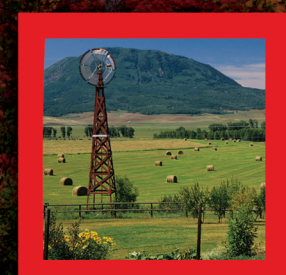
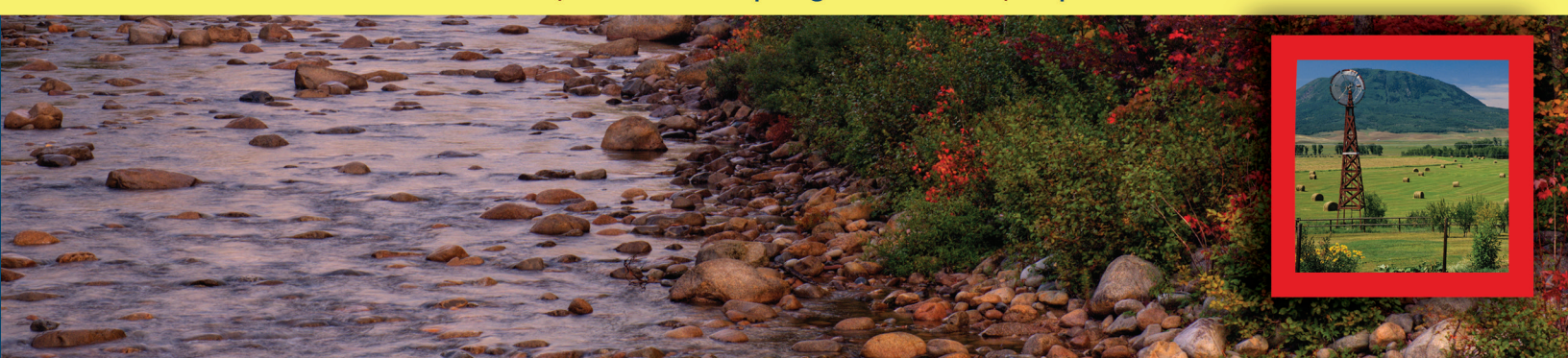


2013 CASFM CONFERENCE

"ALL HANDS ON DECK"

Colorado Association of Stormwater and Floodplain Managers
24th Annual Conference | Steamboat Springs, Colorado | September 10-13, 2013



2013 CASFM CONFERENCE

"ALL HANDS ON DECK"

2013 CASFM CONFERENCE

Steamboat Springs, Colorado

Greetings CASFM members both new and old, and welcome back to Steamboat Springs for those that attended last year! This year's theme is centered on getting everyone to work together, across the spectrum of different generations, with different workplace lifestyles and goals.

We are excited to have Robert Wendover with the Center for Generational Studies as our keynote speaker. Since we already have a room full of experts in hydrology and hydraulics, we decided to offer you a different type of presentation that should help in the workplace – how to all work together. His presentation focuses on the generational differences in the workplace. Mr. Wendover authored the Center's training curriculum "Generations: Understanding Age Diversity in Today's Workplace."



Robert Krehbiel,
Conference Chair

John Fielder, renowned Colorado Nature Photographer will be here on Thursday. Mr. Fielder published two books last year commemorating the 20th anniversary of Great Outdoors Colorado. John Fielder was a founder of GOCO and his pictures depict the many places enhanced by GOCO. He will discuss the development of his two books featuring lottery-funded places and resources throughout the State of Colorado. CASFM members will appreciate his work since many of the GOCO dollars funded stream restoration projects and preservation of public open spaces.

Thank you for attending the annual CASFM conference! We appreciate your efforts to participate in this year's conference. We especially want to thank the many speakers that prepared presentations for this conference, which are certainly the foundation of this conference.

We would like to offer a special note of gratitude and appreciation to the group of individuals who donated their time once again to organize this year's conference. Please join me in thanking them for all their great work!

- Shea Thomas, Program Chair
- Stuart Gardner, Facilities Chair & Web Master
- Alan Turner, Registration
- David Krickbaum, Vendors & Sponsorships
- John Pflaum, Project Awards
- Brian Murphy, Field Trips Coordinator
- Rich Ommert, Bike Tour Coordinator
- Dave Center, Golf Tournament
- Janae Newman – Conference Announcement and Brochures

We hope you find the conference to be beneficial, educational and entertaining!
Next year, CASFM will be held at the Vail Cascade September 30 – October 3, 2014.

Robert Krehbiel
Conference Chair

David Bennetts
CASFM Chair



Colorado Association of Stormwater and Floodplain Managers



TABLE OF CONTENTS

Schedule At-A -Glance 4-5

Featured Speakers 5-6

Workshops 7

2013 CASFM Award Finalists 8-12

Field Trips 13

Conference Schedule 14-24

Tuesday, September 10th 14

Wednesday, September 11th 15-18

Thursday, September 12th 19-23

Friday, September 13th 24

Presentation Abstracts 25-38

Exhibitors & Sponsors 39-42

CASFM Officers 43

Conference Facilities Map 44

Thanks to all our sponsors!



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2013 CASFM CONFERENCE

"ALL HANDS ON DECK"

Tuesday, September 10, 2013

8:00	Certified Floodplain Manager Training Session		
9:00			
10:00			
11:00			
12:00			
1:00	(Lunch Provided)	<div>NFIP Reform Workshop</div> <div>Permanent Water Quality BMP Inspection and Maintenance Workshop</div>	
2:00			
3:00			
4:00			
5:00	Dinner on your own		
6:00			
7:00			
8:00	Ice Breaker Social Hour		

Wednesday September 11, 2013

7:00		Certified Floodplain Manager Training Session	
8:00	Registration and Breakfast		
9:00	Welcome and Introduction		
	Panel Discussion: <i>Meet the Generations</i>		
10:00	Keynote Address: Hey Dude! Managing Generational Differences in Today's Workplace		
11:00			
12:00	Lunch		
	Introduction of 2013/2014 Officers and Committee Chairs		
1:00			
	CONCURRENT TECHNICAL SESSIONS		
2:00	Water Quality	Floodplain Management	Steam Restoration
3:00	← - - - - - BREAK - - - - - →		
4:00			
5:00	Happy Hour		
6:00	Dinner on Your Own		
7:00			

CASFM OFFICERS 2012-2013



CHAIR

David Bennetts

Urban Drainage and Flood Control District
dbennetts@udfcd.org



SECRETARY

Shea Thomas

Urban Drainage and Flood Control District
stthomas@udfcd.org



VICE CHAIR

Brian Varrella

City of Fort Collins
bvarrella@fcgov.com



TREASURER

Brian Murphy

CDM Smith
murphybm@cdmsmith.com

Thursday, September 12, 2013

7:00	
8:00	Breakfast - Board Member Meeting
9:00	2013 CASFM Award Finalists
10:00	BREAK
11:00	Featured Speaker: Colorado's Great Outdoors — Celebrating 20 Years of Lottery-Funded Lands
12:00	General Membership Lunch Meeting
1:00	
CONCURRENT TECHNICAL SESSIONS	
2:00	Technical Modeling Stormwater Management Emergency Preparedness
3:00	← — — — — BREAK — — — — — →
4:00	
5:00	Happy Hour
6:00	
7:00	
8:00	CASFM Association Dinner and Awards
9:00	9:00 - 2:00 - Entertainment

Friday, September 13, 2013

7:00				
8:00	Continental Breakfast			
	Closing Remarks			
9:00	Workshop: Modifications of Stream Restoration Techniques for Arid and Semi-Arid Environments	Field Trips:		Golf Tournament: Rollingstone Ranch Golf Club
		Burgess Creek Daylighting and Yampa River Restoration	Mountain Bike Tour	
10:00				
11:00				
12:00				
1:00				
2:00				
3:00				

Golf Tournament:
Rollingstone Ranch Golf Club



NORTHWEST REGION

Andi Staley

Mesa County Public Works
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Danny Elsner

SEH
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SOUTHWEST REGION

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REGIONAL REPRESENTATIVES 2012-2013



NORTHEAST REGION

Mark Kempton

City of Fort Collins
mkempton@fcgov.com

2013 CASFM CONFERENCE

"ALL HANDS ON DECK"

FEATURED SPEAKERS

ROBERT WENDOVER

Robert W. Wendover has been researching and writing about workforce trends for more than 20 years. He currently serves as Managing Director of the Center for Generational Studies.

Mr. Wendover has authored the Center's training curriculum *Generations: Understanding Age Diversity in Today's Workplace*. His nine books include: *Crossing the Generational Divide*, *On Cloud Nine: Weathering the Challenge of Many Generations in the Workplace*, *High Performance Hiring*, *High Performance Recruiting*, *Two Minute Motivation: How to Inspire Superior Performance*, and *Handpicked: Finding and Hiring the Best Employees*. His first book, *Smart Hiring*, first published in 1988, has just been released in its sixth edition.

Mr. Wendover serves as the editorial director of the Center's monthly newsletter, *GenTrends*, and has written or contributed more than 200 articles for a wide variety of publications. Mr. Wendover is a regular guest on radio and TV across the U.S. His credits include CNN, CNBC, The Atlanta Journal Constitution, The Detroit Free Press, The Florida Sentinel, The Denver Post, The Providence Journal, The Fort Worth Star-Telegram, Entrepreneur, Money and even Women's Wear Daily. In addition, he has written monthly columns for both retailers and Realtors. Mr. Wendover has also served as special advisor to the American Productivity and Quality Center.

Mr. Wendover's education includes degrees in psychology, education and industrial arts. He served on the management faculty of the University of Phoenix for more than ten years. He has earned the designation of Certified Speaking Professional (CSP) from the National Speakers Association. Along with being past president of both the Colorado Speakers Association and the Rocky Mountain Chapter of the American Society for Training and Development, he is two-time past chair of the National Meetings Industry Council.

His clients include IBM, KPMG, Discover Card Services, Shell Oil, International Dairy Queen, Kaiser Permanente, CITGO, Chevron USA, the Food Marketing Institute, Searle Pharmaceuticals, Super 8 Motels, Ace Hardware, Major League Baseball, the Professional Golfers Association and a host of other household names, government agencies, and educational institutions.



