

BLUF:

Develop Guidance for Rapid
Watershed Assessments
Identify channel instability within watersheds

-Repeatable analysis methods

Challenge/Objectives:

- Assess existing DHP watershed
- Develop/test methods on watershed
- Provide methodology and toolbox for geomorphic assessments



MVK-Campbells Creek Watershed



USACE PDT Members:

Brian Johnson-MVK Chris Haring, Keaton Jones, and David Biedenharn (ERDC-CHL)

Stakeholders/Partners:

Angie Rogers (USFWS) Dale Jackson (NRCS) USACE Planning Community

MVK-Campbells Creek Field Site Visit



Leveraging/Collaborative Opportunities:

-SMART Planning initiatives

-Interest in wildfire recovery efforts in western US for rapid

watershed assessment tools

-Interest in ecological modeling associated with tools



RSM Approach using FG:

Includes: (1) complete field investigation, (2) use of existing field surveys, (3) acquisition and development of LiDAR-high resolution terrain data, and (4) identify reaches for further study and/or stabilization recommendations





MVK-Campbells Creek Field Site Visit







Stationing (feet)

Campbells Creek Channel Profiles







Accomplishments/Deliverables

- Completion of field visits and data analysis
- Repeatable methodology that can be applied throughout USACE
- Technical Report documenting methodology
- Final Report and Presentation

Lessons Learned:

- Scheduling of resources difficult with flooding and others
- Limitations/advantages to using LiDAR, hydro-flattening, resolution, others (draft TN)
- Based on results-FY21 second phase proposed comparing to new physical cross-sections, slopes, and modeling







What challenges did you face to get your project to implementation and how did you move past them?

- Scheduling meetings-field site visits
- Competing resource needs •
- COVID travel restrictions

If not yet implemented, what is your path forward?

- Draft report in review.
- Additional draft reports based • on FG analysis
- Additional research required for • new data collection approaches

FY20 MVK-RSM IPR Guidance for Incorporating Regional Sediment Management into the Design of Channel Systems

environmental degradation, intrarecorp ure recircle government in 1997, but available available sixteen watersheds comprising 2626 square miles within the Vazoo River Basin in the Lower Mississippi Valley. Primary features that are being utilized to achieve the project goals include: grade control structures, floodwater relations structures, bank-stabilization measures, pipe drop of the monitogen of the monitogen of the monitogen of the project structures. structures, and land-treatment measures. A key component of the DHP is the monitoring of the system to determine the impact of various features on the system, particularly with respect to reductions in sediment delivery. Monitoring also provides for the development of advanced technologies that can be transferred to projects outside of the DHP watersheds. Integrating and further increasing USACE's knowledge base of DHP watershed and regional sediment management approaches is vital to the successful implementation of SMART Planning paradigm. Watershed management, in this context, includes the evaluation of sediment sources,

pathways, and sinks, and the impacts of various sediment management features on channel stability throughout a watershed. It also includes the design of equilibrium channels and siting for grade control and bank stabilization measures. By utilizing findings from geomorphic assessments, in conjunction with selective surveying to obtain general slope and cross sectional data. watershed plans for flood control, channel stabilization, regional sediment management, and habitat enhancement can be developed more rapidly than existing approaches. Establishing and applying this rapid assessment framework in a DHP watershed through this R&D effort will

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PURPOSE: Existing Delta Headwaters Project (DHP) watershed stabilization studies are focused on restoration and stabilization of degraded stream systems. The original watershed studies fortherly under the Demonstration Erosion Control (DEC) Project started in the mid-1980's. The watershed stabilization activities are continuing and because of the vast number of degraded watersheds and limited amount of yearly funding, there is a need for developing a rapid watershed assessment approach to determine which watersheds to prioritize for further work.

The goal of this project is to test the FluvialGeomorph (FG) toolkit to determine if the Rapid Geomorphic Assessment approach can identify channel stability trends in Campbell's Creek and Geomorphic Assessment approach can identify channel staouty utants in composed system its main tributary. The FG toolkit (Haring et al. 2020) is a new rapid watershed assessment approach using high resolution terrain data (Light Detection and Ranging-LiDAR) to support US Army Corps of Engineers (USACE) watershed planning. One of the principle goals of the plant of the standard statement of the standard statement of the standard statement of the USACE SMART Planning is to leverage existing data and resources to complete studies. The FG approach uses existing LiDAR to rapidly assess either reach specific analysis for smaller more focused studies or larger watersheds or ecosystems. The rapid assessment capability can reduce the time and cost (use existing mformation) to complete a preliminary watershed assessment and provide rapid results to provide insight into where to focus more detailed study efforts

BACKGROUND: The DHP seeks to develop and demonstrate a watershed systems approach to address problems associated with watershed instability: erosion, sedimentation, flooding, and

environmental degradation. Initiated by the Federal government in 1984, DHP activities targeted





into the Design of Channel Systems How is this project benefiting the USACE and Nation?

- Replicable effort that can be applied to other areas/districts
- Provide District Engineers, Planners, Regulators, Operations Managers, and Project Managers with scientifically sound rapid watershed assessment methods that are most beneficial to regional systems and effective regional sediment and watershed management
- Collaborative efforts with other Federal Agencies; such as U.S. Fish and Wildlife and the NRCS
- Identify watershed sediment
 sources-pathways-sinks
- Ecological assessment for watershed analysis





