

Session 1A: MS4

Wednesday, 10:30 am - Noon

Moderator: Adam James, Cook County DOT

Use of Watershed Modeling to Support Watershed-Based Planning and Inform Management Decisions

A Watershed-Based Plan (WBP) allows stakeholders to develop and implement solutions to address nonpoint source pollution issues at a watershed scale in a holistic manner. An important element of a WBP is the characterization of existing conditions in the watershed which includes identifying the causes and sources of pollution and quantifying the pollutant loads from different sources. This enables stakeholders to identify critical areas in the watershed for the implementation of best management practices (BMPs). Watershed models can be used to quantify the pollutant load and load reduction through implementation of BMPs. Watershed models can range in complexity from simple spreadsheet models like STEPL, which provides annual average loads, to continuous simulation models like Hydrologic Simulation Program Fortran (HSPF). The pollutant load estimates can be then be used for identifying critical areas in a watershed for BMP implementation

This presentation will build upon the presentation by the Chicago Metropolitan Agency for Planning (CMAP) on the overview of watershed-based planning. The presentation will showcase three case studies on the use of watershed models to support watershed-based planning in Mill Creek and Indian Creek watersheds in Illinois and Greater Bonne-Femme watershed in Missouri. A methodology to prioritize critical areas in the watershed based on the pollutant load estimates also will be presented. The prioritization of critical areas for BMP implementation enables stakeholders to better allocate resources to achieve target water quality objectives.

Karoline Qasem, Ph.D., E.I.T., Geosyntec Consultants

Rishab Mahajan, Geosyntec Consultants

Kelsey Pudlock, Chicago Metropolitan Agency for Planning (CMAP)

Holly Hudson, Chicago Metropolitan Agency for Planning (CMAP)

North Mill Creek Channel Restoration

The North Mill Creek Channel Restoration project located on within the Ethel's Woods Forest Preserve and involved the full removal of the Rasmussen Lake Dam, an earthen structure approximately 20 feet high that was built in the 1950s as well as an upstream low head dam that was previously submerged by the Rasmussen Lake Dam impoundment. Both dams significantly impacted the water quality and aquatic habitat for this reach of North Mill Creek so the Lake County Forest Preserve District (LCFPD) obtained IEPA 319 grant funding to implement the dam removals and associated channel restoration.

LCFPD had previously attempted to permit the dam removal but the original design approach proposed dredging activities within the normal pool behind the original Lake Rasmussen Dam that created IEPA Section 401 Water Quality permitting challenges that ultimately prevented the full removal plan from proceeding. V3 worked with LCFPD to identify a creative water management system alternative which avoided wet dredging and removed this permit challenge. The water management and earthwork approach considered sediment management concerns and focused on channel construction being completed in the dry.

The restored 7,700 feet of North Mill Creek includes a terraced floodplain that provides a natural flooded overbank and filtration through native vegetation buffers. The 51-acre restoration area includes aquatic/stream channel habitat, wetland and floodplain habitat within the historic dam impoundment area as well as native prairie habitat on the surrounding hills and slopes.

The project was the focal point of the Ethel's Woods Preserve's overall improvements, which cumulatively is the single largest and most complex land and water management project the District's ecologists and planners have undertaken. The presentation will include post-project drone footage as well as pre- and post-project photos and photos/commentary regarding the constructability challenges associated with this type of project.

Derrick Martin, V3 Companies & Lake County Forest Preserve District

Successes and Setbacks: Naturalized Stormwater Basins

The Village of Orland Park's landscape ordinance requires that all stormwater management basins incorporate native vegetation. Additionally, three years of post-construction monitoring and management are required to ensure that each basin meets specified performance criteria prior to final acceptance. This presentation will provide an overview of Village regulations and give numerous examples of observed successes and setbacks in the design, implementation, and management of naturalized stormwater basins over several years.

Tim Pollowy, Hey and Associates, Inc.

Session 1B: Urban Flooding

Wednesday, 10:30 am - Noon

Moderator: Henry Schmitz, Crawford, Murphy & Tilly, Inc.

Redmond Reservoir Expansion - A Regional Solution to Localized Flooding

The Village of Bensenville experienced urban flooding within the southern portion of the Village. Flooding is caused by local depressional areas that rely solely on storm sewers to convey runoff out of the area. During short duration high intensity storm events runoff overwhelms the Village's drainage systems flooding residential structures, properties, and roadways. In response to these issues the Village completed a study that called for a combination of storm sewer upgrades and over 100-Ac-Ft of localized storage within an existing golf course to provide a higher level of service to these flood prone areas. The 100 Ac-ft storage facility was cost prohibitive due to acquisition costs. Rather than scrapping the storage proposal the Village brain stormed additional areas to put storage which included utilizing the existing Redmond Reservoir asset located downstream of the golf course. Redmond Reservoir is a regional flood control facility that stores over 700 acre-feet of runoff at the headwaters of Addison Creek. The storage facility protects Bensenville and downstream communities from riverine flooding along Addison Creek. Discharge out of the reservoir is controlled by 3 pumps owned and operated by the Village of Bensenville. The Village of Bensenville retained Engineering Resource Associates, Inc. (ERA) to update the initial study focusing on Redmond Reservoir as the location for the proposed 100-AC-Ft of flood storage. Using detailed modeling it was demonstrated that not only would the additional storage work at Redmond Reservoir but it could be reduced to approximately 20 Ac.-Ft. while providing the same flood reduction benefits as the upstream 100 ac-ft initial proposal. In addition to the cost savings in storage volume, DuPage County collaborated with the Village to secure federal disaster recovery grant to help fund the construction cost of the project. This presentation will discuss the phase I study, phase II design, and Phase III construction of the Redmond Reservoir. It will discuss how the creativity of a municipality and intergovernmental cooperation created a successful flood control project at a fraction of the cost anticipated by the Village of Bensenville.

Marty Michalisko CFM PE, Engineering Resource Associates

Mehul Patel, Village of Bensenville

Jamie Lock, DuPage County

Placemaking Infrastructure: Mundelein's Downtown Stormwater Story

In 2017, the Village of Mundelein experienced significant urban flooding in residential and commercial neighborhoods of the Downtown including a major intersection of US 45 (IDOT jurisdiction) and Division Street (Village jurisdiction). Kracklauer Park, just south of the State ROW and adjacent to Seavey Drainage Ditch was flooded from the creek. Flooding impacted both residential and commercial properties as well as required closure of US 45 and Division Street. The Village responded to this crisis with preparing a watershed study and a flood mitigation plan.

The Village was also in the midst of redevelopment planning of its downtown area, including relocation of its public works facility just north of the Seavey Drainage Ditch. Adjacent to the Seavey Drainage Ditch was an old US Music Factory building that was vacant and purchased by the Village as part of their planning efforts.

