

CALCASIEU PARISH

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HOUSTON RIVER BASIN STORMWATER MASTER PLAN



Prepared by:



NTB Associates, Inc.

Solving Tomorrow's Problems Today...

PROJECT TEAM

- Calcasieu Parish Division of Engineering & Public Works
- URS Corporation – Prime Consultant
- NTB Associates, Inc. – Surveying Sub-Consultant



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PROJECT OBJECTIVES

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- Develop hydrologic and hydraulic models for storm water planning
- Identify flood prone areas
- Identify undersized major culverts, drainage channel limitations and other watershed deficiencies
- Develop Capital Improvement Plan



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PROJECT TASKS

- Collect and organize existing relevant data (Geospatial data, hydrologic and climatic data, environmental data, and socioeconomic data)
- Perform topographic surveys on all modeled channels and structures
- Determine basin and sub-basin hydrologic characteristics
- Develop hydrologic and hydraulic models
- Prepare engineering report



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PROJECT SCHEDULE

- Work began on the Houston River Basin in December of 2008
- Scheduled for completion by the end of June, 2010



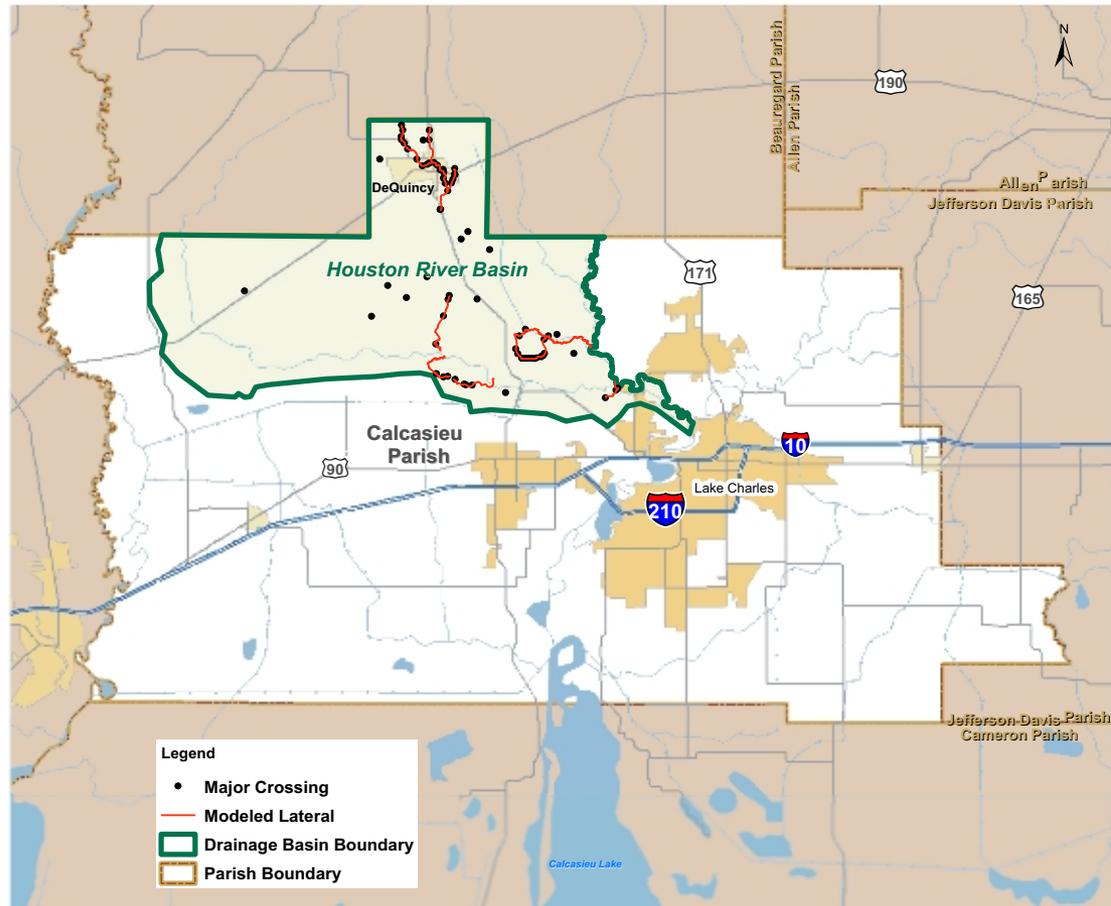
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PROJECT AREA

The Houston River Basin consists of approximately 142,908 acres; approximately 136,000 linear feet of drainage channel (shown in red) will be modeled. This includes 160 cross-sections of the drainage channels at key locations and 126 bridge and culvert structures at major road crossings.