ROBERT WENDOVER

JOHN FIELDER

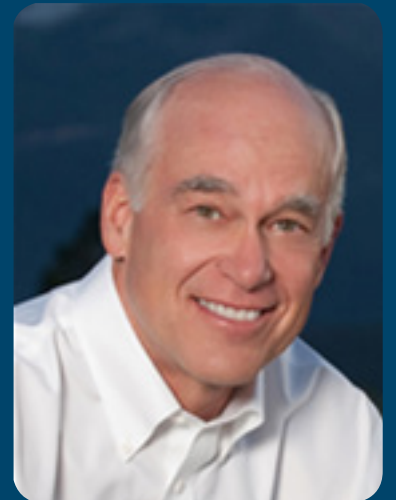
John Fielder is a nationally renowned photographer, publisher, teacher, and preservationist. He hikes and skis hundreds of miles in Colorado alone each year - and drives thousands - in order to record on film its most sublime natural places. For the last 40 years, no one has traveled this state like John Fielder, from its rolling plains to the soaring Rocky Mountains and the Western Slope's remote plateaus and river canyons.

He first visited Colorado at the age of 14 during a school field trip from North Carolina: "In all my life, I have not forgotten my first sight of the Rockies rising up before me over the plains. I was simply smitten by this wall of snow-capped peaks above a treeless plain. And the word C-O-L-O-R-A-D-O, it was the most poetic name for a place I had ever heard. I realized at that moment that someone or something had guided me to this place, and that I belonged here for the rest of my life."

Though he started his family and planted his Colorado roots as a department store executive, he ultimately turned his avocation into a career. He is the photographer of more than 39 exhibit format and guidebooks, all but four about Colorado. He might be best known for creating Colorado's best-selling book ever, *Colorado: 1870 - 2000*, which juxtaposes historic photographer William Henry Jackson's images of the 19th-century landscape with those of today.

John Fielder has worked tirelessly to promote the protection of Colorado's open space and wildlands. His photography has influenced people and legislation earning him recognition including the Sierra Club's Ansel Adams Award in 1993 and in 2011 the Aldo Leopold Foundation's first Achievement Award given to an individual. He was an original governor-appointed member of the lottery-related Board of Great Outdoors Colorado, and speaks to thousands of people each year to rally support for timely land use and environmental issues. His latest Colorado project involves photographing parks, open space, wildlife habitat, ranches, and more...the work of Great Outdoors Colorado...for its 20th anniversary in 2012.

JOHN FIELDER



2013 CASFM CONFERENCE

"ALL HANDS ON DECK"

WORKSHOPS

PERMANENT WATER QUALITY BMP INSPECTION AND MAINTENANCE

Tuesday, September 10, 2:00 pm

The Colorado Stormwater Center – Chris Olson, Holly Piza, Scott Struck

The objective of this workshop is to increase participants' knowledge and understanding of permanent water quality best management practices (BMPs) with the intent of improving the effectiveness of inspection and maintenance activities. Attendees will learn to:

- Identify functional components of various permanent water quality best management practices BMPs
- Evaluate the operational status of those components in the field
- Identify common construction errors
- Recommend and perform appropriate routine and restorative maintenance activities

The target audiences for this workshop include, but are not limited to, inspectors, maintenance personnel, construction and landscape contractors, consulting engineers and MS4 managers.

NFIP REFORM

Tuesday, September 10, 2:00 pm

David Mallory – Urban Drainage and Flood Control District

Jamie Prochno – Colorado Water Conservation Board

Michael Gease – FEMA

Under the Biggert-Waters National Flood Insurance Reform Act of 2012, (BW-12) flood insurance premiums will be phased into full actuarial rates in order to make the National Flood Insurance Program (NFIP) more fiscally sound, create a reserve fund for future disasters, and to reflect the true risk of flood prone area construction. This may have dramatic financial implications for some property owners, especially those who own structures built in hazardous areas before NFIP flood maps were produced showing their flood risk, structures for which a new flood insurance policy is purchased, and those built in compliance with previous maps and now impacted by new map changes. Under the NFIP's Community Rating System (CRS), voluntary community participation and increased CRS class improvement can somewhat offset higher flood insurance costs by implementing freeboard, foundation design, fill protection, natural area protection, and other mitigation strategies that reduce rates, but more importantly decrease risk and improve community resiliency. Participants in this interactive workshop will learn what changes have already occurred in floodplain management and flood insurance, and the very latest word on what the next implementation phase of BW-12 will bring. Community messaging, strategies for managing upcoming changes, and how flood insurance and flood hazard mitigation are more closely aligned than ever before.

MODIFICATIONS OF STREAM RESTORATION TECHNIQUES FOR ARID AND SEMI-ARID ENVIRONMENTS

Friday, September 13, 9:00 am

David Williams – DTW and Associates

Most stream restoration design techniques that have been developed for areas with climates and associated hydrology that are unlike those found in arid to semi-arid environments will not work without appropriate adjustments, experience in arid environments, and understanding the underlying basis of the techniques and how they differ in arid areas. This workshop will present the differences in these restoration techniques as they relate to climate differences in hydrology, regime relationships, channel forming discharge, equilibrium slope, design channel width and depth, and vegetative stabilization techniques.

CASFM AWARD FINALISTS

BRANTNER GULCH CHANNEL AT HOLLY STREET

City of Thornton
Urban Drainage and Flood Control District
ICON Engineering

Two critical stormwater and floodplain management issues addressed:

- Flood conveyance within a rapidly developing watershed;
- Safety issues resulting from an undersized culvert under a major arterial roadway and a pedestrian corridor used extensively by school age children.

\$2.3 million project constructed on-time and within budget. The 5-lane wide roadway improvements, including a 24-ft wide arch culvert and lighted ADA compliant trail underpass. Constructed in very limited time with no adverse impact to adjacent school. Overhead electric lines relocated underground prior to channel construction. Xcel Energy's 12-inch gas line temporarily relocated. Road closure minimized using 25-ft tall shoring to allow the eastern half of the arch culvert to be constructed prior to closing the roadway.

- Provides 100-year conveyance
- Dry trail system for minor floods
- Drainageway Masterplan hydrology revised to reflect multiple detention ponds constructed on downstream tributary which decreased need for planned detention at Holly, thereby making it technically feasible to construct large culvert without increasing downstream flows.
- Incorporates a safe, well lit, pedestrian underpass providing link in regional trail, replacing hazardous at-grade crossing of Holly Street to the school.
- Design accommodates future roadway expansion.
- High quality wetlands preserved with grouted boulder drop improved inlet.
- Off-Channel water quality pond for local drainage.
- New FEMA floodplain LOMR approved.



August 6, 2008 (School Registration Day)
Holly Street washed out by minor storm event overtopping dual 48-inch CMPs



2013 *New 100-year capacity crossing structure is 24-ft wide arch with trail underpass. An 8-ft grouted boulder drop structure protects upstream wetlands.*



2013 CASFM CONFERENCE

"ALL HANDS ON DECK"

CHERRY CREEK STREAM RECLAMATION AT PARKER JORDAN CENTENNIAL OPEN SPACE

Parker Jordan Metropolitan District
City of Centennial
Southeast Metro Stormwater Authority
Cherry Creek Basin Water Quality Authority
Urban Drainage and Flood Control District
J3 Engineering Consultants

The mile long stretch of Cherry Creek within the PJCOS was considered by many to be one of the most severely eroded stretches of stream corridor along all of Cherry Creek. Increased runoff due to upstream development, less available sediment to optimize load equilibrium, grazing pressure, off-road recreational use, noxious weed encroachment and lowering of the water table all resulted in stream instability, vertical incision, and loss of riparian habitat. This was all prior to Parker Jordan Metro District's purchase of the 107 acre open space property 2009. This began an extensive project to reclaim Cherry Creek. Ultimately, the project, through passionate collaboration, successfully stabilized and enhanced approximately 5,200 lineal feet of existing, severely degraded stream corridor.

Many varying objectives were successfully accomplished through the stabilization of Cherry Creek at Parker Jordan Centennial Open Space. The project raised the thalweg of the channel by an average of five feet in order to reconnect the riparian vegetation; stabilized the incised channel using engineering and bio-engineering solutions; created a secondary channel along historic channel alignments and existing terraces; increased low terrace plant development (reintroduce wetland and willow riparian diversity); increased upland terrace plant development (reintroduce upland diversity and cover); eliminated uncontrolled grazing and indiscriminate off-road use; and implemented a comprehensive weed management program for the open space. Ultimately, the project enhanced water quality, improved the riparian corridor, increased Preble Meadow Jumping Mouse habitat, stabilized a severely degraded stream corridor and floodplain, provided regional connectivity of the Cherry Creek Regional Trail, provided open space amenities that promoted healthy living and appreciation of Cherry Creek, included ecological and social history educational components in a natural environment using a state-of-the-art kiosk with touch screen, and implemented a sustainable design with maintenance eligibility.

This project was unique from beginning to end, which can be confirmed by the numerous stakeholders and partners. Although it employed some common stabilization techniques, this was not your ordinary project. It is important to emphasize that it was challenged by unprecedented adversity, struggles and difficulties. However, overcoming those challenges lays the foundation for the greater story of this project and the success of its implementation which we are eager to share. Through acquisition hurdles, design adversities and construction difficulties, the significance of this project shines through. Great lessons were learned and the importance of collaboration was modeled with this project.



