Association of Montana Floodplain Managers
19th Annual Conference

BEST WESTERN PLUS HERITAGE INN, GREAT FALLS, MT, MARCH 5– 9 2018

"A RENDEZVOUS ON THE MISSOURI"

MONDAY AGENDA

Monday, March 5 **Pre-Conference Workshop and Meetings**

8:00 am – 5:00 pm	Registration	
12:00 pm – 1:00 pm	AMFM Board Meeting	
1:00 pm – 5:00 pm	**Community Rating System (CRS) Workshop Program**	**Constance Lake**, CFM CRS Specialist ISO Community Hazard Mitigation

This four-hour CRS Training will focus on activities that appear to be under-utilized in the State of Montana. The CRS activities include 330, 340, 350, 360, 370, 450, and 610. Arrangements can also be made for meetings with individual communities while at the conference.

1:00 pm – 5:00 pm	**Certified Floodplain Manager (CFM®) Exam Preparation* Workshop** (*Refresher purposes only. Not intended to teach the exam.)	**Mike DaSilva, CFM** Tetra Tech, Inc. **Forest Sanderson**, AICP, CFM KJL
6:00 pm – 9:00 pm	**CFM® Exam**	**Mike DaSilva,** CFM Tetra Tech, Inc. **Forest Sanderson**, AICP, CFM KJL

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TUESDAY AGENDA

Tuesday, March 6 Pre-Conference Concurrent Workshops

Two concurrent workshops will be offered on Tuesday morning. One of the concurrent workshops will be non-technical in nature and is geared for Local Floodplain Administrators and those new to floodplain management. The other concurrent workshop is intended for the technically orientated professionals who work in the floodplain field.

8:00 am – 5:00 pm **Registration**

8:00 am – 12:00 pm **Floodplain Basics Workshop**

This workshop is tailored for those new to floodplain management and others interested in an overview of the basics of the National Flood Insurance Program (NFIP) and local floodplain programs.

8:00 am – 10:00 am **Floodplain Administrator Conundrums: Tackling Tricky Permitting and Enforcement Issues** — **Traci Sears**, CFM, MT DNRC; **Michelle McNamee**, CFM, MT DNRC

Do permit applications make you anxious? Are enforcement issues getting you down? Traci and Michelle are here to help. This interactive session will take floodplain administrators and others interested through the complex land of floodplain permitting and enforcement issues. During the first part of workshop, the group will examine real-life permitting scenarios, tackling the permitting process from initial contact to permit close out (and all the hiccups in between).

10:00 am –10:15 am **Morning Break** — ***Courtesy of AMFM***

10:15 am – 12:00 **Floodplain Administrator Conundrums: Tackling Tricky Permitting and Enforcement Issues** (continued) — **Traci Sears**, CFM, MT DNRC; **Michelle McNamee**, CFM, MT DNRC

In the second part of the workshop, the group will discuss possible solutions for challenging enforcement issues seen around Montana. The audience should leave the session more comfortable with floodplain permitting and enforcement issues as well as with a better understanding of floodplain administrator roles, duties, and resources.

---------- CONCURRENT TUESDAY SESSION ----------

8:00 am – 12:00 pm Technical Floodplain Workshop

This workshop is tailored for the technically orientated professionals who work in the floodplain field. This session will provide in-depth presentations concerning the technical aspects of Hydrology, and Bioengineering Stream and Bank Restoration projects within the regulatory floodplain.

8:00 am – 9:00 am **Peak-Flow Frequency Analysis: USGS Activities in Implementing the Bulletin 17C Guidelines**

Peter M. McCarthy, USGS
Steve Sando, USGS

The U.S. Geological Survey (USGS) is tasked with collecting and disseminating reliable, impartial, and timely information that is needed to understand the Nation's water resources. Reporting peak-flow frequency analyses for USGS streamgages is an important part of the USGS mission. Peak-flow frequency analyses are needed for many applications including flood-plain mapping, bridge and culvert design, dam design and analysis, and instream-flow water rights requests. Calculation of peak-flow frequency analyses for Montana streamgages is complicated by (1) the diverse and complex flood hydrology of Montana; and (2) continual change in available data, understanding of hydroclimatic processes, and analytical methods. The AMFM conference presents a valuable opportunity for interaction between USGS hydrologists, flood-plain managers, and other professionals to facilitate understanding of flood hydrology that is essential for effective flood-plain management.