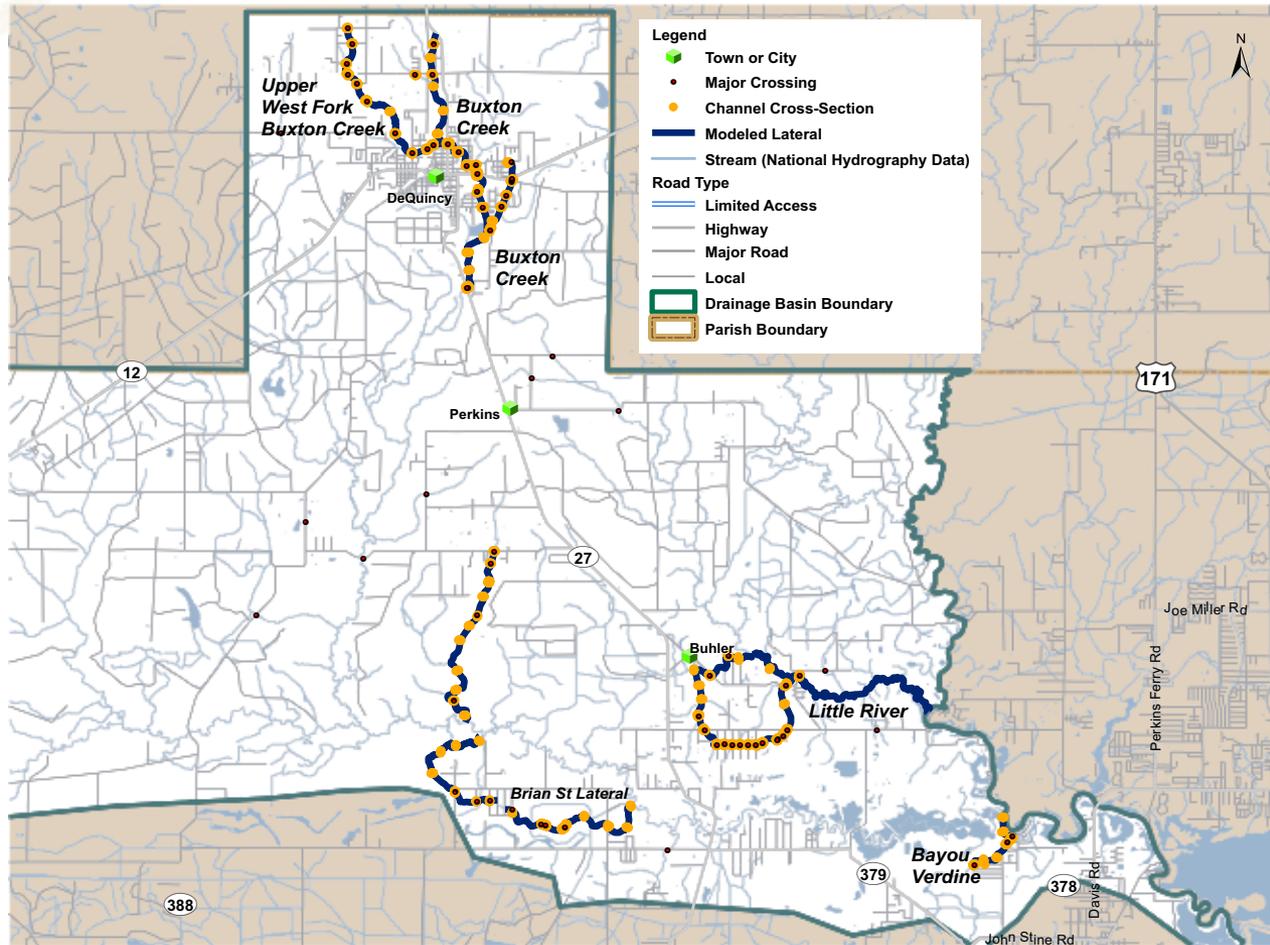
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MODELED CHANNELS, SURVEYED CROSS-SECTIONS AND ROAD CROSSINGS

