

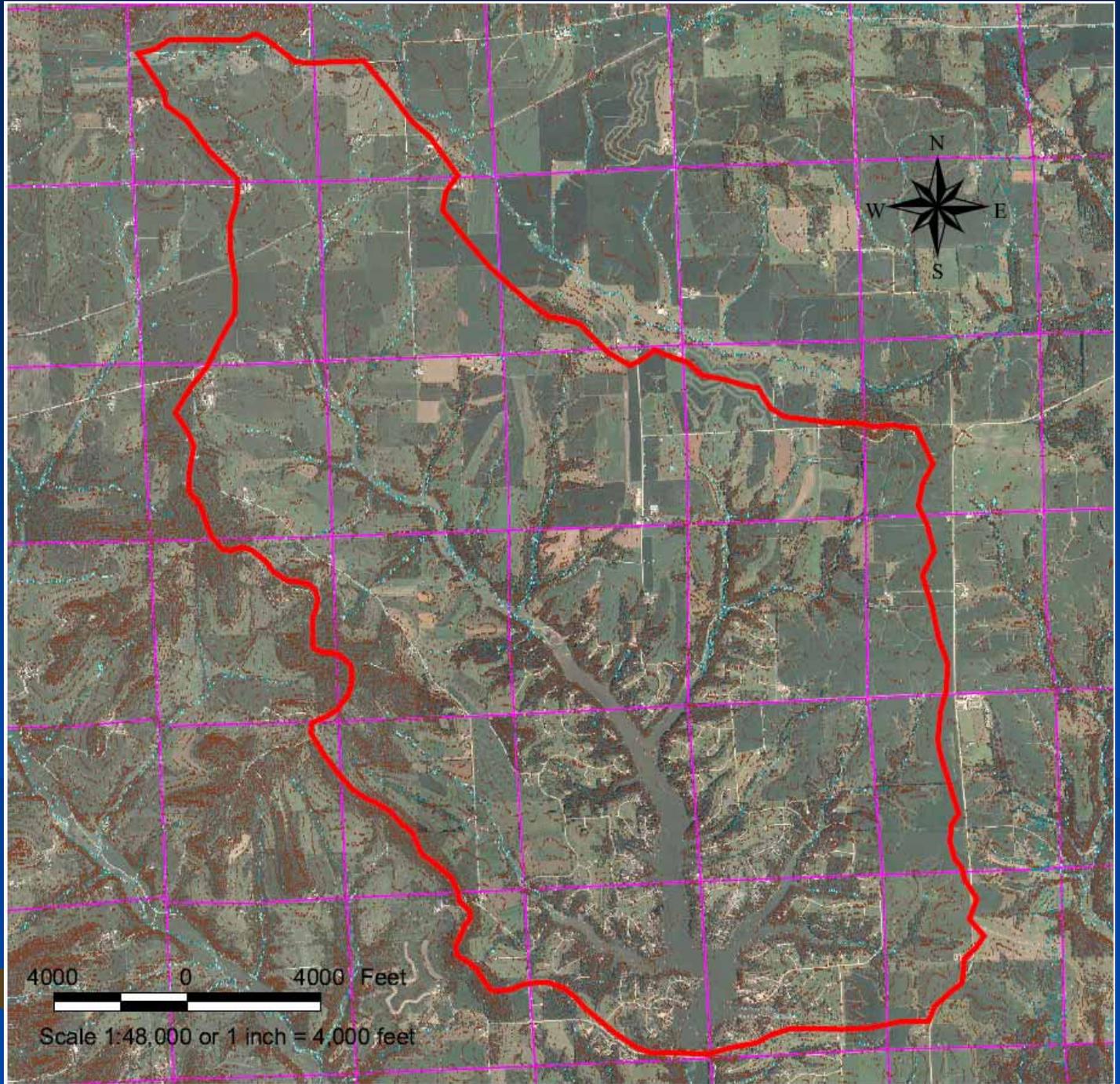
12+ inches of rain  
+ steep topography =  
muddy waters

Randy Stowe  
Apple Canyon Lake



- Apple Canyon Lake (ACL) was formed in 1969 by damming Hell's Branch, an Apple River tributary in Jo Daviess County.
- The 450 acre lake is the focal point of a 2,700 acre / 2,727 lot recreation-based residential community.
- The balance of the 9,870 acre watershed is dominated by agricultural uses, with cropland comprising 50% of the watershed.





