

Monitoring and Evaluation Road Ditch Gully Erosion Demonstration

**FY 07 CWA Section 319 Grant
by
City of Harrisburg, Arkansas
Project # FY 07-300**

Principal Investigators
Donnie Faulkner, Mayor
Danny Faulkner, Superintendent
Dennis K. Carman, P.E.

Project Goals/Objectives

■ Demonstrate

- Practicality, cost efficiency, installation procedures, effectiveness
 - Controlling gully erosion along streets and road ditches
 - using a newly developed thermoformed plastic HDPE ditch lining technology
 - that can be installed with commonly available local People and equipment resources.

Primary Tasks

□ Completed

- ✓ Installation of new road ditch lining technology
- ✓ Install a conventional application (ie. Rock)

□ In Progress

- Monitor the stability and effectiveness of both ditch linings (in progress)
- Host field day(s) for adjoining mayors, county judges and maintenance personnel
- Prepare conclusion reports

Project Facts

■ **Project Costs:**

- Federal (\$57,375)
- State/Local (\$49,200)
- Total (\$106,575)

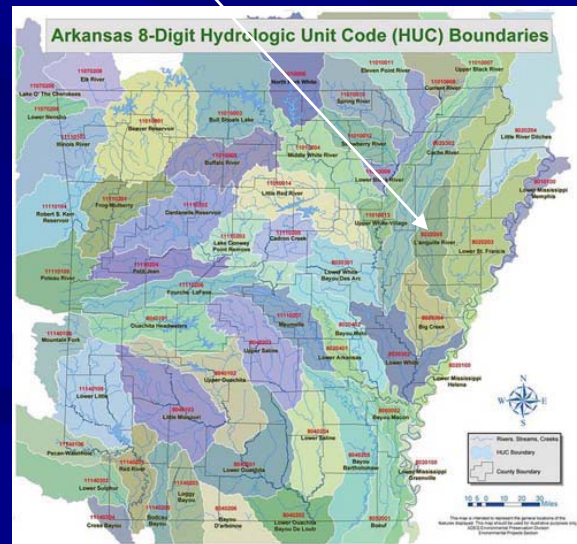
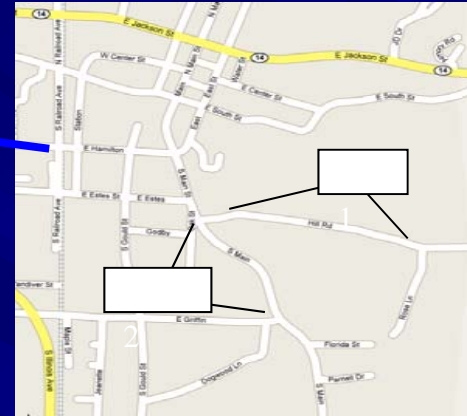
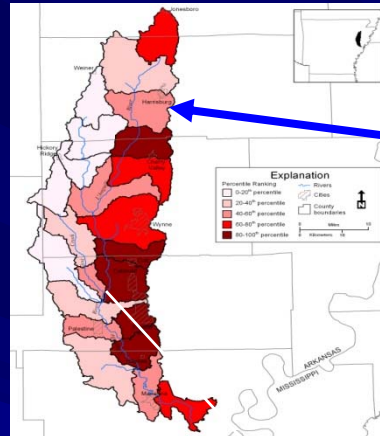
■ **Project Management:**

- City of Harrisburg, Arkansas
- Carman has volunteered the technical resources

■ **Project Period:**

- July 1, 2007 to June 30, 2009.

FY 07 CWA Section 319 L'Anguille River Priority Watershed City of Harrisburg, Arkansas



Gully erosion-

A costly local maintenance issue

A typical 100 foot long eroding road ditch or gully will have voided 40 tons of soil or more directly to the stream system.



Gully Erosion – directly transported to the stream network



Larger Particles deposit upstream



Sands deposit further downstream

Smaller particles, clays move thru major tributaries

Harrisburg problems

Typical for many communities



2' ditch, Dogwood Lane



1' Ditch (deposition) on E. Main

HDPE trapezoidal sized to fit



12" HDPE for portions

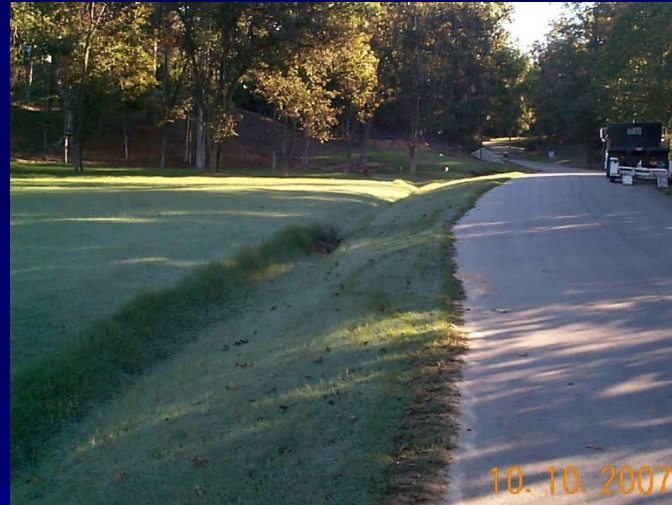


12" inadequate for portions



24" section works

Before and After – Upper Dogwood



Before and After – Lower Dogwood



Before and After S. Main



Outlet section



Rock Demonstration



22/07/2007

Prevent Erosion and the Resulting Sediment deposition



9. 6. 2007



9. 6. 2007



22/07/2007

Installation Procedures and Experiences

- Danny Faulkner
 - Superintendent
 - City of Harrisburg, Arkansas

HDPE Lining sections connected while shaping is completed



Sections Connected with screws



5 – 9' sections (45 feet) moved to lining location



45' Placed in the shaped ditch



Impact Hammer to drive anchors



Anchors, cable and tie



Finished



HDPE Before and After



Finished Section with sod



HDPE fits where other solutions do not

***note water line location



Finished Rock Demonstration



Lower Dogwood Before and After



Lower Dogwood- Finished



Lower Dogwood Flowing Before and After



Upper Dogwood Flowing Before and After



HDPE Conclusions

- a viable alternative
- Fits in locations where other alternatives will not work
- Can be installed with city personnel and equipment
- Life expectance more than 20 years
- Will safely carry more flow on steeper grades
- Rock is less expensive for initial installation
- Rock can normally be installed using equipment and less labor
- Labor requirement for backfilling of HDPE is an issue

Conclusions

- Significant portions of the rock demonstration section washed out and had to be replaced
- The HDPE lining functioned well
 - One short section on Dogwood “floated” and had to be re-anchored

Conclusions

- Some present the idea that less non-structural solutions can work
 - Not with these flow velocities
- Some questioned the cost
 - The cost is \$30 to \$40 per foot depending on site
 - This is equal to or less than any solution that actually works for the given site conditions

Conclusions

- If grass works, use it
- If pipes work, use it
- If rock works, use it
- If you have space to work great
 - But if you have limited space and an erosion problem this is an excellent, cost effective solution

Contact Information

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Thank You!