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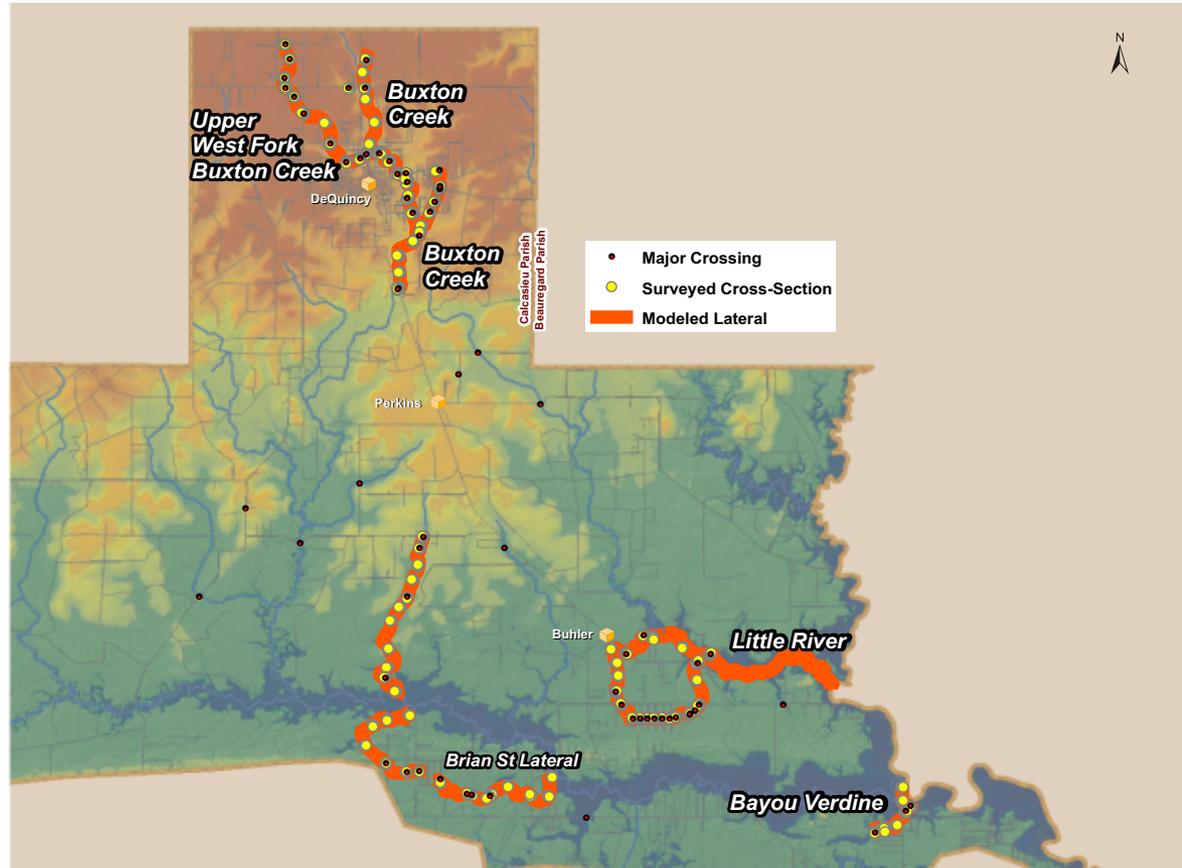


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LiDAR DATA

Light Detection and Ranging (LiDAR) data assists the Geographic Information System (GIS) and modeling efforts by providing the initial land surface that was combined with channel cross-section survey data to identify the flow directions and sub-basins within the Houston River Basin.

LiDAR data is available from Louisiana State University at <http://atlas.lsu.edu/> with elevation data supplied at a 5 meter point spacing.