The redevelopment efforts and Village's purchase of the US Music Factory site created an opportunity for a regional detention facility that would provide flood reduction benefits in the downtown area as well as reduce flows and sediment transport downstream. Village staff also recognized an opportunity that through placemaking and good design it could enhance the downtown, create open space, and encourage economic development.

To accomplish these goals, the Village would need to balance the goals of the project with competing priorities, needs of the property owners, fiscal constraints, and find benefit to developers to plan and implement appropriate solutions. The presentation will provide a multi-disciplinary overview of this exciting project.

The learning goals of this session include:

- Address stormwater management in urbanized areas.
- Balance infrastructure needs with economic development and placemaking goals.
- Integrate placemaking practices into civic spaces and gain support from elected officials.

Ajay Jain, P.E., CFM, HR Green, Inc.

Amanda Orenchuk, AICP, Village of Mundelein

Daniel Grove, PLA, AICP, LEED, Kimley-Horn and Associates, Inc.

1C: Regulatory and Mapping

Wednesday, 10:30 am - Noon

Moderator: Glenn Heistand, ISWS

Oh no, not again, or, Watershed Study Dos and Don'ts

There are several ways to successfully carry out and document a watershed study for IDNR Office of Water Resources, and many, many ways to fail. This year we're going to go through the dos and don'ts of study documentation by highlighting the ways – all which we've actually seen – that you can do it wrong.

Liana M. Winsauer, P.E., Illinois Department of Natural Resources, Office of Water Resources

The Industry Progression to 2D Hydraulic Modeling and the Requisite Regulatory Response

2-D modeling is poised to become the standard in hydraulic modeling, engineering design, and permitting. Improvements to computational power and the continuing advancement of 2-D modeling software and methodologies have brought 2-D modeling to the mainstream. The more complex nature of 2-D models has disrupted long standing regulatory practices leading to an interim disconnect between regulatory authorities and the private sector.

This presentation will provide insight into rapidly advancing 2-D modeling software and break down the process for determining whether a site warrants the more complex 2D approach. Accordingly, we will discuss recent efforts by government agencies to update regulatory practices to accommodate 2-D hydraulic studies. The Federal Highway Administration (FHWA) has made great leaps in bringing 2-D modeling to the industry forefront through their continued outreach to state and local agencies. FHWA continues to make crucial developments in regulatory practices including development of methodologies for delineating floodways in 2D. They have also been coordinating on recent and upcoming guidance from FEMA.

Additionally, the Illinois Department of Transportation has made a push to develop 2-D capabilities within the agency. In 2018 Hanson conducted a 2-D hydraulic modeling course for IDOT's district staff. This presentation will detail some of IDOT's recent efforts including an upcoming guidance document for selecting and utilizing 2-D hydraulic modeling.

Garrett Litteken, P.E., CFM, Hanson Professional Services, Inc
Anthony Comerio, PE, CFM, Hanson Professional Services, Inc.

Cache River Valley 2D Floodplain Analysis

The Cache River Valley, located in southern Illinois, was the historic channel of the Ohio River. Aggradation of the historic Ohio River channel (current Cache River valley) caused the Ohio River to breach the drainage divide between the Cumberland and Ohio Rivers and the current watercourse of the Ohio River was carved. The valley abandoned by the Ohio River stretches over 50 miles between the current Ohio River and the Mississippi River and the landscape still displays evidence of the historic Ohio River.

In more recent history, the Cache River Valley served as an overflow for extreme Ohio River floods while draining the major tributaries of the Shawnee Hill country from the north through the low relief wetlands of the Cache River Valley. During the last century, major drainage and flood control infrastructure have transformed the hydrology of the Cache River Valley to allow for more agricultural opportunity. Most significantly, the Reevesville Levee prevents Ohio River floods from entering the Cache River Valley and the construction of Post Creek Cutoff diverts most of the upper Cache River to the Ohio River away from the lower Cache River Valley.

FEMA is funding floodplain mapping efforts in the southern Illinois counties containing the Cache River Valley. A massive two-dimensional HEC-RAS model is being developed to capture the flow complexities of the Cache River Valley and to simulate the various flood controlling scenarios of the levees and drainage infrastructure. This presentation will focus on the modeling process and decision making to develop defensible floodplain mapping for the Cache River Valley. The presentation will also showcase the initial two-dimensional modeling results.

Chris Hanstad, P.E., CFM, Illinois State Water Survey

2A: Bank Stabilization

Wednesday, 1:30 pm – 3:00 pm

Moderator: Jenny Loewenstein, Engineering Resource Associates

Bank Stabilization in Confined Residential Neighborhood

V3 Companies served as both designer and general contractor for a bank stabilization project along the East Skokie River in Lake Forest, Lake County, Illinois. V3 worked with the owner and client, East Skokie Drainage District, to study the bank erosion and design bank stabilization for a mile stretch of the East Skokie River between Westleigh Road and Old Elm Road in Lake Forest. The design and permitting of this project was performed between the Fall of 2017 to late 2020. The design consisted of a mix between gabion baskets, natural toe protection (tree revetment), stone toe protection and slope modifications. The biggest challenge on this project was the proximity to the residential properties for two reasons. First, it limits the type of bank stabilization that can be performed without impacting the residential properties and second, it required buy-in from the residents by way of granting easements. During this project there were three public meetings held for the adjacent homeowners. This project was funded in part through a IEPA 319 Grant administered by Lake County so there has been close coordination with Lake County through the entire process.

Construction of the southern half of the project was successfully completed in the summer and fall of 2020.

We intend for this presentation to also include drone footage of the completed project.

Chris Hanchett, PE, CFM, CPESC, V3

Monitoring Streams for Instabilities to Prevent Emergency Situations

We've all seen the horrifying pictures of exposed pipes in a severely degraded stream. As long as everything goes well, the emergency fix can make for a great story of how the engineer came in to save the day and protected the infrastructure and restored the stream and we all lived happily ever after.

The question I'm asking today is not "how did we fix it?" but rather "how did it get that bad?". So often nothing is done until there is a problem, specifically in areas where streams cause erosion around existing infrastructure. At Farnsworth, we try to emphasize to our clients how important monitoring and mitigation are before the harrowing emergency arises.

In this presentation, I will be discussing what to look for during a stream inspection, how often you should monitor areas, and who should be performing the inspections. Through consistent monitoring and maintenance efforts, emergency situations regarding stream instabilities can be avoided.

Emily Jenkins, Farnsworth Group

Woods Creek Reach 10 Streambank Stabilization – Lake in the Hills, IL

The Woods Creek Watershed Based Plan was completed in 2012. The plan identified Woods Creek Reach 10 as a critical improvement area for streambank stabilization and wetland improvements. The existing stream in this reach was channelized with steeply eroded banks and was the source of large amounts of sediment and nutrients to Woods Creek and the Fox River. Stabilization of Woods Creek has been a high priority for the Village as improvements to the channel would reduce future maintenance and dredging required in the downstream Woods Creek Lake. HR Green assisted the Village with securing a Section 319 grant through the IEPA and additional funds from the local SWCD grant to help fund the design and construction of the project.

