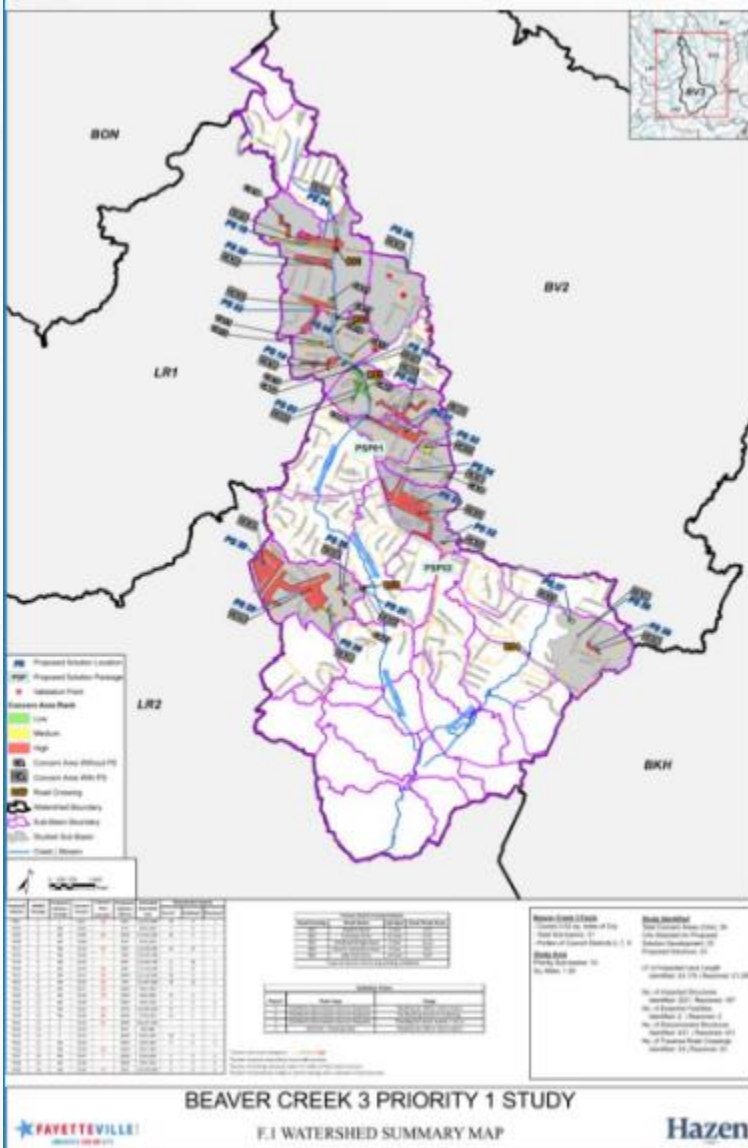




ALW Dam Overtopping Protection

August 5, 2024

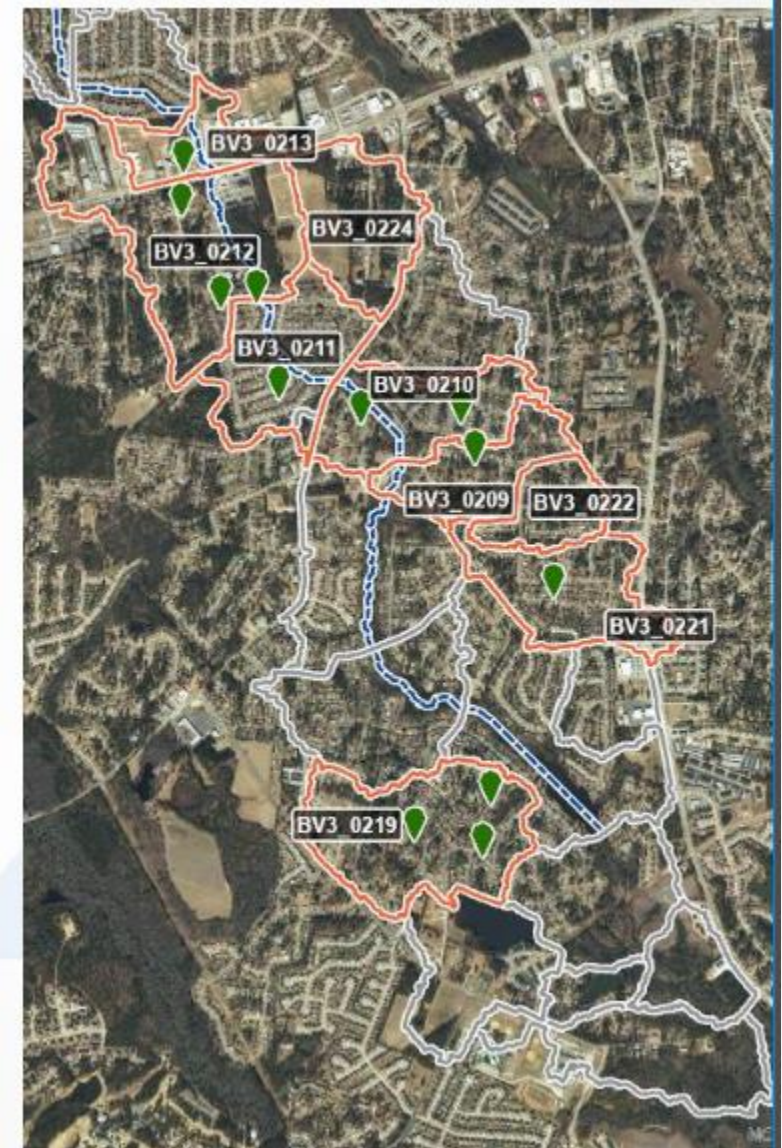


12 PSs from BV3 WSMP
PS01, PS03, PS05, PS08, PS14, PS20,
PS22, PS24, PS26, PS28, PS29, PS31

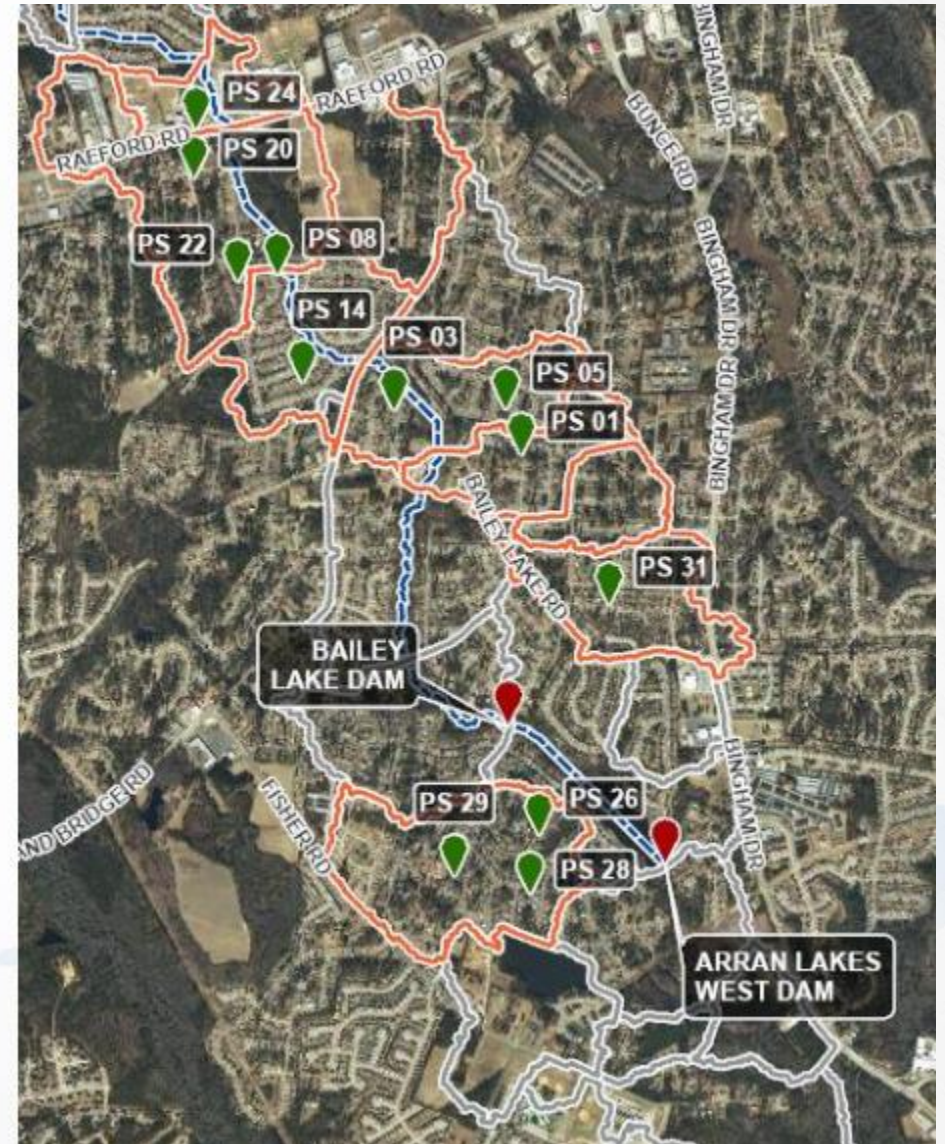
Drainage System
Upsizing

2 PSs in Design
Rhemish, Rockford

Implementation of
Others Unknown



| | |
|----------------|--|
| Concern | Downstream Flow Increases and Associated Impacts |
| Task | Evaluate Detention Alternatives <ul style="list-style-type: none">• Local Detention (at PS Locations)• Regional Detention (at Dams) |
| Goal | Maintain Existing Peak Outflows or Improve Primary System Infrastructure (Dams) |



- Road LOS Changes
 - Carloway Dr decreased from 25- to 10-yr
 - Power Station decreased from 5- to 2-yr
 - **Small increase in ALWD Overtopping Frequency** (dam has 0.5' freeboard in a 10-yr event in existing conditions)
- Increased Flood Risks:
 - 2 additional structures impacted in 10-yr
 - 1 additional structure impacted in 100-yr



Conclusion:

- Implementation of PS01 (Rockford Drive) and PS05 (Rhemish Drive) may cause limited increases to BCTB discharges, ALWD WSEs, and also ALWD outflows.
- An evaluation of impacts estimated that Tributary flows may increase by up to 10-cfs in the 10-year storm and 112-cfs in the 100-year.
- Impacts at ALWD may include a 0.2- and < 0.1 -foot WSE increase as well. Though small, implementation of such drainage system improvements is likely to have some level of impact at ALWD.
- While no level of service (LOS) changes are expected for the facility, the depth and frequency of overtopping may slightly change based upon the analyses conducted.



- Localized Detention

- Assessed Each PS in BV3 in addition to focusing on Rockford and Rhemish projects.
- Challenges with available open space for detention devices.
- ALW Dam reliant on perpetual maintenance of each detention facility.

- Regional Detention Evaluation

- Increased detention (Spillway improvements, lowering PPE, dredging)

vs

- Overtopping Protection (ACB Matting, property acquisition, would meet current dam safety requirement)

any improvements to the dam also requires overtopping protection

Localized Detention

- Rockford Dr - \$4.6M
- Rhemish Dr - \$4.1M
Total for both = \$8.7M
- All BV3 Improvements - \$33.5M



Overtopping Protection at ALW Dam

- ALW Dam - \$8.5M



Conclusion:

“The overall findings and conclusions from this and the prior study are the same – **overtopping protection of ALWD likely presents the most direct, effective, and economical solution to protect the facility from potential flow changes.** Implementation of local detention may require facilities at each project location and do not provide direct benefit to ALWD. Instead, protection of the Dam is reliant upon design, construction, and maintenance of each detention facility. Alternatively, overtopping protection directly protects the facility and is largely unaffected by changes to secondary system drainage systems.”

Recommendation:

Direct staff to move forward with project development and design of the Arran Lakes West Dam Overtopping Protection project.

