich and Keith Hayter, a lock and dam operator who had come in early for his evening shift, launched the boat.

A consensus among Corps and Motor Vessel Neal personnel was that the deckhand’s injury was severe enough to bring the emergency responders to the towboat.

The Corps’ rescue boat picked up two emergency responders and returned to the towboat.

The emergency responders stabilized the deckhand and moved him into the Corps’ rescue boat. The deckhand and the emergency responders were transported back to the downstream boat launch, where the emergency responders moved the deckhand to an ambulance. ■

# BITS & PIECES



## Newcomers

**Monica Brooks**, regulatory student

**Kevin Henricks** (again), contracting

**Monique Johs**, engineering

**Roy Lawson**, construction,  
Western Area Office

**Ryan Malterud**, regulatory student

**Patrick Schmuhl**, regulatory,  
Waukesha, Wis.

**Andrea Sterling**, student

**Dan Swenson**, construction,  
Western Area Office

**Clayton Tallman**, construction,  
Western Area Office

**Katherine Young**, student, planning

## Announcements

**Tom Crump**, formerly St. Paul District project management, was selected as chief of the Regional Planning and Environment Division North.

**Kevin Henricks**, formerly of the Veterans Administration and the St. Paul District, returned to the district in January as the chief of contracting.

**Mark Koenig**, formerly of construction, was selected as the new district emergency management chief in December.

## Retirements

**Richard Carlson**, economics, with more than 20 years federal service

**Richard Hall**, contracting, with more than 14 years federal service

**Judith Kolb**, program management, with more than 32 years federal service

**Chris Lennon**, physical support, with 32 years federal service

**David Nerva**, Lower St. Anthony Falls Lock and Dam, with more than 37 years federal service

**Steve Odegaard**, natural resources, Western Area Office, with more than 32 years federal service

**Larry Sass**, Locks and Dams, with more than 32 years federal service

**Allan Seipel**, Locks and Dams, with more than 31 years federal service

**William Stute**, Lock and Dam 8, with more than 26 years federal service

**Diana Tschida**, program management, with more than 38 years federal service

**Dan Wilcox**, environmental, with more than 31 years federal service

## Taps

**John Marklevits**, Lock and Dam 3, passed away Dec. 29

**Thomas McMahon**, retired engineering, passed away Dec. 29

**Elmer Schmidtknecht**, Locks and Dams, passed away Dec. 20.

**Note:** Send your announcements (births, weddings, graduations, etc.) to: [cemvp-pa@usace.army.mil](mailto:cemvp-pa@usace.army.mil).



# Postcards from Iraq

work completed. The equipment used in the field is of better quality, the methods have improved and we no longer see concrete mixed routinely in the street but brought from a concrete plant. Ground wires are not routinely cut off and safety equipment is now

accepted and used. coworkers that will go back to their home districts or find new paths in their future.

This type of work really does create a melting pot and show how diverse and strong a work group can be created with people from such wide and various backgrounds. I think I can speak for almost everyone that has worked over here that it is a great experience, and one that we would gladly do again without any reservations. It also makes returning to the home district all the more precious – you don't take the work or the people for granted, you appreciate everything more.

## To my fellow St. Paul District family members:

I would like to say it is always good to receive word from you. No matter how mundane it may seem to you the sender – it is always exciting and interesting from the receiver's end.

As most of you know, this is my second visit to Iraq, and it is interesting to see the changes in the people's attitudes of all involved in the restructuring process. The last time I was here, the local nationals, or LNs, that work side by side with us had more of a timid and quiet nature. As time moves on, it has changed to more of voiced curiosity and urgency to be able to carry on the improvements that we started together.

As our LN counterparts are working their way through learning the systems, they are also advancing at all levels. Where most started as quality assurance, or QA, inspectors, they are now successfully filling roles as not only QAs but also as project managers and professional engineers.

The LNs have made tremendous sacrifices to work their normal workloads plus take on the additional training as required. They are working hard to continue the progress in Iraq by demanding better accountability from contractors and stricter standards for

accepted and used.

The \$27 million Sather Air Field repair project In Iraq that I am working on is just one of many where the prime contractor is mentoring the sub contractor, by not only teaching quality construction to the workers who will continue to work in the Middle East, but also by bringing in quality equipment. The concrete plant that is dedicated to this project is the only one in Iraq to be certified by The American Ready Mix Co. The lab installed for testing is of the same level as in the United States.

We have many projects that have been closed out and many more close to completion –with the exit plan in sight, the work is intense and the schedules hectic. It is good to see all the hard work that went into these projects finally pay off successfully. Everyone is excited about our work here coming to completion and seeing the great results, yet a bit sad for leaving all the great Iraqi partners and American

I expect to be back within a few months. I would also like to extend a special thank you to my crew at Lock and Dam 7 for doing such a great job in my absence.

Take care. Respectfully,  
**DJ Moser**

DJ Moser, pictured above and below with contractors, deployed to Iraq and works on quality assurance.

U.S. Army Corps of Engineers photos





High water in Fargo, N.D., March 17, 2010. The U.S. Army Corps of Engineers, St. Paul District, assisted the communities of the Red River of the North river basin fight the 2010 flood.

photo by Shannon Bauer



**US Army Corps of Engineers**  
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