

Regional Resource Stewardship Council

September 11-12, 2019 Pickwick Pines Resort, TN



Mark Iverson

Term 10 RRSC Members

RaeLynn Butler

Muscogee (Creek) Nation

Keith Carnahan

Meriwether Lewis Electric Cooperative

Robert Englert, Jr

Crounse Corporation

Ray Hardin

Decatur Utilities

Richard Holland

Packaging Corporation of America

Donny Holland

KY Parks

Mark Iverson*

Bowling Green Municipal Utilities

Avis Kennedy

State of Tennessee

Kim Klinker

Klinker Management

Brad Kreps

Nature Conservancy

Whitney Lipscomb

State of Mississippi

Tom Littlepage

Ala Dept. of Economic & Community
Affairs

Gary Myers

State of Tennessee

Will Nelson

Nelson Tractor Co.

Sen. Clay Scofield

Alabama Senate, District 9

Danette Scudder

TN Valley Public Power Association

Catherine Via

TN Farm Bureau Federation

Randy Wiggins

Cherokee County, NC



^{*}RRSC Chair

Safety First



Building Emergency Plan



Introductions



- Name
- Organization
- Water-based Activity this summer





Today's Meeting

Meeting Goals

- Inform on the high quality dam monitoring and safety program
- Update on the Pickwick Dam project
- Spotlight the Pickwick Campground restoration project
- Update on the river bank erosion study and prepare for site visit
- Update on TVA Natural Resources Stewardship and River Management activities

Agenda – September 11, 2019

8:30	Welcome	Mark Iverson, Chair and GM Bowling Green Municipal Utilities
8:40	Introductions and Agenda Review	Liz Upchurch, Facilitator
8:55	FACA Briefing	Kendra Mansur – Office of the General Counsel
9:00	DFO Briefing	Amy Henry, Enterprise Relations and Innovation and Designated Federal Officer
9:20	Break	
9:35	Dam Safety Program	Jennifer Dodd and Bernie Auld
10:00	Pickwick Dam project	Mitchell Horton
10:15	Erosion Control Study	Shannon O'Quinn and David Blackwood, West Tennessee Basin Authority
10:45	Break	
11:00	Pickwick Campground Repair Project	Tina Guinn and Derek South
11:35 11:45	Announcements Wrap up and adjourn	Liz



Agenda – September 12, 2019

8:30	Welcome and Recap	Liz, Facilitator
8:40	Council Discussion	Mark/Amy/Liz
9:25	Break/Prep for Public Comment Period	
9:30	Public Comment Session	Liz and Council
10:15	Break	
10:30	River Management Update	David Bowling and Tom Barnett
10:45	Natural Resources Update	Rebecca Hayden
11:15	Finalize Observations	Council
11:45	Wrap Up	Amy/Liz
12:00	Adjourn	



RRSC Meeting Facilitation

- The facilitator will ensure good order during all open discussions
- Only one person is permitted to comment at a time
- Please turn your name card on its side in order to be recognized by the Chair or facilitator when wanting to provide comment.



The Federal Advisory Committee Act and The Regional Resource Stewardship Council

Kendra Mansur, Attorney
TVA's Office of General Counsel
FACA Briefing—Tenth Term
Fourth Meeting

RRSC Meeting Protocols

Agenda

- Joe Hoagland, Vice President, Innovation & Research is the Designated Federal Officer (DFO);
 Amy Henry, Senior Manager, Enterprise Relations & Strategic Partnerships is the alternate DFO
- Agenda prepared and approved by the DFO in consultation with Council Chair, Mark Iverson
- Agenda distributed to Council and an outline is published in the Federal Register prior to each meeting
- Topics may be submitted to the DFO by any member of the Council, or non-members, including members of the public

Meeting Minutes

- DFO will ensure that minutes are prepared for each meeting, approved by the Chair, and made available to Council members and the public

Voting

- Any member of the Council may make a motion for a vote
- Quorum is a majority of the members of the Council*
- Advice requires an affirmative vote of majority of Council members present
- Advice may include minority or dissenting views

Membership

- Balanced Membership
- Professional or personal qualifications to achieve the mission of regional resource stewardship
- Broad range of diverse views and interests, including recreational, environmental, industrial, business, consumer, educational and community leadership





Thank you for your participation and advice.



DFO Briefing

Amy Henry, Senior Manager, Enterprise Relations and Innovation Designated Federal Officer Alternate

TVA Update – Board Actions

Approved:

- 10-year financial plan which proposes a decade of stable rates – making TVA and the Valley even more competitive.
- 2019 Integrated Resource Plan, designed with significant stakeholder input, will serve as a long-range business guide.
- An optional 20-year partnership proposal with our Local Power Companies that more closely aligns the interests and objectives of TVA and our customers.

2019 IRP Results Indicate:



All portfolios point to a TVA power system that will be LOW-COST, RELIABLE, and CLEAN



Near-Term Actions

Renewables & Flexibility



- Add solar based on economics and to meet customer demand
- Enhance system flexibility to integrate renewables and distributed resources
- Evaluate demonstration battery storage to gain operational experience

Existing Fleet



- Pursue option for license renewal for TVA's nuclear fleet
- Evaluate engineering end-of-life dates for aging fossil units to inform long-term planning

Energy Usage



- Conduct market potential study for energy efficiency and demand response
- Collaborate with states and local stakeholders to address low income energy efficiency
- Collaboratively deploy initiatives to stimulate the local electric vehicle market

Distribution Planning



 Support development of Distribution Resource
 Planning for integration into TVA's planning process



Questions?



