



Green Infrastructure & Stormwater Management CASE STUDY

Model Community Watershed Development - Phase I / Marais des Cannes

Location: Lafayette Parish / Scott, LA

Client: State of Louisiana / Office of Community Development –Disaster Recovery Unit

Design Firm(s): Lafayette Consolidated Government, Traffic & Transportation Department, Comprehensive Planning Division

Landscape architect/Project contact: Cecilia Gayle

Email: cgayle@lafayettela.gov

ASLA Chapter: None

Project Specifications

Project Description: The pilot MCWD is proposed to contain a regional stormwater retention-detention facility several hundred acres in size designed for high storm water storage capacity, with elevated on-site areas using excavated dirt from lakes for amenities. The retention and detention lakes would reduce the risk of flooding in downstream areas by containing excess stormwater until it can be recharged into the aquifer or control-released when over-burdened infrastructure can accept it. Some amenities may be located in the floodplain, floodway, and/or wetlands, requiring regulatory permits for the project from Federal Emergency Management Administrations (FEMA) , The Federal Insurance and Mitigation Administration (FIMA) and its National Flood Insurance (NFIP) program for Lafayette Parish, US Corps of Engineers as well as other state and local agencies.

Project Type:

The Marais des Cannes is Phase 1 of the Model Community Watershed Development (MCWD) Project is located in Lafayette Parish near the City of Scott in South Louisiana.

Part of a new development

Design features: Bioretention facility, rain garden, bioswale, cistern, rain barrels, downspout removal, porous pavers, curb cuts, and Coulee By-Pass structures. These divert water from existing coulee (stream) when it reaches flood stage. The water is then transported to storage areas in proposed regional facility. Design of slopes: (2-Stage Ditch concept: shelves / ledges that slows dow.

This project was designed to meet the following specific requirements or mandates:

County ordinance, to meet funding criteria, the funds are to be used for: 1. Activities associated with assembling, surveying, and reviewing existing planning and zoning documents 2. Activities associated with assembling, surveying, and reviewing existing floodplain maps, utility maps, forecasting.

Impervious area managed: greater than 5 acres

Amount of existing green space/open space conserved or preserved for managing stormwater on site: greater than 5 acres. Summary of Southern / Phase I Planning Area / Marais des Cannes 382 acres, 80 ac. combined area of Lakes, 48 ac. of constructed wetland, 1.5 ac. of By-Pass Coulee, 47 ac. of dry retention, 1.1 ac. of community garden, 6 miles of bicycle/walk trail, 216 – 4 story townhouse units, totaling: 175.5 ac. of lake, wetland, detention, and coulee 216 units on 382 acres = .5 units per acre, 45% lake / retention area / open space 55% elevated land / upland woods.

The regulatory environment and regulator was supportive of the project.

Did the client request that other factors be considered, such as energy savings, usable green space, or property value enhancements? In a parish with 60 inches of rainfall per year, land elevations near sea level, changing weather patterns, increased development and reduced pervious area, damage from flooding and costs for repair and primary concerns. Land value increases when land elevation is increased. Greenways increase the value of adjacent properties as an amenity to residential community developments. Greenways between retention facilities allow for increased recreational opportunities. Greenways connect communities, promote interaction and the potential increase of land value.

Cost & Jobs Analysis

Estimated Cost of Stormwater Project: >\$5,000,000 (Public funding: State, local - the funds (\$381,608) for Planning of this project are provided through LCG from The State of Louisiana, Division of Administration, Office of Community Development – Disaster Recovery Unit for a Category 1 of the Comprehensive Resiliency Grant Program.)

Related Information: The funds (\$381,608) for Planning of this project are provided through LCG from The State of Louisiana, Division of Administration, Office of Community Development – Disaster Recovery Unit for a Category 1 (Gustav/ Ike Disaster Recovery Community Development Block Grant (CDBG) funds) of the Comprehensive Resiliency Grant Program. An additional (\$45,000) will be contributed as a match from Lafayette Consolidated Government. This program is designed to provide comprehensive nonstructural recovery tools to some of our most at-risk communities. The grant funds will be used to pay a significant amount of LCG Staff time over a period of three years.

The Department of Traffic and Transportation, Metropolitan Planning Organization and Comprehensive Planning Division will provide the staff professional expertise of project managers as well as a landscape architect, an architect, an urban designer, several GIS specialists, several urban planners and several civil engineers. Four consultant specialists – hydrologist, ecologist, civil engineer, and economist – will be expected to work closely with LCG Staff over the three year period of the grant. Some or all of the specialists may be from the same firm or ad hoc group of consultants who may apply separately or as a team. In addition, other departments of LCG may participate in the project. Projected costs for implementation and proposed proprietorship of the project will be developed during the planning process outlined above.