This presentation will discuss recent developments in peak-flow frequency analysis with emphasis on applications to Montana streamgages. Specifically, the new Bulletin 17C flood-frequency guidelines will be reviewed and the application of the new guidelines to Montana streamgages will be discussed. Example frequency analyses will focus on streamgages in the Ruby, Jefferson, and Madison River Basins, where regulation effects and synchronization of peak-flow records collected at different times present substantial complexities. Other topics that will be addressed include (1) temporal stationarity of peak-flow records and effects of hydroclimatic persistence; (2) aspects of Montana peak-flow datasets that are not well represented by standard Bulletin 17C methods; and (3) methods of reporting peak-flow frequency analyses.

9:00 am - 9:30 am **Functional Floodplain vs. Regulatory Floodplain: A Case Study from the Helena Valley**

Eric Roberts, MT FWP
Helena Area Fish Biologist

Traditionally stream restoration work in Montana focused on improving fish habitat, water quality, and overall stream function with relatively minimal regulatory oversight. Overall gains of restoration work were recognized as beneficial by regulatory agencies and communities, and often granted a pass or a fast track regarding permitting and permitting fees. Over time, permitting for restoration projects became more stringent by regulatory agencies, and the restoration community has adjusted to shifting requirements by both state (DEQ, DNRC, FWP) and federal (USCOE) agencies to conduct stream restoration work. As more Montana communities have adopted model floodplain regulations, floodplain permits have played a greater role in the stream permitting equation. Although most restoration work improves functionality of the geomorphic floodplain, that same restoration work may be contrary to requirements of the regulatory floodplain. Recent restoration projects in the regulatory floodplain in the Helena valley have been completed in recent years, with additional costs associated with additional engineering analysis to meet regulatory requirements. Some smaller scale habitat projects were not completed because engineering analysis cost more than proposed on the ground work. A proposed project on Sevenmile Creek (tributary to Tenmile Creek) proposes to restore a degraded stream reach by plugging the incised stream reach and reconstructing a new stream channel on the floodplain bench. The proposed project was shortened by approximately 1,000 feet because the stream reach entered the regulatory floodplain and engineering and regulatory fees associated with work in the regulatory floodplain would have precluded construction costs. This presentation will provide details associated with the Sevenmile project, and how the functional and regulatory floodplains clash at this location.

---------- CONCURRENT TUESDAY SESSION ----------

9:30 am – 10:00 am	**How to Squeeze 60,000 cfs Through a Massive Restoration Project without getting the Front Lawn Wet. Or Kootenai River Habitat Restoration Project: River Restoration in Approximate A and Detailed Study Areas**	**Chris Nelson**, PE, CFM Water Resource Engineer River Design Group, Inc

The Kootenai Tribe of Idaho, in cooperation with Bonneville Power Administration (BPA), and federal, state, and private stakeholders, is implementing the Kootenai River Habitat Restoration Program (KRHRP), a collaborative effort aimed at restoring and enhancing aquatic habitat impacted by Libby Dam, levees, and floodplain agriculture. The portion of the Kootenai River that flows through Bonners Ferry is in a Detailed Study Area (Zone A10) with Base Flood Elevations. Portions of the Kootenai River upstream and downstream of the city are in Approximate Study Areas, with no base flood elevations determined. A collaborative approach involving coordination with USACE and local floodplain managers was taken to evaluate effects of proposed projects in the context of potential changes to flood risk. Evaluating impacts of proposed projects was an integral part of the design process. Existing and proposed conditions were simulated using a one-dimensional unsteady flow HEC-RAS model. Modeling results demonstrated that the proposed projects would not notably increase Bonners Ferry flood elevations, and no changes in water management activities would be required for Libby Dam flood control operations, This outcome satisfied the FEMA regulatory requirement for no net rise of the 1%-annual-chance Base Flood Elevation. Examples of restoration projects completed in both the Detailed and Approximate Study Areas will be presented. Additional information about the project can be found at www.restoringthekootenai.org.

