

WRITTEN RESPONSE AND FIRM PROFILE FOR
INTEGRATED MASTER PLANNING RFI

Procella DESIGN LLC

1106 General Taylor Street, New Orleans, LA 70115

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Greetings,

Thank you for the opportunity to participate in the Master Planning RFI process. As a New Orleans resident and stormwater professional, I fully appreciate the significant role the Sewerage and Water Board plays in the everyday life of residents and the functioning of this city. I am thankful the Board is pursuing a planning process and believe that incorporation of stakeholders and technical expertise early in the process will result in the most thorough and feasible plan for the agency.

If selected, Procella Design LLC would be honored to participate in this RFI process and any future workshops.

Sincerely,

Brooke Morris, PLA, EI
Principal



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Introduction

*“New Orleans isn’t a third class
American city; it’s a first class
Caribbean city” - Unknown*

New Orleans struggles to provide basic services on par with other American cities. We are plagued by boil water advisories, hundreds if not thousands of cars are flooded in annual non-hurricane storms, and in some areas, despite not having a combined storm sewer system, one still can’t flush the toilet when the street is flooded. For better or worse, I find more similarities between New Orleans and cities in Haiti than I do between New Orleans and Cincinnati.

We need to plan the next phase of the Sewerage and Water Board (SWBNO) improvements like the entire city’s existence is reliant upon our success. Businesses are choosing safer higher ground in Baton Rouge and I often hear laymen say “if the city is here in 50 years,” expressing their doubt that we can survive another Katrina or sea level rise.

Although my career has always centered around New Orleans, I only recently founded Procella Design LLC. “Procella” means “storm” in Latin. Like it’s name, stormwater is central focus of the work the firm does.

I don’t, however, view the challenges and solutions surrounding the SWBNO’s three service lines: drainage, sewerage, and potable water, as separate. They are each plagued by

1. aging infrastructure and maintenance concerns,
2. subsidence,
3. a lack of efficient interagency communication, and
4. managing public perception of the level services that can be provided.

Instead of addressing the three lines of business separately, I will instead address these four common issues and the planning approach needed to address them.

Firm & Personnel Profile

Procella Design LLC is a woman owned landscape architecture firm specializing in stormwater management. Founded and based in New Orleans, Procella works to improve the built environment using a multidisciplinary design approach and constructible details that are tailored to address unique physical conditions in our region. Procella believes the New Orleans area can serve as a model for the world on how to better live with natural and man made water systems and seeks to be a part of the movement to build and export our regional knowledge.

“Procella” is Latin for “storm”.

At this time, Procella consists of just me, Brooke Morris. I have worked the past five years in New Orleans on primarily drainage and green infrastructure projects. My undergraduate degree is in engineering and my masters in landscape architecture. As a result, I’ve been able to act as hybrid designer bridging the gap between the quantitative and qualitative needs of the changing field of stormwater management. I also have six years of experience working with under-represented public schools to provide safe accessible playgrounds to elementary school students in the Baton Rouge area. In total, I am highly skilled in stakeholder engagement, gray and green infrastructure design, stormwater modeling, and resilient planting design.

Since establishing Procella in October 2019, I have been in the process of obtaining Procella’s Disadvantaged Business Enterprise (DBE) certification. I received verbal confirmation from Louisiana DOTD Unified Certification Program that the firm is certified, but I am waiting on the written letter to apply with the Southeast Louisiana DBE program. Although already a licensed and insured landscape architecture firm, I hope Procella will be a licensed engineering firm by the end of 2020.

To date, I have worked on three projects under the umbrella of Procella Design LLC. These have all been private commercial developments in the Greater New Orleans area. Two of the three include a stormwater management plan.

At my previous places of employment, I worked on a plethora of public, institutional, private commercial, and pro-bono projects. A description of a selection of three of those projects and my role are described in the following page.

