

# R. S. Kerr Lock 15

## Cormorant Roosting – A Solution

**Dena Dickerson**  
Research Biologist – ERDC EL

**Chad Kepke**  
Lead Lock Mechanic, R.S. Kerr

**Lock Maintenance Workshop**  
Vicksburg, MS  
9-11 February 2016



US Army Corps of Engineers  
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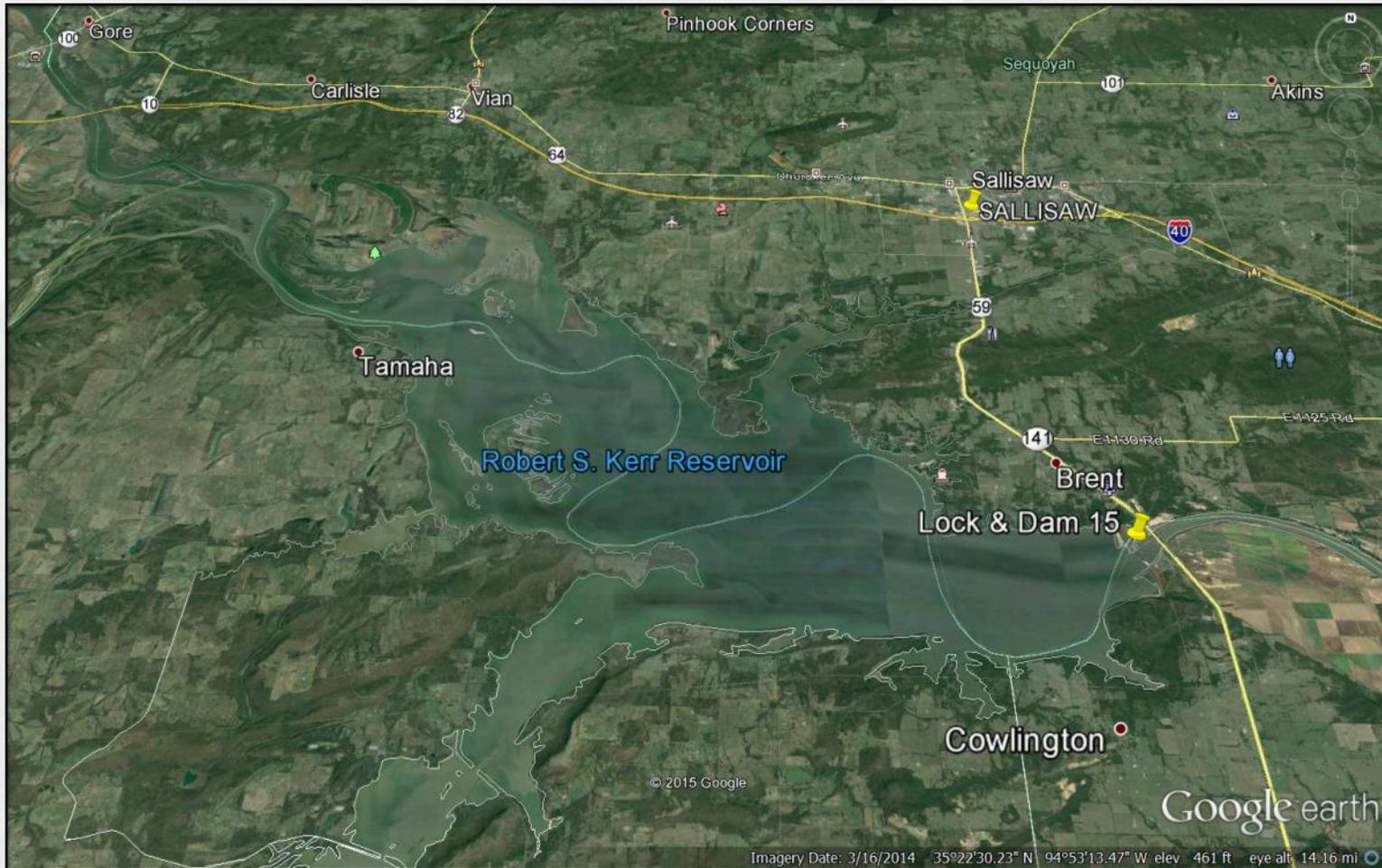


# Team

- **Kerr Lock Operators**
  - ▶ **Josh Cox**
  - ▶ **Ron Foster**
  - ▶ **Wesley Honeysuckle**
  - ▶ **Jeremy Philpot**
  - ▶ **Donald Sharp**
- **Robert Steiner – Kerr Operations Manager**
- **Chad Kepke – Kerr Lead Lock Mechanic**
- **Dena Dickerson – ERDC-EL**
- **Peggy Johnson – ERDC-EL, contractor**
- **Rebecca Moore – Flyaway Farms, NC**
- **Eddie Wiggins – ERDC-CHL**
  - ▶ **Navigation Systems Program**
- **Cynthia Banks – ERDC-EL**
  - ▶ **Dredging Operations Technical Support Program**