Pickwick Landing South Embankment Dam

Bernie Auld
Responsible Engineering Manager

TVA Dam Safety Program

The TVA Dam Safety group provides oversight for 121 dams and impoundments TVA-wide and manages 87 river dams across 6 states.



Our dams are a historic cornerstone of TVA, helping bring flood control, power generation and prosperity to the Tennessee Valley. Our mission is to protect lives and property by enhancing safety and reducing dam risk by ensuring these dams are designed, constructed, operated, and maintained as safely and as reliably as is practicable.



Major Components of a Dam Safety Program

Surveillance – Inspections & Instrumentation

Operations & Maintenance

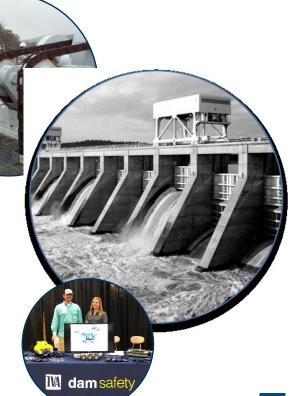
Risk Characterization*

Analysis & Design

Construction/Rehabilitation

Emergency Preparedness

TVA uses an external board of industry experts 3 times each year to review its Dam Safety Program!



Pickwick Landing Dam is a multi-purpose dam located on the Tennessee River in Hardin County, Tennessee, near the borders with Mississippi and Alabama

The reservoir forms the headwater of the Tombigbee Waterway at the Tennessee River and is a vital navigation lock used for hydro generation, recreation, and limited flood control

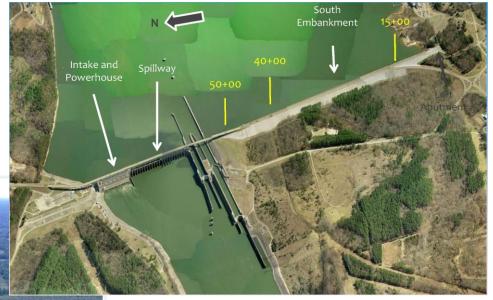
Intake and Powerho

North Dam

North Embankmen

South

Embankment



Pickwick Landing Dam has performed well over the last 80+ years

The south embankment is 4,380-ft long and was constructed in the 1930s using hydraulic fill methods



Background Information

A Hydraulic Fill Dam is one in which the dredged material is used to make the water tight barrier and does not require compaction of the material



Background Information

Earthen embankment dams are no longer built by this method with the development of larger earth moving equipment, and at the time of construction, little was known about building for earthquake safety



South Embankment Dam Seismic Stability

Case histories of hydraulic fill dams show they do not perform well during significant earthquakes Cross section after the earthquake Hydraulic fill sand Liquefied sand Hydraulic fill sand Impervious clay LOWER SAN FERNANDO DAM - CALIFORNIA Reconstructed cross section

Mitigation Measures of the South Embankment

TVA worked with teams of experts, stakeholders, and regulators to achieve the following goals:

- **Protection of the Public**
- ✓ Interim Risk Reduction Measures (IRRM's)
 - Communication and Education
 - **Enhanced Emergency Action Plans**
 - **Enhance Surveillance and Monitoring Systems**
- ✓ Feasibility Study Program to address Seismic Mitigation
- National Environmental Protection Act (NEPA)
- **Design of Mitigation Measures**
- **Construction of Mitigation Measures**



✓ Protection of the Public

- Although not anticipated, there is a remote chance that Pickwick Landing could experience a large earthquake
- TVA has constructed a Dam Failure Warning System to alert residents downstream in the <u>unlikely</u> event of deformation at the South Embankment Dam
- TVA uses news articles, websites, and public meetings to educate and keep the public informed on the dam's condition and on its progress

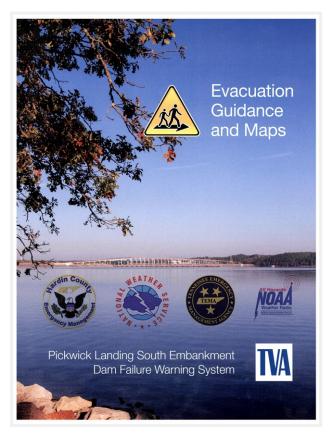
Interim Risk Reduction Measures (IRRM's)

- ✓ Communication and Education
- ☐ Enhanced Emergency Action Plans
- ☐ Enhance Surveillance and Monitoring Systems

TVA continues to work with local Emergency Management Agency's (EMA's) to educate the Population at Risk (PAR)

TVA initiated a Community Outreach Program

- Distributed information about the Dam Failure Warning **System and the Evacuation Plan**
- **Activities included:**
 - **Newsletters**
 - **Brochures**
 - Public meetings
 - **Posters**
 - Web site (www.tva.gov/pickwick)



✓ Interim Risk Reduction Measures (IRRM's)

- ✓ Communication and Education
- ✓ Enhanced Emergency Action Plans
- ☐ Enhance Surveillance and Monitoring Systems

EVACUATION PLAN

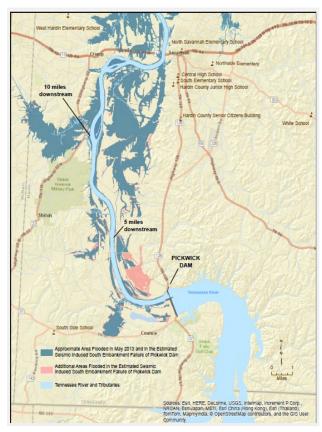
Why is an Evacuation Plan needed?