10:00 am –10:15 am	**Morning Break**	***Courtesy of RESPEC***
10:15 am – 10:45 am	**A Case Study Comparison of Pre-Construction Effort For Bioengineered Streambank Solutions**	**Eric F. Anderson**, PE, CFM WGM Group

The level of design and permitting effort for bioengineered streambank solutions can vary significantly due to location-specific permitting requirements, including the presence or absence of a regulatory floodplain. Permit requirements can also heavily influence the design solutions and construction techniques used for bioengineered stream projects. This presentation will examine several bioengineered projects on various rivers in western Montana, including the Bitterroot River, Rock Creek, and the Smith River. The planning process, design strategy, and technical requirements for each project will be discussed and comparisons will be drawn regarding the overall pre-construction level of effort.

10:45 am – 11:15 am	**StreamStats**	**Peter M. McCarthy**, USGS **Steve Sando**, USGS

This presentation will discuss the USGS StreamStats program. StreamStats is a Web-based Geographic Information Systems (GIS) application that provides users with access to an assortment of analytical tools that are useful for a variety of water-resources planning and management purposes, and for engineering and design purposes. StreamStats users can select USGS data-collection station locations shown on a map and obtain previously published information for the stations. Users also can select any location along a stream and obtain the drainage-basin boundary, basin characteristics, and estimates of streamflow statistics for the location. The streamflow statistics that StreamStats can provide for data-collection stations and for user-selected ungaged sites vary among the implemented states and among data-collection stations within states.

"A RENDEZVOUS ON THE MISSOURI"

Tuesday, March 6 General Conference Sessions

1:00 pm –1:10 pm	**Welcome and Opening Comments**	**Larry Schock**, AMFM Executive Director, MT DNRC
1:10 pm -1:20 pm	**Message from Senator Jon Tester**	**Robyn Yancey** Congressional Staff
1:20 pm -1:30 pm	**Message from Senator Steve Daines**	**Jenna McKinney** Field Representative
1:30 pm - 1:40 pm	**Message from Congressman Greg Gianforte**	**Brett Simons** Field Representative
1:40 pm – 2:30 pm	**To the Moon and Back: The National Flood Insurance Program**	**Diana Herrera,** CFM Sr. Regional Insurance Specialist FEMA Region VIII

The National Flood Insurance Program has a goal to increase participation. This presentation will discuss how we hope to reach that goal. How does the NFIP affect your community? Are you providing flood insurance information to your citizens for their flooding risk? How are you handling flood risks after a fire? All of these questions can help not only your citizens but you too. Oh, and if we have information on reauthorization, we will include that too.

2:30 pm -3:00 pm	**Smooth Transition: How to Adjust Manning's "n" Values for 2D Modeling**	**Andrew Friend,** PE Michael Baker International

In 1D models, Manning's n values are used in part to model the effects of channel sinuosity and meandering. In fact, Cowan (1956) and Chow (1959) suggest that Manning's n values should be increased up to 30% to account for degree of meandering. However, in 2D models, lateral flow losses and more complex flow paths are inherently accounted for in the model's calculations. Theoretically, therefore, Manning's n values should be lower for 2D models than for 1D models when modeling the same reach. However, manuals for HEC-RAS and SRH do not specify different recommended Manning's n values for 2D reaches. To more accurately assess how Manning's n values should be adjusted for use in 2D models, we conducted several case studies and performed detailed modeling comparisons for several different stream reaches in the Rocky Mountain region, including Montana. By comparing 1D modeling results (HEC-RAS) to 2D modeling results (HEC-RAS and SRH), we are now able to propose concrete suggestions on how to adjust Manning's n values for 2D models. These suggestions vary based on the degree of the stream's sinuosity and complexity of flowpaths. The purpose of this presentation is to communicate these recommendations, and to propose general "rules of thumb" for Manning's n selection for 2D models.