# Mile 336.2 on Arkansas River





# Birds of a Feather Flock Together!!!



# The Culprits

**Double Crested  
Cormorant**



**Ring-Billed Gulls**



# **Double Crested Cormorant & Ring-Billed Gull**

- **Protected - Migratory Bird Treaty Act of 1918**
- **Population decreased from DDT - now recovered**
- **Winter feeding roost - October through April**
- **5,000-6,000 Cormorants & 2,000-3,000 Gulls**
- **Populations increasing annually**
- **Cormorants – eat fish & other aquatic animals**
- **Gulls – omnivorous**



# Why do they like Kerr Lock 15?

- **Mild winter weather**
- **Available food**
  - ▶ **43,796 acres of water**
  - ▶ **Lock**
  - ▶ **18 spillway gates**
  - ▶ **Power plant**
- **Ample roosting area – entire structure**
- **Protection from predators**



# The Feeding Grounds



# Roosting Sites



# Spillway



# Trunnion Blocks



# Guide Walls



# Lighting Fixtures



# Annual Problem for over 10 yrs

**5000 – 6000 Cormorants**

**+**

**2000 – 3000 Gulls**

**+**

**Large amount of fish consumed daily**

**= 5 to 10 tons of bird droppings on structure**



# Over 2 inches cover the facility!



# Negative effects of roosting:

- **Health hazards to operators and maintenance personnel**
- **Corrosion from acids**
  - ▶ **Structural damage**
  - ▶ **Equipment damage**
- **Annual costs \$\$\$\$**
  - ▶ **Clean up**
  - ▶ **Damage repairs**



# Health hazards

- **Histoplasmosis fungal spores – inhaled as dust off bird feces**
- **Ammonia fumes when droppings are wet**
- **Safety Hazard**
  - ▶ **Slipping danger when wet**
  - ▶ **Unusable hand rails**
- **Carried to undesired areas on boots & tools**



# Structural damages



# Equipment damage

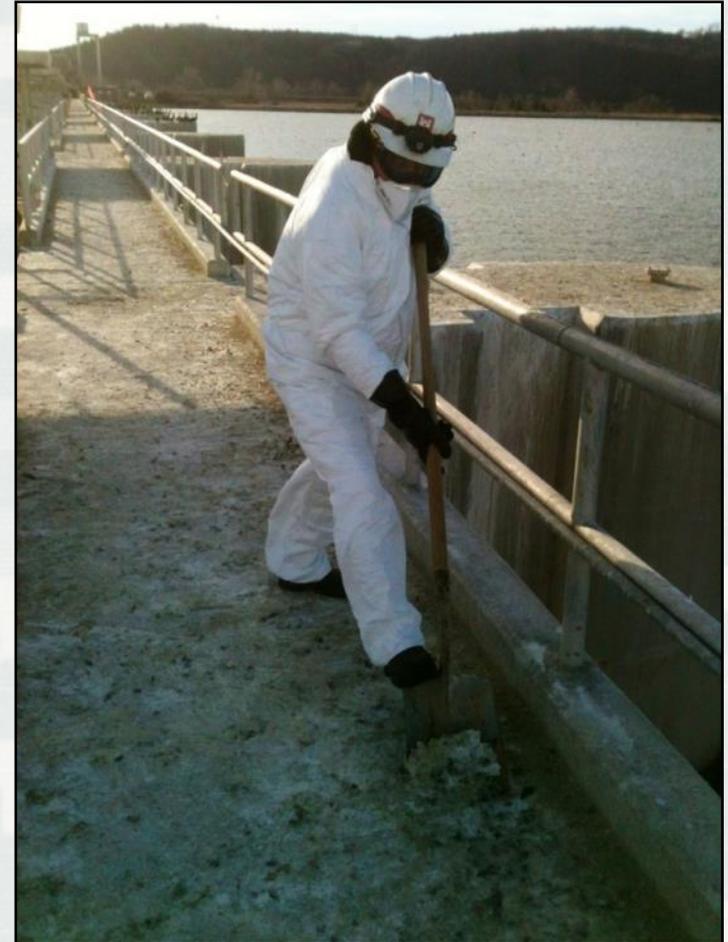


# Equipment damage



# Annual Costs \$\$\$\$

- **Clean up**
  - ▶ Over 250 man hours
  - ▶ \$ 20K labor/equipment
  - ▶ Labor intensive
- **Damage repairs**
  - ▶ Over \$13K labor/equipment