HR Green partnered with Applied Ecological Services to complete a stream and riparian area assessment. The assessment was used to develop typical cross sections which were applied to various segments of the streambank to provide a bio-engineered stream cross section. Stone toe protection, native vegetation and two stage channel sections were applied depending on the modeled shear stresses anticipated along each individual section of the stream. In addition to bank stabilization, the channel was improved through the use of cross vane weirs to provide grade control and to help center the flow in the existing channelized stream alignment. The riparian area vegetation was managed through selective clearing of invasive and non-desirable species and overseeding of the area.

Prior to construction, residential coordination was key to a smooth construction process as the site is highly visible by many single family homes. The project was constructed in the winter of 2019 and has been well received by the Village and residents. Overall, the project was completed on schedule and under budget.

Logan Gilbertsen, P.E., CFM, HR Green, Inc.

2B: Urban Flooding

Wednesday, 1:30 pm – 3:00 pm

Moderator: Brad Brink, Bradley E. Brink Engineering, Ltd.

Rising Tide: Great Lakes Coastal Resiliency Case Studies and Science

Water levels in the Great Lakes during last two years have been at record highs. From Belle Isle (Michigan) to Green Bay (Wisconsin), property owners all around the Great Lakes are struggling to combat significant flooding, erosion, and disappearing waterfronts in a fight that is likely to continue over the next few years. This presentation will demonstrate several projects related to erosion and flooding associated with the Great Lakes high water levels, including assessing properties for vulnerability to flooding and implementing shoreline repair. Technical methods for sustainable shoreline restoration to combat rising water levels will also be discussed.

A property's vulnerability analysis is a holistic method for assessing potential impacts from high water levels, including flooding, erosion, pollution releases, and infrastructure impacts. Predictions on peak high water level are calculated for the site of interest, and, once assessed, proactive measures to prevent damages are implemented. The vulnerability analysis is applicable not only to properties near the Great Lakes/Lake St. Clair shoreline, but also those nearby river tributaries to the Great Lakes.

Shoreline protection measures need to incorporate the dynamics of water level, wave height, and wave velocity. This presentation will describe a case study on a shoreline protection project, as well as discuss additional natural shoreline restoration methods.

Emily Campbell, PE, CFM, Geosyntec Consultants

Brian Valleskey, CFM, CLP, Geosyntec Consultants

Urban Flood Mitigation: Wilmette Neighborhood Storage Case Study

The Village of Wilmette is a northern suburb of Chicago and is located adjacent to Lake Michigan. Two primary watersheds separate the Village, one watershed drains east to Lake Michigan and the other west to the North Branch of the Chicago River. The western watershed is collected by regional trunk line storm sewers that outfall to a large stormwater pumping station at the River. The storm sewer conveyance system is insufficiently sized and the western portion of the Village regularly experiences urban (non-riverine) flooding. The Village developed a Stormwater Management Plan from 2013-2015 to assess the significant flooding experienced in the western portion of the Village, analyzing several improvement options. Primary alternatives included several miles of large diameter storm sewer to increase conveyance capacity to the River, or three localized neighborhood underground stormwater storage basins. After years of study, public participation and deliberation, the Village Board decided to move forward with the neighborhood storage option. The overall program was divided into 4 construction projects. Phase One design/construction involved a 20.2 ac-ft underground stormwater storage facility, over a mile of relief sewer, and significant coordination with residents, the park district, and the

school district – including an international coalition to save a grove of cottonwood trees. The presentation will discuss the process of the study, beginning in 2013, through construction of Phase One; including specific examples of interdepartmental coordination and other hurdles that had to be overcome by the engineering team.

Matt Moffitt, PE, CFM, CPESC, Baxter & Woodman, Inc.

Darren Olson, PE, CFM, D. WRE, Christopher B. Burke Engineering, Ltd.

63rd Street Drainage Improvements

V3 Companies worked with the Village of Woodridge to evaluate and improve a chronic urban flooding issue for a low area on 63rd Street. The depressional area on 63rd Street receives runoff via pipe and overland flow from over 200 acres of tributary drainage area and although the street is located only 300 feet upstream from Prentiss Creek, the area between the street and the creek was raised when the surrounding residential development was constructed in the 1960s. The surrounding homes are not impacted by the floodplain associated with Prentiss Creek but they have experienced repeated and significant localized flooding.

The Village previously implemented less costly improvements that provided some benefit but ultimately made the commitment to identify and fund a long-term solution. In the end, it was determined that the most cost-effective solution was to purchase the home located in the logical overland flow path between the low point on 63rd Street and Prentiss Creek so the home could be removed and a more effective overland flow path could be established. The process of purchasing and demolishing a home was a first for the Village and involved a lot of coordination with the homeowner. At the same time, the Park District was planning improvements to the upstream Triangle Park area that would create additional upstream storage, a new inlet to the 48-inch pipe and a better-defined overland flow path down to the low point on 63rd Street. The Village evaluated the hydraulic benefits of both projects and made the decision to implement the improvements. The project was constructed in 2019 and the benefits were obvious during the May 2020 storm event when no structures flooded and street flooding was minimal. Drone footage of the completed project will be provided along with pre- and post-project flooding photos.

Derrick Martin, V3 Companies & Village of Woodridge

2C: Legislative

Wednesday, 1:30 pm – 3:00 pm

Moderator: Henry Schmitz, Crawford, Murphy & Tilly, Inc.

Why and How to Build a Relationship with your Legislator(s)

Members of the IAFSM Legislative Committee will host a virtual panel discussion with 2-3 guests who currently serve or have served in local elected office or in the Illinois General Assembly. The panel will address the following points:

- The importance of local experts sharing their expertise with elected officials -- (as members of IAFSM we are not advocates but we are available to answer technical questions)
- Whether a local expert can truly inform an elected official and help them build their understanding
- Why an elected official would like to hear from you
- What are the respective roles of an elected official and their staff members?
- How do they do elected officials do their work?
- What kinds of information are most helpful to elected officials? and

Are some briefing formats more helpful than others?

Is it OK to be geeky when briefing an elected official? Be sure to avoid unexplained jargon and acronyms

- How to get to know your elected official before you need their assistance
- In the case of a state or federal elected official, is it better to meet in a local office or in Springfield/Washington DC?
- How to nurture an ongoing relationship with an elected official

P. Kay Whitlock, PE, D.WRE, F,ASCE, Christopher B. Burke Engineering, Ltd

Richard Winkle, Prairie Research Institute

Representative Bennett

Representative Ann Williams

2D: Vendor

Wednesday, 1:30 pm – 3:00 pm

Moderator: Tom Kehoe, Christopher B. Burke Engineering, Ltd.

