LESSONS LEARNED
From School Crises and Emergencies

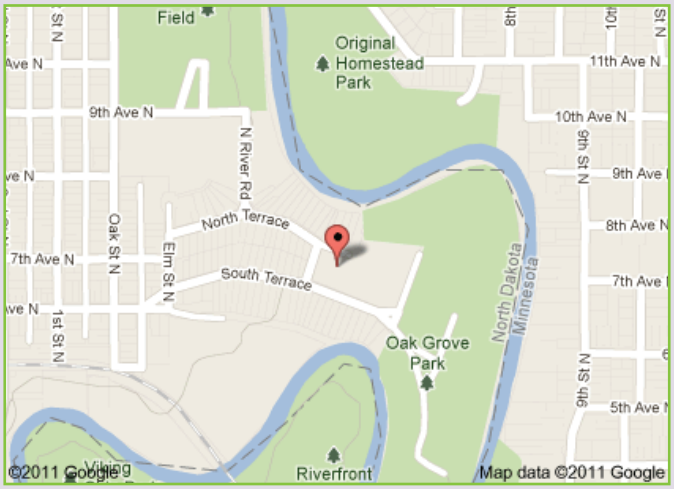
Vol. 6, Issue 1, 2012

RECURRING FLOODING AT OAK GROVE LUTHERAN SCHOOL IN FARGO, NORTH DAKOTA

Along a 395-mile snaking course, the Red River forges a winding boundary between North Dakota and Minnesota as it makes its way northward towards Lake Winnipeg in Canada. During the river's long history of use as a conduit for trade, settlements in the northern U.S. bloomed around its banks, evolving into such present-day communities as Greater Grand Forks and Fargo-Moorhead. While life in these communities today is perhaps not as dependent upon the river for survival as it was in the time of fur trading and pioneers, surviving life along the river can be just as treacherous.

Tucked in a boot-shaped twist of the river's path is the north campus of Fargo's Oak Grove Lutheran School, a private pre-K–12 institution dating back to 1906. Located on five park-like acres and bordering the Red River on three sides, the north campus has a tumultuous history of life on the riverbanks. Morgan Forness, a staff member, teacher, and principal at the school for over 30 years, can recall numerous incidents of major Red River flooding that affected the school and its surrounding region. A record-setting spring flood occurred in 1969, a summer flood in 1975, spring floods again in both 1979 and 1989, and a major flood affecting the entire Midwest in 1993. However, these were no match for the floods of 1997 and 2009—incidents that changed the way the school and its community respond to the threat and occurrence of flooding.

This *Lessons Learned* brief is based on the experiences of Oak Grove Lutheran School in dealing with recurring flooding and its destructive consequences—including school closures and damages to its facilities —and the necessary steps for recovery, preparedness, and mitigation for future flooding. Based on information gained from interviews with Oak Grove Lutheran School staff, the lessons learned from their experiences can help inform schools elsewhere on how to prepare for, mitigate the effects of, and recover from flooding on their campuses.



Google Maps view of Oak Grove School, as it sits geographically surrounded on three sides by the Red River.

The Threat of Flooding: Structural Preparedness

A record snowfall in winter 1997, combined with extreme spring temperatures, resulted in the most significant flooding of the Red River in more than 100 years. Cresting at 39.72 feet in mid-April, the river neared the previous record high, estimated to be close to 40 feet in 1897. The entire area was saturated, and Oak Grove Lutheran School was inundated with water after the failure of a neighborhood dike, resulting in

several million dollars in damages. However, Forness remembers, "This was the beginning of heavy involvement we had with the city of Fargo, the state, and the federal government through the Federal Emergency Management Agency (FEMA) looking at permanent flood protection."

Following the 1997 flooding, the school embarked on a joint project with state and federal assistance to build a flood wall on three sides of the campus. "Before this, our mitigation efforts were just about filling sandbags and doing the best you can," Forness explained, "but at that time, it was about city and state efforts working with local families and businesses." After several less-significant flooding incidents in 2001 and 2006, additional mitigating measures were put in place, namely, establishing catch basins and raising earthen dike walls to a flood level of 40 feet. However, in 2009, a second record-setting flood hit the region, with the crest reaching an unprecedented 40.84 feet. At this point, all structural efforts to resist the flood's impact were challenged, and prevention and mitigation efforts turned to rescue efforts, which relied primarily on the school's and community personnel's plan for response.