Was a green vs. grey cost analysis performed? Yes, we are projecting cost / benefit analysis within the study and will provide results as the reports are completed. There will be an economic impact study taking place concurrent with the hydrological, ecological, architectural, and engineering studies.

Cost impact of conserving green/open space to the overall costs of the site

design/development project: While there is a lot of information about conservation and preservation of green space, there are not many studies attaching "costs" and "benefits" to green infrastructure. By reducing pollutants before they enter the stormwater system improves pond performance and lowers maintenance costs. Natural buffers or naturalized plantings along streams, bayous, and lake edges protect water quality by filtering out sediments and pollutants before they can enter a fresh water body and improve the environment, but specific cost analysis is hard to find.

An effective, stormwater pollution prevention plan involves community members and governmental officials. Street sweeping, leaf collection, fertilizer and pesticide application restrictions, and commercial and industrial pollution prevention all serve to minimize health related hazards, and extend the service life of stormwater coulees and detention ponds. These are the concepts that will be incorporated into the overall plans being created with the Marais des Cannes Phase I. The monitoring of costs to this development will be tracked to further this body of knowledge and to provide a template for other communities to replicate.

Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)? Significantly reduced costs (10% or greater savings). It is too soon to indicate the cost savings of green over grey infrastructure, but the concept is in place to prove that this manner of development is ecologically responsible and financially cost effective. For example: A safety shelf around the perimeter of the detention pond and lake edges will be incorporated to reduce the risk of someone falling into the permanent pool. This approach can also create wildlife habitat and an attractive natural shoreline.

By relating events and programs, stormwater facilities with greenway corridors can be varied, dynamic and provide access to and increases education & eco-tourism opportunities and financial benefits. Bringing together varied types of outdoor activities to a stormwater facility district can attract and stimulate investor dollars. A “green” community with a strong sense of place, unique character = higher demand = more \$, and promotes civic ecology.

Number of jobs created: Planning contract to be released will create (3 year) part-time job benefits for 5 multi-disciplinary private sector consultants (Hydrologist, Ecologist, Permit Compliance Specialist, Economist, Civil Engineer) as well as LCG civil service staff of (2) Pr

Job hours devoted to project:

Planning and Design: Almost 9,000 hours between 12 private and staff consultants has been proposed in the LRA-MCWD grant

Construction: projected # of hours and construction design and implementation costs are pending grant study

Annual Maintenance: projected maintenance expenses are pending grant study

Performance Measures

Stormwater reduction performance analysis:

Data is not readily available, but the hydrologist will seek to provide 100% storage for the first Phase of Marais des Cannes with an estimated additional 20% storage capacity for stormwaters received from upstream developments. Coulee By-Pass Structures will divert water from existing coulee (stream) when it reaches flood stage. The water is then transported to storage areas in proposed regional facility. Research will be directed towards the possibility of an assessment for the utility of off-site stormwater storage.

Community & economic benefits that have resulted from the project: As new residences, businesses, roads, parking lots and urban developments follow growth, it is our responsibility to prevent drainage problems from occurring to the greatest degree possible. Construction of a retention facility that maintains the pre-development runoff capacity and alleviates downstream flooding when rainfall events overwhelm both natural and manmade drainage systems are a benefit to many people within the community.

Centralized lake with greenways also: buffer adjacent land uses, provide recreation, improve water quality, and create wildlife habitat. Lafayette Parish is home to many migratory birds and wildlife enthusiasts. The MCWD will place the south Louisiana culture, and the love for natural environment, high on the scale of importance. A wildlife refuge that promotes healthy biodiversity, is an ecological and an economical consideration, in this respect. Mixed-use residential, commercial and retail will be another component of the MCWD to be taken through the planning process. The architectural component will demonstrate a selection of products

with an economic range for market feasibility.

Project Recognition

Grant award: State of Louisiana, Division of Administration, Office of Community Development – Disaster Recovery Unit for a Category 1 of the Comprehensive Resiliency Grant Program; City of Scott, Mayor Purvis Morrison - Enthusiastic approval and committed partnership

Additional Information

Links to images: http://www.lafayettelinc.net/LINCWeb/CMP/DRAIN/DRAIN_intro.asp

This link will bring you to the Lafayette In a Century (LINC) website, under the Drainage Element of the Comprehensive Plan. On this page you will find a watershed map.

It should be noted that the pilot MCWD will not be constructed with funds requested from the LRA grant proposal. The aim of the LRA grant proposal is to develop model tools to initiate the construction of this and other pilot MCWD area projects. The tools will help clear the environmental, regulatory, and financial hurdles to initiate such a development and will help garner political and public support.