St. Anthony Green Streets Resilience Project

(New Orleans, Louisiana) Design: 4/2018 – 8/2019

Ms. Morris helped develop the winning proposal for this multi-million dollar design contract with the City Of New Orleans for a HUD funded National Resilience Competition Project within the Gentilly Resilience District. The project consists of redevelopment of two neighborhood streets and two neighborhood parks. Ms. Morris was responsible for green infrastructure design in the right of way and assisted with sub-consultant management. She served as quality control for the stormwater modeling performed in SWMM and played a crucial role in every part of the project including extensive community engagement, engineering design, and metrics collection and tracking.

Hagan Lafitte Drainage Upgrades

(New Orleans, Louisiana) Design: 6/2016 – 4/2018, Construction Administration: 1/2019- 8/2019

Ms. Morris was Landscape Architect of record for this combination green and gray infrastructure drainage upgrades design project which aimed to reduce flooding in the Hagan Lafitte neighborhood. This project had a construction budget over six million dollars and the designs had to meet a flood reduction cost benefit ratio of at least one. Green infrastructure elements of the project included roughly forty-five rain gardens and twenty blocks of pervious sidewalks. Ms. Morris assisted with the preparation of community meetings and design review presentations, completed graphic renderings, selected plant material, drew typical sections for all green infrastructure elements, drew and stamped all aspects of the landscape plans, laid out curbs for green infrastructure retrofit design, and incorporated the green infrastructure elements into the hydrologic and hydraulic modeling.

Aurora Rain Garden

(New Orleans, Louisiana) Design: 5/2016 – 2/2017, Construction Administration: 3/2017, Monitoring: 5/2016 - 1/2018

Ms. Morris served as Project Designer to design and build inexpensive, low maintenance, and easily replicable green infrastructure projects on city owned property. Sewerage and Water Board Environmental Division funded and reviewed this project, which culminated in two adjacent rain gardens and a flow through planter adjacent to a pump station in a residential neighborhood in the Aurora neighborhood in New Orleans. Ms. Morris assisted with pre-design and post construction flood depth monitoring, hydrologic and costing calculations, and hydraulic design. Ms. Morris developed the grading design, selected plant and subsurface material, and developed a detailed maintenance plan. Following construction, Ms. Morris coordinated with Groundwork NOLA for maintenance and data collection.

Aging Infrastructure & Maintenance

New Orleans drainage, sewerage, and potable water infrastructure are all aging. Yet, the funding mechanisms aren't in place to maintain and replace the infrastructure.

Sewerage and potable water are funded by utility fees. Drainage infrastructure is funded by a millage that has not increased since the 1980s. All systems are especially fragile in this area due to our high susceptibility to subsidence, however, it is the drainage system that, due to New Orleans' geography and the inequitable funding measures, is especially vulnerable to the lack of maintenance and upgrades.

New Orleans geography resembles a bowl and an island. The city is vulnerable to storm surge, sea level rise, and heavy precipitation. The drainage system in New Orleans is an engineering marvel, or at least it was. In the early 1900s, the Dutch were learning from us. Much of the city is located on land that was previously a swamp and that only impressive engineering at the time could make inhabitable. The city and world has since learned of the negative side effects of that technology; by lowering the water table, the organic soils are vulnerable to subsidence.

The field of stormwater management has developed alternative strategies to combat flooding. These strategies, frequently referred to as green infrastructure, can be applied to New Orleans. This is articulated in great detail in the Greater New Orleans Urban Water Plan released in 2013. Since the Urban Water Plan's release, the City of New Orleans has obtained almost \$200 million in federal funding to implement predominately green infrastructure projects, however, to date, none of these public projects have completed construction.

Although these projects are a step in the right direction for supplementing our drainage system, they don't address the long term funding concerns. Depending on federal funding for drainage upgrades is not sustainable or reliable. Furthermore, green infrastructure implementation alone will not keep our houses and cars from flooding during the next summer deluge.