Floodplain Design, Construction, and Impacts on Flood Insurance

This course provides insight into the importance of proper foundation flood vents and dry floodproofing techniques for buildings located in a flood zone. It will identify FEMA Technical Bulletins 1, 2, and 3, the National Flood Insurance Program, ASCE 24-14, ICC, and Building Code regulations and standards as they relate to sustaining foundations and overall business continuity in flood hazard areas. The course will also analyze the role of building compliance in securing lowering flood insurance rates and what mitigation solutions are available for both residential and non residential structures.

After the course, participants will have a thorough understanding of floodproofing options and the important role they play in designing a sustainable structure.

Bryan Christopherson, CFM LIA, Floodproofing.com

Illinois Public Works Mutual Aid Network (IPWMAN) - When Disaster Hits, We'll Get You Through

The Illinois Public Works Mutual Aid Network was formed in 2009 to provide assistance to public works agencies when resources are exhausted as a result of an unanticipated incident. This presentation will be a review of the history of IPWMAN, the benefits of the organization, the anatomy of a response, and a brief overview of actual responses.

It is the mission of IPWMAN, in the spirit of intergovernmental cooperation, to develop and maintain a statewide network of public works related agencies whose principal purpose is to provide mutual aid response and recovery assistance to each other when confronted with natural or man-made emergencies and disasters.

Sean Henry, PE, City of Carbondale

3A: Special Topics 1

Wednesday, 3:20 pm – 4:50 pm

Moderator: Stephen Bicking, HR Green, Inc.

Using Pre-vegetated Blanket to Achieve Instant Results

Pre-vegetated blankets provide all the components of a traditional erosion control blanket with the added benefit of vegetative cover. All blankets are grown to specification (typically a 4-6-week lead time) from pure live seed, DOT (Department of Transportation) and native seed mixes. Pre-vegetated blankets work in a variety of projects such as ditch lines, drainage channels, roadsides, stormwater management areas, green roof installations, steep slopes, shorelines, streambanks, wetland restorations, woodland preservation, prairies, bioretention facilities, rain gardens, golf courses, athletic fields and many more.

GreenLine's Pre-vegetated blankets have been used in various projects. The following are a couple examples.

☒ Private Residence - Wisconsin Dells, WI Area - Steep slopes often present challenges when it comes to re-vegetation by being difficult to negotiate, unstable, and dry. Pre-vegetated blanket can help minimize disturbance while maximizing erosion control through the use of live vegetation.

☒ Village of Fontana - Fontana, WI - Our blankets can be grown to meet the needs of any site. The banks of this drainage stream were lined with pre-vegetated blanket seeded for different flow rates.

Robert Livingston, GreenLine

LID and the Soil Conundrum

As the nature of regulations for water quality and quantity evolve and advance, best management practices (BMP's) continue to be adopted without appropriate regard for the native soils. The majority of low impact design (LID) practices are implemented to use natural vegetation such as bio-swales and rain gardens to both enhance the landscaping of a site and also provide on-site runoff reduction. While these BMP's can potentially work well on sites with in situ free draining soils, there are significant limitations to these practices in areas where rock is close to the surface or sites that contain native soils not conducive to infiltration. So, the obvious question is how can LID be put into effect on sites where the aforementioned conditions are encountered? Herein lies the soil conundrum.

Not all sites are created equal. This undoubtedly applies to all aspects of stormwater design (precipitation rates, footprint availability, drainage area, etc...), but none of these variables are more important than the in-situ soils. Utilizing of a bio-swale or rain garden as a BMP on a site can end up being a very limiting endeavor for a plethora of reasons. The inherent nature of different soils provides variability in infiltration rates, and therefore variances in the overall

effectiveness on the implementation within LID sites. Of even greater concern for the engineer of record, is the potential liability for not adequately managing the larger 90+ percentile storm on these sites.

The incorporation of structural underground detention systems (and other BMP's) into bio-retention practices provides engineers an effective way to counteract poor infiltrating native soils while also significantly reducing the amount of sediment, nitrogen, and phosphorous (TMDL's) that leaves a developed site. Not only can this blend be beneficial from both a water quality standpoint and achieving the desired infiltration, but it also provides an optional avenue for more effective maintenance of these systems post-installation.

Aaron Ganson, PE,

DuPage County Water Quality Improvement Program: Funding Projects and Educating Residents

Since 2000, DuPage County Stormwater Management's Water Quality Improvement Program (WQIP) Grant has provided financial assistance for projects that provide a regional water quality benefit to DuPage County streams. The program funds up to twenty-five percent of construction costs for projects that provide water quality benefits. Eligible projects include stream restoration, detention basin retrofit, shoreline stabilization, native plantings, and green building technologies that reduce or filter stormwater runoff. In its 20th year, DuPage County has awarded nearly \$5 million to 88 public and private projects countywide.

For the FY2019 grant cycle, Stormwater Management staff created an ArcGIS Story Map to showcase previous awardees, provide examples of eligible projects, and inform applicants about the program. The Story Map provides an educational component with animated graphics featuring green infrastructure and stream restoration, as well as an interactive map with details and photos of past awarded projects. In 2020, the Illinois GIS Association named the WQIP Story map a top web app in its annual Web Map App competition.

Mary Beth Falsey, DuPage County Stormwater Management

3B: Case Studies

Wednesday, 3:20 pm – 4:50 pm

Moderator: Ajay Jain, HR Green, Inc.

Heritage Park: Regional Drainage Improvements in Homer Glen, IL

The Village of Homer Glen has experienced frequent flooding within the Woodbine Subdivision and surrounding areas. In 2015, the Village worked with HR Green to complete a regional drainage study. The study utilized 2D-XP SWMM to model the existing conditions and identify proposed improvements. Residential surveys were sent to over 400 households to gather input on severity, frequency and type of flooding that was occurring in the area. The responses were used to calibrate the XP SWMM modeling results. Since the completion of the study, the Village has implemented improvements that have provided relief to the residential neighborhood.

One of the largest improvements completed included improvements to Heritage Park. This Village owned park is located on a former golf course. The improvements included creation of over 20 acre-feet of detention, conversion of nearly 30 acres of turf grass to native vegetation and wetland and over 700 linear feet of bioswale. Additionally, an existing golf course water hazard was dredged and expanded to provide stormwater detention and to serve as a fishing pond. The Village has since stocked this pond with fish habitat with assistance from the IDNR. These improvements were partially funded through an IEPA Section 319(h) grant. HR Green and the Village were able to incorporate a large cost savings into the project by constructing an on-site sledding hill adjacent to the stormwater basins. This resulted in no soil leaving the site and reduced the overall carbon footprint of construction. Construction was completed on this site in 2018 and the native vegetation is now fully established.

Overall, the improvements have provided noted improvements to the adjacent residential neighborhoods and have been very well received by the residents who frequent Heritage Park.

Logan Gilbertsen, P.E., CFM, HR Green, Inc.

