



SAVANNAH GULLY
FLOOD AND STORM SURGE MITIGATION PROJECT



Project Development Process

May 16, 2006

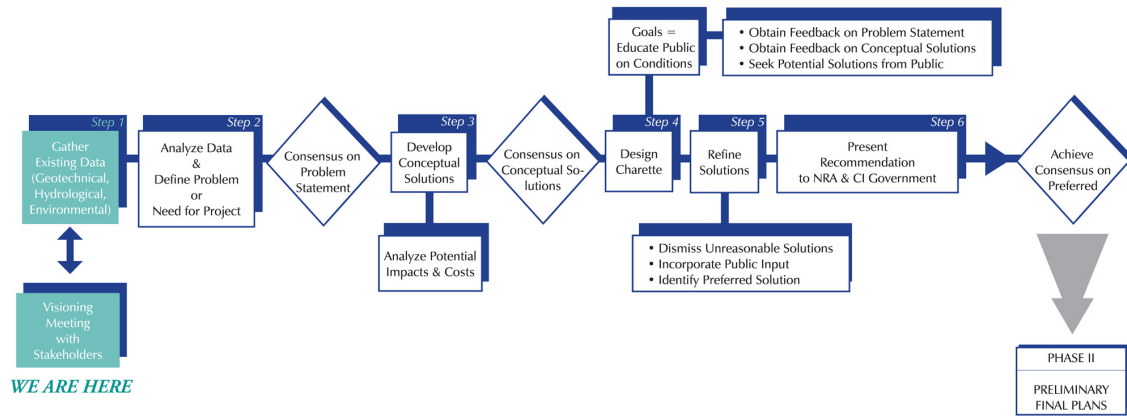
Introduction

One of the most common misunderstandings regarding hurricanes is that the wind speeds cause the most damage. While it is true that wind will damage structures and property, the residents of the Savannah area know it is storm surge and inland flooding that cause the most damage. The flooding is typically caused when storm surge breaks through low spots in the coastal ironshore area, commonly referred to as the gully. The area affected by the flooding in the Savannah Gully area extends through the Savannah, Sandy Ground, Spotts Newlands, Savannah Acres, Savannah Meadows, Newlands, and North Shore Estates subdivisions. The most recent occurrence of the storm surge flooding was from Hurricane Wilma in October 2005.

Hurricanes will continue to produce storm surge off the ironshore bluff in the Sandy Ground area and our project is not intended to prevent the surge but rather to propose mitigation measures to reduce or eliminate the subsequent inland flooding. It is anticipated that any mitigation measures developed will include both short and long term solutions. It is also known that the solutions have the potential to involve many of the governmental agencies.

Therefore, the proposed project development process involves all of the stakeholders and tailors proposed solutions to meet the community's needs. Successful application of these principles results in a project that has lasting value to the community and achieves a level of excellence. At this time, it is assumed that the following departments will participate as stakeholders: National Roads Authority, Department of Planning, Lands and Survey, Department of Environment, Water Authority, Cayman Emergency Management Authority, and the Mosquito Research & Control Unit.

PROJECT DEVELOPMENT PROCESS



The project development process involves six steps to achieve consensus on a preferred conceptual solution. Once the preferred is identified, the project will move into Phase II, which is Preliminary Engineering and Final Design.

Step 1: Data Collection

Prior to the development of conceptual alternatives, information will be collected on the history of the flooding in the study area. This effort included the collection of secondary source data, along with limited field reconnaissance of the natural, geotechnical, hydrological, and socioeconomic features in the study area. This information will be used to create a broad understanding of the existing flooding conditions within the study area, to identify critical or sensitive features, to educate the agencies and the public on the study area conditions.

This first stage of the project development process is also defined by collecting information from the residents and business owners on the extent and duration of the flooding and how it affects their daily life. This is accomplished through Public Visioning Meetings designed to help the project team define the context of the communities in the study area. These meetings were developed to provide the public with a forum to express important issues regarding the flooding, safety concerns, emergency access concerns, property damage concerns, and travel concerns.

Step 2: Analyze Data and Define Problem Statement

ORA will use the information gathered from the government stakeholders as well as from the public during the visioning meetings to generate flood mapping. The maps will reflect average and worst case flooding conditions, if possible. Once the mapping is generated, it will be used to determine the Problem Statement and Measures of Effectiveness. The Measures of

Effectiveness may include public safety requirements, environmental protection areas, community concerns, and engineering requirements.

The Problem Statement and Measures of Effectiveness will be reviewed and approved by the NRA and will be presented before the government stakeholders for consensus prior to development of conceptual engineering solutions. *Consensus is an agreement that may not be one's preferred choice, but is something that the stakeholder can live with.* The project team will work with all the stakeholders to ensure that all parties are heard and all opinions evaluated but it is understood by all parties that not everyone will agree to the solutions.