LEFTHAND CREEK FLOOD CONTROL PROJECT - PHASE 1 MAIN STREET TO PIKE ROAD

City of Longmont
Muller Engineering
Wenk Associates
ERO Resources

The City of Longmont constructed flood control improvements along a 5,700' reach of Lefthand Creek between Main Street (State Highway 287) and Pike Road in Longmont, Colorado. Lefthand Creek is one of two creeks that begin at the continental divide and pass through Longmont (the other being St. Vrain Creek). The creek has a drainage basin area of 72 square miles, which yields a 100-year flow rate of approximately 5,000 cfs. The Lefthand Creek corridor within the project reach is mainly located within residential developments with some commercial development and businesses located at the downstream end. The road crossing at State Highway 287 marks the downstream end of the project, which is the City's most important north/south transportation corridor serving over 22,000 City residents, commuters, and emergency vehicles each day. Based on floodplain modeling completed during the project, it was determined that 197 houses/buildings would be flooded and overtopping of State Highway 287 would occur during a 100-year storm event under the pre-project conditions. The project involved design of several components including upsizing road crossings, upsizing the channel capacity along Lefthand Creek; roadway realignments; reconfiguring several storm sewer systems; relocating utilities; recreational trail improvements, and an extensive revegetation plan. Construction was completed in 2012 by DeFalco Construction and Naranjo Civil Constructors. The impact of the above improvements was evaluated with a post-project conditions floodplain analysis. Through this analysis, it was determined that 172 of the 197 structures are now located outside of the floodplain limits and State Highway 287 will no longer overtop during a 100-year event. The total cost of the improvements was approximately \$7 million. The City applied for and received a FEMA Grant to supplement the project funding. The grant amount awarded was approximately \$3 million, allowing the work to be fully funded. A second phase of work to design and construct improvements to eliminate flooding of the remaining houses within the floodplain has been identified and placed on the City's future projects list.



BEFORE



AFTER

2013 CASFM CONFERENCE

"ALL HANDS ON DECK"

Honorable Mention Project:

3.5-ACRE, 288-SPACE, POROUS ASPHALT PARKING LOT

Ball Aerospace & Technologies Corp.

Thanks to this year's selection panel:

Alan Searcy, City of Lakewood

Kevin Wegener, City of Aurora

John Pflaum, Independent

Thuy Patton, CWCB



FIELD TRIPS

BURGESS CREEK DAYLIGHTING AND YAMPA RIVER RESTORATION

Coordinator: Brian Murphy, CDM Smith

This field trip will cover two different projects in the Steamboat area. Burgess Creek runs behind the Steamboat Sheraton Resort at the base of the ski area. The creek, which had been conveyed in an underground culvert, was brought to the surface along the length of the Promenade to provide opportunities for summer recreation. Bill Wenk with Wenk Associates will explain the issues that challenged the design team, including grout selection to keep the water in place, finding a way to allow the pond water to be drained in difference seasons and choosing a liner that could endure snowmaking operations. Along with the typical challenges associated with stream rehabilitation projects, the ultimate charge involved creating a natural-looking stream that could be enjoyed by the community.

After visiting Burgess Creek, the group will move on to the Yampa River to follow up on projects completed since last year's field trip. The Yampa River project is in the third and final phase to conduct in-stream and riparian habitat improvements within the Chuck Lewis State Wildlife Area. This project proposes river channel stabilization and riparian rehabilitation activities that will allow the river to function in a more natural state and will eventually allow for enhanced floodplain function and lower width to depth ratios. Improved river processes will provide better channel stability and less bank erosion, better sediment transport, improved riparian habitat, decreased pike habitat and increased trout habitat.



MOUNTAIN BIKE TOUR

Coordinator: Rich Ommert, RESPEC

Last year the bike tour was well received with over a dozen riders joining Rich Ommert for a morning of education and fun. This year we will continue our tour of improvements along the Yampa and travel up a tributary or two to investigate river stabilization methods within the Town's natural setting. We will start our journey alongside the scenic Yampa River, summarizing improvements that benefit fishing, tubing and numerous outdoor activities. We will briefly review measures to stabilize the tributaries within the Town and discuss water quality improvement measures that help to protect the Yampa. This tour is not to be missed.



9:00 am	Meet at Hotel Conference Center
10:30 am	Arrive at Bear River Park
12:00 pm	Return to Ski Haus/Conference Center

Bikes are available to rent at the Ski Haus, only a short drive from the Sheraton Hotel. Rental costs range from \$12 to \$44, depending on the bicycle you wish to ride.

The ride will begin near the Ski Haus, once everyone is settled and has a bike to ride. From the Ski Haus we will enter the Yampa River Core Trail, a short bike ride away. We will set off for the downtown section of the Yampa River, and take side tours of the tributaries at key locations. The bike ride is very easy, the grades are similar to those found on the Cherry Creek bike path and other flat trails in Colorado – so don't hesitate to sign up.

The ride will continue for about an hour, at which point we will turn around and head the same way back towards the Ski Haus and end the tour well before noon.

2013 CASFM CONFERENCE

"ALL HANDS ON DECK"

CONFERENCE SCHEDULE

TUESDAY, SEPTEMBER 10, 2013

8:00 AM—5:00 PM CERTIFIED FLOODPLAIN MANAGER TRAINING SESSION

Location: Storm Peak

Jamie Prochno, Kevin Houck—Colorado Water Conservation Board
Craig Jacobson—ICON
Chris Tagert—Michael Baker Jr.

2:00 PM—5:00 PM NFIP REFORM

Location: Twilight

David Mallory – Urban Drainage and Flood Control District
Jamie Prochno – Colorado Water Conservation Board
Michael Gease, FEMA

2:00 PM—5:00 PM PERMANENT WATER QUALITY BMP INSPECTION AND MAINTENANCE

Location: Rainbow

Chris Olson, Scott Struck, Holly Piza – Colorado Stormwater Center

5:00 PM—8:00 PM DINNER ON YOUR OWN

8:00 PM—9:00 PM ICE BREAKER SOCIAL HOUR

Location: Saddles Deck



WEDNESDAY, SEPTEMBER 11, 2013

7:00 AM—10:00 AM CERTIFIED FLOODPLAIN MANAGER EXAM

Location: Storm Peak

Jamie Prochno—CWCB

8:00 AM—9:00 AM REGISTRATION AND BREAKFAST

Location: Conference Center Lobby and Vendor Area

Alan Turner—CH2M Hill

9:00 AM—9:30 AM WELCOME AND INTRODUCTION

Location: Werner/Sunshine

Dave Bennetts, CASFM Chair—Urban Drainage and Flood Control District

9:30 AM—10:00 AM PANEL DISCUSSION: MEET THE GENERATIONS

Location: Werner/Sunshine

Shea Thomas – Urban Drainage and Flood Control District

10:00 AM—11:30 AM KEYNOTE ADDRESS: KEY DUDE!

MANAGING GENERATIONAL DIFFERENCES IN TODAY'S WORKPLACE

Location: Werner/Sunshine

Robert Wendover – The Center for Generational Studies

11:30 AM—1:30 PM LUNCH

Location: Pool Tent

*Introduction of 2013/2014 Officers and Committee Chairs
Research Funds - Recipient - Colorado Stormwater Council
Scholarship Award Winners*

2013 CASFM CONFERENCE

"ALL HANDS ON DECK"

	Water Quality	Floodplain Management	Stream Restoration
1:30	A New Generation of Parking Lot	South Platte River Hydraulic Model	Ideas for Ecological Restoration
2:00	Design of a Retrofit WQ Control Structure	The Role of FIRMs in Two Lawsuits	Alternative Bank Stabilization
2:30	Media Filter Drains	Flood Hazards and Property Values	Riparian Habitat Mitigation Banking
3:00	<----- break ----->		
3:30	Estimating Nutrient Loads in Urban Runoff	FPM Aspects of RTD West Corridor	Overlooked Elements of Stream Restoration Projects
4:00	Flow-Based WQ Measures	Adventures in the Last Frontier	Phase III Chuck Lewis Wildlife Area
4:30	I-70 Twin Tunnels WQ Mitigation	Unconventional Oil and Gas Development	Stream Restoration Using Natural Logs

1:30 PM—2:00 PM CONCURRENT TECHNICAL SESSIONS:

- WQ1 A NEW GENERATION OF PARKING LOT: POROUS ASPHALT AT BALL AEROSPACE**
Location: Storm Peak
Deborah Fisher – Martin/Martin
- FM1 SOUTH PLATTE RIVER HYDRAULIC MODEL**
Location: Werner
Jason Messamer – Olsson Associates
Bill DeGroot, Shea Thomas – Urban Drainage and Flood Control District
- SR1 IDEAS FOR ECOLOGICAL RESTORATION: SOMETIMES IT'S THE LITTLE THINGS**
Location: Sunshine
Julie Ash – Walsh Environmental

2:00 PM—2:30 PM CONCURRENT TECHNICAL SESSIONS:

- WQ2 DESIGN OF A RETROFIT WATER QUALITY CONTROL STRUCTURE TO MAXIMIZE POLLUTANT REMOVAL EFFICIENCY FOR AN EXISTING STORMWATER WETLAND**
Location: Storm Peak
Laurie Trifone, Chris Olson – Colorado State University
Basil Hamdan – City of Fort Collins
- FM2 THE ROLE OF FLOOD INSURANCE RATE MAPS (FIRMS) IN TWO LAWSUITS**
Location: Sunshine
Eliot Wong – Wright Water Engineers
- SR2 ALTERNATIVE BANK STABILIZATION TREATMENTS**
Location: Werner
Dave Bennetts – Urban Drainage and Flood Control District

2:30 PM—3:00 PM CONCURRENT TECHNICAL SESSIONS:

WQ3 MEDIA FILTER DRAINS – WATER QUALITY OPTION FOR LINEAR PROJECTS

Location: Storm Peak

Teresa Patterson – RESPEC

Justin Werdel – CDOT Region 1

FM3 FLOOD HAZARDS AND PROPERTY VALUES; KILLING THE ECONOMY?