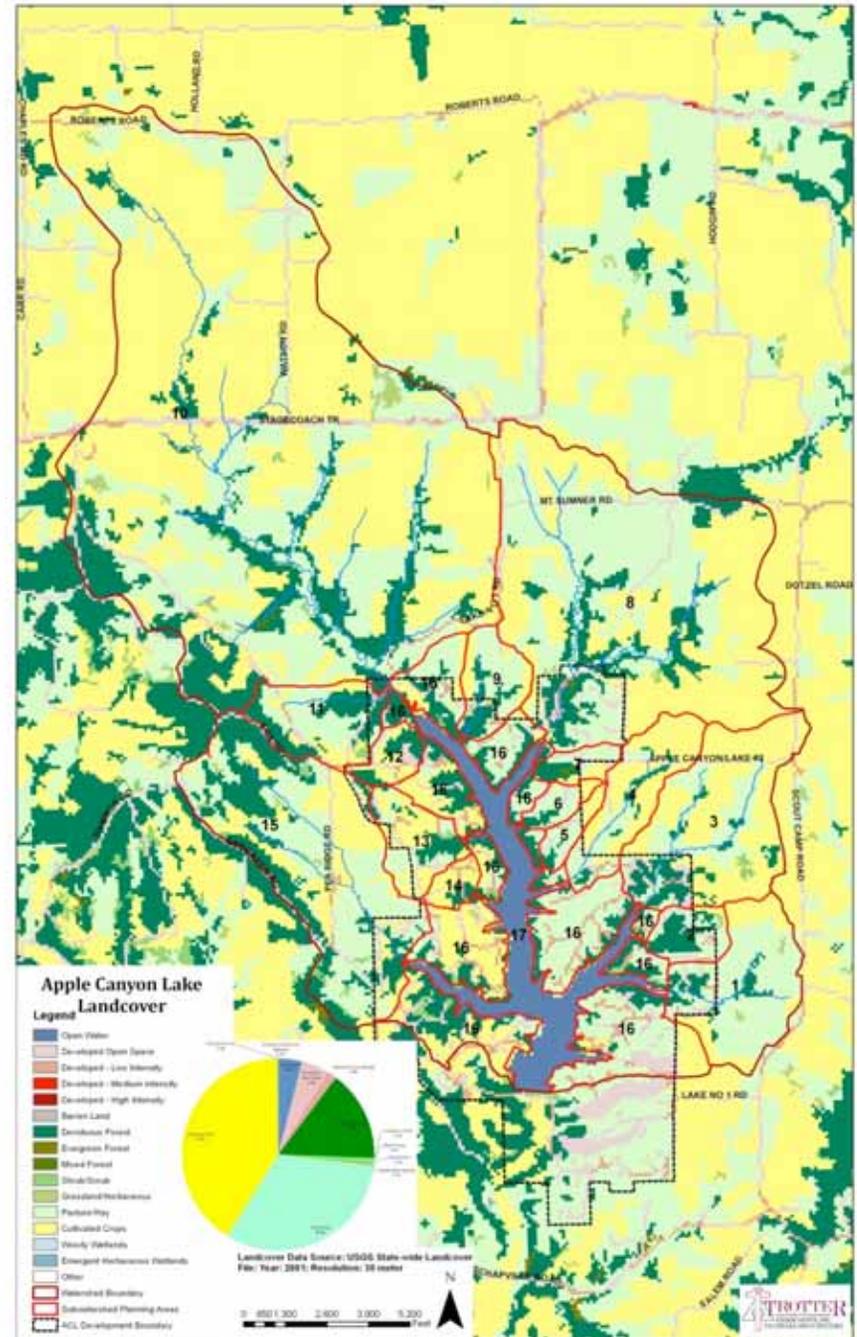
4000 0 4000 Feet

Scale 1:48,000 or 1 inch = 4,000 feet

- Due to the steep watershed topography, watershed cropland erosion is always an issue, but stream channel erosion and incision also causes significant sedimentation within ACL.
- This sedimentation, and associated nutrient load, has resulted in degraded water quality within both Hell's Branch and ACL.



# ACL Watershed Land Cover

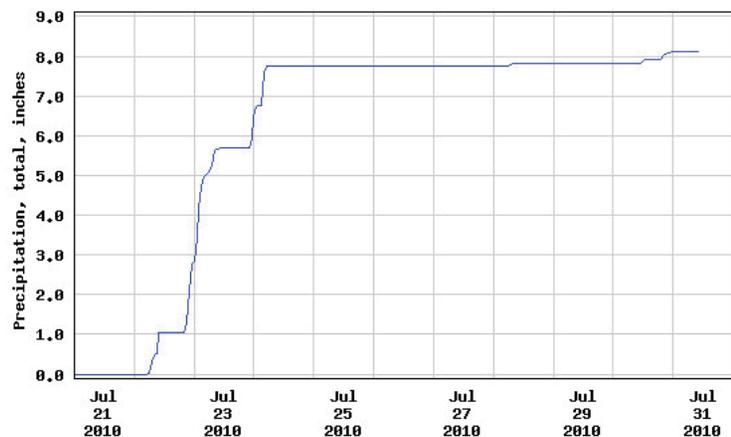


- On July 23<sup>rd</sup>, 2010, northwestern Illinois experienced significant rainfall, seemingly centered over ACL, where over 12 inches of rain fell.
- The intense precipitation, combined with the steep watershed topography, caused significant flooding and significant erosion along the streams and drainage ways leading to the lake.