Dam Breach Analysis and Geotechnical Investigation for a Class II Hazard Potential Dam

Geosyntec performed a dam breach analysis of a proposed stormwater impoundment dam in Addison, IL in accordance with Illinois Department of Natural Resources Office of Water Resources (IDNR/OWR) protocol. The dam breach analysis was performed using an unsteady HEC-RAS 2D model to evaluate the impacts of a potential embankment failure. The results of the analysis showed that failure of the proposed embankment would result in overtopping of a downstream railroad and the dam was classified as a Class II hazard potential (i.e. significant hazard).

Following classification of the dam as a Class II hazard potential, Geosyntec assisted their client with a full suite of engineering analyses, including a geotechnical field investigation, geotechnical

analysis of seepage and slope stability, hydraulic analysis, an inspection plan, and set of inspection forms to meet the requirements of the IDNR dam safety regulations for a Class II hazard potential dam.

Geosyntec subcontracted a drilling firm and mobilized to the site and completed a five-boring geotechnical investigation program of the dam foundation and borrow soils. Geosyntec then oversaw the completion of a laboratory testing program, including soil strength, compaction, permeability, and index tests. This data was used to complete geotechnical analyses in SLOPE/W and SEEP/W and prepare a stamped Geotechnical Investigation and Design Report for submittal to IDNR, along with an inspection plan and forms.

This presentation will focus on breach analysis, geotechnical investigation, reporting and permitting of the Class II hazard potential dam. The presentation will describe the methodology used by Geosyntec to conduct dam breach analysis, requirements of IDNR dam safety regulations based on dam classification, geotechnical investigation and permitting.

Ranjita Tiwari, Geosyntec Consultants

Emily Campbell, PE, CFM, Geosyntec Consultants

Lucas Carr, PE, Geosyntec Consultants

Multi-Use Flood Conveyance, Storage, Wetlands, and Recreation Improvements Along the East Branch of the DuPage River

The August 1996 flood and 1997 winter flood caused severe damage and a year-long loss of skilled-labor jobs at a 70-year old limestone quarry along the East Branch of the DuPage River. The flooding submerged mining equipment and production areas by tens of feet, necessitating large-scale flood protection to prevent future such damage. In addition to flood protection improvements, extensive flood storage and wetland mitigation measures were undertaken to protect surrounding properties and ecological resources. High-quality recreational features were also made possible by these improvements.

A wide range of community benefits was incorporated into the plan. These included transforming a 140-acre, 90-foot deep former limestone quarry into a 1,000 acre-foot, 80-acre multi-functional flood storage and recreational lake with extensive fish spawning features and wildlife nesting on two islands. In addition, an adjacent 28-acre former gravel pit was transformed into high-quality emergent wetlands with upland buffer. All told, approximately 3.5 million yards of clean fill was imported to reduce the depths of the former quarries to provide for good fisheries and wetlands. Also, an 8,000-foot pedestrian trail with a bridge and automatic traffic crossing safety signals provided the missing link in a regional, multi-county trail system; and a secondary highway that formerly flooded annually was raised up above the floodplain and improved for vehicle safety.

The dynamic hydraulic FEQ computer program was required to model pre-existing and design conditions because of on-stream storage and the numerous flow paths. The flood control will

benefit both the mine and local residents by providing a barrier that prevents water from entering the mine and lowering water levels during higher flow events.

Derrick Martin, V3 Companies & Elmhurst Chicago Stone Company

Stuart Dykstra, V3 Companies & Elmhurst Chicago Stone Company

3C: MWRD

Wednesday, 3:20 pm – 4:50 pm

Moderator: Brian Wawczak, MWRD

Buffalo Creek Reservoir Expansion

The Buffalo Creek Reservoir Expansion is a flood reduction project that benefits multiple jurisdictions including communities in both Lake and Cook Counties. The reservoir is owned and operated by MWRGC on property owned by the Lake County Forest Preserves (LCFP) with some maintenance responsibilities falling to the Village of Buffalo Grove. This project was funded in its entirety by MWRDGC. The project represents the very best of government in action with agencies of different jurisdictional boundaries and constituencies working cooperatively toward the common good of residents in Lake and Cook Counties. The project includes flood reduction, public access, wetland/stream/upland habitat enhancement, and water quality components.

Tim Pollowy, PLA, ASLA, Hey and Associates, Inc.

Justin Kirk, PE, CFM, MWRD

2021 Update: MWRD Stormwater Master Planning: Partnering for Resilient Communities

This presentation provides an update to the MWRD's efforts to develop a Stormwater Master Plan for Cook County to address stormwater and urban flooding. Although this presentation focuses on Cook County, the approach is relevant throughout Illinois.

The MWRD's goal is to protect businesses and homes from flood damage. To this end, MWRD is building a Stormwater Plan that will:

--Provide consolidated data, tools, and information to local governments as a baseline assessment of current conditions.

--Quantify the flood mitigation need throughout Cook County and measure progress towards addressing that need.

--Support local governments and agencies in their efforts to identify feasible flood mitigation projects, programs, and/or policies; construct and/or implement these measures; and maintain the systems.

--Encourage and incentivize local government participation in stormwater planning and solutions to reduce flooding, while considering multi-beneficial solutions.

This presentation will provide a progress update and include:

--An introduction to the "Volumetric Storage Metric". This numerical quantification of the total, cumulative flood mitigation need is calculated countywide at the local level. It is a common measurement by which successful implementation of flood mitigation measures can be reported

to the MWRD, Board, or public to show progress. The presentation will describe why the Metric is important, how it's developed, and how municipalities and engineers can use it as a planning tool.

--A discussion of data and maps developed under the program, which can be used by communities to understand potential causes or sources of existing flooding, identify potential at-risk areas, and prioritize locations for additional analysis.

--A discussion of a new interactive GIS platform that will deliver the products of the data analysis and mapping, and become "The Stormwater Master Plan" for Cook County.

--Highlight collaboration efforts with regional agencies.

Jennifer Maercklein, P.E., CFM, V3 Companies

Matt Bardol, PE, CFM, CPESC, D.WRE, Geosyntec Consultants, Inc.

Richard Fisher, PE, CFM, MWRDGC

Jack T.P. Chan, PhD, PE, MWRDGC

3D: RAFT/SDE

Wednesday, 3:20 pm – 4:50 pm

Moderator: Dallas Alley, CFM, Village of Swansea

RAFT and SDE Training

This presentation will review damage estimates, the definition of substantial damage, use of the FEMA's SDE tool and expectations of RAFT volunteers. This training is for both new and continuing RAFT volunteers and will meet the biennial training requirement for participation in 2021.

Don Glondys

Marilyn Sucoe, PE, CFM, IDNR/OWR

Ashely Reiman, FEMA

4A: CRS/RR 2.0

Thursday, 10:30 am - Noon

Moderator: Julie Lomax, Village of Downers Grove

Community Rating System – New for 2021

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 program assigns credit points for each floodplain management activity a community performs and then correlates those points to classes and flood insurance premium discounts for property owners in that community.