# Bird Deterrents Tried

**NOT EFFECTIVE & COST PROHIBITIVE**

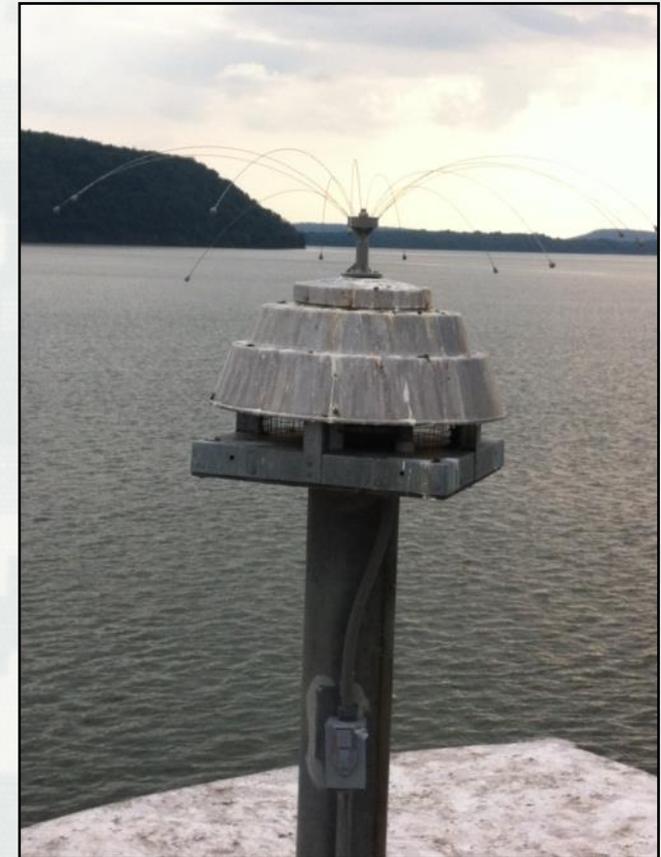
- **Propane canons**
- **Electronic sounding devices**
- **Predator decoys**
- **Hotwired rails**
- **Spikes and Spiders**
- **Netting**
- **Shooting**



