Wednesday, November 9th

1:00 PM

The Community Rating System (CRS): Getting the most out of the 400 Series
Lou Ann Patellar, ISO/CRS Specialist
The Community Rating System (CRS) is a Federal Emergency Management Agency (FEMA) program, administered by the Insurance Services Office (ISO), Inc. that recognizes communities for their floodplain management activities that go above and beyond the minimum NFIP standards. The CRS assigns credit points for each floodplain management activity a community performs and then correlates those points to classes and flood insurance premium discounts for homeowners in that community.

This session will discuss the 2013 Coordinator’s Manual focusing on credit criteria and documentation needed for credit within the 400 Series. This session will look at state laws and common practices that communities can take advantage of to maximize credits and community discounts. There will be discussion regarding impact adjustment maps, open space and how higher regulations within the Wisconsin State Building Code can work toward CRS credit points.

A Template for Developing Flood Emergency Action Plans at the Community and Tribal Level” or How to Avoid Acronyms and Still Create Your Own Flood Emergency Action Plan.
Terry R. Zien, PE, CFM and Bonnie K. Greenleaf, PE, PMP - ASFPM and USACE
This presentation will describe the process for developing an Emergency Action Plan (EAP) at the local level and the recommended features of a plan. It has been observed that many communities have outdated EAP’s or rely on general county-wide emergency plans. Furthermore, much of the public living and working in leveed areas are not fully aware of the risk associated with doing so. While many community leaders understand the importance of EAP’s, they often lack the expertise and/or the resources necessary to develop a preparedness plan specifically for flood emergencies in their community.

The purpose of this Silver Jackets pilot project is to provide a step by step set of instructions to allow a small community or tribe to develop a flood emergency action plan (EAP). This EAP template document can be customized to fit each community’s or tribe’s situation with sections added or deleted as necessary. The concept is that the most important format is the one that works for each community or tribe and will actually be used and updated. Although other state and federal resources may be available during a flood, it is the responsibility of each community to identify and reduce their risk, determine necessary actions and additional required resources, and to take those actions. The template document is written in plain language, provides suggestions for the most important actions to take, has checklists of useful actions in each section, provides references and Internet links, fillable forms, a glossary, and an example plan. The EAP should incorporate the community’s response to flooding, location of evacuation centers, primary evacuation routes, and post flood recovery processes. Local governments are encouraged to develop and maintain an EAP that identifies flood hazards, risks and vulnerabilities, identifies and prioritizes mitigation actions, and encourages the development of local mitigation.
Thursday, November 10th

10:30 AM Session A

Update on the Milwaukee River Basin Total Maximum Daily Loads
Bill Krill, Kevin Kirsch, and Kimberly Siemens, CDM Smith
With Great Lakes Restoration Initiative funding, the Milwaukee Metropolitan Sewerage District (MMSD) initiated a study on behalf of the Wisconsin Department of Natural Resources (WDNR) to develop total maximum daily loads (TMDLs) for phosphorus, sediment, and fecal coliform bacteria in the 880-square-mile Milwaukee River Basin, which contains the Menomonee River, Kinnickinnic River, and Milwaukee River watersheds, and the Milwaukee Harbor estuary. A TMDL is the maximum amount (expressed in load per day) of a pollutant a water body can receive from both point and nonpoint sources and still meet water quality standards or targets. The purpose of the TMDL study was to allocate loads of total phosphorus, sediment (Total Suspended Solids), and fecal coliform in a manner that will result in attainment of applicable designated uses throughout the Basin. The presentation will provide an overview of the TMDL development process and focus on the approaches that have been used for TMDLs in Wisconsin. The presentation will also include an update on the implementation of the Milwaukee River Basin TMDLs.

Using Web Soil Survey to Access Most Current Data
Shaunna Repking, USDA NRCS
Learn how to use Web Soil Survey to access the most current official soil survey data online or for download to use in ArcGIS. Learn what information is available through Web Soil Survey and it’s limitations and uses.

