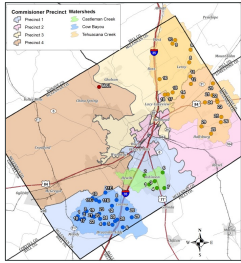


General Information

- McLennan County, Texas
 - Central Texas
 - Rural and urban mix
 - Moderate/rapid growth

General Information



- 51 County-sponsored Dams
- 69% of the structures exceeded their service life (+50yrs)
- Average annual benefits: approximately \$3,500,000

Right-Sized Program

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

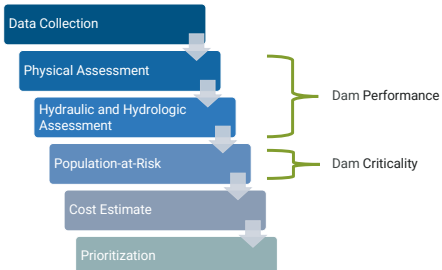
Texas Soil and Water Conservation Districts

USDA Natural Resources Conservation Service
United States Department of Agriculture



- Review local, state, federal data sources
- Leverage existing data, where appropriate
 - 19 NRCS Assessment Reports
 - 28 TCEQ Inspection Reports
- Streamline processes
- Develop consistent results

Project Tasks/ Asset Management



Physical Assessment

- Field Observation
- Objective Scoring Criteria
 - Excellent
 - Good
 - Fair
 - Poor
- Scores assigned to each component the dam
- Aggregated per structure for overall score



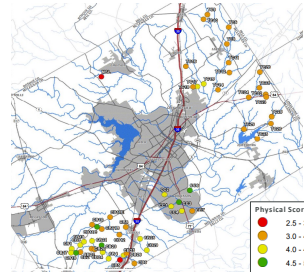
Physical Assessment

Watershed: **Upper Meritt**
 Dam Name: **Upper Meritt Dam**
 Inspection Date: **11/11/17**
 Inspectors: **...**

OVERALL DAM SCORE
2.9

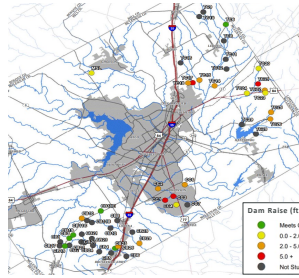
DAM ELEMENT SUMMARY	SCORE	WEIGHT
EMBANKMENT SCORE	2.7	50%
PRINCIPAL SPILLWAY SCORE	3.1	30%
EXTRINSIC SPILLWAY SCORE	3.0	20%

Physical Assessment



- Summarize condition scores on single map
- Overall Physical Condition
 - Poor to fair: 2 dams
 - Fair to good: 29 dams
 - Good to excellent: 19 dams
 - Excellent: 1 dam

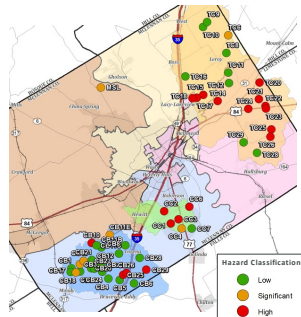
H&H Assessment



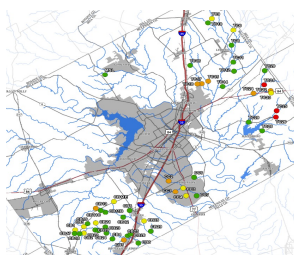
- Review both federal (NRCS) and state (TCEQ) design floods
- If inadequate, height of dam raise represents magnitude of potential rehabilitation
- High and significant dams only

Hazard Classification

- NRCS/TCEQ classification
 - 18 High
 - 8 Significant
 - 25 Low
- FNI performed a PAR analysis for criticality ranking
- No changes to hazard class



Hazard Classification



- PAR measures life safety hazards during dam failure event
 - Sub-divided into structures and roads
 - Serves as "Criticality" metric
- Utilized previous breach analyses, where available
- Leveraged screening-level capabilities of DSS-WISE and simplified RAS models
- Variability from rural vs. urban

Cost Estimates

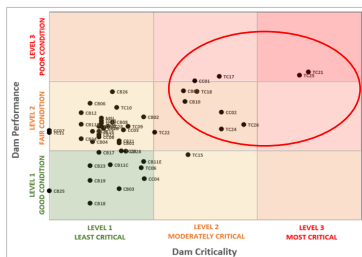


- Routine Maintenance Cost
 - Mowing/weed control
 - Annual inspections
- Maintenance Repair Cost
 - Brush/tree clearing
 - Other deterioration
 - **Restores dam to original condition**
- Rehabilitation Cost
 - Hydraulic inadequacy
 - **Upgrade to meet modern criteria**

Overall Prioritization

Phy. Condition (out of 10)	PRIORITIZATION		Rehabilitation Cost (Dam Raise)	Maintenance Repair Costs	Performance Weight (out of 10)
	Combined Weighted Total (out of 10)	Overall Priority Rank			
2	7.8	1	\$ 6,682,100	\$ 8,900	9
2	7.6	2	\$ 6,166,600	\$ 60,600	9
7	6.0	3	\$ 6,755,200	\$ 3,100	7
2	5.6	4	\$ 1,718,100	\$ 9,100	7
2	5.5	5	\$ 8,141,700	\$ 13,400	7
2	5.4	6	\$ 3,099,100	\$ 6,000	7
2	5.3	7	\$ 2,991,700	\$ 7,100	7

Overall Prioritization



Funding Opportunities

- Texas Water Development Board
 - Flood Infrastructure Fund (FIF)
 - Clean Water State Revolving Fund (CWSRF)
- FEMA
 - High Hazard Potential Dams (HHPD)
 - Building Resiliency Infrastructure in Communities (BRIC)
 - CDBG - MIT
- NRCS/TSSWCB Funding
 - Watershed Rehabilitation Program
 - Emergency Watershed Protection and O&M Grants
- Local Sources
 - Development fees
 - Bond programs
 - Specific utility fees

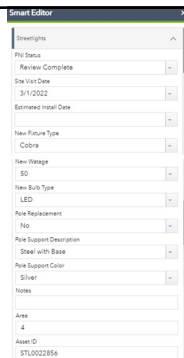


Mobile Data Collection



Innovative Workflow

- FNI employee used the ArcGIS Field Maps application on their smartphone/tablet to mark GIS points for street light locations
- FNI team assessed the condition of around 2,000 street lights on-site
- FNI visited the project site and answered each question prompted by the site visit evaluation tool
 - **Based on availability and project budget, could develop training course for staff**



Alternatives Uses for ArcGIS Field Maps

- Trinity Metro Bus Stop Replacement Tracking
- Guardrail Replacement Program
- Storm Damage Assessment
- Site Visit Documentation
 - Location of Elements
 - Image Inventory



Thank you

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