Location: Werner

Brian Varrella – City of Fort Collins

SR3 RIPARIAN HABITAT MITIGATION BANKING AND NUTRIENTS

Location: Sunshine

Ben Guillon – WRA

Noah Greenberg – Wright Water Engineers

3:00 PM—3:30 PM BREAK

Location: Vendor Area

3:30 PM—4:00 PM CONCURRENT TECHNICAL SESSIONS:

WQ4 ESTIMATING NUTRIENT LOADS IN URBAN RUNOFF UNDER COLORADO'S REGULATION 85

Location: Storm Peak

Jane Clary – Wright Water Engineers

Jill Piatt-Kemper – City of Aurora

Holly Piza – Urban Drainage and Flood Control District

Scott Struck – Geosyntec Consultants

Robert Pitt – University of Alabama

FM4 FLOODPLAIN MANAGEMENT ASPECTS OF THE RTD WEST CORRIDOR PROJECT

Location: Werner

Bill DeGroot, David Mallory, Joanna Czarnecka –

Urban Drainage and Flood Control District

SR4 OVERLOOKED ELEMENTS OF STREAM RESTORATION PROJECTS CAN CONTRIBUTE TO OVERALL PROJECT SUCCESS

Location: Sunshine

Janel Servis – Aqua Terra Compliance

Deb Keammerer – The Restoration Group

2013 CASFM CONFERENCE

"ALL HANDS ON DECK"

4:00 PM—4:30 PM CONCURRENT TECHNICAL SESSIONS:

WQ5 FLOW-BASED WATER QUALITY MEASURES

Location: Storm Peak

Jessie Nolle – RESPEC

April Barker Long – City of Aspen

FM5 ADVENTURES IN THE LAST FRONTIER: HAZARD PLANNING ALASKAN STYLE

Location: Werner

Kimberley Pirri, R. Scott Simmons, Jon Philipsborn, Shane Parson, Rich Chamberlain – URS Corporation

Daniel Mahalak – Seward-Bear Creek Flood Service Area

SR5 PHASE III CHUCK LEWIS WILDLIFE AREA

Location: Sunshine

Michael Geenen – Stantec Consulting

4:30 PM—5:00 PM CONCURRENT TECHNICAL SESSIONS:

WQ6 I-70 TWIN TUNNELS WATER QUALITY MITIGATION AND SEDIMENT CONTROL

Location: Storm Peak

Josh Hollon – Atkins

Holly Huyck - CDOT

FM6 UNCONVENTIONAL OIL AND GAS DEVELOPMENT LESSONS LEARNED – MANAGING POTENTIAL DRAINAGE AND FLOODING IMPACTS

Location: Werner

Sally Cuffin – URS Corporation

SR6 STREAM RESTORATION USING NATURAL LOGS AND SCULPTED CONCRETE LOGS TO MIMIC NATURAL DROP STRUCTURES

Location: Sunshine

Kyle Hamilton – CH2M Hill

Dave Skuodas, Laura Kroeger – Urban Drainage and Flood Control District

5:00 PM—6:30 PM HAPPY HOUR

Location: Vendor Area

Sponsored by SEH

6:30 PM

DINNER ON YOUR OWN

THURSDAY, SEPTEMBER 12, 2013

7:30 AM—8:30 AM BREAKFAST

Location: Werner/Sunshine

BOARD MEMBER MEETING

Officers and Committee Chairs

Location: Aspen Room

8:30 AM—10:00 AM 2013 CASFM AWARD FINALISTS

Location: Werner/Sunshine

BRANTNER GULCH CHANNEL AT HOLLY STREET

City of Thornton

Urban Drainage and Flood Control District

ICON Engineering

CHERRY CREEK STREAM RECLAMATION AT PARKER JORDAN CENTENNIAL OPEN SPACE

Parker Jordan Metropolitan District

City of Centennial

Southeast Metro Stormwater Authority

Cherry Creek Basin Water Quality Authority

Urban Drainage and Flood Control District

J3 Engineering Consultants

LEFTHAND CREEK FLOOD CONTROL PROJECT – PHASE 1, MAIN STREET TO PIKE ROAD

City of Longmont

Muller Engineering

10:00 AM—10:30 AM BREAK AND BOOK SIGNING

Location: Vendor Area

10:30 AM—11:30 AM FEATURED SPEAKER: COLORADO'S GREAT OUTDOORS – CELEBRATING 20 YEARS OF LOTTERY-FUNDED LANDS

Location: Werner/Sunshine

John Fielder

11:45 PM—1:30 PM GENERAL MEMBERSHIP LUNCH MEETING

Location: Pool Tent



2013 CASFM CONFERENCE

"ALL HANDS ON DECK"

	Technical Modeling	Stormwater Management	Emergency Preparedness
1:30	Resolution of Instabilities in Unsteady HEC-RAS	Denver's Sustainable WQ Program S	Ideas for Ecological Restoration
2:00	Design of a Retrofit WQ Control Structure	The Role of FIRMs in Two Lawsuits	Alternative Bank Stabilization
2:30	Media Filter Drains	Flood Hazards and Property Values	Riparian Habitat Mitigation Banking
3:00	<----- break ----->		
3:30	Estimating Nutrient Loads in Urban Runoff	FPM Aspects of RTD West Corridor	Overlooked Elements of Stream Restoration Projects
4:00	Flow-Based WQ Measures	Adventures in the Last Frontier	Phase III Chuck Lewis Wildlife Area
4:30	I-70 Twin Tunnels WQ Mitigation	Unconventional Oil and Gas Development	Stream Restoration Using Natural Logs

1:30 PM—2:00 PM CONCURRENT TECHNICAL SESSIONS:

TM1 RESOLUTION OF INSTABILITIES IN UNSTEADY HEC-RAS MODELS

Location: Storm Peak

Kyle Hinton, Alan Turner, Mark Glidden, Scott Yanagihara – CH2M Hill

SM1 DENVER'S SUSTAINABLE WATER QUALITY PROGRAM STORMWATER QUALITY GIS MAPPING, INVENTORY AND BMPS

Location: Werner

Darren Mollendor, Brian Schat, Jon Novick, Kimberly Watanabe –
City and County of Denver
Robert Krehbiel – Matrix Design Group

EP1 OPERATIONAL COLORADO FLOOD THREAT PREDICTION PROGRAM: 2012 INNOVATIONS AND CHALLENGES AND 2013 OPPORTUNITIES

Location: Sunshine

John Henz – Dewberry Consultants
Kevin Houck – Colorado Water Conservation Board

2:00 PM—2:30 PM CONCURRENT TECHNICAL SESSIONS:

TM2 PINEY CREEK MAJOR DRAINAGEWAY PLAN: WATERSHED APPROACH TO UNDERSTANDING SEDIMENT DYNAMICS

Location: Storm Peak

Nathan Torrey, Alan Leak - RESPEC

SM2 DRAINS TO RIVER: THE DIFFICULTY OF TRASH AT LARGE URBAN OUTFALLS

Location: Werner

Saeed Farahmandi, Bruce Uhernik – City and County of Denver

EP2 JERSEY STRONG: LESSONS LEARNED DURING A FEMA HOUSING MISSION

Location: Sunshine

Zac Collins - RESPEC

2:30 PM—3:00 PM CONCURRENT TECHNICAL SESSIONS:

**TM3 VARIED TOPOGRAPHIC LAPSED SNOWMELT AND GIS FACILITATED SNOWMELT
RUNOFF ROUTING IN ASPEN, COLORADO**

Location: Storm Peak

Max Shih, Joseph Machala, Kimberley Pirri – URS Corporation

**SM3 REDUCING E COLI LEVELS IN DRY WEATHER DISCHARGES FROM DENVER'S MS4:
HOW EFFECTIVE ARE SYSTEM MAINTENANCE BMPS AFTER FOUR YEARS
OF IMPLEMENTATION?**

Location: Werner

Jon Novick – Denver Department of Environmental Health

EP3 GIS BASED EMERGENCY MANAGEMENT AND PLANNING

Location: Sunshine

Mike Schwab – Beehive Industries

3:00 PM—3:30 PM BREAK

Location: Vendor Area

3:30 PM—4:00 PM CONCURRENT TECHNICAL SESSIONS:

TM4 USING ARC TO WEATHER THE FLOOD – GIS TOOLS FOR HYDROLOGIC MODELING

Location: Storm Peak

David Delagarza, Teresa Patterson - RESPEC

SM4 TUNNELING 101

Location: Werner

Dave Skuodas – Urban Drainage and Flood Control District

Nate Soule – Brierley Associates

Brenden Tippetts – BT Construction

EP4 INUNDATION MAPPING AS A MULTI-FACETED FLOODPLAIN MANAGEMENT TOOL

Location: Sunshine

Stuart Geiger – Dewberry

2013 CASFM CONFERENCE

"ALL HANDS ON DECK"

4:00 PM—4:30 PM CONCURRENT TECHNICAL SESSIONS:

**TM5 COMPARISON OF KINEMATIC AND DYNAMIC WAVE ROUTING FOR
PIPED STORM SEWER SYSTEMS**

Location: Storm Peak

Aaron Cook – CH2M Hill

**SM5 ADAM'S RIB WATER QUALITY MONITORING AND
MITIGATION PLAN IN EAGLE, COLORADO**

Location: Werner

Shannon Tillack, Jonathon Jones – Wright Water Engineers

Matt Shoulders – Adam's Rib Ranch

Ray Merry – Eagle County Environmental Health Department

EP5 POST-FIRE WALDO CANYON AREAS OF CONCERN FOR POTENTIAL FLOOD INUNDATION

Location: Sunshine

Robert Krehbiel, Graham Thompson – Matrix Design Group

Kevin Houck – Colorado Water Conservation Board

4:30 PM—5:00 PM CONCURRENT TECHNICAL SESSIONS:

**TM6 GRAVEL PIT HEADCUTTING AND EROSION ANALYSIS USING
NRCS WINDAM B EMBANKMENT DAM EROSION MODEL**

Location: Storm Peak

Douglas Trieste – Flow Technologies

SM6 MANAGING STORMWATER COMPLIANCE WITH EMERGING TECHNOLOGIES

Location: Werner

Chad Kudym – Beehive Industries

**EP6 THE MYTH OF THE MULTI-TASKING ENGINEER –
WHAT'S BURNING OUT OUR BEST AND BRIGHTEST?**

Location: Sunshine

Jeffrey Sickles – Enginuity Engineering Solutions

5:00 PM—6:30 PM HAPPY HOUR

Location: Vendor Area

Sponsored by Brierley Associates

7:00 PM—9:00 PM CASFM ASSOCIATION DINNER AND AWARDS

Location: Werner/Sunshine

Sponsored by ERO Resources Corporation

2013 CASFM Project Awards Presentation: John Pflaum

Grand Prize Drawings: Stuart Gardner—CDOT

9:00 PM—2:00 AM ENTERTAINMENT

Location: The Tugboat Bar and Grill



<http://tugboatgrillandpub.com/>



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Save the date for the
2014 CASFM Conference in Vail

September 30th to October 3rd, 2014

2013 CASFM CONFERENCE

"ALL HANDS ON DECK"

