

# Iowa's River Restoration Toolbox Level 2/Geomorphic Design

Dependent on pandemic conditions in Iowa, portions of this training may be converted to a virtual experience.

**2020**  
**October 5<sup>th</sup> - 8<sup>th</sup>**

**Clive Aquatic Center**  
**1801 NW 114th St.**  
**Clive, IA 50325**



## Course Details

Level 2 training focuses on geomorphic design and utilizes the skills acquired in the Level 1 training to develop ecologically sound restoration techniques. Includes outdoor exercises and development of conceptual designs for a restoration project in Clive.

Course topics include, but not limited to:

- Phases of Geomorphic Channel Design
- Multi-Staged Channels
- Alluvial vs. Threshold Channel Design
- Dimensionless Ratios
- Reference Reach Criteria
- Shear Stress
- Sediment Supply & Transport
- Sediment Transport Competency

## Featured Speaker: George Athanasakes

George is the Ecosystem Restoration Program Leader for Stantec, and has 25 years of experience working on innovative stream restoration projects nationwide. George has taught at numerous restoration workshops, and worked with the IDNR river restoration planning team to create Iowa's River Restoration Toolbox. Additional instructors will supplement George's presentations.

## What to Expect

- Four days of team-based training in the latest stream assessment and restoration practices conducted by restoration experts, lunch included
- Level 2 Certificate of Completion
- Listed on IRR and ISWEP websites as having completed the training requirements
- Certificate for Professional Development Hours (PDHs)
- Course Fee: \$700 per person

**Course Prerequisite: Participants must have completed Level 1/Base Training to register for Level 2.**

## Register Today!

[www.iowaRivers.org](http://www.iowaRivers.org)



## Questions?

Contact Sara Carmichael  
[sara@iowarivers.org](mailto:sara@iowarivers.org)

# Level 2/Geomorphic Design Training Agenda

## Monday, October 5<sup>th</sup>

<b>8:00am - 8:30 am</b>	Module 1 – Welcome & Course Overview
<b>8:30 am - 9:15 am</b>	Module 2 – Phases of Geomorphic Channel Design
<b>9:15am - 10:015 am</b>	Module 3 – Concept of Multi-Staged Channel & Design Discharge
<b>10:15am - 10:30 am</b>	Break
<b>10:30am - 11:00am</b>	Module 4 – Alluvial Channel Design Versus Threshold Channel Design
<b>11:00am - 12:00pm</b>	Module 5 – Reference Reaches & Dimensionless Ratios
<b>12:00pm - 12:30pm</b>	Lunch
<b>12:30pm - 1:00pm</b>	Module 6 – Designing for Ecology
<b>1:00pm - 1:45pm</b>	Module 7 – Sheer Stress in Streams
<b>1:45pm 2:45pm</b>	Module 8 – Understanding Sediment Supply (BANCS) & Sediment Transport
<b>2:45pm - 3:00pm</b>	Break
<b>3:00pm - 4:15pm</b>	Module 9 - Sediment Transport Competency
<b>4:15pm - 4:30pm</b>	1st Day Wrap Up / Q&A

## Tuesday, October 6<sup>th</sup>

<b>8:00am - 9:30am</b>	Module 10 - Sediment Transport Capacity
<b>9:30am - 10:00am</b>	Module 11 - Development of Conceptual Designs
<b>10:00am - 10:15am</b>	Break
<b>10:15am - 11:00am</b>	Module 12 - Overview of Project Site
<b>11:00am - 11:30am</b>	Teams Meet with Team Leaders to Discuss Field Work
<b>11:30am - 12:00 pm</b>	Lunch
<b>12:00pm - 4:30pm</b>	Field Work

## Wednesday, October 7<sup>th</sup>

<b>8:00am - 10:30am</b>	Data Work Up/Develop Concept Designs
<b>10:30am - 11:30am</b>	Module 13 – Use of Practices / Techniques in Stream Design
<b>11:30am - 12:00pm</b>	Lunch
<b>12:00pm - 2:30pm</b>	Teams Finalize Designs
<b>2:30pm - 2:45pm</b>	Break
<b>2:45pm - 3:15pm</b>	Team 1 Presents Overall BANCS Model Results
<b>3:15pm - 3:45pm</b>	Team 2 Presents Sediment Calcs
<b>3:45pm - 4:15pm</b>	Team 3 Present River Restoration Toolbox Results
<b>4:15pm - 4:30pm</b>	Teams Regroup to Discuss Designs

## Thursday, October 8<sup>th</sup>

<b>8:00am - 11:00am</b>	Teams Finalize Designs
<b>11:00am - 12:00pm</b>	Team 1 Presents Design
<b>12:00pm - 12:30pm</b>	Lunch
<b>12:30pm - 1:30pm</b>	Team 2 Presents Design
<b>1:30pm - 2:30pm</b>	Team 3 Presents Design
<b>2:30pm - 3:30pm</b>	Module 14 – Overview of Recommended Design & Course Wrap-Up

## Defining the Iowa River Restoration Toolbox

The Toolbox was developed by the Iowa Department of Natural Resources to assist Iowa designers and reviewers of stream stabilization and restoration projects by providing proven techniques that incorporate natural materials, such as logs, rocks, and live plantings. Among the many techniques included in the Toolbox are: longitudinal peaked stone toe protection, j-hook vanes, rock arch rapids, oxbows, riparian corridor restorations, and tree/shrub plantings. Included are an assessment method and reviewable design checklists to aid in decision making among multidisciplinary teams (i.e. – funding partners, designers, project managers, and contractors etc.). The Toolbox also provides detailed design guidance, drawings and specification requirements to assist with project bidding.

## Toolbox Development

The goal of this resource is to assist design teams with the evaluation of streams and the selection of suitable practices that will result in successful projects. Just as important, the Toolbox will prevent the installation of practices that are unsuccessful and destructive to the stability of river ecosystem. A national expert in the design and installation of these practices was hired to research and merge common engineering and restoration practices into useful assessment and design guidance. It was then reviewed and adapted by a statewide team of Iowa engineering, river restoration, project management, and aquatic habitat professionals from various cities, state agencies, federal, and non-governmental organizations with a stake in its development. Efficiencies are anticipated with the use of the Toolbox from inception to permitting, because reviewers can work from generally accepted design assumptions and calculations to support the selected practices.

## Why Use the Toolbox?

This resource focuses on natural techniques in streambank stabilization and stream restoration that provide multiple benefits while remaining the most cost-effective options. The Toolbox will help you understand the driving factors that cause an unstable stream segment to erode or damage infrastructure prior to jumping to solutions, which leads to long-term stable, economically beneficial solutions. It takes the user through the major steps of stream assessment, including field-collected stream survey data, key stream stability issues, and multiple practices and techniques that are appropriate for the type of restoration project. The Iowa DNR State Revolving Fund (SRF) Sponsored Project Program will be requiring its applicants to use the Toolbox to be eligible for the Clean Water Loan Program. Through this program, wastewater utilities can finance and pay for projects, within or outside the corporate limits, that cover best management practices for nonpoint source pollution control.

## What Should I Wear & Bring to the Training?

Plan on clothing and foot attire for muddy and wet conditions. Hip waders or long rain boots will be needed. Bring several pencils, clipboard, a laptop, and a notebook. Please download [RIVERMorph](#) in advance of the class.



## Questions?

Contact Sara Carmichael  
[sara@iowarivers.org](mailto:sara@iowarivers.org)