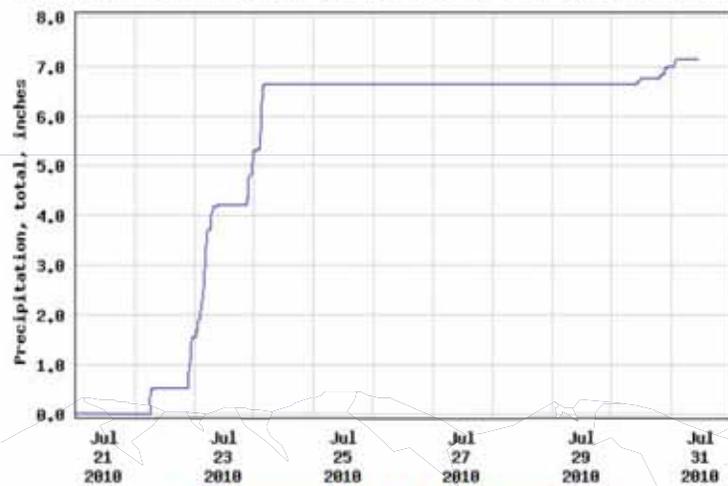
USCE 422956090390800 RAIN GAGE AT MISSISSIPPI RIVER AT DUBUQUE, IA



----- Provisional Data Subject to Revision -----



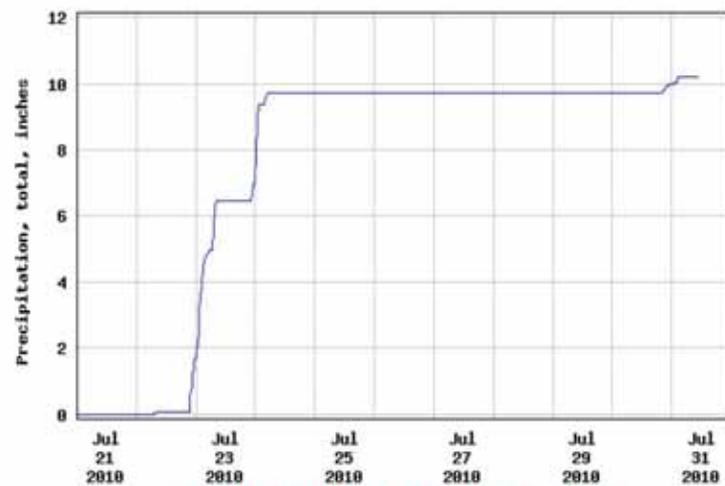
USCE 421539090252100 RAIN GAGE AT MISS R @ L&D 12 AT BELLEVUE, IA



----- Provisional Data Subject to Revision -----



USCE 421810089371000 RAIN GAGE AT PECATONICA RIVER AT FREEPORT, IL



----- Provisional Data Subject to Revision -----

Radar Precip Est From 09:27 PM CDT Wed Jul 21 2010 to 08:35 AM CDT Sat Jul 24 2010



National Weather Service Enhanced Radar Image Loop



# Chicago, IL Radar

Go to: [Standard Version](#)

Local weather forecast by "City, St"

City, St

Go

[Radar Status Message](#)

Adjacent Radars:



Short Range Images

Reflectivity:

Composite Loop  
Base Loop

Velocity:

Storm Relative Loop  
Base Loop

Rainfall:

1-Hour Total Loop  
Storm Total Loop

Long Range Images

Reflectivity:

Base Loop

U.S. Views

Reflectivity:

National Loop  
Alaska Loop  
Hawaii Loop  
Guam Loop  
Puerto Rico Loop  
Radars by State

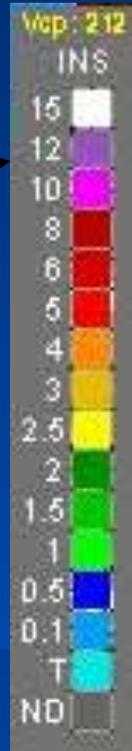
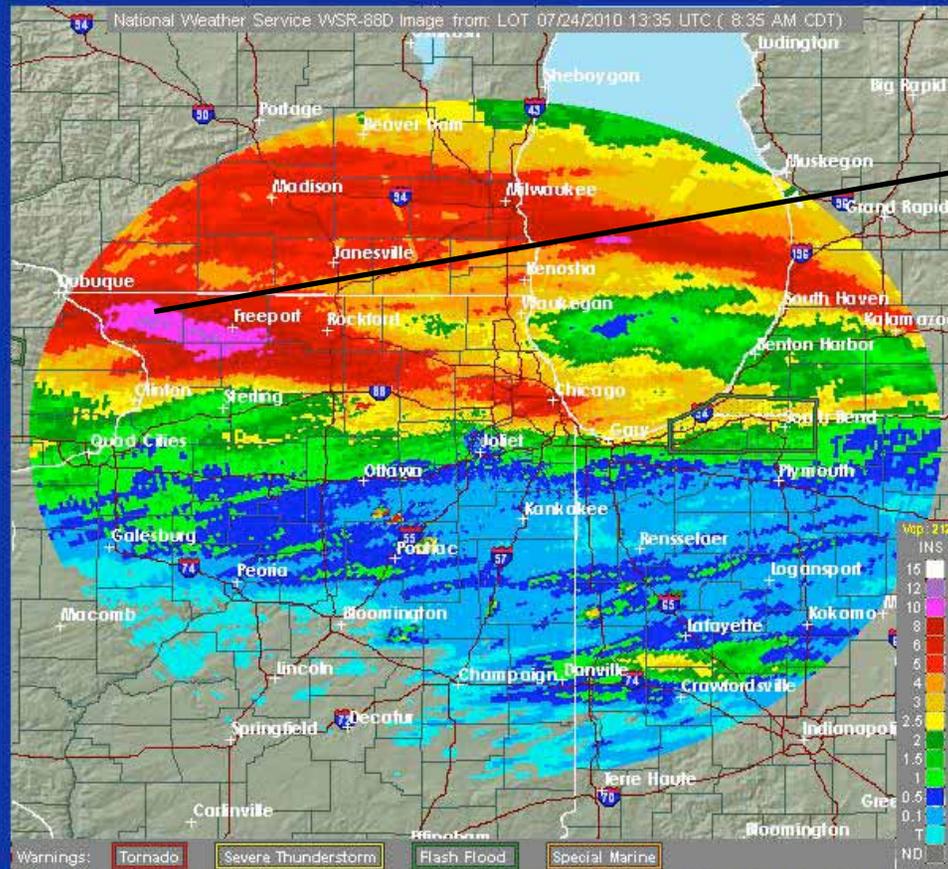
Additional Info:

[Radar FAQ](#)  
[Downloading Images](#)  
[Mobile Users](#)  
[GIS Users](#) **KML**  
[Doppler University](#)  
[Color Blindness Tool](#)  
[Credits](#)

## Storm Total Precipitation

MWS Chicago, IL

Radar Precip Est From 09:27 PM CDT Wed Jul 21 2010 to 08:35 AM CDT Sat Jul 24 2010



Stop Rock < > <| >| Set Animation Speed AutoUpdate is Off Refresh

Topo  Radar  Counties  Rivers  Highways  Cities  Warnings  Legend

# Scenes from the Flood of 2010; still plenty of work to be done



It was challenging to say the least, but in as little as one week ACL staff from all departments, and crew from K&S Marine worked diligently to get the lake cleared and the amenities open after the storms and floods of July 23 and 24. Amenity updates were posted in a number of places daily and by Friday afternoon, July 30, most of the amenities were open for use. At this point the trails remain closed for an undetermined amount of time due to the severe damage. We would like to thank you for your ongoing patience as we continue to clean up after the storm.

1. The force of the water raged over the spillway and above the walls for several days. 2. Hell's Branch Creek flowed into the the "lower 80" flooding the walking trail. 3. Maintenance crew member Mark Krueger secures a renegade dock with boats still attached. 4. At least one boat went over the spillway, but maintenance crew members discovered fiberglass remnants further down the creek, leading them to believe there were more. 5. A majority of docks were damaged; maintenance and K&S Marine crews worked diligently to secure, reposition, and repair them.

*Thank you to Mary Hagene, Rich Hedges and Steve Davis for contributing photos.*



## Is there *really* a ‘calm’ after the storm?

### Apple Canyon dealing with flooding

BY TONY CARTON

*Published originally in the Journal Standard  
July 27, 2010*

Apple Canyon Lake and its surrounding area saw rainfall amounting to more than 2 inches over a 36-hour period last weekend causing extensive flood damage.

“It’s been an interesting weekend,” GM Paula Lange said Monday morning.

“To say the least, it was very rough for everybody,” Lange said. “All of the amenities were closed as of Saturday morning. Yesterday, the only amenity open was the pool. As of today, everything but the pool remains closed.”

Lange said the primary goal is to be sure that everything is in place from a safety standpoint.

“The dam was inspected twice a day by myself and a team from our maintenance, and environmental staffs to make sure that there were no breaches and no situations with the dam itself,” she explained. “Our next goal is to secure the lake.”

Lange said they believe that at least two boats went over the spillway. She also said that there were a number of boats loose on the water.

“We know that one boat went over the spillway, but we have no confirmation on the second boat yet,” she said.

Lange said the second task facing her team is the securing of boat piers.

“Several of our boat piers are piled on top of each other,” she said. “That situation is to the point where we have to get a barge with a crane in here to lift those and get them back where they need to be.”

Lange said their third priority would be clearing the lake of floating debris.

“There is an awful lot of floating debris in the lake and that can be very dangerous to folks tubing or waterskiing,” she said. “That includes logs, broken piers or whatever the case may be. That all has to be cleared before we can allow boating again.”

She said that one of their maintenance barges incurred damage from a collision during the storm and the loss of that barge is limiting their ability to restore use of the lake.

“We are hoping to get the lake reopened by this coming weekend,” Lange said. “Our trails are another story. It’s going to take some excavating equipment to get back in there and get those trails into shape. I would like to say that the trails would be ready to go again in a couple of weeks, but I’m just not sure at this point.”

She added that the trails up at the North Bay are completely washed out and most of the other sections are deeply rutted and in some cases, completely gone.

“We haven’t even been out there yet to completely assess the damage,” Lange said.

ACL maintains nearly 10 miles of trails.

