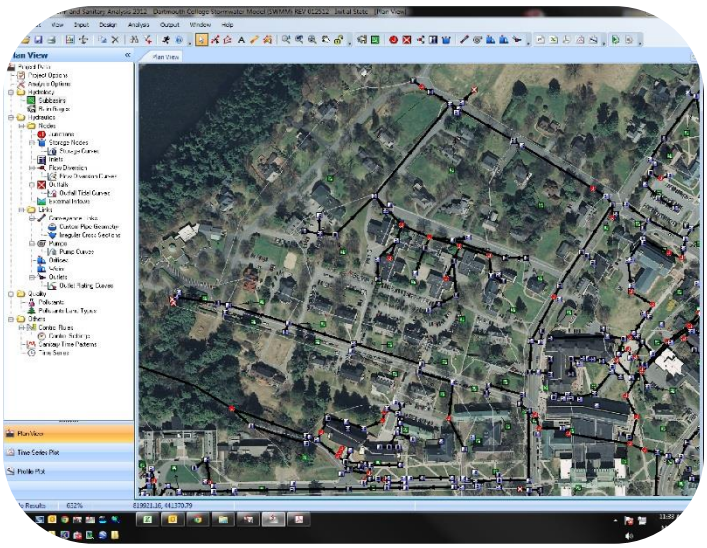
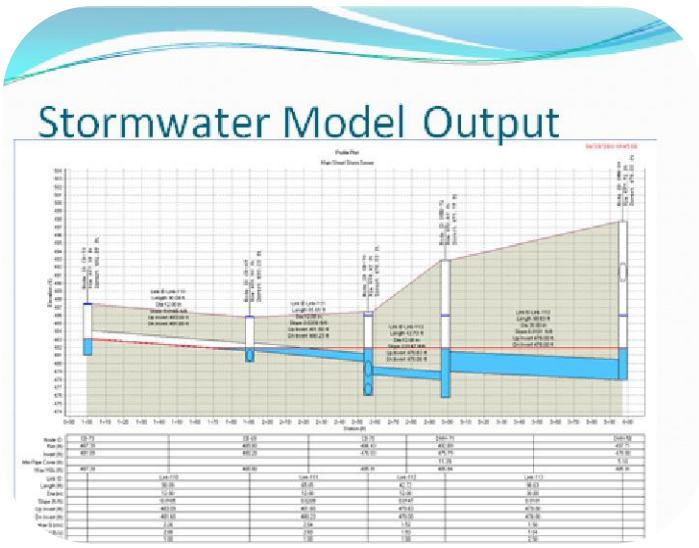
STORM SEWER INVENTORY, MODELING AND PLAN

DARTMOUTH COLLEGE, HANOVER, NH



Planning Area



Model Output

Dufresne Group developed a GIS based computer model of the entire Dartmouth collection and conveyance storm sewer system using a variety of existing data sources and information obtained during the model development project, including:

- Existing paper and digital mapping
- Structure inspection reports by DG and others
- Camera inspections by Stearns Septic Service
- Field surveys by DG to obtain complete horizontal and vertical coordinates
- Flow monitoring
- Water quality testing

DG reviewed the existing information and TV inspection data conducted during two monitoring periods, then created a list of structures that needed additional investigation work. DG conducted field work to inventory structures and determine flow directions, size and material of each pipe and obtaining coordinates and elevation of structure rims and pipe inverts. Inspection report forms were completed for each structure.

The computer model of the collection system uses an aerial photograph of the campus as a reference background. Once the completed and calibrated model was used to simulate hydraulics, results such as surcharge conditions, pipes at or above capacity and flow and velocity in each pipe were reviewed to develop a list of deficient conditions. Five and ten year plans were prepared to present deficiencies, alternative improvements and a recommended phasing plan for resolving structural and hydraulic deficiencies and improving water quality.

KEY FEATURES:

- Database for 18 miles of pipe including size, length, roughness coefficient, invert elevations and computed slope.
- Database for over 1,200 structures includes type of structure, rim elevation and depth.
- Data is GIS-based and can be exported for use in other GIS programs including querying, sorting and record keeping.
- Water quality testing and flow monitoring at five locations for model calibration.
- Water quality modeling including discharge points to four water bodies including the Connecticut River.