To enable residences, businesses, schools and other facilities downstream of the dam to quickly evacuate

What are the Elements of the Plan?

- Identification of the inundation zones
- Identification of populations, critical facilities, and people needing special assistance

How did TVA Communicate the Plan?Through community outreach programs

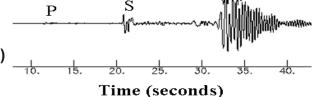


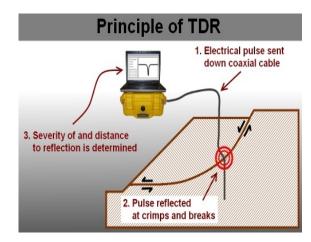
✓ Interim Risk Reduction Measures (IRRM's)

- ✓ Communication and Education
- ✓ Enhanced Emergency Action Plans
- ☐ Enhance Surveillance and Monitoring Systems

What does the Dam Failure Warning System include?

- ✓ Seismic Recorder
- ✓ Instruments to detect earthquake induced damage to dam (TDR)
- √ Live composite video feeds







Composite Video permits viewing of a potential seep or breach condition within the embankment night and day based on its heat signature.

Ground motion



Enhanced Surveillance and Monitoring Systems

- South Embankment Dam Failure Warning System is monitored by operators in the TVA River Forecast Center 24/7
- ☐ Provides specific actions for evaluating alerts from monitoring equipment to prevent **FALSE** notifications
- ☐ Lock operations verification 24/7 (via satellite phone)
- National Weather Service will send an alert in the event of deformation or breach condition
- □ Tone Alert System
- □ Provided Weather Radios to homes within inundation regions
- ☐ Instrumentation has Radio backup