FRIDAY, SEPTEMBER 13, 2013

7:30 AM—8:30 AM CONTINENTAL BREAKFAST

Location: Vendor Area

8:30 AM—9:00 AM CLOSING REMARKS

Location: Werner/Sunshine

Brian Varrella, New CASFM Chair—City of Fort Collins

9:00 AM—12:00 PM WORKSHOPS AND FIELD TRIPS:

WORKSHOP:

MODIFICATIONS OF STREAM RESTORATION TECHNIQUES
FOR ARID & SEMI-ARID ENVIRONMENTS

Location: Twilight

David Williams – DTW and Associates

FIELD TRIPS:

BURGESS CREEK DAYLIGHTING AND YAMPA RIVER RESTORATION
Coordinated by Brian Murphy—CDM

MOUNTAIN BIKE TOUR

Coordinated by Rich Ommert—RESPEC

10:00 AM—3:00 PM GOLF TOURNAMENT—ROLLINGSTONE RANCH GOLF CLUB

Coordinated by Dave Center—AECOM
Sponsored by Oldcastle Precast

WHO: All Conference Participants, Family Members, Sponsors, and Exhibitors

WHERE: Rollingstone Ranch Golf Club at the Sheraton Steamboat Resort

WHEN: Friday, September 13, 2013 at 10:00 AM

COST: \$85

FORMAT: Four-Person Scramble



Rollingstone Ranch Golf Club at the Sheraton Steamboat Resort features one of the best golf courses in Colorado's Rocky Mountains. For a memorable experience in a breathtaking mountain setting, Rollingstone Ranch golf Club is unparalleled. A spectacular 18-hole course, designed by Robert Trent Jones II, features incredible views of the Yampa Valley, while Fish Creek winds its way through seven of the holes. Abundant wildlife will accompany you throughout the pine and aspen tree-lined holes. The 66 bunkers and large, undulating bent grass greens make this a truly championship-caliber course to be enjoyed by players of all skill levels. For these reasons, Fairways Magazine voted Rollingstone Ranch Golf Club as one of its 100 best golf courses.

PRESENTATION ABSTRACTS

Wednesday, September 11th

Location: Storm Peak

WQ1 1:30 pm

A NEW GENERATION OF PARKING LOT: POROUS ASPHALT AT BALL AEROSPACE

Deborah Fisher – while with Martin/Martin, INC. | civil2652@hotmail.com

Guy Fromme – Ball Aerospace Corp. | gfromme@ball.com

To meet the local criteria for providing parking in conjunction with expansion of their satellite manufacturing test plant, Ball Aerospace was required to add 288 additional parking spaces. A water quality and detention pond would have required an area of 12,000 square-feet, resulting in the loss of up to 40 of the 288 parking spaces, which would have required either a parking structure or purchase of additional land. Porous asphalt with a sand filter layer was suggested to fulfill the water quality requirements, and due to the good permeability of the creek basin soil, full infiltration was possible. Detention was not required since no runoff is expected to flow directly into Boulder Creek; thus the project became the first low impact/sustainable parking lot in the City.

WQ2 2:00 pm

DESIGN OF A RETROFIT WATER QUALITY CONTROL STRUCTURE TO MAXIMIZE POLLUTANT REMOVAL EFFICIENCY FOR AN EXISTING STORMWATER WETLAND

Laurie Trifone, Chris Olson – Colorado State University

ltrifone_85@hotmail.com, colson23@engr.colostate.edu

Basil Hamdan – City of Fort Collins | bhamdan@fcgov.com

EPA SWMM5 and the k-C* model were used to design a retrofit water quality control structure (WQCS) to maximize pollutant removal efficiency for an existing wetland that receives stormwater runoff from the Howes Street Basin located in Fort Collins, CO. The spatial constraints on the wetland prevent changes to the existing wetland layout and volume which is currently less than the watershed's water quality capture volume. The analysis included modeling several WQCS ranging from the existing condition to those that provide drawdown times of up to 72 hours. For each WQCS modeled, the hydraulic residence time and hydraulic loading rate were calculated from SWMM5 modeling outputs. Initial results suggest that the WQCS designed to provide a 72 hour drawdown time maximizes both the HRT and pollutant removal efficiency.

WQ3 2:30 pm

MEDIA FILTER DRAINS – WATER QUALITY OPTION FOR LINEAR PROJECTS

Teresa Patterson – RESPEC | Teresa.patterson@respec.com

Justin Werdel – CDOT | Justin.werdel@dot.state.co.us

Median filter drains (MFDs) are flow-through water quality treatment that can be installed along highway shoulders treating sheet flow runoff from the pavement. The MFDs constructed in 2012 on CDOT's Interstate 76 near the South Platte River were monitored in 2013 to compare their pollutant removal performance against an extended detention basin at the same site.

WQ4 3:30 pm

ESTIMATING NUTRIENT LOADS IN URBAN RUNOFF UNDER COLORADO'S REGULATION 85

Jane Clary – Wright Water Engineers | clary@wrightwater.com

Jill Piatt-Kemper – City of Aurora | jpiatt@ci.aurora.co.us

Holly Piza – Urban Drainage and Flood Control District | hpiza@udfcd.org

Scott Struck – Geosyntec

In response to Colorado's new "Regulation 85 Nutrients Management Control Regulation," the Colorado Stormwater Council (CSC) and the Urban Drainage and Flood Control District (UDFCD) co-sponsored a project to characterize nutrients in urban runoff. Under Regulation 85, Colorado MS4s are required to conduct a data gap analysis to "identify information that exists and the need for additional monitoring to be conducted in the future to determine the approximate nitrogen and phosphorus contribution to state waters due to discharges from MS4s." The paper provides findings to date related to a Discharge Assessment Report that 1) documents availability of existing data for estimating nutrient loads associated with urban runoff and 2) provides a data gap analysis to identify information that may be needed for future analysis.

WQ5 4:00 pm

FLOW-BASED WATER QUALITY MEASURES

Jessie Nolle – RESPEC | Jessica.nolle@respec.com

April Barker Long – City of Aspen | april.barker@ci.aspen.co.us

Drainage criteria manuals typically require a water quality volume to be stored and drained over a specific period of time. Examples include Urban Drainage's Water Quality Capture Volume to be drained over 40 hours and the City of Aspen's Water Quality Capture Volume to be drained over 12 hours. As an alternative, flow-based water quality treatment analysis may be a useful tool for evaluating water quality treatment effectiveness for sites that do not easily lend themselves to the more traditional large storage volume scenarios.

I-70 TWIN TUNNELS WATER QUALITY MITIGATION AND SEDIMENT CONTROL

The Colorado Department of Transportation (CDOT) has begun to implement sediment control measures identified in the Clear Creek Sediment Control Action Plan (SCAP) as part of the I-70 Twin Tunnels project. The Twin Tunnels EA and the SCAP identified goals of 80% sediment capture efficiency, spill containment and reduction of direct runoff and associated erosion from I-70. . Sediment inlets, ponds, spill containment basins and minimization of direct highway runoff have been incorporated into the I-70 Twin Tunnels project to meet these goals. Sediment reduction is important because it carries phosphorous (a nutrient that is increasingly being regulated in streams), and excess fine sediment can impact fisheries. Since cleanup of historical mining in Clear Creek has greatly improved the stream's fish populations, maintaining fish habitat is vital to the local economy.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

2013 CASFM CONFERENCE

"ALL HANDS ON DECK"

Wednesday, September 11th

Location: Werner

FM1 1:30 pm

SOUTH PLATTE RIVER HYDRAULIC MODEL

Jason Messamer – Olsson Associates | jmessamer@olssonassociates.com

Bill DeGroot, Shea Thomas – Urban Drainage and Flood Control District | bdegroot@udfcd.org, sthas@udfcd.org

Olsson Associates (Olsson) was retained by the Urban Drainage and Flood Control District (UDFCD) to combine the numerous existing hydraulic models along the South Platte River from Chatfield Reservoir to the Adams County/Weld County line. The intent of the project was to assemble one continuous floodplain model in current HEC-RAS format that would facilitate easier and more efficient floodplain modeling without drastically changing existing floodplain mapping. Olsson obtained and organized 15 hydraulic models/studies, incorporated newly surveyed data and topography, and created 2 combined models for the South Platte River (upstream of Confluence Park and downstream of Confluence Park). Floodplain differences were investigated and were usually attributed to updated infrastructure, modeling software differences, changes in the channel, or independent projects that were modeled to tie into the floodplain but never analyzed together. The completion of unified models along the South Platte River will facilitate easier coordination for new improvements where the impacts of multiple projects can be comprehensively assessed.

FM2 2:00 pm

THE ROLE OF FLOOD INSURANCE RATE MAPS (FIRMS) IN TWO LAWSUITS

Eliot Wong – Wright Water Engineers | ewong@wrightwater.com

Flood Insurance Rate Maps (FIRMS) are used by engineers, realtors, builders and others to determine where structures are relative to the 100-year floodplain. Utilizing FIRMs can help to minimize the hazards of flooding to existing and future development. This presentation will examine the role and significance of FIRMs relative to flooding cases that occurred in central Texas and central Kansas.

FM3 2:30 pm

FLOOD HAZARDS AND PROPERTY VALUES; KILLING THE ECONOMY?

Brian Varrella – City of Fort Collins | bvarrella@fcgov.com

Has your local floodplain manager ever been told he or she was killing property values with their flood risk map? Has your capital project manager ever completed a project removing flood risk from a property and been accused of subsidizing development with public money? What is the bottom line for property values in and near floodplains; the answer may be surprising. This multi-media presentation will explore the human and environmental side floodplain management as it relates to property values, risk communication, public outreach and human psychology.

FM4 3:30 pm

FLOODPLAIN MANAGEMENT ASPECTS OF THE RTD WEST CORRIDOR PROJECT

Bill DeGroot, David Mallory, Joanna Czarnecka – Urban Drainage and Flood Control District |
bdegroot@udfcd.org, dmallory@udfcd.org, jczarnecka@udfcd.org

In the summer of 2004, the Urban Drainage & Flood Control District (UDFCD) started meeting with the Regional Transportation District (RTD), affected local governments and RTD's preliminary design consultant on numerous unresolved floodplain issues along the West Corridor. This presentation will chronicle the UDFCD involvement in the West Corridor Project from the initial negotiations, through design reviews and the construction phase to completion. UDFCD involvement included two capital projects, one maintenance project and nine different drainage project reaches constructed by RTD that went through the UDFCD maintenance eligibility process. This is a good account of how several public agencies with sometimes competing agendas worked through some very large challenges to complete a good transit project that lives well with the stream systems it intersects.