3:00 pm–3:15 pm	**Afternoon Break**	***Courtesy of MT DNRC & MT DES***

Tuesday, March 6 Conference Sessions

3:15 pm – 4:00 pm	**Lessons Learned from a Section 1316 Declaration In Montana**	**Sean O'Callaghan**, AICP, CFM Gallatin County Planning Director

and Floodplain Administrator

Gallatin County has had reasonably good success (luck) working with property owners to remedy violations of our Floodplain Regulations. Obtaining compliance is seldom a quick, easy, or clean process, and often involves hard work and coordination with various agencies and departments. In 2016 Gallatin County became aware of a violation of our Regulations and in dealing with the landowner and his representatives it became clear that he was not going to voluntarily halt his substantial construction project and do what was necessary to bring his property into compliance with the requirements of the County's Regulations. After exploring other options, Gallatin County pursued and ultimately obtained a 1316 Declaration against the property, eliminating eligibility for that property to obtain flood insurance through the National Flood Insurance Program. This was important because it protected Gallatin County's status as a CRS community. As there are few examples within FEMA Region VIII of 1316 Declarations I'd like to share our experience with AMFM members. I'd like to discuss the facts of the case, why we chose to pursue a 1316 Declaration, what we had to do to get FEMA to sign off, what we learned, and the ongoing situation that has ensued.

4:00 pm – 4:30 pm **Missoula County Flood Tool** **Todd Klietz**, RS, CFM
Missoula County
Floodplain Administrator

Missoula County's Flood Tool is an online resource utilized by the general public, developers, realtors, lenders and insurance professionals to determine a property's floodplain status. The tool identifies properties by geocode or address and links to the main Property Information System (PIS) where additional information regarding tax information, septic permitting and other land use information can be identified. In addition to the flood zone, Letters Of Map Change (LOMCs) and Elevation Certificates (ECs) are identified and linked to the original documents. The floodplain shapefile is also amended to show the updated boundaries approved by FEMA through the LOMC process. Georeferenced aerials taken during flooding are also available. A one-mile buffer around the Approximate A zone may also be selected to determine if a given property requires a historical analysis to determine if the parcel was created post-FIRM without benefit of the base flood elevation having been determined. If so, the base flood elevation is required to be determined prior to additional development, subdivision or subdivision exemption.

4:30 pm - 5:00 pm **What the Heck is a Silver Jacket, and What Can It Do for Me?** **Worby McNamee**, CFM
MT DNRC

The Montana Silver Jackets are an interagency team comprised of eleven State and Federal agencies working to manage and reduce flood risk in Montana. The team identifies potential projects aimed at community flood-risk reduction and attempts to connect those projects the resources needed to be successful, including funding offered annually through the National Silver Jackets Program. This presentation will highlight successful Montana Silver Jackets projects and discuss how the team can be leveraged to reduce your community's flood risk.

5:00 pm - 5:15 pm **DNRC Floodplain Mapping Program Updates** **Nicole Decker**, PE, CFM
MT DNRC

The Montana DNRC Floodplain Program serves as a Cooperating Technical Partner (CTP) to FEMA, managing multiple flood risk projects for the State of Montana. This presentation will give an overview of the current projects the DNRC is managing around the state, and what the status of each project is.