# Hot wired rails



# Spikes on rails/canopies

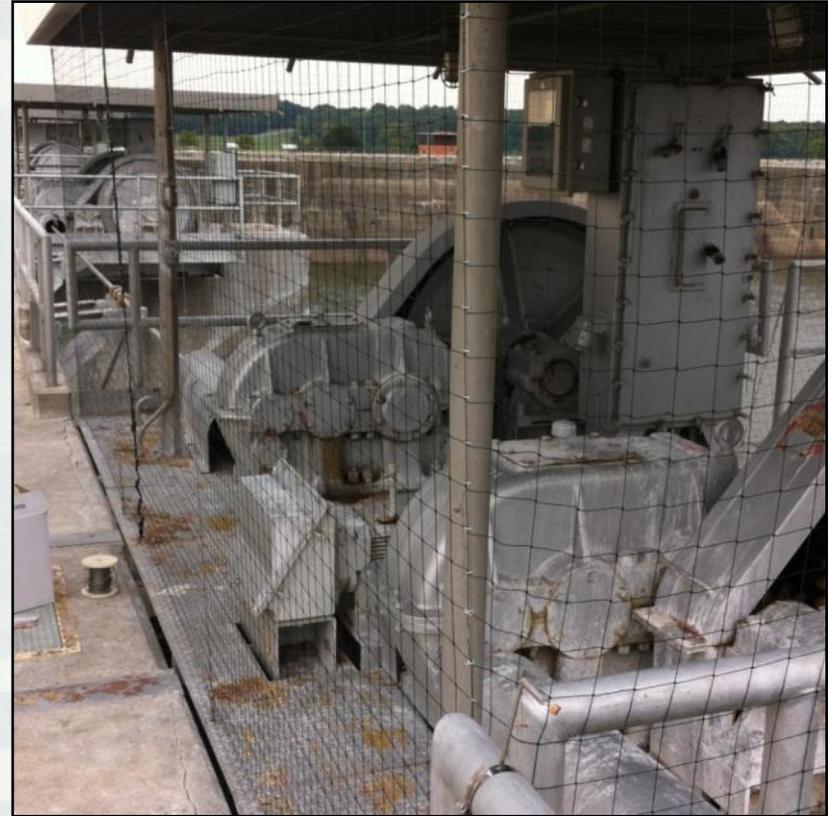


# Railing Deterrent



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# Netting

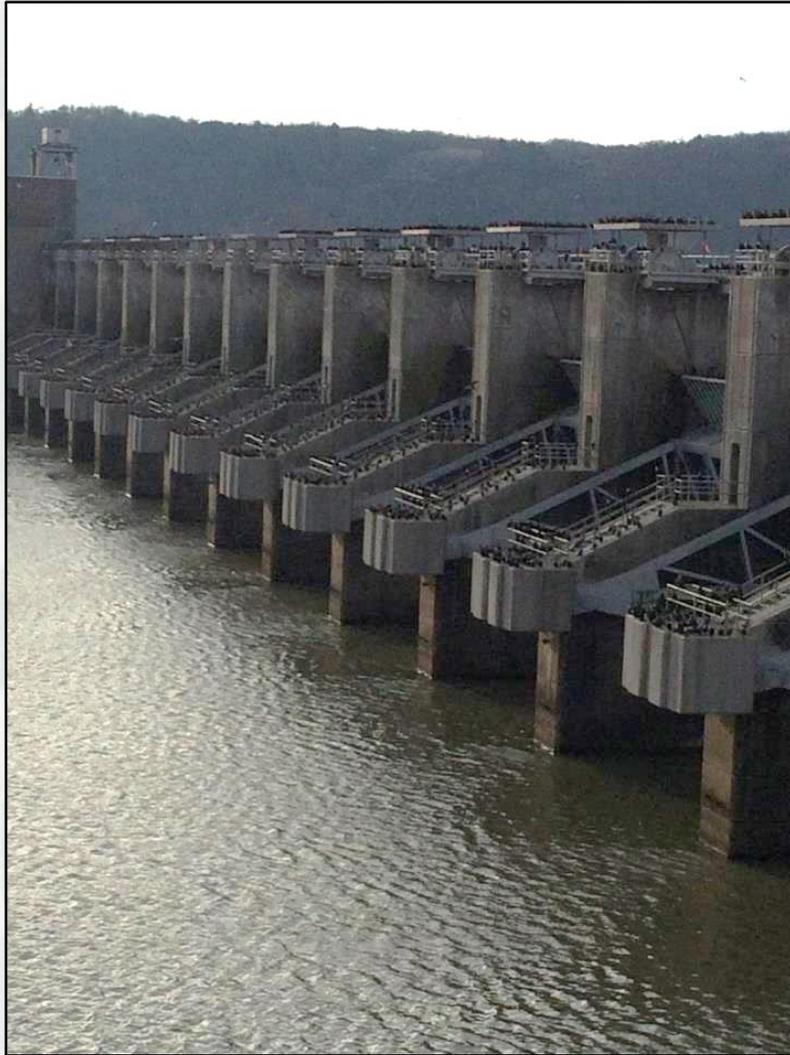


# Bird Deterrent Costs



- **\$6,000 - 1 spillway gate (done)**
  - ▶ **\$2,500 materials**
  - ▶ **\$3,500 labor 5 people**
  
- **\$108,000 - 18 spillway gates**
  - ▶ **Cost prohibitive**
  
- **Partially effective for equipment**
- **Ineffective for walkway**





- **Bird populations growing.**
- **Problem likely to worsen without effective deterrent**



# Dog Patrol

## Initial Test – 10 April 2015



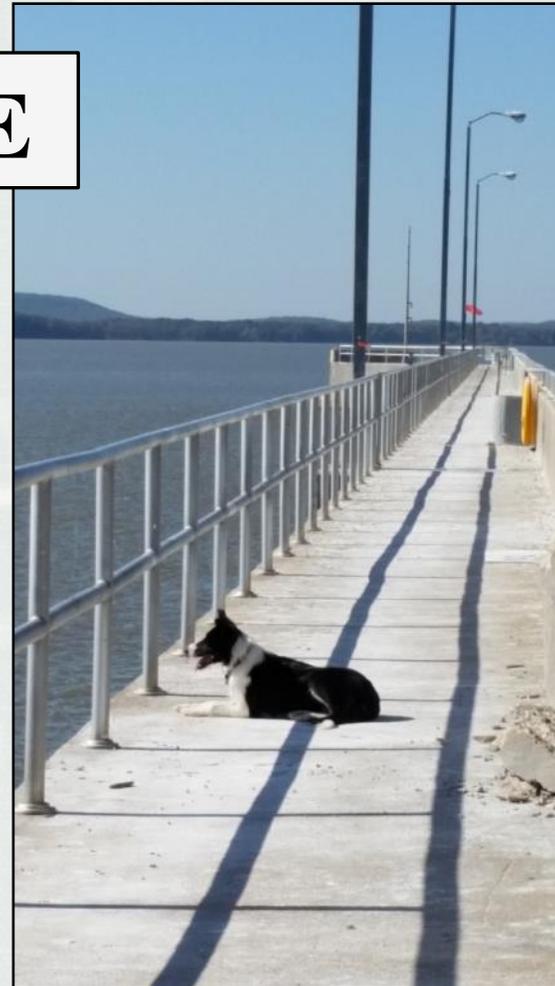
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# Dog Patrol Implemented