FM5 4:00 pm

ADVENTURES IN THE LAST FRONTIER: HAZARD PLANNING ALASKAN STYLE

Kimberley Pirri, Scott Simmons, Jon Philipsborn, Shane Parson, Rich Chamberlain – URS | Kimberley_pirri@urs.com
Daniel Mahalak – Seward-Bear Creek Flood Service Area

URS has implemented an all-natural hazards planning process for the Seward-Bear Creek Flood Service Area (SBCFSA) on Alaska's Kenai Peninsula. For the flood hazard assessment, advanced Hazus modeling techniques were used, including: user-defined depth grids and user-defined building stock. This planning process also incorporated the impacts of climate change and future land use to compile a full assessment of future hazards. While this project occurred in Alaska, the planning process and analysis methods are applicable to projects in Colorado.

FM6 4:30 pm

UNCONVENTIONAL OIL AND GAS DEVELOPMENT LESSONS LEARNED – MANAGING POTENTIAL DRAINAGE AND FLOODING IMPACTS

Sally Cuffin – URS | sally.cuffin@urs.com

Unconventional oil and gas resource development is booming across many areas of North America, including portions of Colorado. This kind of development generates considerable land disturbance due to the need for well pads, compressor stations, access roads, and pipelines. Although O&G land disturbance is regulated by numerous state and federal laws and programs, local governments and communities should be aware of and plan for potential impacts to their infrastructure and area waterways. This presentation will summarize some of the lessons learned in areas of Colorado, Louisiana, and Texas during large-scale oil and gas projects.

2013 CASFM CONFERENCE

"ALL HANDS ON DECK"

Wednesday, September 11 - Stream Restoration Abstracts

Wednesday, September 11th

Location: Sunshine

SR1 1:30 pm

IDEAS FOR ECOLOGICAL RESTORATION: SOMETIMES IT'S THE LITTLE THINGS

Julie Ash – Walsh Environmental | jeash@walshenv.com

Ecological restoration of stream corridors in urban environments is all about constraints and challenges. Existing infrastructure typically sets the stage, defining and often seeming to limit the restoration potential of the corridor. Urban constraints can affect every aspect of a project and while the constraints are unavoidable, combining a thorough understanding of the constraints with a burning desire to maximize every last possible opportunity for ecological improvement (both large and small) is a great path to project success. Sometimes it's the little things that add up to meaningful improvements and ultimately to healthier urban ecosystems.

SR2 2:00 pm

ALTERNATIVE BANK STABILIZATION TREATMENTS

Dave Bennetts – Urban Drainage and Flood Control District | dbennetts@udfcd.org

Bank protection projects on drainageways in the Denver region have historically been done using hard structural treatments such as riprap, grouted riprap, boulders, or concrete channels and walls. These treatments have traditionally been expensive to install, and replace when needed. Based on these considerations, as well as an evolving permit climate requiring alternative approaches be considered, the District has been exploring a number of alternative bank protection treatments in an effort to 'soften' our projects while still providing the required protection. This case study looks at a number of projects constructed in the District over the last 25 years using more natural bank protection techniques.

SR3 2:30 pm

RIPARIAN HABITAT MITIGATION BANKING AND NUTRIENTS

Ben Guillon – WRA | guillon@wra-ca.com

Noah Greenberg – Wright Water Engineers | ngreenberg@wrightwater.com

Recent nutrient regulatory developments in Colorado elevate the importance of conserving and enhancing riparian corridors. Mitigation banking is an established tool for conserving wetland resources and wildlife habitat, but has been used for riparian corridor conservation in a few states. This presentation outlines the benefits and structure of riparian mitigation banking and will highlight expected benefits for landowners, watershed managers and water quality.

SR4 3:30 pm

OVERLOOKED ELEMENTS OF STREAM RESTORATION PROJECTS CAN CONTRIBUTE TO OVERALL PROJECT SUCCESS

Janel Servis – Aqua Terra Compliance | janelservis@aol.com

Deb Keammerer – The Restoration Group | deb@restorationecology.us

Stream restoration projects offer valuable opportunities to stabilize restore and conserve our urban stream corridors. Habitat restoration allows us to re-establish the processes and functions of ecological and physical linkages between aquatic, riparian and associated terrestrial ecosystems. This paper will discuss lessons learned from participating in these projects. Construction phasing, hydrology, grade control structures, permitting process, stream diversion and unique restoration opportunities will be discussed in terms of their function and project implantation. The concept of developing lessons learned is a resource where systematic post evaluations should be initiated. A draft outline for how we could move forward with a systematic post project review will be presented.

SR5 4:00 pm

PHASE III CHUCK LEWIS WILDLIFE AREA

Michael Geenen – Stantec Consulting | michael.geenen@stantec.com

Phase III of the Cluck Lewis State Wildlife Area located on the Yampa River 5 miles south of Steamboat Springs consists of approximately 3,300 linear feet of channel improvements for habitat development and site improvement. Current condition of the site includes high with/depth ratios, channel instability, bank erosion, sediment transport problems, and poor riparian habitat. The primary object of the project is to create a self-sustaining, low-maintenance system that fosters the development of a viable fishery, improves aesthetic appeal and contributes the overall value of the Check Lewis State Wildlife Area. This talk will focus on the efforts made for design to achieve the goals and objectives of the project, outlining the steps for the design process and restoration efforts.

SR6 4:30 pm

STREAM RESTORATION USING NATURAL LOGS AND SCULPTED CONCRETE LOGS TO MIMIC NATURAL DROP STRUCTURES

Kyle Hamilton – CH2M Hill | kyle.hamilton@ch2m.com

Dave Skuodas, Laura Kroeger – Urban Drainage and Flood Control District | dskuodas@udfcd.org, lkroeger@udfcd.org

The Urban Drainage and Flood Control District and CH2M HILL recently implemented two stream restoration pilot projects that use natural logs (wood) and sculpted concrete logs to create natural looking log drop structures. The projects are located on Timbers Creek in Douglas County, Colorado and on Rock Creek in Superior, Colorado. This presentation documents the basis for the pilot projects, a summary of the design elements, an overview of construction, and a summary of our performance observations.

2013 CASFM CONFERENCE

"ALL HANDS ON DECK"

Thursday, September 12 - Technical Modeling Abstracts

Thursday, September 12th

Location: Storm Peak

TM1 1:30 pm

RESOLUTION OF INSTABILITIES IN UNSTEADY HEC-RAS MODELS

Kyle Hinton, Alan Turner, Mark Glidden, Scott Yanagihara – CH2M Hill | kyle.hinton@ch2m.com, alan.turner@ch2m.com, mark.glidden@ch2m.com, scott.yanagihara@ch2m.com

CH2M HILL has been working on the development of a complex Unsteady HEC-RAS model of the Sacramento River system upstream of Sacramento, CA. The unsteady HEC-RAS model was developed to represent over 250 miles of riverine channels protected by almost 400 miles of state or federal levees. In addition, the floodplain delineation will use a series of breaches of the levees modeled in HEC-RAS to develop hydrographs that will then be loaded to a two dimensional hydraulic model representing over 1500 square miles of floodplain. The most difficult element of model development revolved around the resolution of mathematical instabilities associated with the representation of some of the complicated hydraulic phenomena. The resolution of some of the issues related to common but challenging hydraulic conditions will be discussed during the presentation in the hopes that other modelers can learn from our experience.

TM2 2:00 pm

PINEY CREEK MAJOR DRAINAGEWAY PLAN: WATERSHED APPROACH TO UNDERSTANDING SEDIMENT DYNAMICS

Nathan Torrey, Alan Leak – RESPEC | nathan.torrey@respec.com, alan.leak@respec.com

The purpose of the Piney Creek Major Drainageway Plan was to develop a plan for the watershed which will provide guidance to the project sponsors for future construction projects and development plans. Specific areas along the Piney Creek drainageway are experiencing or have experienced severe channel degradation and erosion and other areas experience heavy sediment deposition as a result. As part of the Piney Creek Major Drainageway Plan, a qualitative analysis of sediment transport was prepared in an effort to better understand the sediment dynamic within the drainageway.

TM3 2:30 pm

VARIED TOPOGRAPHIC LAPSED SNOWMELT AND GIS FACILITATED SNOWMELT RUNOFF ROUTING IN ASPEN, COLORADO

Joseph Machala, Max Shih, Kimberley Pirri – URS | joseph_machala@urs.com, max_shih@urscorp.com, kimberley_pirri@urs.com

An area north of the Roaring Fork River in the City of Aspen, Colorado was evaluated for snowmelt runoff as a sub-part of the Hunter/Smuggler Surface Drainage Master Plan. Snowmelt was estimated by applying a topographic/temperature lapse rate methodology using the degree-day snowmelt approach coupled with a non-parametric analysis for multiple temperature frequency return periods. Resulting snowmelt hydrographs were routed through the project area using the GIS integrated InfoSWMM software for existing conditions and multiple alternative scenarios.

TM4 3:30 pm

USING ARC TO WEATHER THE FLOOD – GIS TOOLS FOR HYDROLOGIC MODELING

David Delagarza, Teresa Patterson – RESPEC | david.delagarza@respec.com, teresa.patterson@respec.com

Utilizing ArcGIS, ArcHydro, and Python for development of CUHP and SWMM hydrologic models speeds up the development of the modeling files, reduces duplicate information, and minimizes errors. We will illustrate how we have incorporated these tools into our workflow for automating master planning hydrology.

TM5 4:00 pm

COMPARISON OF KINEMATIC AND DYNAMIC WAVE ROUTING FOR PIPED STORM SEWER SYSTEMS

Aaron Cook – CH2M Hill | aaron.cook@ch2m.com

In storm water modeling there are two typical approaches for wave routing: kinematic wave routing and dynamic wave routing. This topic focuses on recommended approaches for storm infrastructure sizing and potential costs impacts for budgeting purposes using the example of an urban basin within the City and County of Denver. Two variables were selected to determine the impact of using kinematic wave routing or dynamic wave routing; peak flow and maximum to full depth ratio. Pros and cons for each modeling approach in planning and design situations will be discussed.