5:15 pm - 5:30 pm **DNRC Awards**

6:00 pm – 9:00 pm **Evening Social** ***Courtesy of Morrison & Maierle***

Wednesday, March 7 Conference Sessions

8:00 am – 5:00 pm **Registration**

8:00 am – 8:15 am **Funding for Non-Structural Floodplain Control** **Alice Stanley**, Chief

Resource Development Bureau
MT DNRC

The Montana Department of Natural Resources and Conservation offers grants and loans for flood control projects that protect or repair a renewable resource. These non-structural floodplain control measures modify the ways that a floodplain is used and can provide places for floodwaters to go while avoiding damage to communities. Flood control projects funded by the DNRC include floodway and natural habitat expansion, creating flood-water storage basins, encouraging bank storage, feasibility studies, building adaptable irrigation infrastructure, and floodplain management plans. This presentation will briefly summarize floodplain control funding options available to Montana government entities, watershed groups and irrigation companies.

8:15 am – 9:00 am **Custer County – Miles City Regional Flood Protection Project Update**

Samantha Malenovsky, CFM
Miles City FPA
Becky Bey, KLJ
Government Relations Specialist

Almost 80 percent of residences and businesses in Miles City are located within the natural floodplain or floodway at the confluence of the Yellowstone and Tongue Rivers. In addition to the obvious flood risk and potential for large scale property and critical infrastructure damage, citizens of Miles City pay substantial flood insurance premiums, representing approximately 23 percent of ALL flood insurance policies in Montana, a total of just over $625,000 annually (2015). It is anticipated that by the year 2020, the total amount leaving Miles City annually in flood insurance premiums will exceed 1.2 million dollars. In response to these concerns, The Custer County-Miles City (CCMC) Regional Flood Protection Project Team was formed and is currently in the second year of working with USACE to complete a Section 205 Study to aid the community in determining how to address the currently substandard levee structure and best protect their citizens from a catastrophic flood event. In addition to the technical aspects of this project, there has been considerable attention paid to creating meaningful partnerships, engaging City, State, and Federal partners early and often, and engaging and informing the public, ensuring ongoing community buy-in. This presentation will give a short update on CCMC project progress and will also outline how the CCMC Steering Committee and related working subcommittees came to be in existence, how the City and County are working together effectively, what essential outside partners have been included, what communication and public engagement tools have been utilized, and the lessons learned to date. Sample documents, websites, marketing materials, and project schedules will be provided. Attendees will be able to utilize the CCMC experiences to better inform and prepare them in successfully moving forward with their own flood-protection projects.

9:00 am – 9:30 am **National Flood Services You CAN complete an EC-Unlocking the Mysteries of A zones w/no BFE**

Connie Flora, ANFI
Director of Training, NFS
Amber Cry, ANFI
Operations Manager 1, NFS

9:30 am – 10:00 am **What is this "*Model*" You Speak Of?**

Ben Fennelly, PE, CFM
HDR

Have you ever asked or thought to yourself, "This crazy engineer said that they developed a model of the river, but I can't see it." As an engineer, have you ever struggled to describe your work tasks to somebody outside of the engineering division? This presentation attempts to bridge the gap between the technical speak of the engineering community with the local administrators and general public. It will define a model, the various types of models, and how they are used. The discussion will also lead to what is coming next in "the modeling world" by highlighting features that will be incorporated in upcoming releases of HEC-RAS.

10:00 am - 10:15 am **Morning Break** ***Courtesy of WGM Group & AMFM***

Wednesday, March 7 Conference Sessions

10:15 am – 11:00 am **Navigating the Options: Which Hydraulic Method is Appropriate To Meet Your Floodplain Management Needs**

Greg Gable, PE, CFM
DOWL
Josh Robbins, EI, CFM
DOWL

We live in a world of options - always seeking to select the best choice for a given situation. With advances in technology and software, engineers now have more tools in their toolbox for completing floodplain studies. This presentation will provide floodplain managers with a high-level understanding of the engineering methods that they may encounter during the permitting process. We will discuss the appropriate use of different hydraulic evaluations, data requirements, and other key factors that will help floodplain managers make informed decisions when reviewing applications.