The SWBNO needs to establish a reliable power system for the pumps to be able to operate at the capacity needed to keep up with our annual storms. The SWBNO needs an estimated double the operating budget to properly maintain its existing drainage infrastructure. And finally, the SWBNO needs to lead the pursuit of alternative stormwater management techniques. To do any of these things, the SWBNO needs to build public trust, improve agency coordination, and develop a master plan that balances short term and long term drainage goals.

“Existing millages generate approximately \$54 million annually - about \$50 million less than is necessary for adequate operations and maintenance.” - Task Force on New Orleans Sewerage, Water and Drainage Utilities Final Report

Subsidence

No longer submerged in water, the soils of the former swamps are oxidizing and shrinking. This leads to subsidence. The shifting soils destabilize our pipes, causing breaks in potable water, sewer and drainage lines. It is rumored that following Hurricane Katrina, when the city was empty of inhabitants, the demand on the water system was still 30% of its typical flow, indicating, that almost 30% of the water usage was actually lost to cracks in the potable water distribution system. These cracks require the potable water system to maintain pressure to prevent back flow of contaminants into the pipes. The cracks in the sewer and stormwater drainage system are draining our water table, further exacerbating the subsidence problem.

In other words, the very technology that made development possible in this region, is also undermining its resilience. It is clear a careful balance is needed. Green Infrastructure and the “Living With Water” practices offer a means to achieve this balance. However, we need funding and more extensive regional research on the effects on groundwater tables and subsidence to better achieve that careful balance.

As a part of the Gentilly Resilience District, the Dutch have performed soil borings and created geological cross sections of the city. These findings, however, only represent a snapshot of our geohydrologic conditions. Monitoring wells in the St. Anthony neighborhood indicate up to 4 feet of fluctuations during storm events. Other parts of the city are known by local geotechnical engineers to be far more susceptible to river flood heights.

I believe an imperative part of the master planning process is extensive research as to the green infrastructure, gray infrastructure, and their temporal relationships with our groundwater table.

Interagency Communication

SWBNO and Department of Public Works (DPW) seem to have more of an adversarial relationship than the efficient and allied productive relationship that the citizens of New Orleans need.

Sewerage and potable water lines are upgraded piecemeal, sometimes upgrades are opportunistic based on when street repairs are occurring. I've seen projects that have reached 100% design completion according to DPW but SWBNO only then decides to also do a waterline repair in the same area, stalling the project when earlier planning could have produced a more efficient design process.

DPW and SWBNO also seem to not be in agreement on the methods by which to design drainage. DPW federally funded projects rely on a city wide SWMM model to determine the flood reduction benefits of a project. Meanwhile, SWBNO has at times rejected the SWMM model for sizing drainage infrastructure in favor of hand calculations that assume free outlet flow. The SWMM model takes into account that the pumps limit flow in this city and models the back flow that plagues most neighborhoods, whereas hand calculations do not. This lack of consensus between DPW and SWBNO has halted projects.

Currently, catch basins and pipes under 36" are the responsibility of DPW whereas the drainage pumps and canals greater than 36" are the responsibility of SWBNO. I understand the 2019 task force identified consolidation of the drainage all under SWBNO would be advisable, but that is contingent upon funding mechanisms being in place. I also believe that such a move would require considerable buy in from SWBNO into the Urban Water Plan, green infrastructure initiatives, and other progressive measures the City of New Orleans has been pursued in the past five years.

Public Perception

Right now there is considerable lack of trust between the SWBNO and the public. Due to that lack of trust, it is more difficult to pass a millage or drainage utility measure needed to fund the measures and maintenance needed to make the progress needed to create trust.

I support a planning process that identifies short and long term goals to making progress in a way that builds trust and respect in the SWBNO. This will require creative measures to prompt productive dialogs. At the moment, conversations seem to mostly be an airing of grievances and finger pointing marred by a lack of understanding. By facilitating a planning process that treats citizens, SWBNO employees and policy makers with respect, we may be able to build consensus and make some real progress.