This session will discuss the new CRS-Submit program, a web-based tool that easily allows communities to provide their ISO/CRS Specialist with the Cycle Verification and Recertification documentation. The session will also cover the changes to the CRS program that began January of 2021:

New Class 8 and 9 Prerequisites;

Activity 310 – Elevation Certificates / Construction Certificate Management Procedures (CCMP);

New credit opportunities in Activity 510 – Substantial Damage Plan.

Lou Ann Patellaro, CFM, Insurance Services Offices (ISO) – Community Rating System (CRS) **4A-**

The Evolution of Flood Insurance: A Look at Private Flood Insurance and the NFIP's Risk Rating 2.0

While the reform legislation of 2012 and 2014 provided FEMA direction to improve the financial stability of the NFIP, it--along with newer technology--also helped trigger the growth of the private flood insurance market. But this advancement in technology has also allowed FEMA to take a new and simpler approach to how federal flood insurance will be rated in the near future.

This session will first provide a look at the current private flood insurance market and what floodplain managers and others should know and be aware of. Then next will be an update by FEMA on Risk Rating 2.0 followed by an open Q&A session.

With a lot of buzz in the air about private flood insurance and Risk Rating 2.0, you don't want to miss this opportunity to learn the latest.

Bruce A. Bender, CFM, Bender Consulting Services, Inc.

Tony Hake, Federal Insurance and Mitigation Administration

4B: Case Studies

Thursday, 10:30 am - Noon

Moderator: Diane Bouckaert, Manhard Consulting Ltd.

White River Bank Stabilization - 2D Hydraulic Modeling of Bendway Weirs

Bank stabilization utilizing bendway weirs was designed to protect the new I-69 interstate highway from erosion due to lateral migration of the White River in Morgan County, Indiana. Hydraulic design parameters, and performance of the bendway weirs, were estimated using 2D hydraulic modeling.

This presentation will discuss how 2D hydraulic modeling helped refine the bank stabilization design. A comparison of results from 1D and 2D model results will also be presented.

Nabil Ghalayini, P.E., D.WRE, CFM, PMP, WSP USA, Inc.

Better Informed with HEC-RAS 2-D

This presentation will include discussion and examples of how to utilize the basic tools of HEC-RAS 2-D to provide useful information in floodplains that are hydraulically complex. Examples will include projects where HEC-RAS 2-D was used to develop preliminary cost estimates, to develop better informed 1-D models, and to help with locating hydraulic problem areas in a floodplain.

Steven Brown P.E., CFM, Hanson

Floodproofing Solar Infrastructure - Risk Mitigation in the Face of Climate Change

In the U.S. today, power is a basic commodity. However, traditional power sources contribute to climate change and have fueled the development of solar power and other renewables. The Fourth National Climate Assessment predicted and warned the world: "more frequent and intense extreme weather and climate-related events" will place even more stress on our current and future infrastructure.

While there is no preference to site solar fields near water like traditional power plants, precipitation and increased intensity of storms directly affects the risk taken by developers and owners when building a solar site. Mitigating this risk is at the forefront of design. Hydrologic and hydraulic modeling can play an integral role in managing risk for these sites.

FEMA Flood Insurance Rate Maps are widely used as a way to ensure that proposed infrastructure is not within a 100-year floodplain or floodway. However, there is little known of the flood risks outside of these mapped areas. Solar sites have panels and inverters that must stay dry to ensure reliable power generation. Kimley-Horn has been using HEC-RAS 2-D to quantify inundation depths outside of the FEMA floodplain. The 2-D flow model is able to estimate the depth of flow at a given location (i.e. at a solar panel or inverter). The HEC-RAS model also quantifies the velocity of flow at locations within the project area. Recently, many stakeholders have asked if

their equipment is adequately protected from scour and as a result, scour analyses and recommendations on how to mitigate scour have become more frequent in designing solar panel sites.

With solar energy and other renewables becoming more prevalent to combat climate change, the presentation will highlight the importance of performing hydrologic and hydraulic analysis to design resilient solar farms in the face of more frequent extreme weather.

Melissa Duyar, P.E., CFM, Kimley-Horn and Associates, Inc.

4C: Young Professionals

Thursday, 10:30 am - Noon

Moderator: Adam Blumstein, Burns & McDonnell

What I wish I knew 3 years ago: Playing to your strengths as a new engineer

Acknowledging the challenges of entering a new industry and a new workplace, this presentation career planning as a new engineer. As a young engineer herself about to apply for PE licensure, SarahWenzel shares advice learned over the first 3 years of her career about leveraging “new engineer” status and discusses how to maximize opportunity in the first phase of your career.

Sarah Wenzel, Prairie Engineers

IAFSM Young Professionals Panel

The IAFSM Young Professionals (YP) Group will host a panel discussion. Discussion topics will range from challenges that Young Professionals have faced in the stormwater/floodplain management industry, transitioning from university to professional life, challenges faced as YPs working through a pandemic, and various other topics. Panel members (TBD) will include various Young Professionals with a wide array of backgrounds.

Adam Blumstein, PE, CFM, ENV SP, Burns & McDonnell

Lorena Reyes, CFM, FEMA

John Watson, PE, CFM, MWRD

Michal Tutka, CFM, SCST LLC

Chris Hanstad, PE, CFM, ISWS

Dallas Alley, CFM, Village of Swansea

4D: Special Topics

Thursday, 10:30 am - Noon

Moderator: Brian Chaille, ISWS

Nutrient Retention in Ecologically Functional Floodplains: A Review

This presentation will review the potential nutrient pollution retention in ecologically functional floodplains and make recommendations on how to design floodplain restoration projects to maximize nutrient pollution removal from rivers. Nutrient loads in fresh and coastal waters continue to lead to harmful algal blooms across the globe. Historically, floodplains—low-lying areas adjacent to streams and rivers that become inundated during high-flow events—would have been nutrient deposition and/or removal sites within riparian corridors, but many floodplains have been developed and/or disconnected. This review synthesizes literature and data available from field studies quantifying nitrogen and phosphorus removal within floodplains across North America and Europe to determine how effective floodplain restoration is at removing nutrients and draw conclusions on how to design floodplain restoration projects to maximize removal of nitrogen and phosphorus from rivers.

Olivia Dorothy, CFM, American Rivers

Anticipating and Adapting to Riverine Flooding at a Construction Site

This presentation will describe strategies and lessons learned for performing construction in floodway and floodplain and mitigation measures during flood conditions. Construction consisted of excavation and dredging to and remediate soil and sediment contaminated with tar and NAPL from former manufactured gas plant (MGP) operations at a site immediately adjacent to a large river in northern Illinois. The presentation will describe the methodology the construction team utilized to anticipate flood events that occurred during construction and actions taken to mitigate flood damage to the construction site, excavations, and construction equipment. The project team was proactive to plan flood contingency measures and anticipate when floods would occur in addition to implementing mitigation measures quickly prior to flood events that occurring during construction. Proactive site planning included material staging at the highest practicable elevation on site, soil stockpiles removed from the site daily or staged within lined material management pads, berms around material management pads and the wastewater treatment plant pad constructed to elevations greater than the 100-yr floodplain elevation, sheet pile walls for excavation shoring constructed to remain above the 100-yr floodplain elevation, daily tracking of nearby National Oceanic and Atmospheric Administration (NOAA) gages, and redundant securing of on-water boats and equipment. Three flood events occurred during construction which required quick implementation of additional measures including stabilizing disturbed soil near the shoreline with riprap, removal of water quality management buoys from the waterway, removing equipment from the site, and evacuation of the site during the largest flood event which resulted in over 12 feet of river level rise inundating

the entire construction site in over a foot of water. Despite best efforts and practices, some construction materials sustained damage.