11:00 am – 11:45 am **Montana Infrastructure Report Card: What It Is, and How It Relates To Floodplain Management**

Melissa Matassa-Stone, PE, CFM
Senior Project Engineer
WGM Group

Montana's aging infrastructure is approaching a critical state of disrepair. From neighborhood roads and community schools to safe drinking water, from dams that produce energy and prevent flooding to waterways that irrigate our fields, this infrastructure is used by all Montanans and is essential to our economic future. The Montana Section of the American Society of Civil Engineers (ASCE) completed Montana's first Infrastructure Report Card in 2014 and is working to prepare an updated 2018 Report Card that reflects current status and how conditions have changed since 2014. This session seeks to educate AMFM members about the Montana Infrastructure Report Card in general and to discuss why it is relevant to floodplain management. Specifically, the session will review the following items:

1. Introduce the concept and application of state and national Infrastructure Report Cards,
2. Review highlights and outcomes of the 2014 Montana Infrastructure Report Card,
3. Discuss why the outcomes of the Infrastructure Report Card are relevant to floodplain managers and how floodplain managers can use the results to better protect their communities, and
4. Provide an update on the 2018 Montana Infrastructure Report Card process and timelines

11:45 – 1:00 pm **General AMFM Membership Luncheon Meeting**

11:45 – 1:00 pm **Lunch on Your Own for Non AMFM Members**

1:00 pm – 1:30 pm **City of Burlington, North Dakota Interior Drainage Design**

Thomas Johnson, PE, CFM
Ackerman-Estvold

Levees and floodwalls that are constructed adjacent to rivers are intended to prevent flooding of adjacent floodplain lands. These levees and floodwalls, however, block the natural local drainage to the river, resulting in potential for flooding landward of the levees from local rainfall events. The design of the "interior drainage" is a crucial piece of any flood protection project. Traditional interior drainage systems allow runoff to flow through gravity storm sewer systems and outfalls into the river, when the river elevation is at low stage. The gravity storm sewer system outfalls are fitted with gates and backflow prevention devices. During times of high river stage, the gravity outlet gates are closed, and local runoff captured landward of the levee is pumped to the river. During the design process for the Mouse River Enhanced Flood Protection Project Phase BU-1 – City of Burlington, several interior drainage alternatives were analyzed, resulting in reconsideration of this traditional approach to interior drainage. The preferred alternative identified included a centrally located pump system with no gravity outfalls, requiring runoff to be pumped at all times, regardless of high or low river stage. This presentation will discuss the alternatives analysis that led to the preferred interior drainage alternative and why this alternative is the best fit for this project and community.

Wednesday, March 7 Conference Sessions

1:30 pm – 2:00 pm **Local Choices and How They Can Impact The National Flood Insurance Program**

Traci Sears, CFM, MT DNRC
Tiffany Lyden, CFM, MT DNRC

Elected officials are making daily decisions that could impact local communities and vulnerable flood areas. A glance of the issues that elected officials face reveal a lack of understanding of the flood risk responsibilities at a local level and the

need for long term sustainability planning. The State Community Assistance Program helps local communities identify areas of concern and provides strategies on how to deal with issues such as enforcement and other land use activities before, during, and after an event. Learn about courses of action that a floodplain administrator may employ to help reduce the impact of those choices that elected officials make that can undermine the fundamental principles of the NFIP.

2:00 pm – 2:45 pm **The Hoops of Mitigation Grants** **Adam Carlson**, CFM
Musselshell County FPA

There are many Mitigation grants out there and they all have their own hoops to jump through. Musselshell County is working with three different Mitigation grant programs and learned the hoops and challenges that come with the Mitigation grants. Some challenges were handles early and were not and big problem some we had to learn the hard way. I will share with you the hoops, challenges and how Musselshell County overcame the issues that came up and ones that we are still working on.

2:45 pm – 3:00 pm **Emergency Management Assistance Compact Hurricane Irma Recovery Experiences** **Adam Carlson**, CFM
Musselshell County FPA

I will share the EMAC experience I had while assisting with the Hurricane Irma Recovery efforts in Florida and working with Floodplain and Emergency Managers from other States.