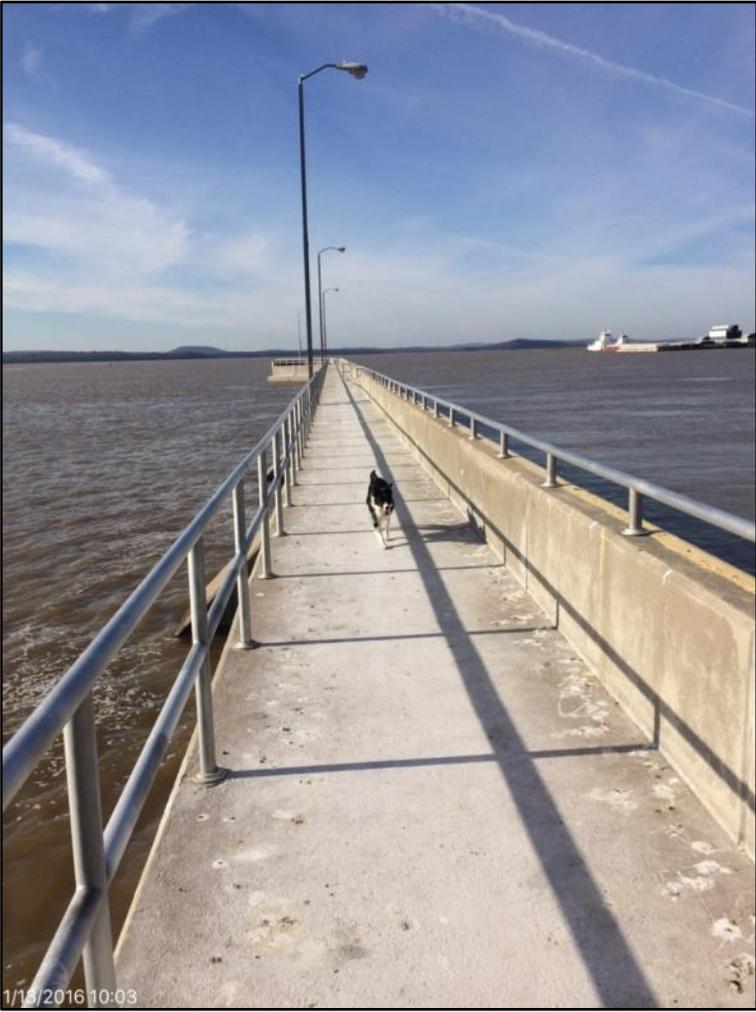
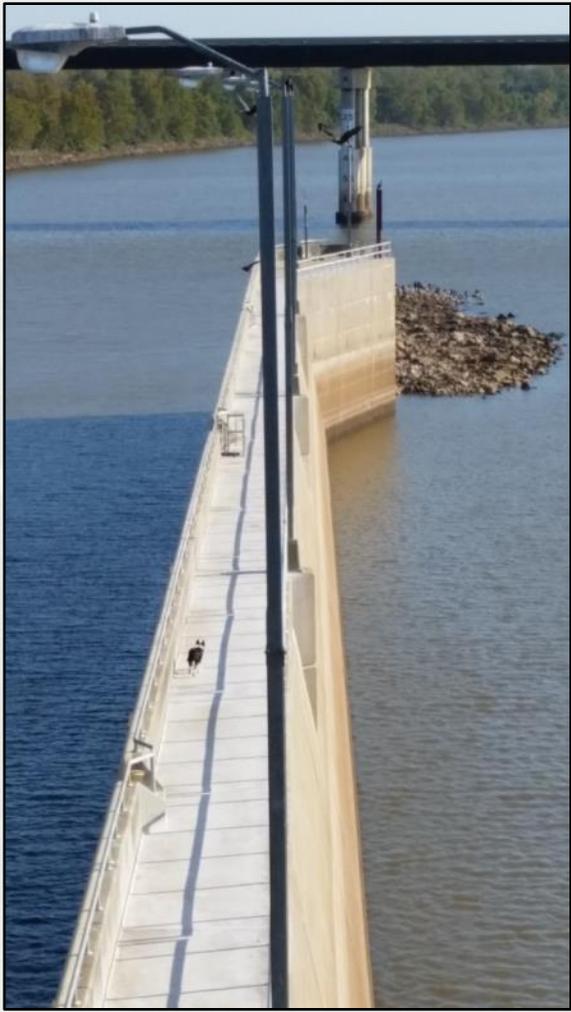
## 19 Oct 2015