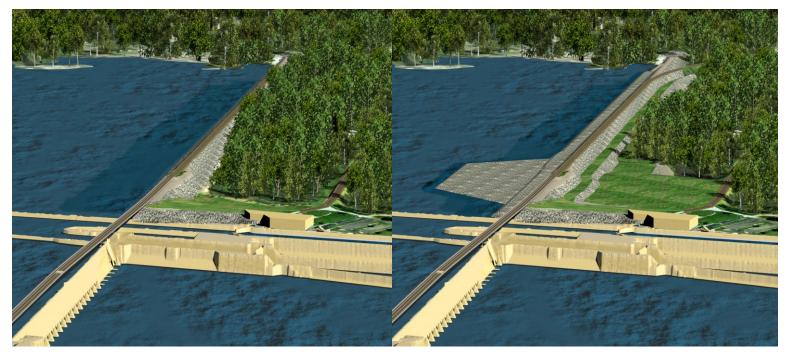








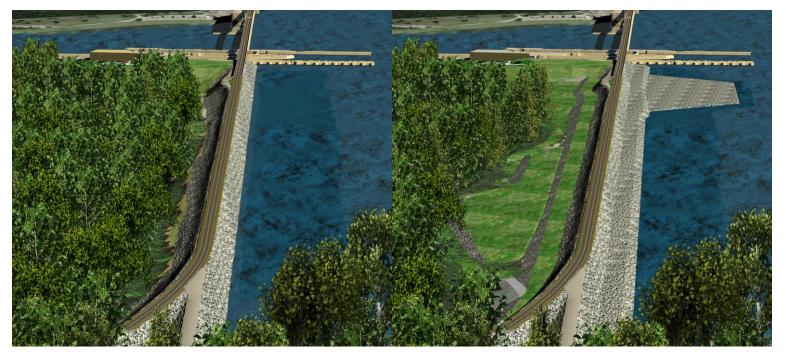
Berms and Extended Fills



Existing

Proposed

Berms and Extended Fills



Existing

Proposed



Questions





Pickwick Landing South Embankment Dam

Jacob Horton
Construction Manager

















































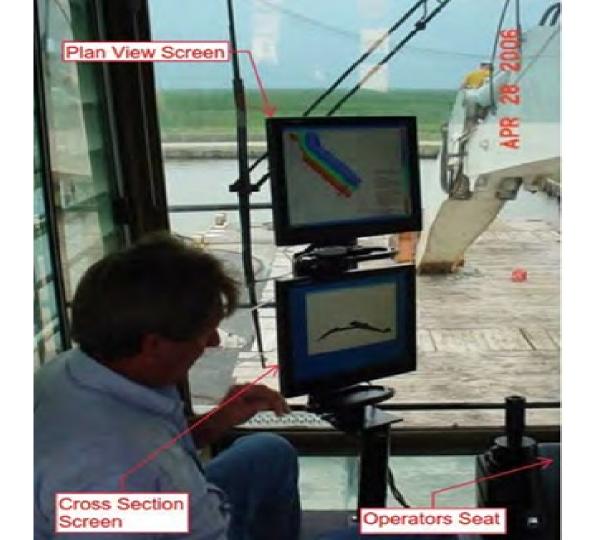






























Questions







Savannah, TN Erosion Study

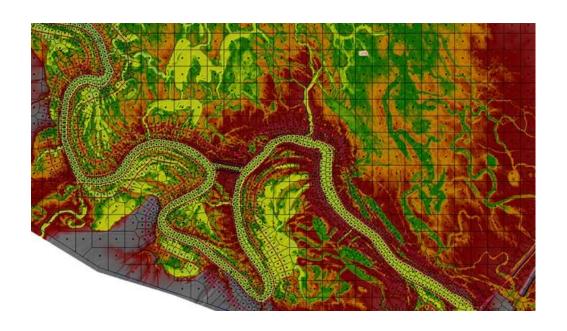
David Blackwood, PE

Executive Director

West Tennessee River Basin Authority

September 11, 2019

West Tennessee River Basin Authority



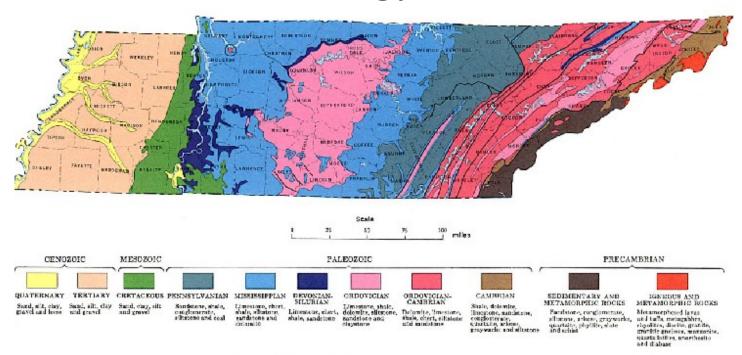
David Blackwood, PE Executive Director



TN River Bank Stability Study



Geology



GENERALIZED GEOLOGIC MAP OF TENNESSEE

River/Lake Function



River/Lake Function



Agricultural Concerns



Cultural Resource Concerns



Mass Wasting Bank Failures



Bank Failure Cycle



High Water Dropout



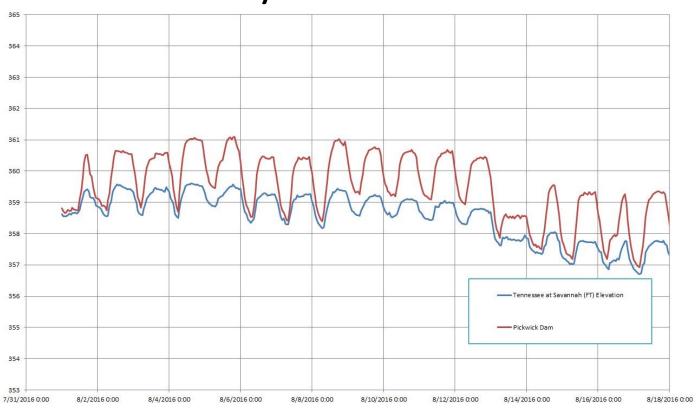
Bank Slough



Boat + Wind Waves



Daily Fluctuation



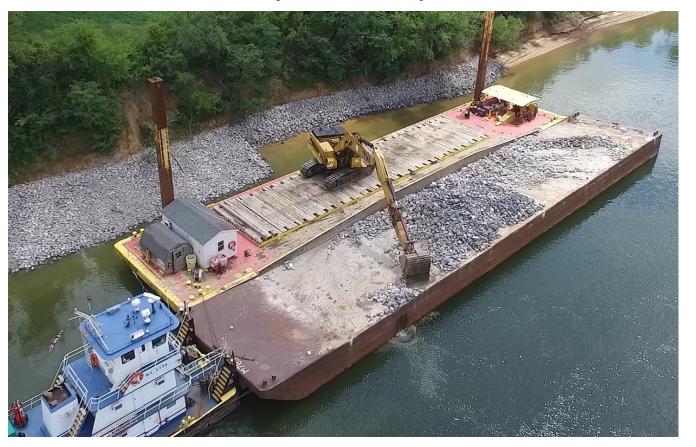
Sediment Balance



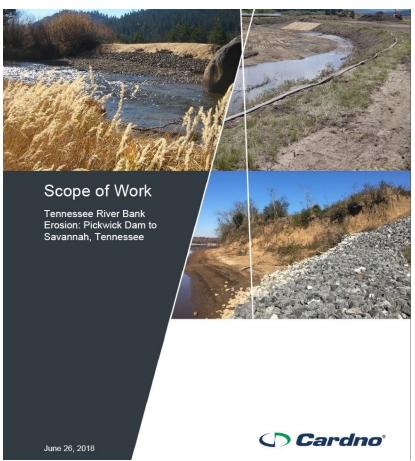
Flow Storage vs. Lake Storage



Disrupt the Cycle



BSTEM Model – Detailed Study



Drivers of Erosion

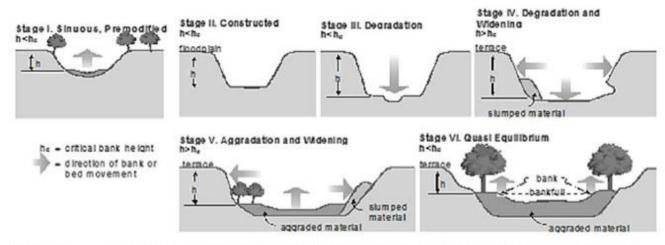
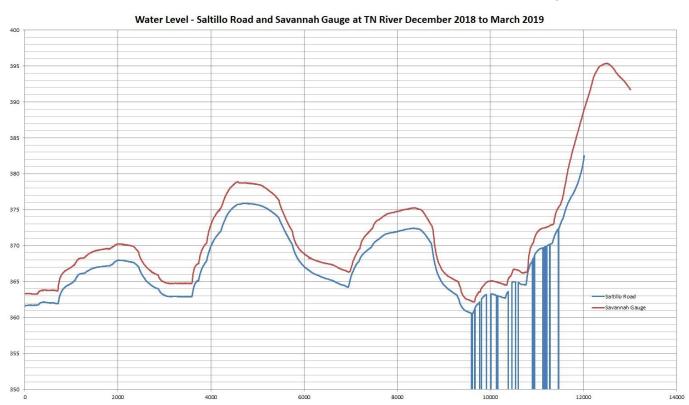