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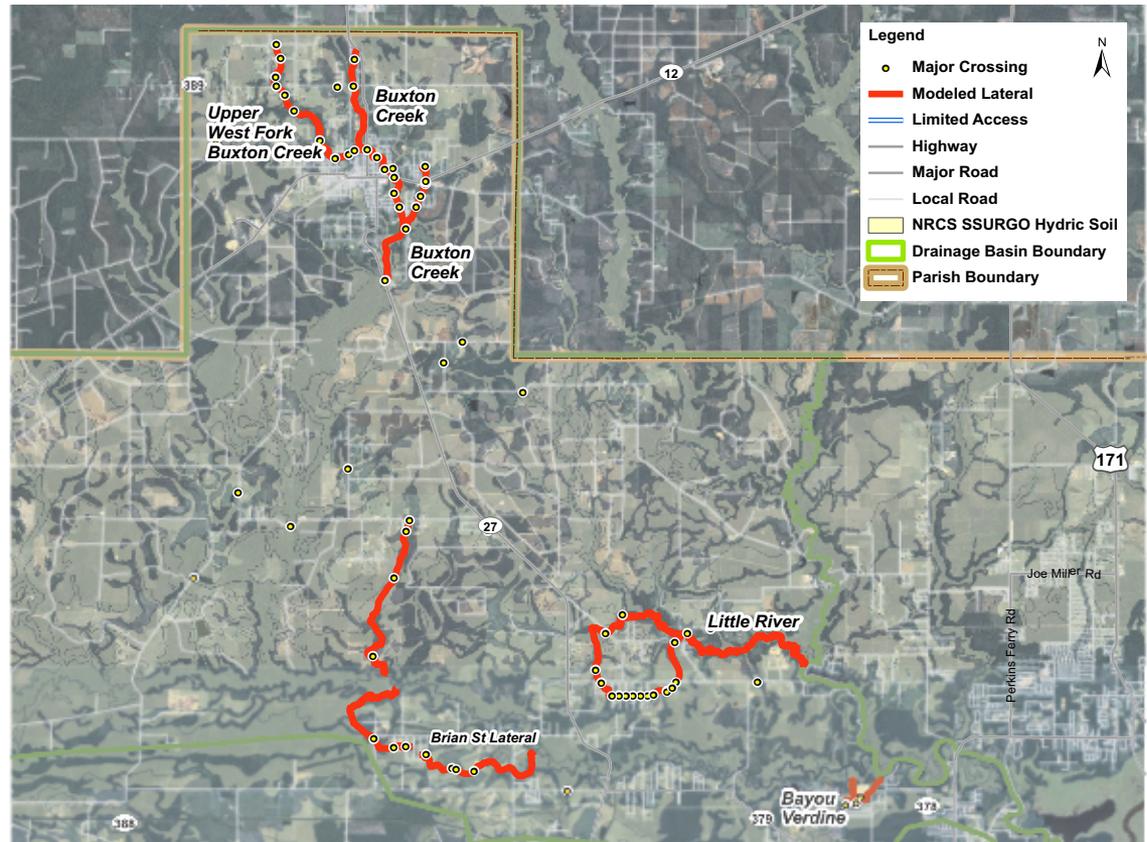
GEOSPATIAL DATA

URS is collecting and organizing geospatial data with a twofold purpose:

1. Facilitate hydrologic modeling efforts for the Houston River Basin.
2. Work in tandem with the Calcasieu Parish Police Jury to develop its Parish-wide stormwater GIS.

Selected GIS data to assist with the HEC-HMS and HEC-RAS hydrologic modeling includes: FEMA Q3 flood zone and Land Use Data.