**ELLIE**



# Birds Hazed During Day



# Spillway Results

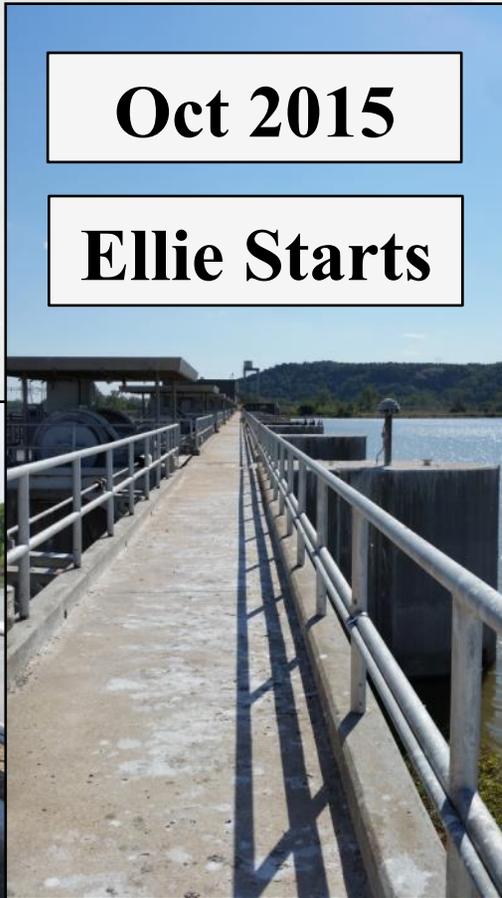
**Apr 2015**

**End of Roosting**



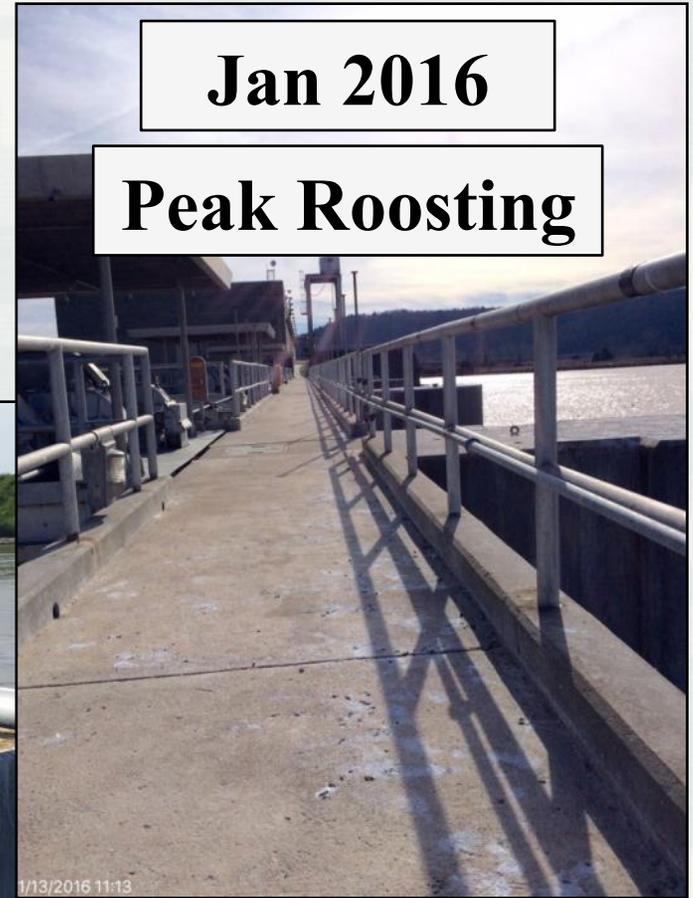
**Oct 2015**

**Ellie Starts**



**Jan 2016**

**Peak Roosting**



# Upper Guide Wall Results

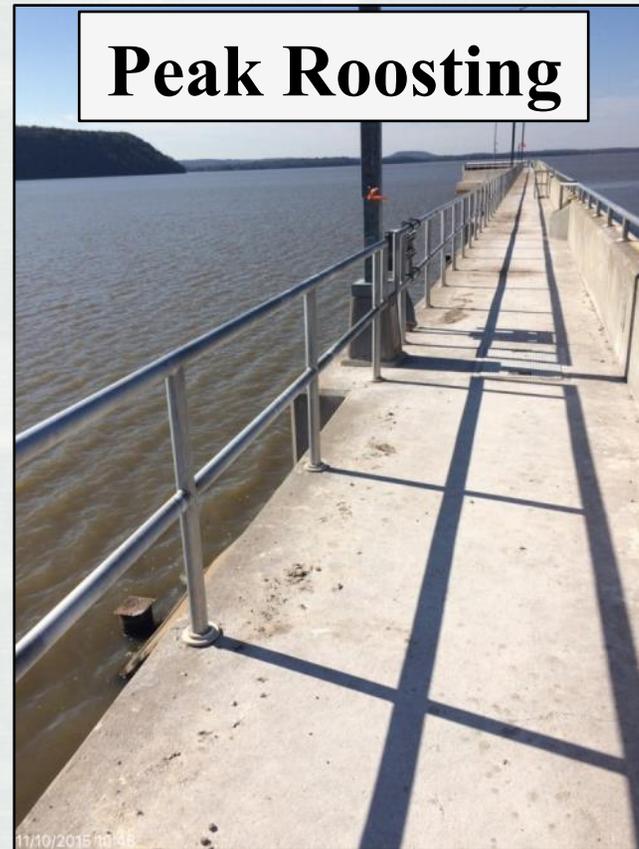
Apr 2015

End of Roosting



Jan 2016

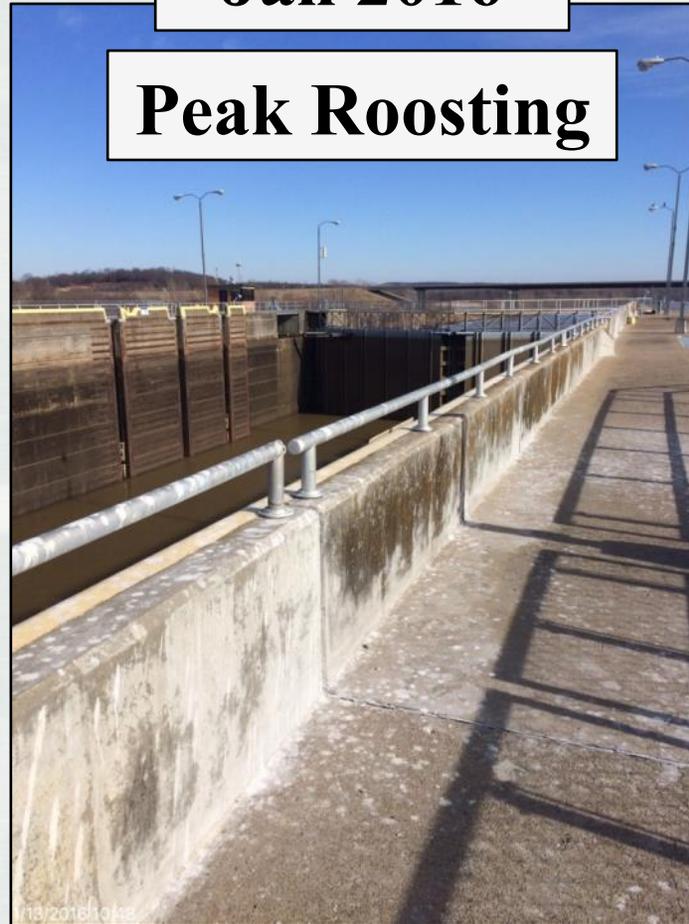
Peak Roosting



# Lock Wall Results

Jan 2016

Peak Roosting



# Pillar Results

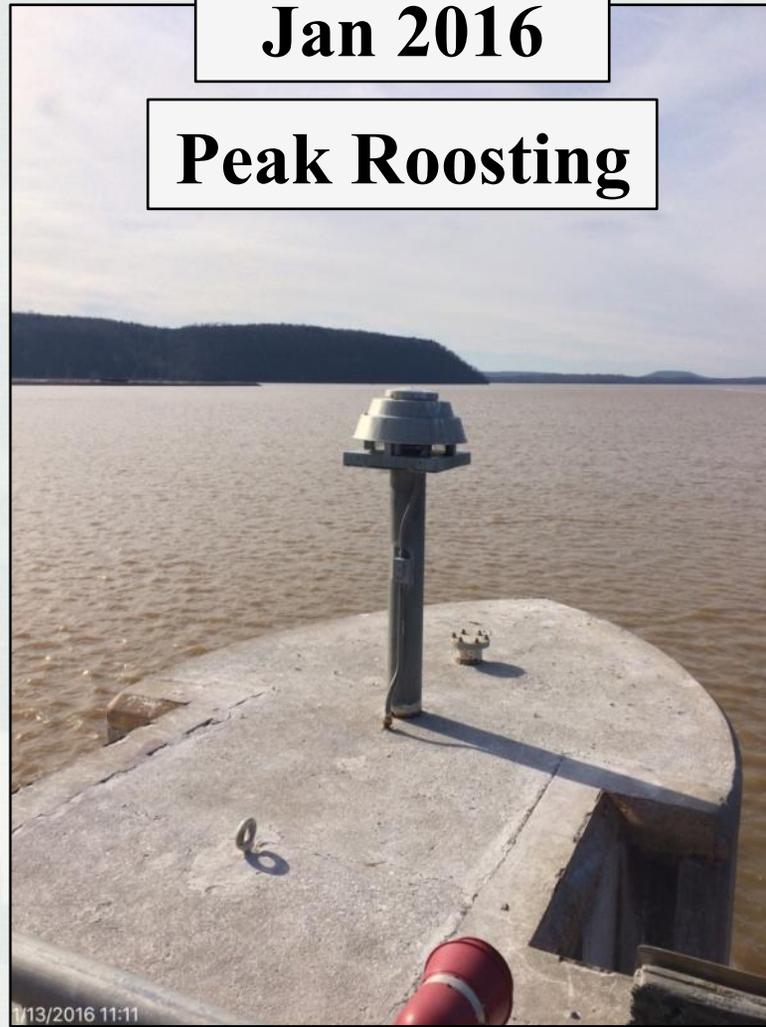