Figure 6 Six stages of channel evolution from Simon and Hupp (1986) and Simon (1989)

Flow Patterns and History



Past Conditions and Current

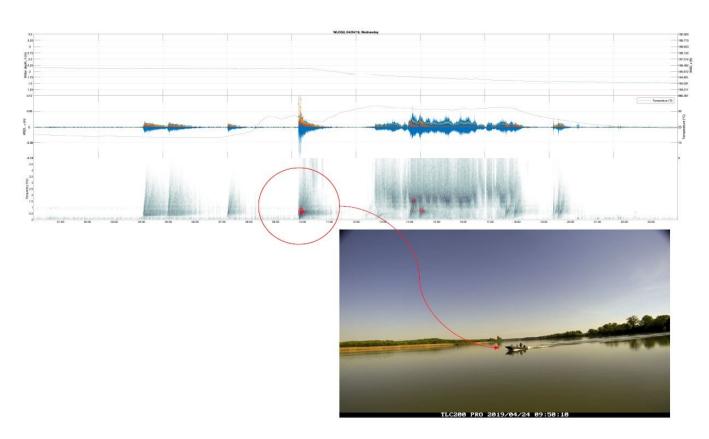


Soil Properties – Field Crew

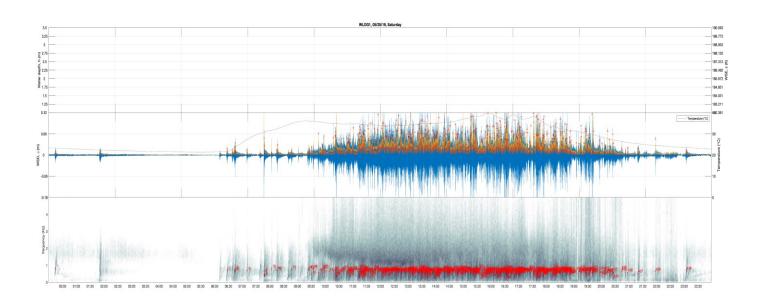




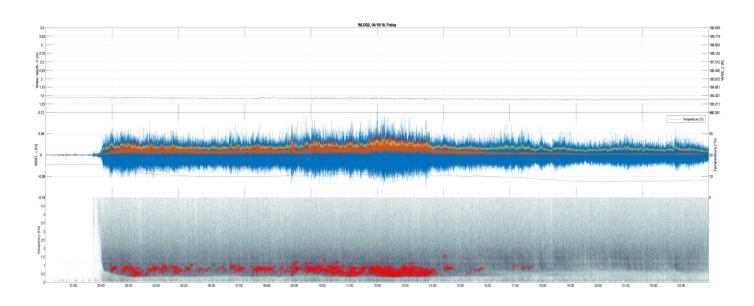
Wave and Sources



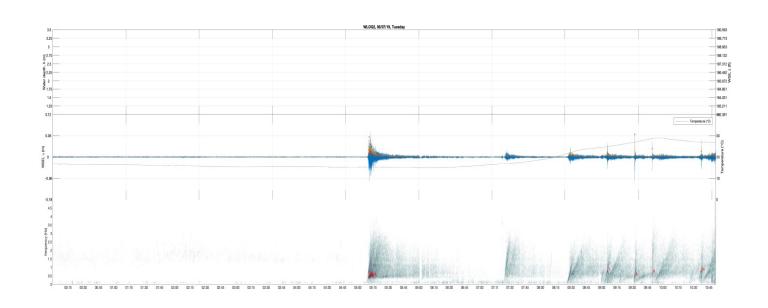
Memorial day weekend



A windy day



A calm day



Model Different Practices



Run Models Through Time/Events



Cost Versus Benefit

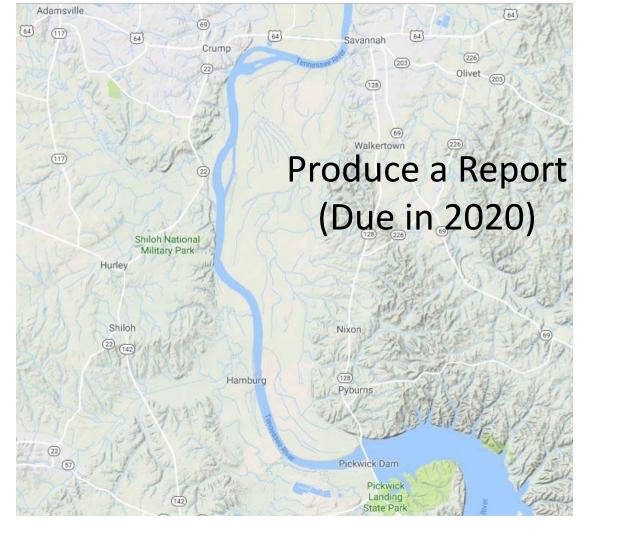


Resources, Nutrients, Land, Water Quality



Identify Locations with Cost-Benefit and Best Practices





Questions?