NRCS Soils Data



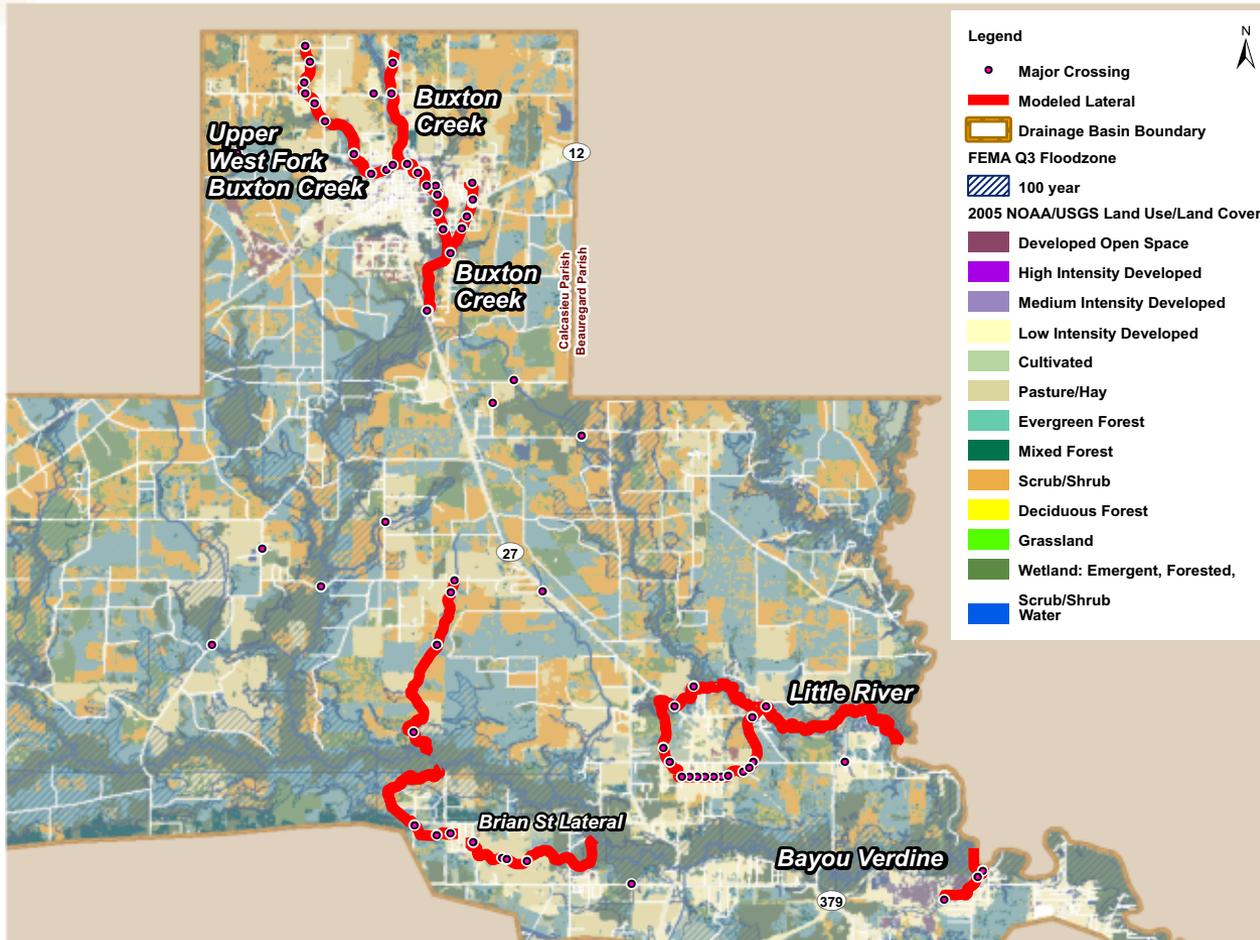
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GEOSPATIAL DATA

FEMA Floodzone and NOAA/USGS Land Use/Land Cover Data



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WORK ACCOMPLISHED TO DATE

- As of May, 2009 all topographic survey data has been collected and processed. Approximately 136,000 linear feet of modeled drainage channel was surveyed. This includes 160 cross-sections of the drainage channels at key locations.
- 126 bridge and culvert structures were surveyed for geometric features and condition.
- Basin and sub-basin hydrologic characteristics were defined for model development.
- Development of 6 hydrologic models for the various sub-basins is underway using HEC-HMS, a US Army Corps of Engineers computer model for analyzing watershed rainfall runoff.



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PRESENT STATUS

HEC-HMS and HEC-RAS models are nearing completion and will be delivered to parish for review and comment by end of June. After resolution of review comments, URS team will proceed with remaining work.



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REMAINING WORK

- Complete development of hydrologic models for the various sub-basins
- Perform hydraulic modeling to identify flood prone areas and watershed deficiencies
- Develop Capital Improvement Plan
- Prepare Engineering Report



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CAPITAL IMPROVEMENT PLAN

Using the Stormwater Planning Models, watershed deficiencies will be identified for current and future conditions and a Capital Improvement Plan (CIP) prepared. The CIP will include the following:

- Listing of recommended improvements which may include:
 - Replacement of undersized culverts
 - Modifications/upgrading of bridge crossings
 - Channel improvements (widening & deepening)
 - Channel paving
 - Detention Basins
- Construction cost estimates
- Schedule for implementation



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ENGINEERING REPORT

After review and acceptance of the Capital Improvement Plan an Engineering Report will be prepared which will include the following:

- Background information
- Criteria and methodology for hydraulic modeling
- Alternatives development
- Capital Improvement Plan
- Maintenance Plan
- Exhibits, Site reconnaissance photographs, and supporting documentaion
- HEC-MHS and HEC-RAS model files



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