

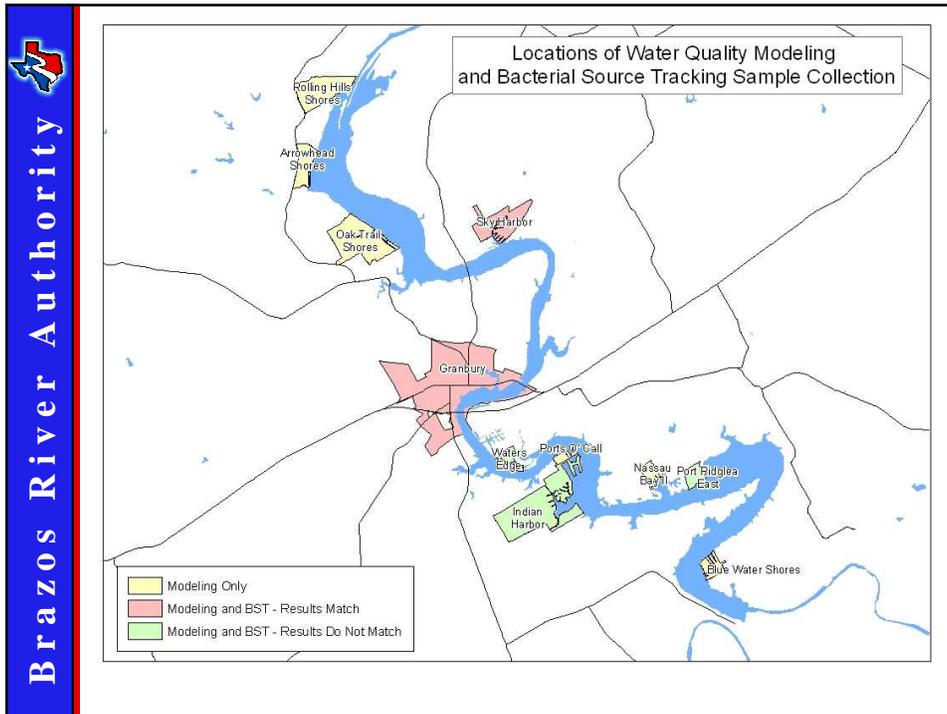


Source ID Summary



Issues

- **Some assessment strategies for source identification have yielded conflicting and confounding results in some areas**
 - Land Use and BST
 - Model and BST
- **Stakeholders will need to determine which sources to focus on for each area prior to BMP selection**
- **Models are the only tool we have for evaluating potential success of BMPs**

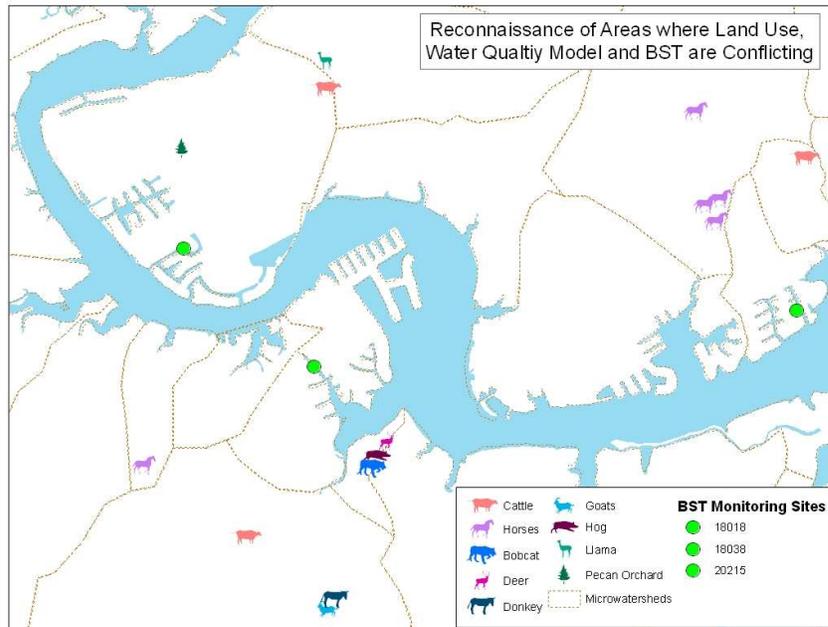


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- ## Reconnaissance
- To attempt to rectify discrepancies between land use, model and BST
 - **Waters Edge**
 - We found no evidence of feral hogs.
 - Golf course said they have not had any issues
 - Did not see any areas with suitable nesting habitat
 - Most of the area is residential property and/or commercial property
 - It would be extremely difficult for the hogs to travel from anywhere to WE without encountering vehicle traffic.
 - We did find a very small pecan orchard but it had no cover and no evidence of rooting. The orchard was in the process of being converted to residential property.
 - Livestock are forbidden within the subdivision boundaries and the HOA strictly enforces this rule.
 - Granbury's WWTP does not accept solid waste from any agricultural operations



Reconnaissance

- Port Ridglea East
 - We found several ranchettes with horses and one location with approximately 10 - 20cattle. However, none appear to be in the PRE drainage.
- Indian Harbor
 - Security guard indicated that livestock are forbidden within the subdivision boundaries. He said the HOA strictly enforces this rule.
 - Population of deer on Anaconda Ridge on the south east side of the harbor which should drain to Contrary Creek.
 - Undeveloped area observed that could provide habitat for deer close to canals
 - Unlikely that flow from Contrary Creek pushes back up into the canal
 - Property with cattle outside of IH but that location should also drain to the Contrary Creek and not into the canals.