Contact Information

David.Blackwood@tn.gov

731-784-8173 (office)

731-225-7509 (cell)

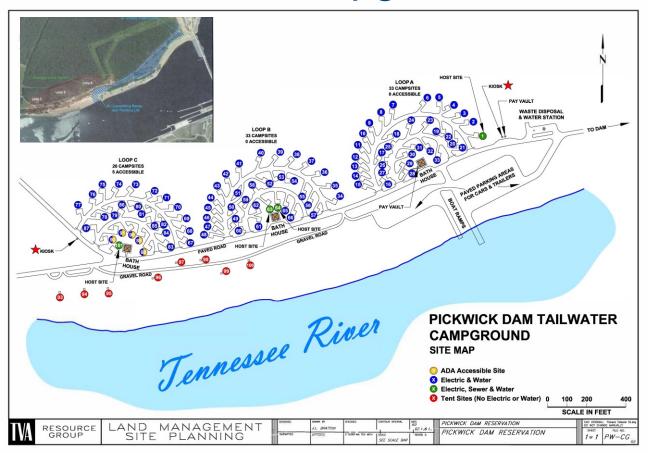


Pickwick Dam Reservation

September 11, 2019

<u>Tina Guinn, Manager of Recreation, Natural Resources</u>

Pickwick Dam Campground



Pickwick Dam Reservation





Pickwick Campground is one of six TVA campgrounds located on dam reservations and managed by Recreation Resource Management, Inc.

The Rain

Facts from TVA's River Management Group

- 2018 was the rainiest year on historical record for the Tennessee Valley
- Rainfall in December 2018 was 170% of normal
- We had the rainiest February ever 269% of normal

Pickwick Reservoir can only hold 4.5 inches of runoff at winter pool, but received 12+ inches of rain in February. At one point, four million gallons per second were being released at the dam.

The Damage



Analysis & Recovery Plans

Primary Considerations

- 1. Safety concerns
- 2. Timing within funding constraints
- 3. Public interest



Recreation Economic Value

Table 1- Pickwick Dam Campground Recreational use Values 2016-2018

Year Reported	Individual User Days	Recreational Economic Value
2016	14,342	\$502,973
2017	10,238	\$359,047
2018	24,793	\$869,491
3 Year Average	16,458	\$577,170

^{*} Note- Bathhouse renovations occurred in 2017 which could explain the drop in user days

Analysis & Recovery Plans

- Extremely high recreational economic value
- Offers users direct access to other tailwater recreational pursuits
- Grown in popularity to become second in visitors served for the 6 concessionaire campgrounds under RRM management
- Rebuilding Pickwick Dam Campground to its full capacity
- Taking into consideration mitigation measures to reduce impacts from future flood events

Major Projects

- A. Restrooms
- B. Tree removal
- C. Debris
- D. Campsites
- E. Day Use Area
- F. Boat ramp



Restroom Replacement

- Three bathhouses within the campground, one for each of the loops
- One restroom building at the day use area
- All facilities were a total loss









Tree Removal

- NR's Natural Resource Management foresters developed a tree removal plan and managed the project, including cleanup
- Tree stand safety concerns







Campground Loops C and B Repair

Damage to the developed campsites

- electric and water facilities
- campsite grading and site timbers
- campsite amenities: picnic tables, lantern holders, site numbers, grill, & fire rings







Day Use Area

Damage to the Day Use Area included

- gravel and sand fill
- road damage
- fisherman's pier
- picnic tables
- garbage cans
- signs









Schedule

- Memorial Day Temporarily opened Day Use Area and Boat Ramp
- July 4th Opened Loop C Campsites, Day Use Area and Boat Ramp
- September 16th Install new restrooms
- Spring of 2020 Open Loops A and B

Public Interest

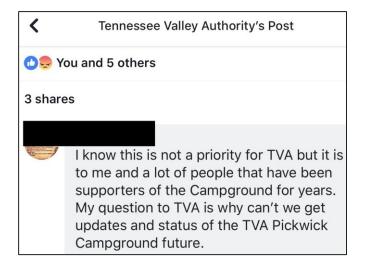
Recreation was busy assessing and planning, two very internal processes

Concerns

- Facebook postings
- Media requests
- PLIC calls

Solutions

- TVA Facebook postings
- Onsite interviews with media
- Talking points for PLIC



Public Feedback





We were very impressed with how the renovations after the flood are coming. The lots are spacious and everything is being well kept.... the rest of the campground is going to be really great when finished, too. Mr. Dallas and Mrs. Toni (the camp hosts) were so accommodating and sweet. Our boys loved fishing from the bank, riding to the dam and back on bicycles, and piddling around camp. With no throughtraffic, we didn't have to worry about feeling safe even on a busy river weekend. We'll definitely be back (soon).