10:30 AM Session B

Great Lakes Coastal Shore Protection and the Public Interest
Martin Griffin, Statewide Waterway Science and Policy Leader WDNR
When it comes to protecting great lakes shorelines from erosion, landowners and municipalities have many options to choose from. Sometimes those options require the placement of structures or material in public water. This presentation will explore the state's responsibility under the public trust doctrine to balance the rights of riparian landowners to protect against the loss of property and the state's responsibility to ensure that the cumulative effect of shore protection structures stays within the public's interest. It will highlight the state's policies surrounding informational requirements as part of the state permit process that landowners must provide to help the state make public trust decisions and will give an example of adaptive policies the state has used to handle emergency bluff failure situations.

Coastal V Zones - Ready or not - Here they come
Alan R Luloff, Science Services Program Director ASFPM
The Federal Emergency Management Agency (FEMA) has initiated a coastal analysis and mapping study to produce updated Digital Flood Insurance Rate Maps (DFIRMs) for coastal counties along the Great Lakes shorelines of the United States. Coastal flooding in the Great Lakes is a result of the combined action of elevated water level and storm waves. Areas subject to waves in excess of three feet will be designated as velocity zones or “V Zones”. 
This presentation will provide information on the methodology being used to develop the Base Flood Elevations along the coast and the building standards associated with those areas designated as V-Zones. In addition, information will be provided on the schedule for developing revised coastal flood hazard data and mapping for communities on the Great Lakes.

**10:30 AM Session C**

**Providing Stormwater and Floodplain Management on a Rapid Schedule**

*Jonathan Lefers, PE, AE2S*

Western North Dakota has seen unprecedented growth due to the Bakken oil formation. Watford City – a small community in the heart of the Bakken – has had to keep up with that growth. In order to accommodate the many families moving to the city, Watford City was proposing to construct a new High School and Event Center (HS/EC). Several developers also decided to join with the City to provide a more regional approach for stormwater management and water quality improvement. The overall project provides stormwater management for approximately 436 acres including the high school / event center and residential and commercial land uses.

The regional stormwater management approach will also benefit the area by creating a greenway corridor along an existing tributary and wetland channel. The greenway corridor will have seven separate stormwater facilities, designed in series to create a contiguous greenway and pedestrian corridor. The project was completed on an incredibly rapid schedule. The design and construction team only had 20 months from project start to opening the high school for students, which included moving over 2 million cubic yards of material, 2.5 miles of new road and utilities, and the high school building.

**A Stormwater Management Plan for Harwood Heights with Alternatives Development using Optimizer**

*Heather Schwar, P.E., Cardno and Mark Wagstaff, M3*

The Metropolitan Water Reclamation District of Greater Chicago developed a Master Plan in the Village of Harwood Heights as one of five pilot studies to investigate urban flooding for the 1 percent annual storm event, evaluate potential green and grey infrastructure solutions to reduce flood damages in the Village, and complete a stormwater master plan. These projects partnered the District with local communities and residents to develop community-based plans to address local flooding. Extensive collaboration with community leaders, other agencies, and residents leveraged local knowledge of flooding issues, as well as improved awareness and participation in the solutions.

For Harwood Heights, solutions needed to address flooding in a community served primarily by a combined sewer system (and some separate storm and sanitary sewers) without any natural drainage outlet. As with many communities developed in the late 1940s, the Village’s sewer capacity is limited; when storms occur, flooding is a major problem for residents, employers, and drivers.

This presentation will discuss the development of the existing conditions model using XP-SWMM and the technically feasible and innovative concept-level alternatives with an emphasis on reducing structural damage using Optimizer WCS decision support software. Potential solutions for the Village was include both traditional/grey infrastructure and sustainable/green infrastructure solutions.
11:30 AM Lunch Plenary

History of the Mississippi River Valley
Mark Wagner, Director of Education at the National Mississippi River Museum
This program will talk about the Mississippi River, its geology, human history, use and abuse, its wildlife, and how the watershed impacts the Gulf and oceans of the World. It will also highlight some of the educational programs about the Mississippi River watershed presented at the National Mississippi River Museum & Aquarium. Over the past 25 years the Dubuque County Historical Society has successfully raised $54 million to organize and expand its Mississippi River Museum into the National Mississippi River Museum & Aquarium. The Museum & Aquarium is accredited by the American Association of Museums — a distinction held by only 9 percent of American museums, was named an affiliate of the Smithsonian Institution in August 2002, and was accredited by the Association of Zoos & Aquariums in 2009.