Joel Conzelmann, EIT, Geosyntec Consultants

Neil Couch, PG Geosyntec Consultants

Rick Skowron, Geosyntec Consultants

Using Customized GIS Maps with Hydraulic Features for Your Community

As Illinois communities are dealing with urban flooding from a wetter climate the demand from residents to improve stormwater management is increasing. This presentation is going to focus on how communities can use customized GIS maps from readily available data. The maps are used to identify flood risks from hydraulic features, such as, overland flow paths, local depressional storage areas and delineated watersheds and subwatersheds. The easy to read maps can be used by community staff (engineers or non-engineers alike) during public outreach, permitting, planning and design activities to address urban flooding issues for residents. The presentation will go through real life examples of how these GIS maps are put to work for local communities.

Jenny Loewenstein, PE, CFM, CPESC, DECI, Engineering Resource Associates, Inc.

Molly Garrow, PE, CFM, Engineering Resource Associates, Inc.

Mike Maslowski, PE, CFM Engineering Resource Associates, Inc.

5A: Mitigation

Thursday, 1:30 pm – 3:00 pm

Moderator: Mei Zhu, Gewalt Hamilton Associates, Inc.

OWR mitigation program

The Office of Water Resources (OWR) has had a mitigation program dating back to the mid-1970's. This presentation will discuss the program, how to apply for funds, how the program functions, and what can be done with the land after the property is purchased.

Ron Davis, CFM, IDNR / OWR

Village of Shorewood, Loss Avoidance Study: 14 years and 17 floods later

During the past century, the Village of Shorewood, Illinois transitioned from a sleepy summer cottage respite along the DuPage River to a rapidly expanding suburban community. However, following an historic rainfall event in July 1996, the community of Shorewood received a federal disaster declaration and centered their focus on recovery and mitigation.

This loss avoidance study estimates flood damages that would have occurred in Shorewood along the DuPage River if at-risk properties had not been mitigated. It also tells the story of Shorewood, its residents, and their collective resolve in the wake of repeated flooding. This presentation will evaluate the mitigation benefits from 56 property acquisitions between 1996 and 2010, funded through four different public sources. The mitigation benefits, or return on investment, have already surpassed the initial investment, and they will continue to accrue into perpetuity. The presentation will also discuss the local financial mechanisms to facilitate long-term capital improvement projects, the complementary community plans and ordinances, and the role of local champions who seized the momentum following the recovery effort.

Lisa Graff GISP, CFM, Prairie Research Institute - Illinois State Water Survey

Rebecca Leitschuh, AICP, Prairie Research Institute – Illinois State Water Survey

Update of Silver Jackets Floodprone Structure Inventories and the SAFR Web Mapping Application

Using an interagency approach among state and federal partners, Silver Jackets projects in IL are addressing flood risk management issues. Over the past few years, the USACE, IDNR-OWR, ISWS and local communities have worked together to perform several structure-by-structure risk assessments to provide information that identifies which structures may flood, which frequency of flood impacts structures, the depth of flooding likely for each structure, and the expected losses. The results have been uploaded to the Structures at Flood Risk (SAFR) web mapping application which allows floodplain managers in specified project areas to view estimated flood losses, surveyed elevations, and flood depth data for individual buildings in the 0.2%-annual-chance floodplain. This talk will provide an overview of Silver Jackets Floodprone Structure

projects in IL and highlight the information available and the features of the web mapping application.

Terra McParland, PE, IDNR-Office of Water Resources

Lisa Graff GISP, CFM, Prairie Research Institute - Illinois State Water Survey

5B: Urban Flooding

Thursday, 1:30 pm – 3:00 pm

Moderator: Bruce Matthews, Matthews Engineering, Ltd.

Elk Grove Village's Rear Yard Drainage Program

Elk Grove Village experiences rear yard flooding throughout its residential areas. Unique to the area, the Village has rear yard utility easements within every residential lot, with minimal storm sewer within residential rights-of-way. Mitigating the rear yard flooding within the easements has noteworthy benefits when compared to traditional right-of-way projects, particularly concerning restoration and traffic control costs. However, some additional challenges arise, including easement encroachment by residents and the proximity of private underground utilities. A GIS dashboard was developed to monitor drainage complaints and to record inspections. Inspections helped to verify which flooding reports qualified for the Village's program, recording the extent, depth, and duration of ponding. The dashboard also allowed for analysis of severity and relative proximity of various flooding instances, facilitating prioritization and design of the rear yard drainage program.

Corey Van Dyk, CFM, PE, Baxter & Woodman, Inc.

Bulletin 75 impacts on O'Hare Designs

Since 1989, the "industry standard" source for design rainfall data in Illinois has been the Illinois State Water Survey's (ISWS) Bulletin 70. In March 2020, the ISWS released Bulletin 75 which replaces Bulletin 70 and incorporates an additional 34 years of rainfall statistics. Prior to that release, in 2005-2006, an analysis was performed to review proposed drainage systems and resulting ponding on pavement and near buildings and facilities. The goal of the analysis was to assure that the CDA and FAA criteria would be met for standing water in infield areas, on taxiways and runways for facilities to be constructed through the O'Hare Modernization Program, OMP. The majority of construction for OMP drainage facilities was completed prior to the 2018 construction season. After the Illinois State Water Survey issued Bulletin 75 in 2020, CDA designers recognized the need to evaluate sizing of existing and future airfield facilities to accommodate revised rainfall amounts and remain in compliance with regulations. In 2020, CDA directed an update to the earlier ponding analysis using record drawings, updated XP-SWMM models and Bulletin 75 rainfalls. The presentation will explain the diligence of the modeling updates, the airfield ponding results and guidance to airfield designers.

Jeff Julkowski, PE, CFM, Christopher B. Burke Engineering, Ltd
Carolina Martinez-Gutierrez, Chicago Department of Aviation-Design & GIS

Caught Between a Lake and a Hard Place: Solutions to Preventing Erosion on Lake Michigan's Shoreline

In the Midwest, it is typically rivers that grab headlines for flooding; however, over the course of the last 7 years, Lake Michigan has seen water level rise over 5 feet. This has led to erosion, overtopping, and flooding along the coast. Most notably, Chicago and its northern neighbor, Evanston, have faced detrimental impacts to vital public beaches, parks and traffic corridors.