"share a call I had this morning...he really appreciates us getting things back open... mentioned how important the boat ramp is to the community"

The Crew

- Derek South and Jim Morse Recreation
- Facilities Management
- Recreation Resource Management, Inc.
- Supply Chain
- Financial Services
- Environment Cultural Compliance
- Public Land Information Center
- Communications
- Public Outreach and Support
- Natural Resource Management





Questions

Wrap up and Adjourn

- Field trips bus location
- Breakfast at the hotel
- Term 11
- April 2020 meeting date





Lunch Break

Meeting Adjourned for Today

Meeting will reconvene tomorrow, 9/12, at 8:30 am



Regional Resource Stewardship Council

September 12, 2019
Pickwick Pines Resort



Agenda – September 12, 2019

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12:00	Adjourn	



Day 1 Recap

- Pickwick Campground repair project
- TVA's Dam Safety program and dam project tour
- Erosion Control study and site visit





RRSC Discussion



Break
Prepare for Public Comment Period

Public Comment Period

- Public participation is appreciated
- This is a listening session; responses are typically not provided

















River Management Update

Tom Barnett, P.E.

Integrated Tennessee River System Provides Multiple Benefits



Navigation



Water Supply



Flood -Damage Reduction



Recreation



Power Generation



Water Quality



Reservoir Conditions

- Rainfall 48" CYTD (137% of normal, 8/25/19)
- Runoff 26.8" (153% of normal)
- All10 major tributary lakes at or above target levels on June 1st.
- Tributary lake levels maintained near FG for majority of summer
- Main stem lakes maintained at guide curve



Highlights

- Handled record breaking rainfall and significant flooding in February 2019. Flood reduction benefits totaled \$1.6B in structural damages averted across the Tennessee River Valley.
- Performed our first tree ring drought study since the 1930's.
- M/V Sideview staff completed two round trips of the Tennessee River and its secondary channels and maintained over 1,500 navigations aids with a perfect safety record.
- Developed and put into production the first operational forecasting 3D hydrothermal model for BFN
- Installed a water quality monitoring station and new fiber communications at Tims Ford Hydro Plant.
- River Management indicator above stretch goal







River/Recreation Tour May 13 – May 17

Three Teams-

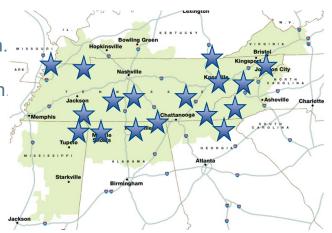
Eastern Valley: North Georgia, Western N.C. and East Tenn. Western Region: West Tenn./Kentucky and Middle Tenn. Central Valley: North Alabama/Miss. and Southeastern Tenn.

Organizations participating:

- River Management
- Natural Resources
- Government Relations
- Communications & Marketing



- 8 stakeholder briefings
- Media event in Tri-Cities



Outreach

- Dozens of River Forecast Center tours provided (over 400 people this CY)
- River Management staff supported numerous speaking engagements and community events across the Valley
- Social Media River Management stories and real-time information
- Traditional Media
- Website and App
- TVA Info e-mails (~300 this CY)
- Public phone line



Social Media Impact

Facebook:

Number of Posts: 35

Number of Impressions: **7,610,058** Number of Users Reached: 2,755,040

Number of Link Clicks: 17,700

Number of Video Views: 2,210,756

Avg. Reach Per Post: 141,286.63 < Very impressive

Engagement Rate: 9.76% (Compared to the national average of 0.17%)

Tennessee Valley Authority

Public Utility Company in Knoxville, Tennessee

4.3 ****



facebook.com/TVA

We gained 9,387 Facebook followers over the 18 days a 9.85% growth. We now have 104,718 followers Facebook.

Twitter:

Number of Tweets: 88 Impressions: 996,400 Overall Reach **1,684,800**

Retweets 1,896

Engagement Rate: 4.1% (National average is 0.05%)





We gained1,200 new Twitter follower over the period, a 6.26% growth. We now have 20,800 Twitter followers.





TVA Natural Resources Update

September 12, 2019

Rebecca Hayden, Senior Manager of Recreation and Shoreline Management

Natural Resources

Natural Resources Focus Areas





FY19 Year End Summary

- 306 stewardship projects implemented in 112 counties
- 72 recreation projects to expand opportunities and increase tourism
- 4,100 volunteers through 34 organizations supported to result in 250 tons removed from lakes and public lands
- 18,000 children engaged through environmental education programs including TVA Science Kids World Water Monitoring program
- Provided quick response of restoration efforts impacted by flood damage









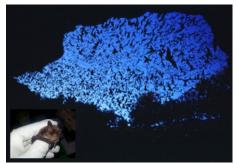


FY19 Year End Summary

- 2,340 parcels assessed, with 2,636 assets identified as part of the asset inventory initiative
- Assessed 9,874 acres of TVA public lands through land condition assessment efforts
- Collaborated to enhance wildlife and native plant habitats
- Supported aquatic ecology through habitat improvements and rearing and release of selected native fish











2020 Natural Resource Plan Update Schedule

Scoping **Draft SEIS Public Comment Final SEIS** July 16 - August 20, 2018 May - June 2019 June 2019 - March 2020 September 2018 - May 2019 **Public Notice of Intent Prepare Final SEIS Prepare Draft SEIS Draft SEIS 60 Day** 30-Day Public Scoping June to December 2019 August 2018 to May 2019 **Public Comment Period Comment Period** May to June 2019 July 16 to August 2018 Release Final SEIS and **Review and Finalize Publish NOA Draft SEIS Public Meetings:** December 2019 April to May 2019 Knoxville, TN Chattanooga, TN **FSEIS Public Review** Muscle Shoals, AL Buchanan, TN Release Draft SEIS and January to February Webinar **Publish NOA** 2019 Issue Record of May 2019 **Scoping Report Posted** Decision October 2018 March 2020