TM6 4:30 pm

GRAVEL PIT HEADCUTTING AND EROSION ANALYSIS USING NRCS WINDAM B EMBANKMENT DAM EROSION MODEL

Douglas Trieste – Flow Technologies | doug@flowtechnologies.biz

This presentation discusses a method to evaluate gravel pit headcutting and erosion based on the National Resource Conservation Service embankment dam erosion model WinDAM B (Windows Dam Analysis Module) that was applied to a gravel pit in the Cache La Poudre River floodplain near Greeley, Colorado. The berm between the river and crest of the gravel pit was treated as a “dam” and modeled as a potential dam failure for the purpose of estimating headcut and erosion depth, width, and time to failure (i.e., headcut back to the river). WinDAM B is a modular software application for the analysis of overtopped earth embankments (berms in this case) and internal erosion.

Notes:

2013 CASFM CONFERENCE

"ALL HANDS ON DECK"

Thursday, September 12th

Location: Werner

SM1 1:30 pm

DENVER'S SUSTAINABLE WATER QUALITY PROGRAM STORMWATER QUALITY GIS MAPPING, INVENTORY AND BMPS

Darren Mollendor, Brian Schat, Jon Novick, Kimberly Watanabe – City and County of Denver
darren.mollendor@denvergov.org, brian.schat@ci.denver.co.us, jon.novick@denvergov.org,
kimberley.watanabe@denvergov.org
Robert Krehbiel – Matrix Design Group | robertk@matrixdesigngroup.com

The City & County Denver is embracing efforts to improve the quality of stormwater runoff. A Water Quality Task Force comprised of Public Works, Mayor's Office of Sustainability, Environmental Health, Development Services, City Attorney's Office, Parks & Recreation, Community Planning and Development and Denver International Airport was established for coordination of stormwater activities. To initiate their strategic stormwater master planning efforts, Denver completed a GIS-based basin delineation of their 1,224 MS4 stormwater outfalls and developed estimated pollutant loading for each of these outfalls. The study also inventoried all known existing BMP's and developed a datasheet for each facility to help with operations and maintenance.

SM2 2:00 pm

DRAINS TO RIVER: THE DIFFICULTY OF TRASH AT LARGE URBAN OUTFALLS

Saeed Farahmandi, Bruce Uhernik – City and County of Denver | saeed.farahmandi@denvergov.org, bruce.uhernik@denvergov.org

Hitting golf balls into the water isn't a good idea, unless of course you are practicing with floating golf balls at Aqua Golf located just north of Overland GC in Denver. In 2007, with the construction of a 12'x8' box culvert and upstream system, the city transformed Aqua Golf at Overland Lake into a dual purpose driving range & stormwater facility. A large forebay was built at the outlet, however, golf course workers noticed an increase in floating trash which resulted in an undesirable looking lake and made collecting the golf balls difficult and even dangerous with some of the types of trash. This presentation will include a discussion of this test case at Overland Lake, as well as how Denver is looking to apply the results to other outfalls around the city.



SM3 2:30 pm

REDUCING E COLI LEVELS IN DRY WEATHER DISCHARGES FROM DENVER'S MS4: HOW EFFECTIVE ARE SYSTEM MAINTENANCE BMPS AFTER FOUR YEARS OF IMPLEMENTATION?

Jon Novick – Denver Department of Environmental Health | jon.novick@denvergov.org

Denver's MS4 permit contains a special section on E. coli control that contains a compliance schedule to meet wasteload allocations established by the E. coli TMDL for Segment 14 of the South Platte River. The permit identifies priority storm drainage basins, BMPs to be implemented in those basins to attain the wasteload allocation, and contains a compliance schedule. Required BMPs are primarily related to infrastructure maintenance. In 2013, analysis of sampling data from the problem basins indicated that infrastructure maintenance is a promising approach to reducing E. coli levels in discharges from Denver's storm sewers; ongoing implementation efforts have successfully reduced E. coli levels and loads in some of the targeted basins.

SM4 3:30 pm

TUNNELING 101

Dave Skuodas – Urban Drainage and Flood Control District | dskuodas@udfcd.org

Nate Soule – Brierley Associates | nsoule@brierleyassociates.com

Brenden Tippets – BT Construction |

We recently completed six tunneling projects, with sizes ranging from 30-inch up to 108-inch diameter. This presentation will provide you with knowledge regarding the various risks associated with tunneling, and why certain tunneling methods can reduce that risk. We'll share cost information, with some insights as to why certain tunneling methods are much more expensive than others. We'll also discuss the types of geotechnical exploration we did ahead of these projects, in addition to the various ways we bid and contracted the work.

SM5 4:00 pm

ADAM'S RIB WATER QUALITY MONITORING AND MITIGATION PLAN IN EAGLE, COLORADO

Shannon Tillack, Jonathon Jones – Wright Water Engineers | stillack@wrightwater.com, jonjones@wrightwater.com

Matt Shoulders – Adam's Rib Ranch | mshoulders@adamsribbranch.com

Ray Merry – Eagle County Environmental Health Department | ray.merry@eaglecounty.us

When land approximately six miles southeast of the Town of Eagle, Colorado was proposed for development of Adam's Rib Ranch, there was concern from the community with regard to the development causing water quality degradation of Frost Creek, Brush Creek, and Salt Creek. In response to the community's concerns regarding the proposed development, a flexible and dynamic Water Quality Monitoring and Mitigation Plan (WQMMP) was prepared to provide a basis for determining whether development using best management practices could demonstrate protection of water quality and aquatic life. This presentation will provide an overview of the development of the WQMMP, as well as the annual water quality monitoring and reporting requirements presented in the WQMMP. Data collected to-date regarding development impact will also be presented.

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Thursday, September 12 - Stormwater Management Abstracts

SM6 4:30 pm

MANAGING STORMWATER COMPLIANCE WITH EMERGING TECHNOLOGIES

Chad Kudym – Beehive Industries | ckudym@beehiveindustries.com

Learn how to leverage emerging technologies as part of your best management practices of stormwater management. This presentation will highlight unlocking the power of GIS tools and applications for managing and tracking compliance issues. You can have a one stop shop for all stormwater information, and it should be very easy to use.

Notes:

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Thursday, September 12th

Location: Sunshine

EP1 1:30 pm

OPERATIONAL COLORADO FLOOD THREAT PREDICTION PROGRAM: 2012 INNOVATIONS AND CHALLENGES AND 2013 OPPORTUNITIES

John Henz – Dewberry Consultants | jhenz@dewberry.com

Kevin Houck – CWCB | kevin.houck@state.co.us

The Colorado Water Conservation Board (CWCB) developed a Flood Threat Bulletin (FTB) program in 2006 to complement and supplement National Weather Service flash flood/flood predictions for the emergency response community. In 2012 Dewberry Consultants began a five year contract to provide the FTB services. In 2012 Dewberry introduced an enhanced Google-Earth based web page with special graphical information forecasts of flash flood potential. Dewberry provided watershed specific prediction of flash flood potential for the numerous fireburn areas across the state. In addition to county-specific flash flood threat forecasts, Dewberry produced special 15-day graphical forecasts of rainfall over the state to aid in drought water management. Examples will be presented and discussed.

EP2 2:00 pm

JERSEY STRONG: LESSONS LEARNED DURING A FEMA HOUSING MISSION

Zac Collins – RESPEC | zac.collins@atkinsglobal.com

During the latter part of 2012 into the beginning of 2013, I spent three months on the east coast working to complete a FEMA housing mission in response to the Hurricane Sandy disaster. It was an enlightening experience to see firsthand the coordination and planning it takes to succeed at a large scale housing mission. This presentation is a brief overview of the FEMA Housing Mission process and the real world lessons learned to include photos and video of the area of interest.

EP3 2:30 pm

GIS BASED EMERGENCY MANAGEMENT AND PLANNING

Mike Schwab – Beehive Industries | mschwab@beehiveindustries.com

By taking a step back and thinking proactively instead of reactively and evaluating your data and tools, you can significantly increase your responsiveness. With appropriate data sets and specific GIS tools, you can predict areas that will be most affected and even look for areas for shelter locations. This presentation will highlight some of the options that are out there for you.

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EP4 3:30 pm

INUNDATION MAPPING AS A MULTI-FACETED FLOODPLAIN MANAGEMENT TOOL

Stuart Geiger – Dewberry | sgeiger@dewberry.com

Inundation mapping leverages the wealth of hydrologic forecasting and streamflow information to create scenario-based depictions of flood hazards. This mapping provides several major benefits to a community, including better Communication of Risk, ability to Prepare for Flood Events, and Assess Existing and Potential Flood Risk. This presentation will describe some of the ways in which inundation mapping is being used to meet these objectives, such as web-based viewers to provide personalized flooding snapshots during flood emergencies, to how to integrate local data with the maps for increased-resolution of risk assessments. We will also discuss how locally developed information, such as flood warning systems and flood response plans can be tied in with inundation mapping as centerpieces of a community's emergency management plan.

EP5 4:00 pm

POST-FIRE WALDO CANYON AREAS OF CONCERN FOR POTENTIAL FLOOD INUNDATION

Robert Krehbiel, Graham Thompson – Matrix Design Group | robertk@matrixdesigngroup.com, graham_thompson@matrixdesigngroup.com
Kevin Houck – CWCB | kevin.houck@state.co.us

Residents and Emergency Managers for the Waldo Canyon burn area are concerned with the increased risk of flooding and the potential of sediment and debris to block drainageways and culverts. A study sponsored by the Colorado Water Conservation Board and local municipalities identified structures at increased risk of flood inundation. The study developed post-fire hydrology and floodplain models to map areas of concern for five different rainfall events. This emergency preparedness study will help the community better manage for potential flood hazards after the fire until the hillside vegetation is re-established.

EP6 4:30 pm

THE MYTH OF THE MULTI-TASKING ENGINEER – WHAT'S BURNING OUT OUR BEST AND BRIGHTEST?

Jeffrey Sickles – Enginuity Engineering Solutions | jsickles@enginuity-es.com

Some of the best and brightest engineers in the industry are feeling burnt out and dispassionate about the civil engineering industry. Corporate structures that push the "seller/doer" model have put significant responsibility and time requirements on engineering staff. This presentation is meant to challenge organizations to structure themselves and the roles of engineers working within those organizations in ways that lead to long-term success and eliminates the burn-out problem; sustainable engineering.