Steve Davis is the Building Inspector at ACL. Davis said there is an unprecedented amount of water, but the facility is recovering quickly.

“People want to know when they can go back on the lake, and when they can use the trails, and when the golf course will reopen,” Davis said. “They want to come out for a weekend and they want to know what to expect.”

He said that the pool is open and that crews were mowing parts of the golf course, but that those crews were avoiding areas that are still flooded.

“The lake and the beach are both closed,” Davis said. “There is too much debris out



there now for people to boat and we are going to have to get several loads of sand to the beach to restore it. We had several docks that rose and fell with the water levels and they have to be anchored again to be usable. It’s going to be a long process, but we will do it a little at a time and get it done correctly so that our residents will be safe when they use our amenities.”

Davis said the trail system would take some time to restore, as some of the ruts are more than a foot deep.

“The first thing to do is to reopen the lake,” he said. “The spillway seems safe. We just had a lot of work done on it after the last big storm in 2002 and it held very well in this storm.”

He said they would be doing extra water quality tests before the lake would reopen.

“We test every two weeks anyway, but for now we will test almost daily to assure safety,” Davis said.

Davis said that safety is always a priority

with the ACL staff and they would be working to be sure that the residents and their guests would continue to have fun when they use the amenities.

“These are great folks and they’ve really come together during this disaster,” he said. “We are going to do everything possible to assure their continued safety and enjoyment.”

*Editor’s Note: As of August 6, all amenities are open except the trails, which will be closed for an undetermined amount of time. Anyone on the trails will be ticketed. We need your cooperation to prevent further damage and/or injury.*

*Updates are available daily at the office, on the Hotline (815-492-2257), website [applecanyonlake.org](http://applecanyonlake.org), and on the new facebook page at Apple Canyon Lake POA.*

*Anyone on the Early Notification List is receiving daily email updates. If you wish to be placed on this list, email your request to [applecore@applecanyonlake.org](mailto:applecore@applecanyonlake.org).*

- The trail system circling ACL was particularly hard hit, with trail surfaces washed away or gullied, and the trail itself washed entirely away at locations where drainage ways crossed the trail.
- Significant damage also occurred to the stream channels themselves, with significant erosion, downcutting, and sediment delivery to the lake.