Natural Resource Plan Update

- Hosted 4 public open houses
- Webinar
- Used web and social media platforms to inform and solicit comments
- Received 48 comments related to:

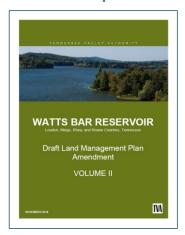
Plan implementation and metrics	Water intake protection	Public outreach and education
NEPA procedures	Shoreline development impacts	Water monitoring
River operations	River-based recreation	Aquatic ecology
Staff and funding capacity	Trails	Water pollution and litter
Cultural resource preservation	Ecotourism	Watershed partnerships
Cultural resource management plan	Public recreation	Preserving public lands
Consultation	Forest and habitat management	Climate change

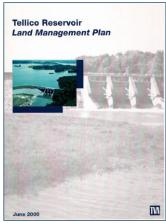




Reservoir Lands Planning

- Watts Bar Reservoir Land Plan Amendment due Fall 2019
- Tellico Reservoir Land Management Plan in progress, public scoping scheduled to begin Winter 2020
- Reservoir Land Planning Viewer Map https://www.tva.gov/landplans
 - Interactive land planning zone map with address search box and optional aerial imagery background











Land Use Activities

- Major land use actions include requests for long term use of public lands, easement requests (utility, recreation, etc.) and deed modifications
- 18 completed disposal actions with 31 in process
- 1,500 Section 26a permits issued and 30 land use actions implemented to support lake access and economic development











Floating Cabin Program – Progress Report

- Phase 1 Rules effective October 1, 2018
- Phase 2 Rules target Fall 2019
 - Electrical, wastewater, flotation, and mooring
 - Permitting, maintenance, rebuilds, alterations, combining, transfers, and relocations



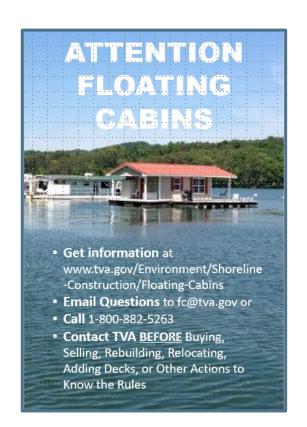






Floating Cabin Program

- Stakeholder Advisory group
- Engagement and Information
 - Marina visits
 - One-on-one conversations
 - Updated web pages
 - Informational posters
 - TN / KY Marina Association
 - Registration form







Asian Carp Partnership

- Four Asian carp invasive species in the Tennessee River Watershed: Grass, Black, Bighead and Silver Carp
- TVA is a member of the Mississippi Interstate Cooperative Resource Association
- TVA partners to increase awareness of Asian carp concerns









Community Engagement

- 615 outreach events in 93 valley counties
- 112 counties participating in our National Geographic Tennessee River Valley MapGuide and film launch
- Increased interest in TVA social media, River Neighbors and web stories, and earned 110 good news stories
- Supported Tennessee RiverLine Initiative











My Lake Guntersville Campaign

The W.E.T. Foundation and its partners support the protection and preservation of Lake Guntersville.

- Raise awareness and money to address threats to a healthy and safe lake
- Manage invasive species including plants, zebra muscles and Asian Carp
- Halt island erosion, water contamination and trash





PROTECT, PLAY, PRESERVE.

Continue social media campaign to increase awareness

www.mylakeguntersville.com.



Award Winning Web Site

- The "My Lake Guntersville" campaign microsite was received a regional economic development communication award by the Southern Economic Development Council.
- The public awareness and conservation campaign's goal is to protect and preserve Lake Guntersville as a natural resource and economic driver for the region and make the public aware of how they can help address these issues for sustainability of the reservoir.



PROTECT. PLAY. PRESERVE.

www.mylakeguntersville.com

Looking Forward to FY20

- Complete 2020 Natural Resource Plan
- Floating Cabin regulations
- Increase community engagement
- Continue work on the flood damaged areas
- Implement stewardship projects

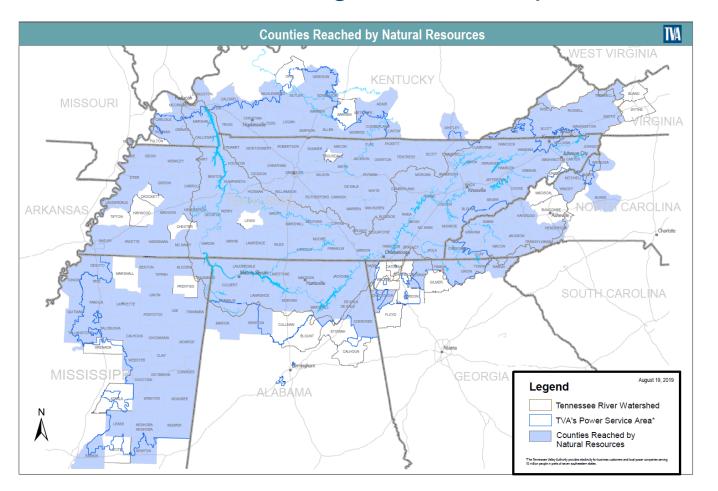








Counties Reached Through Stewardship Efforts











Comments

Announcements

- 11th term April 2020
- Next meeting date and location
- Meeting reimbursements





Wrap Up and Adjourn



Thank you and please travel safely!