1:00 PM Session A

Green Infrastructure Treatment Train at North Point Lighthouse
Adrienne Cizek and Alyssa Schmitt, Stormwater Solutions Engineering
Stormwater Solutions Engineering, LLC (SSE) has worked closely with North Point Lighthouse Friends (NPLF) and Milwaukee County Parks to design a new green infrastructure (GI) treatment train to manage stormwater from North Point Lighthouse property upstream of Bradford Beach. The GI train includes an 11,000 square foot permeable pavement parking and drive, a 1000 square foot new rain garden on the north side of the property and 1,000 square foot expansion of the existing rain garden near the drive, and 225 foot long regenerative stormwater conveyance (RSC) located in the ravine south of the lighthouse. RSC uses a series of pools and riffles connected by an underlying media layer designed to convey, manage, and treat stormwater runoff. Real time water level monitoring of each GI component is displayed via an interactive touchscreen dashboard within the Lighthouse Museum to show visitors how the on-site green infrastructure works together to manage stormwater runoff. The project has been awarded $253 thousand in design, material, and construction funds by Milwaukee Metropolitan Sewerage District, Fund for Lake Michigan, Milwaukee County Parks, and Southeastern Wisconsin Watersheds Trust. Construction begins in late June 2016.

Reformulating a Solution on the University of Wisconsin-Madison Campus
Anne Anderson, Mead and Hunt
Stormwater treatment was needed on the University of Wisconsin – Madison Campus to meet stormwater quality treatment goals before discharge to Lake Mendota located in the Lower Rock River Basin, which is listed on the 303(d) list as “impaired” for excess of sediment and phosphorus.

Identifying suitable areas for stormwater treatment facilities was challenging on the mostly urban campus. The presence of high groundwater, wetlands and contaminated soils in the project area presented additional challenges. Various alternatives were considered such as porous pavement, infiltration and bioretention facilities and ponds.

Bioretention facilities historically have used an engineered soil mix listed in the state's Technical Standards, but these may not target phosphorus as effectively as desired. New technology solutions targeting phosphorus included new engineered soil mixes in bioretention facilities along with a reduced
depth of engineered soil. Reduced engineered soil depth was a critical factor to the design where groundwater is present at shallow depth. Naturalized ponds were recommended for the sites where groundwater is too high for infiltration. This project was selected by The Daily Report as a Top Project of 2014 and is an ACEC-Wisconsin Best of State award winner.

1:00 PM Session B

Community-wide Flood Risk Reduction Program: Analysis with XPSWMM
Sarah Pasquesi, AECOM
Isolated pockets of flooding during 2007 and 2008 rain events provided an accurate delineation of the worst local flood system inadequacies in the Village of Glenview in north east Illinois and inspired the community to address local flooding. The Village developed a stormwater master plan called the “Flood Risk Reduction Program”. The goal of the plan is to quickly investigate the causes of flooding and develop solutions for rapid implementation.

The XPSWMM program was used to evaluate ten unique flood prone areas included in this phase of the program. The model is well suited to assess the overland flood diversions and surface storage common in each area. These flood features significantly impact flood levels, character and solution effectiveness. The analyses were calibrated using photographs and other evidence, a crucial element in accurate modeling. Such real time credible evidence of the flood is a benefit that is often not available.

This presentation summarizes the FRRP program and the modeling and design approach for a few of the flood prone areas are described. This case history illustrates the flexibility of the XPSWMM model to address complex flood conveyance and storage characteristics common in urban flood prone areas.