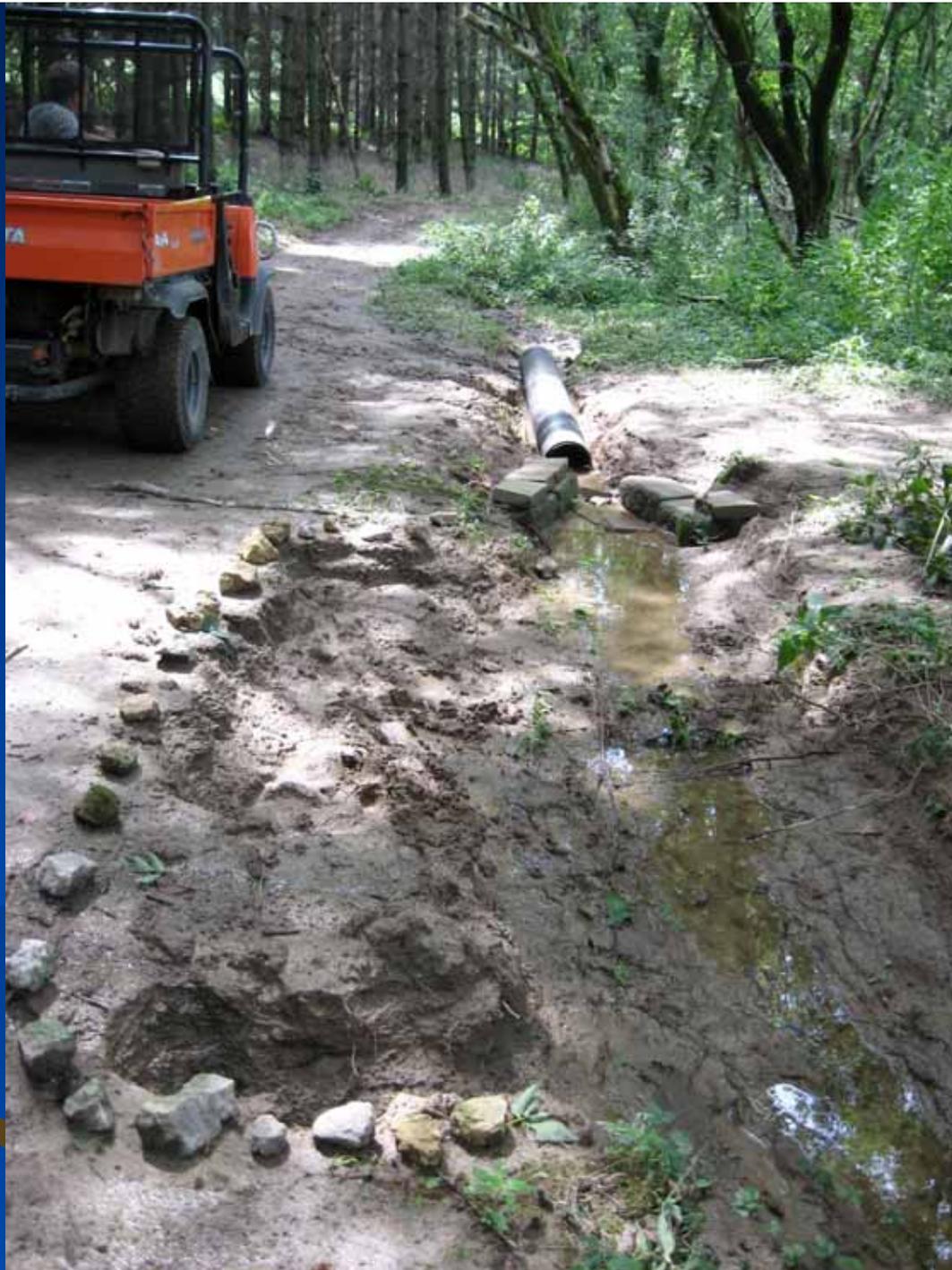
















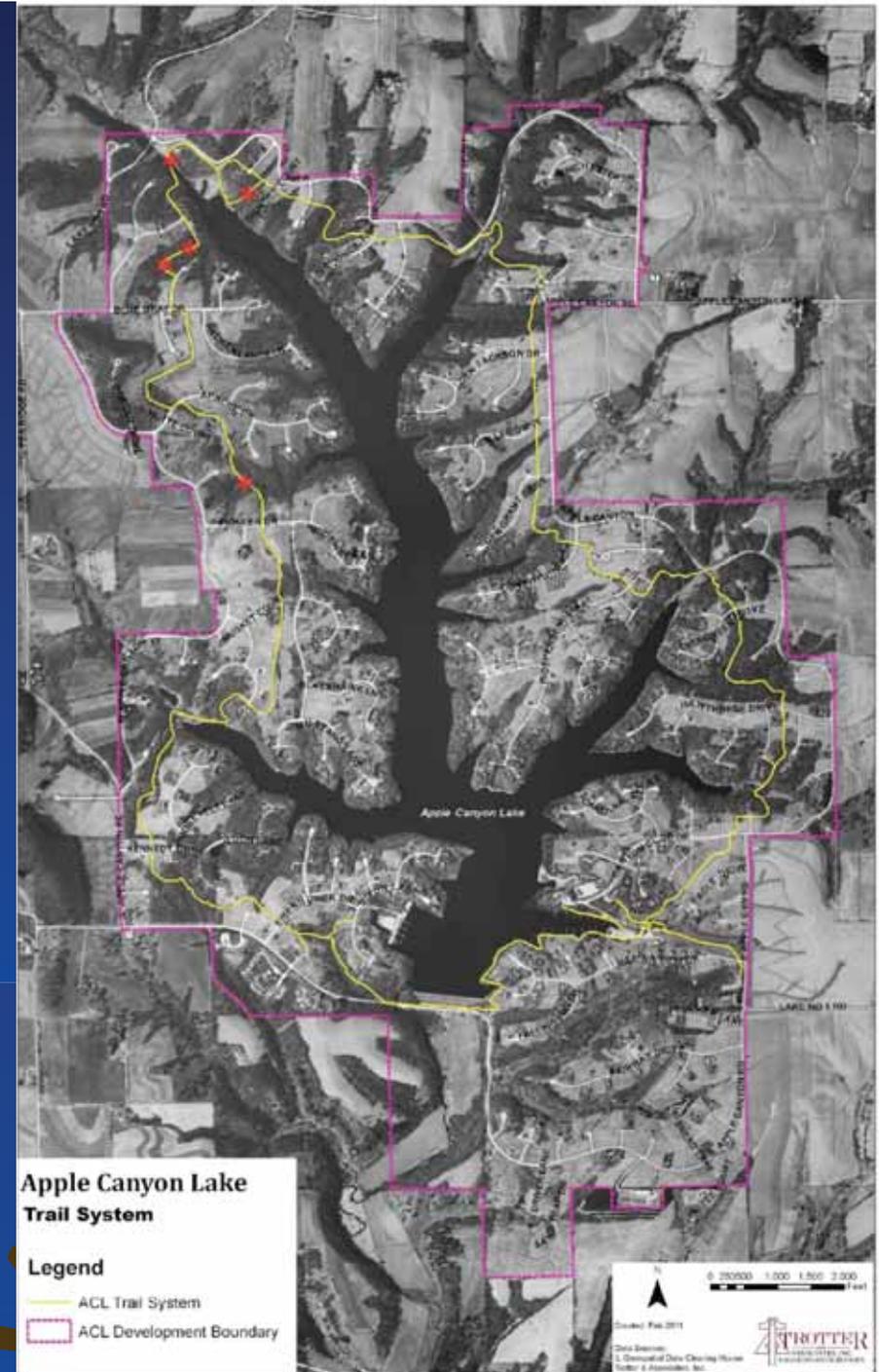


# Fall 2010 Trails Repair

The ACL trail system is a heavily utilized amenity. Re-opening the trails in a safe condition, and minimizing future channel erosion, was identified as a critical area of focus.