The Threat of Flooding: Personnel Preparedness

In the months leading up to the 2009 flood, a significant number of prevention-mitigation efforts were made. State and federal personnel worked with the city of Fargo and the schools to prepare, bringing the Army Corps of Engineers and the National Guard on site to assist. Training occurred in the city of Fargo, involving law enforcement, schools, fire, and first responders, said Forness, to organize response efforts around a military model of strategic planning—the Incident Command System. School personnel worked to prepare facilities on campus, develop plans, train personnel, communicate with the National Weather Service, and execute several important preparedness measures:

- Sites were inventoried, and important information, such as access to electrical pumps, was recorded;
- Teams made up of staff members and volunteer parents and students were formed to serve various roles in response efforts; and
- Training was conducted with team members on their respective roles so they would know what to do in an emergency situation.

"What had been drilled into our heads was the importance of Incident Command," said Forness, "so you don't have people jumping in and making decisions different from those in charge."

EVACUATION PROCEDURES

SHIFT SUPERVISOR: In the event of an **EVACUATION** the Shift Supervisor will:

a) Call the Log Book Operator to inform her;
b) Make the announcement on the Bull Horn located in Benson Hall Office;
c) Call all Team Leaders and inform them;
d) Assist with shut-off of electrical/gas if needed;
e) Communicate with City/Corps if necessary; and
f) Walk to First Lutheran Church to be accounted for.

TEAM LEADERS: In the event of an **EVACUATION** the Team Leaders will:

a) Notify all Team Members of the evacuation;
b) Walk to First Lutheran Church with other Team Members to be accounted for;
c) Assist Log Book Operator with accounting of all individuals; and
d) Communicate with Shift Supervisor before you leave for home.

TEAM MEMBERS: In the event of an **EVACUATION** the Team Members will:

a) Follow the lead of the Team Leaders and walk to First Lutheran Church to be accounted for; and
b) Do not leave until your Team Leader allows.

LOG BOOK OPERATOR: In the event of an **EVACUATION** the Log Book Operator will:

a) Receive notification of evacuation from Shift Supervisor;
b) **CALL 9-1-1 ~ Inform operator that Oak Grove School is evacuating; please notify police, etc.;**
c) Unplug all heated food containers (crockpots, etc.);
d) **Take Log Book** to account for all persons on campus and walk to First Lutheran Church;
e) **Account for all individuals that were on campus; and**
f) Do not leave until your Team Leader allows.

Excerpt from Oak Grove Lutheran School's Flood Response Plans: Evacuation procedures for key roles

The Flooding Impact: Response Efforts

When the flood hit that March, the school went into response action. It placed 24-hour coverage on campus with trained response teams of parents, staff, and volunteers on rotating four-hour shifts. A supervisor oversaw eight hours of team coverage, and the entire cadre of response personnel was directed by the incident commander, who made all the executive decisions regarding where people were to be positioned and what needed to be fixed or addressed. The incident commander also attended the citywide meetings (which sometimes occurred up to three times daily during the crisis response period) to maintain broader levels of communication with city and other support agencies.

"Even though large portions of the city were evacuated, we made the crest of the flooding and were feeling pretty good about it," recalled Forness. "[The river] was beginning to recede." Early in the morning of March 28, when conducting dike patrol, the team noticed that the water was nearly to the top of the dike but holding. "We never dreamt, however, that the dike would give way underground," he said.

At 1:45 a.m., from under the flood wall, the pressure of the water shot up inside the dike like a geyser, inundating the first school building and then the rest of the campus grounds. "We had emergency procedures in place and had talked about what to do in the event of a failure," said Forness. "Safety was the first priority, as well as taking mitigating actions to save the campus." When the dike broke, the breach was immediately reported to the city. There was an initial effort by the response team on duty to plug the hole, but it was unsuccessful. Within minutes, the entire area was underwater and the flood was streaming into the lower building on the north side of campus. Soon after, there were over 200 police, firefighters, Army Corps staff, and volunteers on site doing whatever they could to plug the hole and protect the neighborhood.

Meanwhile, school volunteers were working to protect as much of the campus as possible. First, they tried to secure the inside of the first flooded building by placing sandbags in stairwells to prevent water from flowing from one building to the next. Attempts were also made to build a sandbag dike to keep the water from inundating the rest of the campus, but by 2:30 a.m. the water was shooting into the other buildings. At the same time, incident command was handed off from the school incident commander to the city incident commander, a police officer, and later, passed to the Army Corps of Engineers, Forness recalled. All support entities present met, and it was determined that it was impossible to plug the dike or block the water. The incident commander made the decision to evacuate the site and close off the campus from the city, sacrificing the school to save downtown Fargo.

Although evacuation plans were in place, the actual evacuation did not go as smoothly as intended. Forness remembers that not everyone followed the evacuation procedures laid out, likely due to the chaos of the scene, with a lot of heavy equipment and military present. There was also confusion among staff as to next steps. Due to exhaustion and chaos, the school was unable to account for everyone at the nearby evacuation site until 6 a.m.