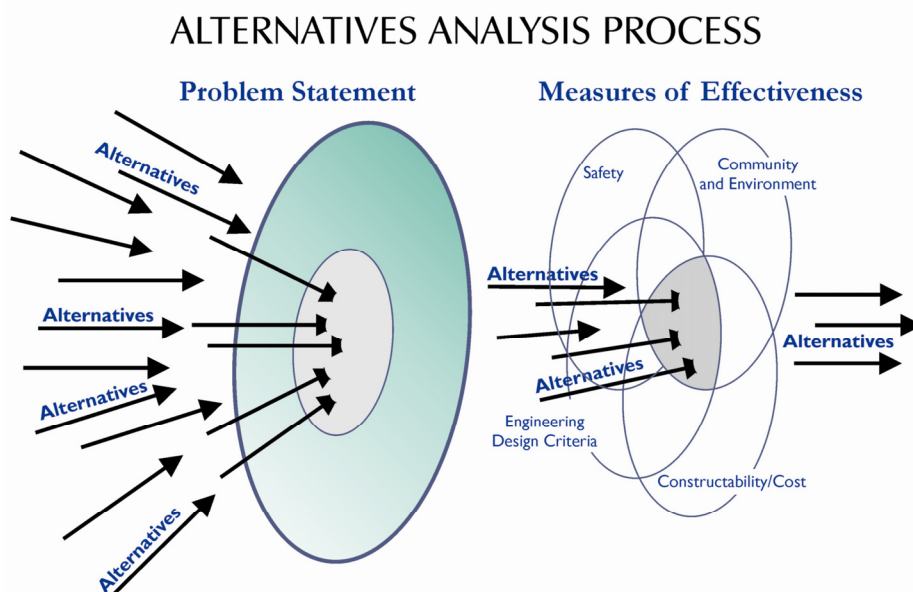
Step 3: Develop Range of Conceptual Solutions and Analyze Potential Impacts and Costs

Upon receiving consensus on the Problem Statement and Measures of Effectiveness, the team will begin the identifying conceptual solutions. This approach will involve context sensitive solutions and will be holistic in nature. The solutions will involve site-specific mitigation efforts and perhaps island-wide mitigation or planning efforts.

Solutions may be traditional or non-traditional in nature; but all will address the flooding conditions (both due to hurricanes and/or periods heavy rain), the development patterns, the constraints on available right-of way, and use of appropriate technology. It is also likely that the solutions will include both short and long term solutions. Traditional solutions may be the construction of inlets, outfall structures and conveyances, incorporation of permeable materials rather than impervious materials (asphalt), and detention swales or basins. Non-traditional solutions may include seawalls, the redesign of roadways to act as dikes or dams, or the creation of an artificial reef to reduce storm surge.

The Alternatives Analysis Process will consider the problem statement and the Measures of Effectiveness (public safety, environmental and community concerns and engineering requirements). The proposed alternatives will first be weighed against their ability to address the

Problem Statement and balance the Measures of Effectiveness. Those conceptual alternatives that sufficiently meet the Measures will be evaluated in terms of costs, constructability, and impacts. ORA will develop a range of conceptual solutions to present to the NRA, the government stakeholders, and the public. The government stakeholders will be presented the



potential solutions in advance of the public in order to provide input. Consensus will be reached on the conceptual solutions prior to displaying them to the public.

Step 4: Conduct Design Charette

The cornerstone of our interactive project development process is the Design Charette. The approach enables the stakeholders to develop and/or provide input into the development and refinement of alternatives in an open forum. The stakeholders will be provided the opportunity to suggest refinements to the solutions and examine impacts while making decisions, a feeling of trust is generated and the stakeholders see first hand why certain decisions are made. More importantly, the stakeholders are left with a sense of ownership in the decision-making process and they become proponents of the project rather than opponents. This is true even if the stakeholders are left with an alternative that they did not initially agree with.

All refinements or suggestions generated from the charette will be evaluated and presented to the NRA and government stakeholders during a subsequent meeting.

Step 5: Refine Solutions

The ORA Team will develop conceptual engineering plans for the additional alternatives. The feasibility analysis that will be conducted will be based on cost effectiveness, impacts, level of right-of-way impacts, the ability to meet the Measures of Effectiveness, conformance with planning regulations and requirements, and engineering feasibility and constructability. Based on the results of this evaluation, three solutions will be recommended for further detailed study. Those alternatives defined as having significant impacts, or determined to be cost prohibitive, impractical from an engineering perspective, or unable to satisfy the identified Performance Measures will be dismissed from further consideration. The results of this selection process will be summarized in a comparison matrix and documented in the Alternative Analysis Report. The comparison matrix will provide a ranking of all alternatives by order of preference.

Step 6: Make Recommendation/Achieve Consensus

The findings will be presented to the NRA and the other governmental stakeholders. The solutions may include interim and long-term alternative solutions. The solution(s) that are approved at this stage will be carried into final design, which will be conducted under a different project.