La Crosse Floodplains: Using GIS as a Management Tool
Doug Kerns, CFM Floodplain Manager, City of La Crosse
With three rivers converging downtown and multiple rural watersheds culminating into the city’s storm sewer, La Crosse over the past 50 years has been challenged with diverse flood hazard areas. Mapping improvements, political changes, thousands of pre-firm structures, and the Biggert-Waters Act of 2012 set La Crosse down the floodplain management path to where it exists today. This presentation will provide a brief history of flooding in La Crosse, detail the need for change, and demonstrate how GIS mapping was an integral part in the process.

1:00 PM Session C

Community Rating System (CRS)
Michelle Staff, Floodplain Management Policy Coordinator, WDNR
The proposed presentation will introduce and further educate communities to the Community Rating System (CRS) program. CRS is an incentive program that recognized communities for implementing floodplain management practices that exceed the Federal minimum requirements of the NFIP to provide protection from flooding. In exchange for a community’s proactive effects to reduce flood risk, policyholders can receive discounts on flood insurance premiums range from 5% up to 45%. There are 10 CRS Classes: Class 1 requires the most credit points and provides the largest flood insurance premium reduction (45 percent), while Class 10 means the community does not participate in the CRS. Communities earn credit points that determine classifications. The CRS Classes are based on completion of 19 creditable activities organized into 4 categories; Public Information; Mapping and Regulations; Flood
Damage Reduction; Warning and Response. This workshop will focus on the types of floodplain management practices that qualify or improve the community's class for the CRS program.

2:30 PM Session A

Building Resilient Communities with Green Infrastructure One Code at a Time
Julia Noordyk, Water Quality and Coastal Communities Specialist, UW Sea Grant Institute

Green infrastructure is a proven and effective means to reduce stormwater pollution and volume, but there remain critical barriers to its implementation. Since 2012, 1000 Friends of Wisconsin has been working with municipalities in southeastern Wisconsin to audit, revise and prioritize codes and ordinances that prohibit or inhibit more widespread use of green infrastructure. To help replicate this approach in other communities in the Great Lakes, Wisconsin Sea Grant developed the Tackling Barriers to Green Infrastructure: An Audit of Municipal Codes and Ordinances guidebook. The Audit can assist municipal staff, planners and resource managers in reviewing, revising and prioritizing municipal codes and ordinances to promote and advance green infrastructure practices. Barriers to green infrastructure can vary widely within the code language (specific rights, specific prohibitions, partial limits, practices mentioned with no guidelines for implementation, etc). Therefore, solutions to code barriers need to be customized for the specific municipality and cannot be satisfactorily addressed by model ordinances or someone else’s idea of how the municipality “should” operate. Engaging zoning and land use staff, planners, consultants and non-profit groups in reviewing, auditing and developing codes and ordinances that work for their communities is essential to the Audit’s process.

La Crosse, Wisconsin: Innovative Stormwater Management Planning
Bernie Lenz, City of La Crosse

More intense rain events are causing higher frequency occurrences of localized flooding. The City finally has had enough and created a Stormwater Utility to fund improvements. The users are paying and want a fix now, but where do you start and how do you prioritize? This scenario prompted the City of La Crosse to develop a better understanding of their storm drainage system, and what happens when the system reaches capacity. Why are the streets flooding? How does runoff water move via overland flow across blocks and through parks? Are the storm sewers full or are the inlets not allowing enough flow into sewers? Is installation of Low Impact Development (LID) stormwater features such as rain gardens or green streets a cost-effective alternative to increasing storm sewer system capacity? The City of La Crosse wanted answers to these questions in order to better understand their storm drainage system and to make better decisions in prioritizing capital improvement projects to upgrade their storm sewer system.