ACL Maintenance Crews focused on implementing repairs to the majority of the trail system.

A local heavy equipment contractor was brought in to handle the critical area repairs.











# Drainage Impacts

- Much of the most major trail damage occurred where the existing culverts under the trails could not accommodate the flow, forcing the flow over the top of the trail, scouring the trail and the downstream slope.
- Site investigations revealed that insufficient culvert capacity and debris blockage were major factors.



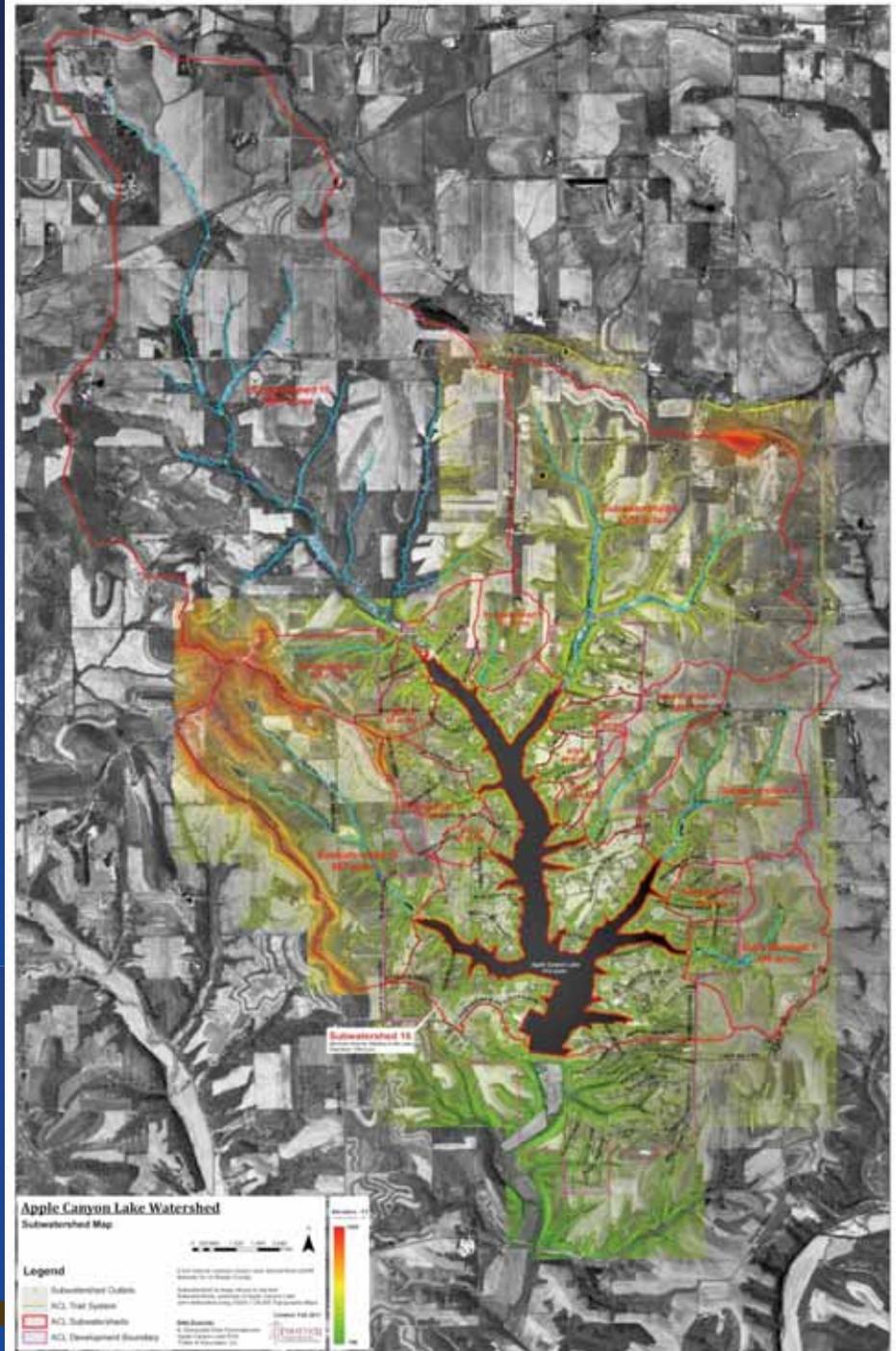
# Drainage Analysis

- After the major trail repairs were conducted in Fall 2010, it was determined that the next ACL focus would be on conducting a drainage study to determine how much watershed area drains to each trail crossing; how much culvert capacity is needed; and how much capacity can be provided at each trail crossing.