Anticipating further damage, both cities have conducted shoreline assessments based on the condition, vulnerability and community use of each site. Between the two cities, 25 miles of shoreline were analyzed to provide a unique solution involving temporary, restorative and proposed structures. Both cities have implemented short-term solutions at several sites along the shoreline, ranging from large stone revetments to TrapBags, a series of sand-filled erosion barriers. This variation is dependent on the condition of the shoreline at each location. In this presentation, the audience will learn about short and long-term approaches from two different cities, enabling community access to amenities along the shoreline.

While it is not known when the high-water level will lower again, it is predicted that, in the future, water levels will rise and fall with greater intensity and over shorter intervals. With these changes, FEMA floodplain maps are being redrawn and will affect more people than ever; Chicago and Evanston are seeing that areas being affected now are falling into these new flood zones. At the end of this coming winter season, it will be clear how effective the short-term measures were and will guide the design teams in how robust long-term solutions need in order to protect shoreline assets for years to come. What is clear now is that not one shoreline protection will fit all scenarios; each solution must be tailored to fit the municipality's needs.

Charlotte Carlton, SmithGroup

Kathryn Ganas, SmithGroup

Sarah White, Chicago Park District

Stefanie Levine, PLA, City of Evanston

5C: Planning

Thursday, 1:30 pm – 3:00 pm

Moderator: Mark Hoskins, IDNR/OWR

Illinois State Water Plan

The State Water Plan Task Force is working to develop a new state water plan. This presentation will provide a history of Illinois State Water Plans, the recent activities undertaken by the task force for updating the State Water Plan and the water topics that will be included in the new water plan. An overview of each of the water topics will be individually presented along with identified issues of each topic. This presentation will include with a summary of the public outreach efforts that have and will be occurring as the plan is developed along with a schedule out to the publication of the new Illinois State Water Plan. In 1980, Governor Thompson appointed a State Water Plan Task Force with the purpose of creating a new State Water Plan. The State Water Plan Task Force was comprised of 14 agencies. The new plan was to replace the original 1967 plan which had become obsolete. Over the course of the next four years, the task force worked with two advisory groups, five regional committees and widespread public hearings. The results of those efforts were the publication of the 1984 "Illinois State Water Plan".

Loren Wobig P.E., CFM, IDNR/OWR

Wes Cattoor, PD, CFM, IDNR/OWR

Naperville Flood Warning Booklets

The DuPage County Stormwater Management Department has teamed up with the City of Naperville and the United States Geological Survey (USGS) to create flood inundation maps and flood warning booklets for the portion of the West Branch DuPage River (West Branch) that flows through Naperville. The West Branch flows northwest to southeast in Naperville from Fawell Dam through the city's downtown before eventually joining the East Branch DuPage River in the Knock Knolls Forest Preserve. Naperville contains approximately 6 miles of the river's mainstem, which has contributed to flood damages throughout the years.

DuPage County and the USGS have developed a flood forecasting system for the County's three major watersheds, including the West Branch and East Branches of the DuPage River and Salt Creek. Actual and forecasted rainfall amounts are simulated using the County's hydrologic and hydraulic models to predict peak elevations and peak flows along the stream system in real-time.

The flood forecasting model for the West Branch uses a boundary condition at Warrenville Road, which is situated just upstream of Naperville and is the location of a USGS stream gage station. By forcing constant flows at Warrenville Road, DuPage County's hydraulic model estimates stream elevations along the mainstem through Naperville. Increasing flow rates enabled the County to produce stream elevation profiles at incremental elevations along the river. Utilizing the County's 2-foot topography and the FEQ-Mapper program, the Stormwater Management Department created flood inundation maps for each incremental elevation. The inundation maps

are sectioned into nine separate panels with a major bridge or roadway at the center of each panel.

In addition, DuPage County developed flood warning booklets to identify activities and notifications or warnings that should take place at each incremental elevation. The inundation maps and booklets will assist Naperville in flood warning and response throughout the community.

Christopher C. Vonnahme, PE, CFM, DuPage County Stormwater Management Department

Watershed-based Planning: A stakeholder driven process for improving and protecting the health of watersheds

Watershed-based planning is a systematic framework for addressing nonpoint source pollution and achieving water quality protection and remediation. The Chicago Metropolitan Agency for Planning (CMAP) has developed numerous watershed-based plans throughout northeastern Illinois. CMAP collaborates with watershed stakeholders to develop these plans which identify planning, policy, outreach and education, and on-the-ground project recommendations that upon implementation will help improve and protect water quality. These plans also meet the “9 minimum elements” required by U.S. EPA and Illinois EPA for projects to be eligible for Clean Water Act Section 319(h) Nonpoint Source Pollution Control Program grant funds.

Drawing on experiences from CMAP’s recent development of plans for the Mill Creek and Indian Creek watersheds in Kane and DuPage Counties, CMAP staff will provide an overview of the watershed-based planning process and its collaborative approach to working with local stakeholders. Recognizing the importance of creating recommendations that are driven by the vision and interests of the watershed, CMAP will discuss outreach strategies that communities can use to solicit public input, engage residents, and obtain feedback from other key stakeholders throughout the planning process. CMAP will also highlight the multi-objective nature of watershed-based plans and how they can help address other water resource challenges, such as the impacts of stormwater and flooding.

Kelsey Pudlock, Chicago Metropolitan Agency for Planning

Holly Hudson, Chicago Metropolitan Agency for Planning

ASFPM Foundation Urban Flooding Listening Session

Thursday, 3:15 pm – 4:45 pm

Moderator: Bruce Bender, Bender Consulting Services, Inc.

The Association of State Floodplain Managers Foundation, the nonprofit charitable arm of the Association of State Floodplain Managers, has concluded the problem of urban flooding is broad, serious and will require participation by a broad array of stakeholders at all levels and from all sectors. To spark action, the Foundation is planning a **2022 National Urban Flooding Summit**, which will bring together the people and institutions who can shape a more defined pathway to mitigate urban flooding. The Foundation will conduct a series of listening sessions in 2021, to inform the Summit with perspectives of local and regional governments, businesses, non-governmental organizations, and the public at large who must play a part in addressing the challenges of urban flooding. At this year's IASFM annual conference, the Foundation is hosting a listening session which will include five experienced panelists from Illinois public agencies and government. Please come so that your voice is heard and helps make the Summit an impactful event in addressing the urban flooding crisis.

Doug Plasencia, President ASFPM Foundation

Sally McConkey (Illinois State Water Survey - ISWS)

Sarah Hunn (DuPage County)

Kate Evasic (Chicago Metropolitan Agency for Planning – CMAP)

Joe Kratzer (Metropolitan Water Reclamation District of Greater Chicago – MWRDGC)

Loren Wobig (Illinois Department of Natural Resources – Office of Water Resources – IDNR-OWR)