La Crosse is located on a flat terrace adjacent to the Mississippi River. Stormwater-driven flooding is a problem in the City due to its flat topography and the runoff that comes into the City from the “coulees” coming out of the Mississippi bluffs to the east. Stormwater-driven flooding is complicated to analyze because overland runoff often by-passes overburden inlets and can travel long distances across the landscape during significant rainfall events, often in a different direction than the storm sewer system pipe alignment, making conventional storm water analysis using pre-defined “sewer sheds” inaccurate. To complicate things farther, some parts of the system act entirely different during high river stages when the pipe outfalls can be submerged by 10 feet or more due to changing Mississippi River stages.

In 2014, the City began a comprehensive analysis of storm water drainage using 1-dimensional / 2-dimensional analysis approach. The model selected was FLO-2D, which utilizes 2-dimensional overland flow model that simulates runoff flow across streets and blocks independent of the storm sewer system,
coupled with US EPA SWMM to analyze the storm sewer system. The criteria used to select areas for analysis of flood reduction included maximum street flooding depth, extent of private property flooding, and intersection closure history. Alternatives were identified for relieving flood conditions, including storm sewer upgrades as well as implementation of LID runoff reduction practices. Alternative performance was defined for a wide range of rainfall frequencies and variable Mississippi River water levels at the storm sewer outlets. A ranking approach was used to identify high-priority projects based on costs, flood reduction performance, and location with respect to planned City Street and other infrastructure projects.

2:30 PM Session B

Wilson Park Creek Flood Management and Stream Rehabilitation
Patrick Elliott, MMSD and Peter Shedy, HNTB
The Milwaukee Metropolitan Sewerage District (MMSD) conducted a preliminary engineering design for Wilson Park Creek Reach 3 in the City of Milwaukee. Wilson Park Creek Reach 3 watershed is about 6 square miles and is predominantly concrete lined with a base flow of approximately 1 cfs. The watershed is urban and peak flows exceed 3,400 cfs for the 1% annual probability flood event. The main components of the design include removal of a concrete lined channel, stream rehabilitation of approximately 1 River Mile, proposed culvert improvements, and design of a side-channel spillway connected to a 123 acre-ft off-line flood management facility to lower the existing floodplain. The rehabilitated channel and basin focus on a native planting approach which are key to improving ecological habitat within the reach and adjacent flood management facility. The proposed flood management facility lowers the existing regulatory floodplain and removes it from 40 structures. This presentation describes the preliminary engineering design and approach of the rehabilitated channel and proposed flood management facility. MMSD and HNTB personnel will be involved in the presentation.

Managing Increasing Flood Risk on the Yahara Lakes
Ken Potter, University of Wisconsin Professor
During the past two decades, flood risk has increased on the Yahara Lakes in Dane County, with major damage resulting from severe and persistent rainfall in 1993, 2000, and 2008. The primary reasons are suburban development and an increase in the incidence of severe storms. These factors will likely persist, even further increasing the magnitude and frequency of damaging flood events. The most promising strategy for managing this risk is to strengthen existing stormwater ordinances. Dane County has initiated a technical committee to explore options for ordinance revisions. This talk will report on these options.

2:30 PM Session C

Floodplain Highlights from Minnesota
Ceil Strauss, Minnesota Floodplain Manager
Minnesota has prevented and reduced flood damage over the years using several strategies: preventing development in flood prone areas, higher floodplain standards, other land use programs and a state level grant program to cost share flood risk reduction projects. This talk will touch on all four approaches, but with an emphasis on Minnesota’s Flood Damage Reduction Grant (FDR) program. (The Minnesota state legislature has provided nearly a half billion dollars to cost share projects all around the state since the FDR program’s inception in 1988. This talk will cover basics of the program, and several examples of how state FDR grants were combined with local (and sometimes federal) funds to reduce risk.
Minnesotans have invested heavily in clean water, with funds generated by a constitutional amendment that dedicates sales tax to this effort. Minnesota's Watershed Approach framework has evolved from this opportunity to efficiently address waterbody restoration (TMDLs) and protection. Statewide efforts, like the state Nutrient Reduction Strategy, the governor's buffer law and water summit, and the Agricultural Water Certification Program, play a key role in achieving clean water goals. Still, widespread changes in the status quo of land and water management are needed for Minnesota to achieve success.