3:00 pm –3:15 pm **Afternoon Break in the Big Sky Atrium** ***Courtesy of Allied Engineering & AMFM***

3:15 pm – 4:00 pm **Helena Valley Flooding: A Case Study** **Matt Johnson,** PE, CFM
RESPEC
Dan Karlin, PE,
Lewis & Clark County

The Helena Valley, located in Lewis and Clark County just north of Helena, Montana, has historically suffered repeated widespread flood events, causing millions of dollars in damages and displacement costs. The most recent significant flood events occurred in 1975, 1981, 2011, and 2014, in addition to numerous large floods prior. This presentation will provide an overview of the mechanisms responsible for flooding and provide a summary of past, current, and future efforts and associated challenges towards mitigating flooding in the Helena Valley.

4:00 pm – 5:00 pm **State Mitigation Plan Update** **Nadene Wadsworth**, MT DES
State Hazard Mitigation Officer

Currently the State of Montana is in the process of updating the state mitigation plan. This plan is an all-encompassing plan of the state's hazards and how we the state agencies will mitigate the effects of these hazards to our state infrastructure and resources, also being able to demonstrate how we the state will assist our local and tribal partners with their own mitigation efforts. A requirement for mitigation planning is that the entity must hold public meetings where the public are allowed to make comments on the information that is going into the plan. I would like to propose to hold one of these public meetings at the AMFM and to seek input from our local and tribal partners on the flood section of the state plan.

6:00 pm –9:00 pm **Evening Social in the Big Sky Atrium** ***Courtesy of Pioneer Technical & Great West Engineering***

Thursday, March 8 Conference Sessions

8:00 am – 8:30 am **Kicking Off the Model Floodplain Ordinance Update Process** **Michelle McNamee**, CFM
MT DNRC
Traci Sears, CFM, MT DNRC

Come one, come all to the first discussion of the State's Model Floodplain Ordinance update! At this time, we will go over the process for updating the current Model Floodplain Ordinance (adopted in 2014) and give a potential timeline towards

the adoption of a revised model. We will also provide information on how those interested can join committees associated with the model update and stay informed of/comment on proposed changes. This will mark the beginning of a multi-year, collaborative process aimed at creating an even stronger Model Floodplain Ordinance in Montana. Thanks, in advance, for your interest and participation!

8:30 am – 9:00 am **Flood Hazard Mapping in Alberta Canada: Highwood River Case Study**

Jim Choles, M.Sc., PE, CFM
River Hydraulics Engineer
Alberta Environment and Parks

In June 2013 severe flooding in Southern Alberta caused an estimated $6 billion in damages. On the Highwood River, particularly in the area around the Town of High River, there was historically high flooding and accompanying damages. Partly in response to this event, a river hazard study along the Highwood River was commissioned under the provincial Flood Hazard Identification Program. The intent of the study is to help enhance public safety, reduce potential future flood damages, and mitigate negative individual and community flooding impacts by identifying flood hazards. This presentation will outline unique technical challenges with the study and describe several new deliverables that were introduced to help support local governments in their emergency response and land-use planning needs. One of the most unique characteristics of the study area is that the Town of High River is located at the basin divide between the Highwood and Little Bow Rivers watersheds. During high flow events, the Highwood River overflows its banks upstream of Town and flows overland into the Little Bow River basin. This overland flow is essentially lost to the Highwood River, and characterizing the dynamic flow split relationship is important for hydraulic modeling and flood mapping purposes. Detailed 1D and 2D modelling was performed to accurately define the flows split relationship over a wide range of inflows, including assessment of pre-and post-levee conditions to reflect construction of flood mitigation infrastructure after the 2013 flood event. Aside from a new flood hazard map identifying the flood hazard area divided into the floodway and flood fringe, the study deliverables included a hydrology assessment using a basin wide analysis, new HEC-RAS river model, updated and new flood inundation mapping up to the 1000-year flood, a flood risk inventory, and a channel stability assessment.