The next morning, all campus response and recovery responsibilities were transferred over to the Army Corps of Engineers. School staff met with corps personnel and begged them to save some of the new campus buildings, if possible. Giving the effort one last try, the corps brought in a Blackhawk helicopter and dropped 11 one-ton sandbags on the area. The city and emergency response teams, with volunteers, then re-entered the campus and began pumping water out of it. By the end of the day, they had collectively pumped the campus dry and saved two buildings.

The Flooding Impact: Structural Recovery

Over the following summer, a huge recovery effort took place, with teams of school staff and volunteers working to replace or repair almost $2 million of damaged property on the campus. Several key efforts involved:

- Documenting losses;
- Completing insurance recovery paperwork;
- Bringing in an architect to consult on the rebuilding effort;
- Commencing rebuilding efforts (e.g., putting in new carpet, tile);
- Working with environmentalists to ensure mold and mildew were eradicated; and
- Working with public health services community-wide to distribute needed shots, and making sure volunteers were kept healthy by wearing gloves and masks.

By September, the entire campus had been repaired and rebuilt, and school began as usual in the fall.

Lessons Learned

When reflecting on these flooding crises and the experience of recurring flooding, Forness has several key lessons to share with other schools. First, collaborating with local, state, and federal partners is crucial, he says, to better preparing for flooding. Together, they can secure funds, equipment, and personnel to build dikes and flood walls and put in place other mitigating measures. In addition, a coordinated response during flooding allowed for the protection of people in the area, as well as the recovery of a great deal of property that would likely have been lost.

Second, Forness points to the importance of training on the incident command process. "What's important is understanding that if a decision is made by another level, we follow that." Similarly, Forness highlights the importance of having an incident commander. "There has to be an internal understanding that, when a crisis occurs, there is one person making the decisions until [that role] is handed to someone else. If there are people stepping in who haven't been involved, trained, or part of the conversation, sometimes the best decisions don't result." For example, he points to the period of evacuation where the whereabouts of everyone was uncertain and suggests that better training on command and procedures might have alleviated this problem. "We are thankful nothing happened that put people at harm, but those were some tough hours determining where everyone was. That can't happen."

Forness also recommends schools keep in mind the value of having complete facility records. "It is just as important to have underground maps of sewer lines and what lines are active as it is to have aboveground maps of the school," he said. Supervisors and team leaders should also be instructed on where to find gas and electricity shutoffs and other key conduits. During a crisis, having this information can mean the difference between salvaging a facility and protecting lives, or not.

Readying for the Next Flood

Current Oak Grove administration President Michael Slette credits the school for its ongoing progress on learning from past experiences and working to continuously improve preparedness efforts. "When I started in June (2011), I was handed the 'Oak Grove Flood Manual'," he said, "and it was clear to me that the preparation that came out of the 2009 flood made the flooding that occurred in 2010 and 2011 much easier to handle." Mitigation efforts have continued, including raising the flood wall two feet, adding 1,000 cubic yards of clay to the dike area breached in 2009, and making a stronger flood fortress. In addition, better tracking efforts for people

on campus have been introduced. Lynn Peterson, administration manager for the school, explains that Oak Grove has always had an area referred to as "flood central," with a log book in place requiring that people sign in and out. "One of the lessons learned from that [2009] flood," she explained, "was that we needed to be much more diligent in enforcing this requirement. In a time of crisis, that is our only way of accounting for the people on campus."

Overall, the importance of emergency management procedures cannot be overlooked, says Forness, insisting they must be operational, understood by all, participatory, and explained so that people know why they are to do what they are instructed to do. "Any organization needs to make this a priority in terms of training," he said. "I think we've done a pretty good job."

This *Lessons Learned* publication was produced by the REMS TA Center with the assistance of Morgan Forness, Mike Slette, Laura Borden, and Lynn Peterson of Oak Grove Lutheran School.

The REMS TA Center was established in October 2007 by the U.S. Department of Education's Office of Safe and Healthy Students (OSHS), *formerly the Office of Safe and Drug-Free Schools (OSDFS)*. The center supports schools and school districts in developing and implementing comprehensive emergency management plans by providing technical assistance via trainings, publications, and individualized responses to requests. For additional information about school emergency management topics, visit the REMS TA Center at http://rems.ed.gov or call 1-866-540-REMS (7367). For information about the REMS grant program, contact Jade Anthony (Jade.Anthony@ed.gov).

This publication was funded by OSHS under contract number ED-04-CO-0091/0002 with EMT Associates, Inc. The contracting officer's representative was Madeline Sullivan.