Rolling Hills Shores

Assessment Strategy	Most Likely Sources (highest to lowest)
2007 Land Use (>2%)	Rangeland (wildlife)
	Single-family residential (septic)
	Cropland/Pasture (livestock)
Watershed Modeling	Cattle
	Septic
	Pet
Cove Modeling	Septic + NPS
BST (not performed at this location)	



Arrowhead Shores

Assessment Strategy	Most Likely Sources (highest to lowest)
2007 Land Use (>2%)	Single-family residential (septic)
Watershed Modeling	Septic
	Pet
Cove Modeling	Septic + NPS
BST (not performed at this location)	



Oak Trail Shores

Assessment Strategy	Most Likely Sources (highest to lowest)
2007 Land Use (>2%)	Single-family residential (septic)
Watershed Modeling	Septic
	Pet
Cove Modeling	Septic + NPS
BST (not performed at this location)	



Sky Harbor

Assessment Strategy	Most Likely Sources (highest to lowest)
2007 Land Use (>2%)	Single-family residential (septic)
	Rangeland (wildlife)
	Cropland/Pasture (livestock)
Watershed Modeling	Cattle
	Septic
	Pet
Cove Modeling	NPS
BST	Non-avian Wildlife
	Septic



Lake Granbury at Business 377

Assessment Strategy	Most Likely Sources (highest to lowest)
2007 Land Use (>2%)	Single-family residential
	Commercial Services
	Rangeland (wildlife)
	Multi-family residential
	Recreation
Watershed Modeling	Pet
	Septic
Cove Modeling	NPS
BST	Non-avian Wildlife
	Septic
	Livestock



Nassau Bay II

(minimal bacteria concentrations, control community)

Assessment Strategy	Most Likely Sources (highest to lowest)
2007 Land Use (>2%, in Holiday Estates Microwatershed)	Single-family residential (septic)
	Rangeland (wildlife)
	Cropland/Pasture (livestock)
Watershed Modeling	Cattle
	Septic
	Pet
	Hog
Cove Modeling	NPS
BST (not performed at this location)	



Waters Edge

(minimal bacteria concentrations, control community)

Assessment Strategy	Most Likely Sources (highest to lowest)
2007 Land Use (>2%)	Single-family residential (sewage)
	Commercial (sewage)
	Cropland/Pasture (livestock)
	Recreation (wildlife)
Watershed Modeling	Pet
Cove Modeling	NPS
BST	Non-avian Wildlife



Ports O' Call

Assessment Strategy	Most Likely Sources (highest to lowest)
2007 Land Use (>2%)	Single-family residential (sewage)
	Commercial (sewage)
	Cropland/Pasture (livestock)
	Recreation (wildlife)
Watershed Modeling	Pet
Cove Modeling	NPS
BST	Non-avian Wildlife



Indian Harbor

Assessment Strategy	Most Likely Sources (highest to lowest)
2007 Land Use (>2%)	Single-family residential (septic)
Watershed Modeling	Septic
	Pet
Cove Modeling	Septic + NPS
BST	Non-avian Wildlife
	Livestock



Port Ridglea East

Assessment Strategy	Most Likely Sources (highest to lowest)
2007 Land Use (>2%)	Single-family residential (septic)
	Recreation
Watershed Modeling	Septic
	Pet
Lake Modeling	Septic
BST	Non-avian Wildlife
	Livestock



Blue Water Shores

Assessment Strategy	Most Likely Sources (highest to lowest)
2007 Land Use (>2%)	Single-family residential (septic)
	Rangeland (wildlife)
	Cropland/pasture (livestock)
Watershed Modeling	Pet
Cove Modeling	Septic
BST (not performed at this location)	



Discussion

- Land use analysis, watershed modeling and cove modeling are a good match
- Cove modeling has more weight than land use or watershed model, because we can compare it to monitoring data
 - cove model is predicting observed conditions well
- Watershed modeling, cove modeling and BST agree in Sky Harbor and Mid Lake
- There are conflicting results between the watershed modeling, cove modeling and BST in Waters Edge, Indian Harbor and Port Ridglea East
 - Waters Edge BST results may be a factor of small quantity of bacteria present in canal
- BST provides information regarding sources on the day of collection
 - Not capable of determining magnitude
 - Not capable of predicting loads or response to BMPs



Purpose of BMPs

- **Bring waterbody into compliance with stakeholder goals**
 - Reduce and/or maintain bacteria concentrations in the canals below 53 MPN/100mL
- **Protect water resources and downstream areas from increased pollution**
- **Reducing the availability of pollutants to the environment**
- **Guide the implementation of watershed management program**



Recommendation

- **Use watershed/cove models from this point forward to evaluate potential effectiveness of BMPs**
- **Focus on what can reasonably be controlled**
 - While non-avian wildlife is indicated to be a source by BST, it is not easily controllable
- **Use routine water quality monitoring to assess effectiveness of BMPs**



Next Steps

- **Stakeholders prioritize sources for each area for BMP selection/research**
 - **Technical feasibility**
 - **Efficiency**
 - **Cost Effectiveness**
 - **Acceptability**
 - **Impact on other resources**