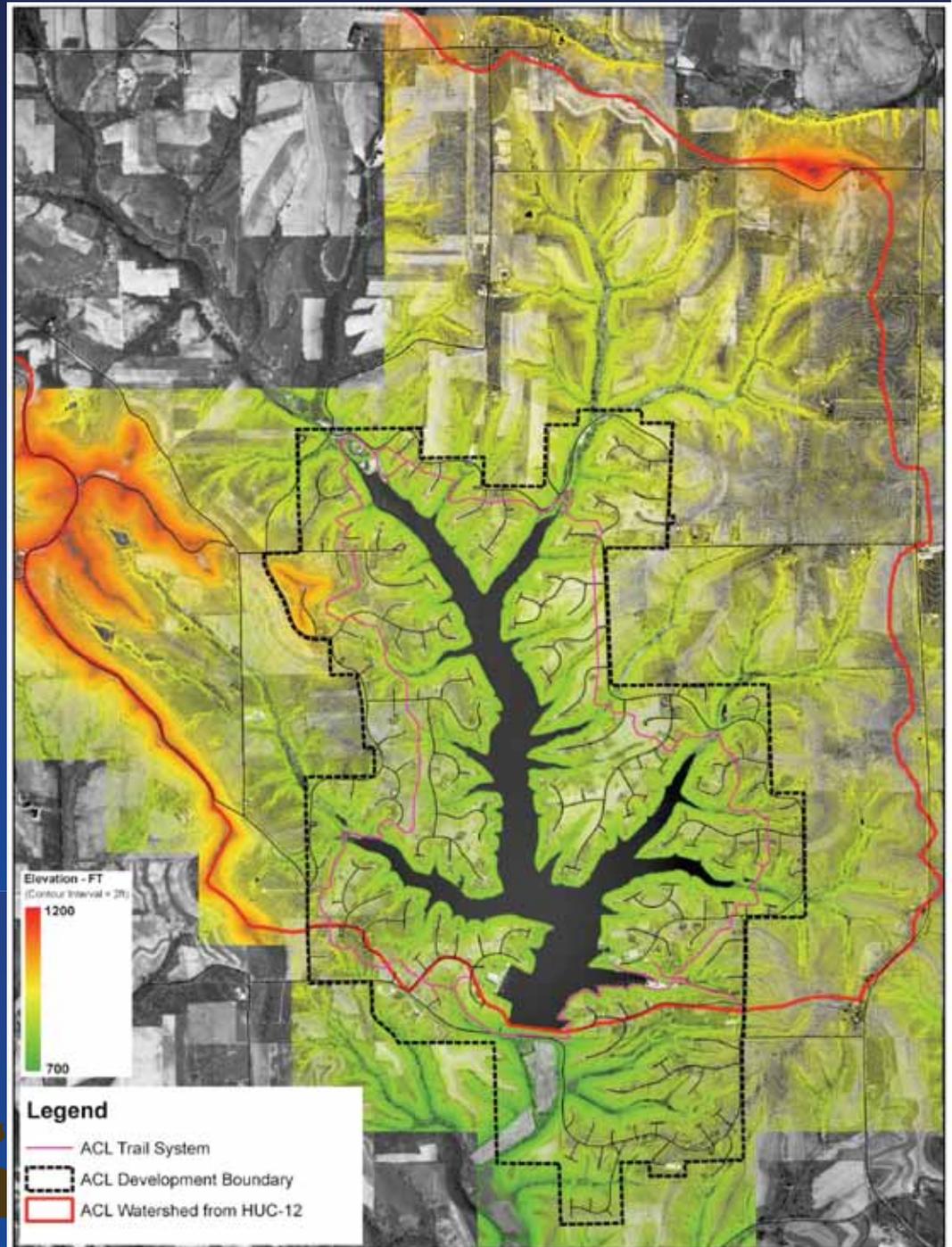


# LiDar Mapping

**LIDAR (Light Detection And Ranging)** is an optical remote sensing technology that can measure the distance to, or other properties of a target by illuminating the target with light, often using pulses from a laser.



# LiDar Mapping





# Drainage Impacts

- Most drainage ways at ACL flow through “greenways”, common open space areas that are typically densely wooded, and contribute a significant woody debris load to the stream corridor, increasing the potential for debris blockages at culvert crossings.



# Managing Greenway Areas

- For years, it seems to have been assumed that “any” tree is a “good” tree, and the wooded portions of the ACL greenways were left largely unmanaged.
- It is now recognized that the dense shade cast by invasive / non-native trees and shrubs can contribute to slope and streambank erosion.



# ACL Greenways Areas (738 Acres)

- Cool Season Grassland: 202 acres
- Native Prairie: 9 acres
- Dry Savanna: 171 acres
- Dry Mesic Savanna: 44 acres
- Mesic Savanna: 29 acres
- Dry Mesic Upland Forest: 89 acres
- Mesic Upland Forest: 35 acres
- Bottomland Forest: 80 acres
- Early Successional Forest: 58 acres
- Pine Plantations: 21 acres

# Watershed Planning

- Apple Canyon Lake is now moving forward on a watershed planning effort to better identify existing and potential water quality impairments, evaluate and recommend water quality Best Management Practices (BMP's), and gain stakeholder involvement.
- The plan will be prepared to meet the IEPA/USEPA guidelines for the Section 319 program.



# Watershed Partners

- Jo Daviess County Soil & Water Conservation District
- Jo Daviess County Conservation Foundation
- ACL Conservation Committee
- ACL Grants Committee
- ACL Trails Committee



Questions?