**Oct 2015**

**Ellie Starts**



**Jan 2016**

**Peak Roosting**

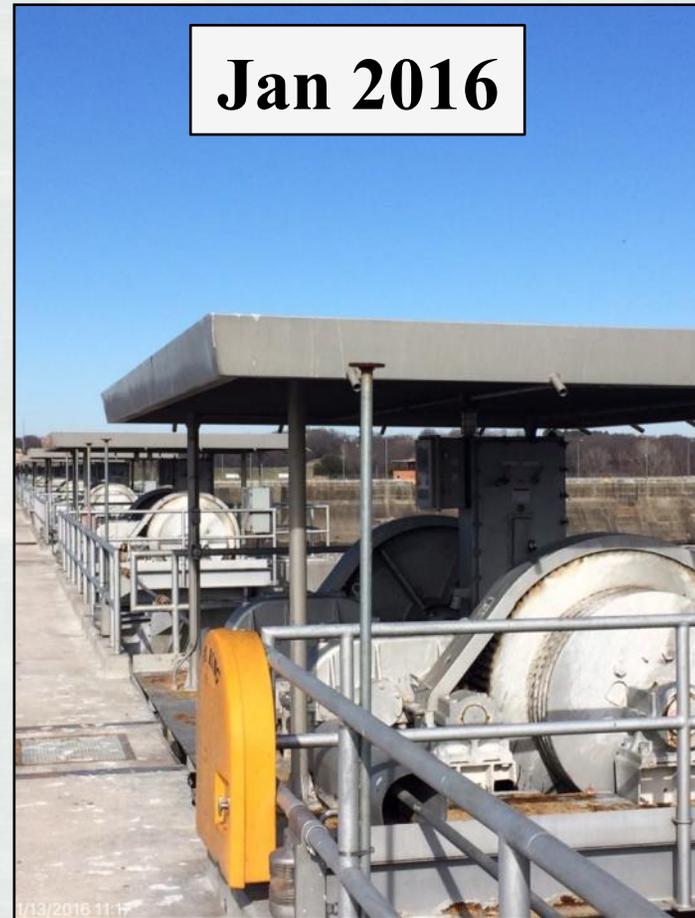


# Equipment Damage Results

Apr 2015



Jan 2016

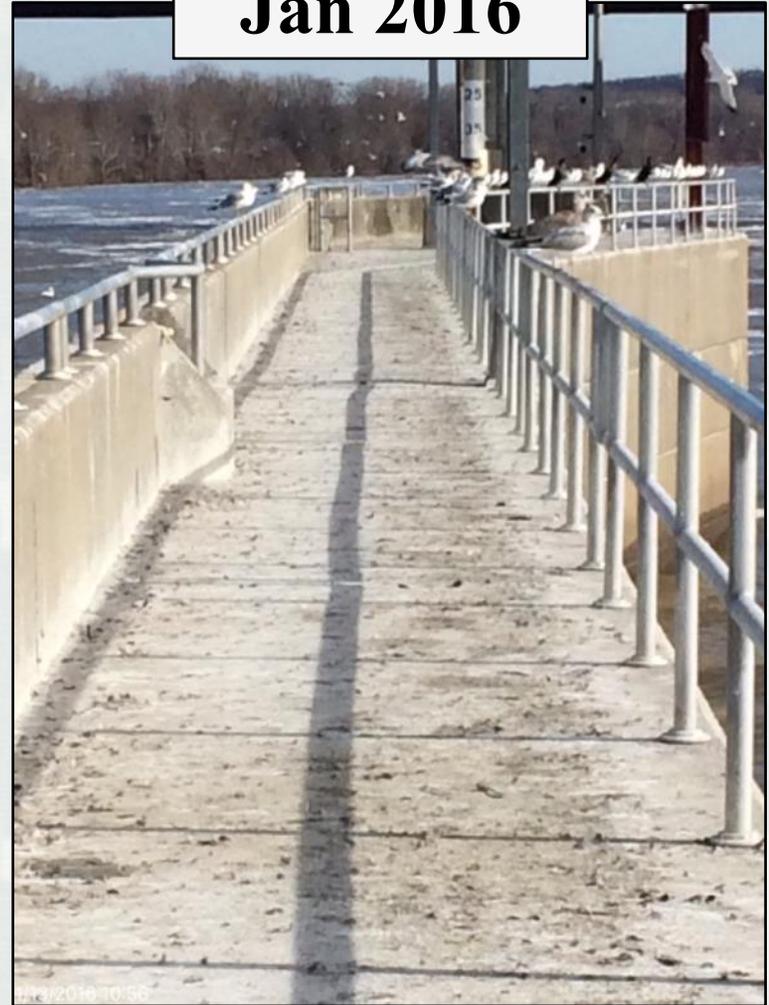


# Lower Guide Wall Results

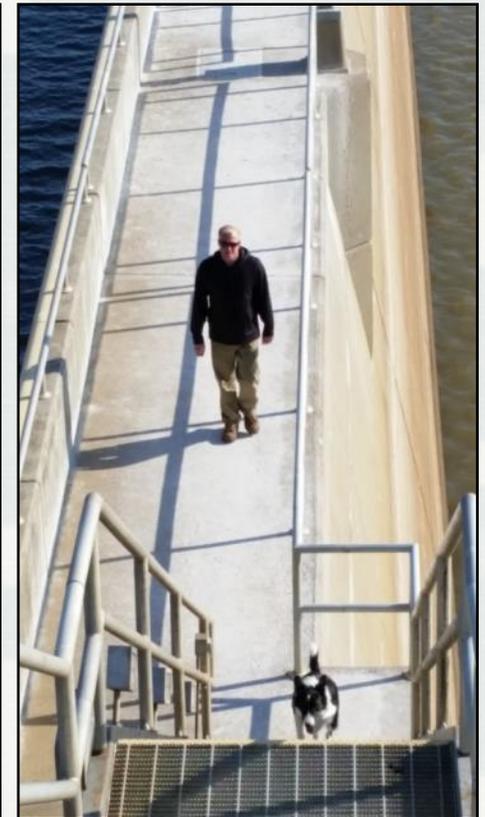
Jan 2015



Jan 2016



# Steep Stairs & Long Distance



# Birds Displaced from Structure

**BEFORE DOG**



**AFTER DOG**



# Alternate Roosting

Nov 2015



Dec 2015



Jan 2016



**Birds also starting to move to other locks.**



# Low Cost, Win-Win Solution



- Improved health environment
- Increased human safety
- Reduce equipment/structure damage
- Substantial cost savings
- Dog has paid for herself (\$4,500)!
  - ▶ Dog rental \$1,500
  - ▶ Dog purchase \$2,000
  - ▶ Annual maintenance/care \$1000
- Lock operator to work dog at other District projects in off season
- Increased employee morale



# Team Work Finds a Solution



# Questions? Other ideas?



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