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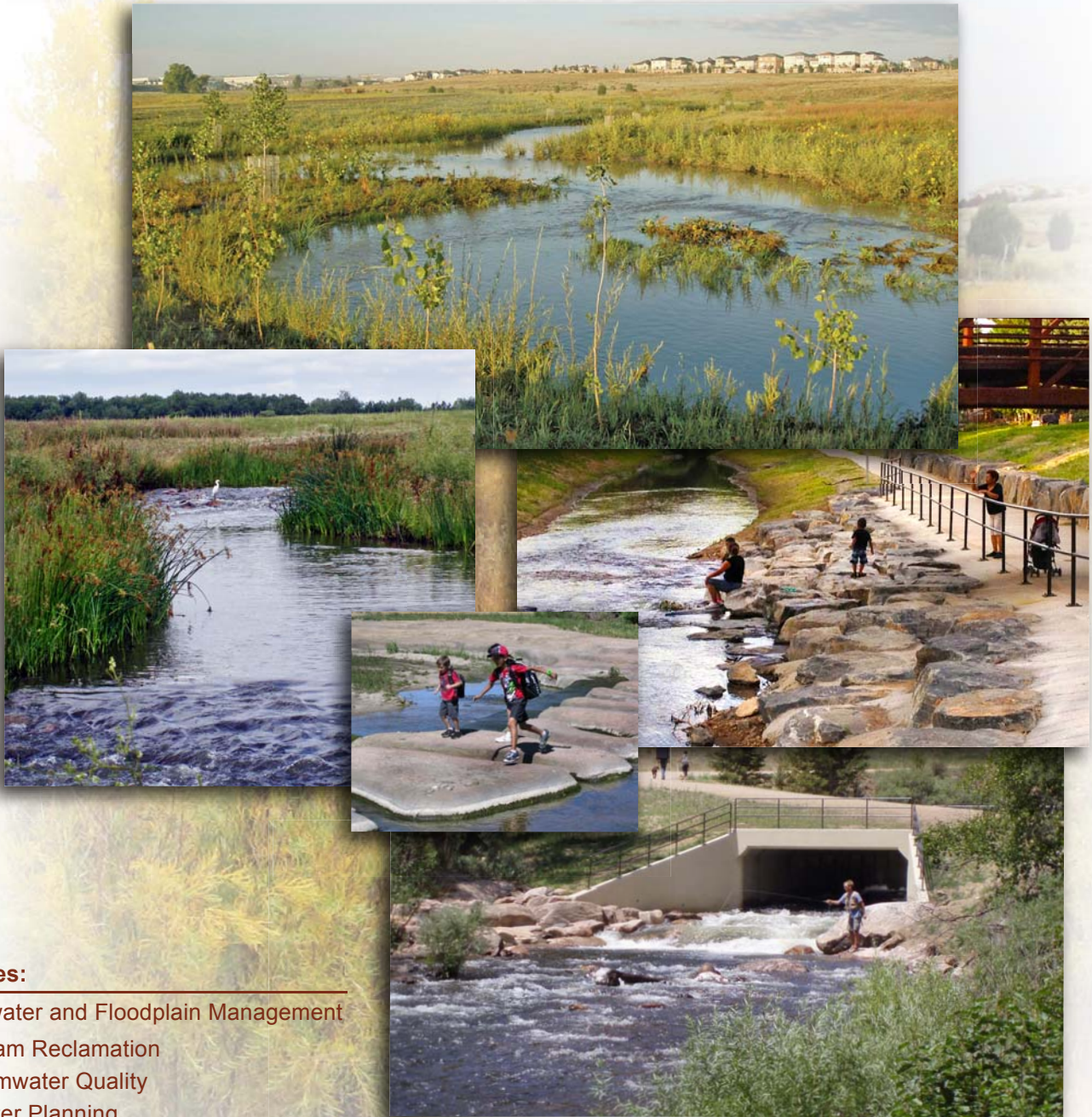
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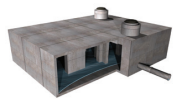
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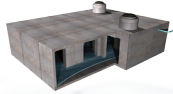
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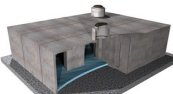
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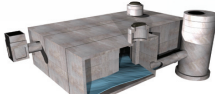
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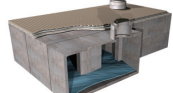
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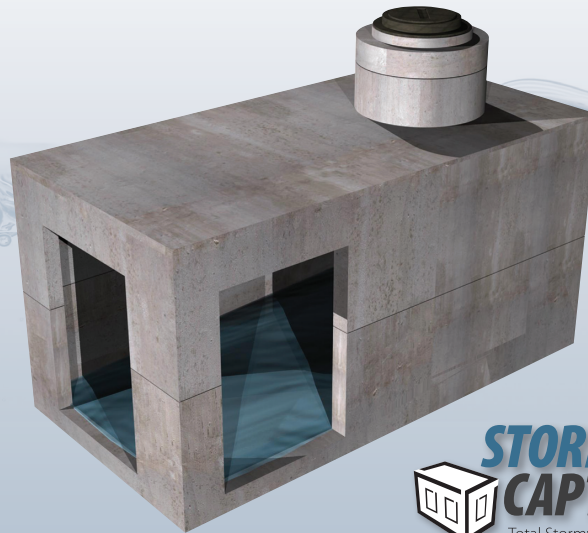


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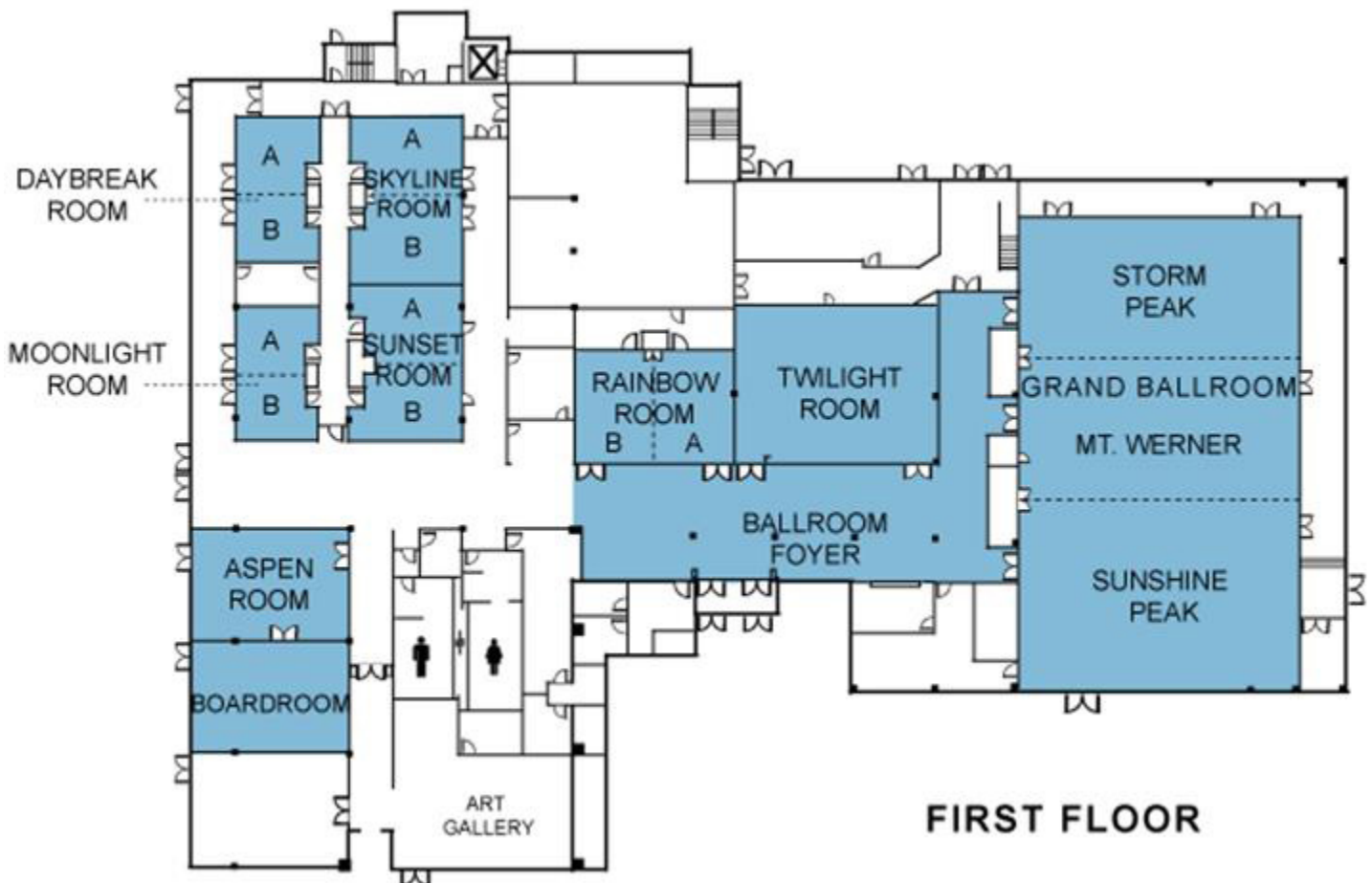
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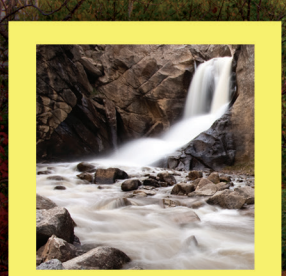
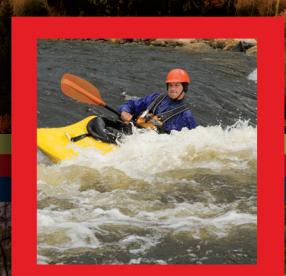
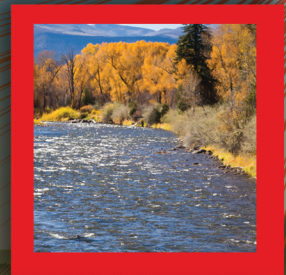
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