9:00 pm – 9:30 pm **Benefits of a Community Rating System (CRS) Program**

Constance Lake, CFM
CRS Specialist
ISO Community Hazard Mitigation

Join us for the overview of CRS! If you're considering a CRS program for your community or would like to be reenergized on your existing program, come hear what CRS is about and the possible benefit to your community. This presentation will also give you an idea of the credit you could receive for what you're already doing. Look forward to meeting you!

9:30 am – 10:00 am **What Can LiDAR Do for You?**

Melissa Christie
Russ Faux
Quantum Spatial, Inc.

The objective of this presentation is to present Montana Floodplain Managers an overview of LiDAR technology including how LiDAR is collected, point clouds, point density, standard deliverables, applications and GIS. We will review how LiDAR has taken remote sensing technology we use every day like GPS, orthophotos and topographic mapping and expanded it to new levels. Bare earth surface models, highest hit models, feature extraction and floodplain mapping will all be discussed. This presentation will bring an increased awareness to field scientists, GIS professionals and floodplain managers to the multiple applications that one LiDAR data set can yield. Time will be available for Q&A.!

10:00 am - 10:15 am **Morning Break** ***Courtesy of TrueNorth Steel & AMFM***

Thursday, March 8 Conference Sessions

10:15 am – 11:00 am **Planning Development in a Context of Uncertain and Changing Floodplains**

Nick Kaufman, Principal Planner
Vice President WGM Group, Inc.
Anne Cossitt, Senior Planner
WGM Group, Inc.

Recent national disasters illustrate the dramatic differences between actual recent flood events and mapped floodplains (FIRM). How do we locate new development and plan for its flood resiliency in light of the uncertainties of mapped

floodplains? This session will briefly review factors affecting differences in mapped floodplains and actual events. Then, using recent information from the Houston floods of 2017 and examining specific examples in Montana, we will examine options for more resilient development practices. Specifically, the session will review the following items:

1. Existing practice for siting new development – a general review of land development in Montana in relation to hazards, including flooding
2. Brief overview of factors affecting accuracy of floodplain maps and data relevant to siting development or providing for resiliency
3. Discuss how to promote more resilient development, using examples

11:00 am – 11:20 am **Montana DNRC 310 Permit Web Applications: Show and Tell**

Bob Flesher, CPG, MT DNRC
Stream Permitting Coordinator

The Streambed and Land Preservation Act (310 Law) was enacted in 1975. Montana statute requires Conservation Districts to administer this law and individuals to apply for approval of any activities that alter the bed or banks of perennial flowing streams or may affect a perennial flowing stream. Since 2001, The Montana DNRC has provided a database and web application to store and manage stream permit information; however, the application has become increasingly outdated. Over the last year, DNRC has worked collaboratively with Conservation Districts across Montana to develop a new Stream Permits Web Application. This resource will serve as a tool for Conservation District staff to create, edit and store stream permit data. The application will also be available to the public and provide the ability to investigate stream permit information. The DNRC Stream Permit Web Application leverages the Esri ArcGIS Online environment and provides users with a variety of query and analysis tools for accessing and manipulating this data. We'll cover how this application can be accessed, a variety of ways Conservation Districts can utilize this resource and functionality available to the public.

11:20 am – 11:50 am **USACE Rapid Floodplain Modeling**

Traci Owens, EI, CFM
United States Army Corps of Engineers

In 2012, USACE began working in partnership with the Iowa DNR and the University of Iowa Flood Center on the Iowa Floodplain Mapping Section 22 project. This project consisted of the rapid floodplain modeling for the entire state of Iowa which has since completed hydraulic modeling for more than 100,000 stream miles and approximately 55 HUC8 watershed areas. The enormous project effort was completed by the help of automated tool sets that streamlined the modeling process. This presentation will detail the results from the rapid floodplain modeling and what we learned along the way.

Adjourn

Thank you for attending, and we will see you next year!