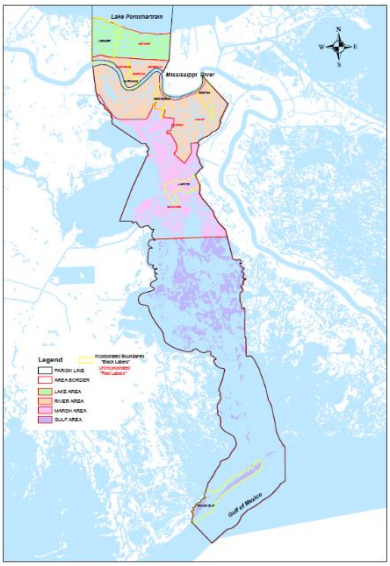
Jefferson Parish
National Disaster Resilience Competition
Phase 2 Application

BALANCING WATER
RETROFITTING & RESHAPING

CFDA Number: 14.272
Opportunity Title: National Disaster Resilience Competition Funding
Opportunity Number: FR-5800-N-29

Executive Summary

Jefferson Parish, including incorporated and unincorporated municipalities within the boundaries of Jefferson Parish (herein referred to as 'JP'), serves as a vital connectivity hub for South Louisiana. Whether travelling inland from the coast, or from a surrounding parish to the coast, citizens from all over the region touch JP on a daily basis. With over 640 square miles of diverse geography, the parish portrays a balance of both urban and coastal living. A map, located in Attachment E-*JP Area Map* and presented to the right, depicts the expansive geography and noted incorporated municipalities. After impacts from five named hurricanes in ten years and the BP oil spill, JP has strived to recover in a proactive way. Now, in a forward-looking manner, JP is making the critical decision to embrace the future and transform the parish to become a more resilient community. JP has assessed impacts from Hurricane Isaac and remaining unmet needs, and through innovation, outreach, and regional collaboration, is ready to take the necessary steps to be on the forefront of resilience.



Regardless of the area in which a JP citizen resides: lake, river, marsh, or gulf; all residents are touched and affected by one common element – water. To promote resilience within the community and lay a strong path towards the future, JP must embrace the diverse geography surrounding and entwining through the parish. Thus, JP has developed a resilience initiative called Balancing Water, focused on reshaping vacant land in a resilient manner, reshaping marshland where it has vanished, retrofitting impervious areas to retain more water and retrofitting vulnerable infrastructure. The combination of these efforts will provide a model for citizens of JP and a path forward to balancing life with water.

GULF Area: Incorporating a balance with water begins here. Grand Isle, located at the southernmost portion of JP, portrays a coastal paradise and a launch point for commercial and recreational fishing. The island embraces a unique balance with water in that the drinking water supply is housed under the gulf waterways. However, the impacts of sea level rise, marsh degradation, shipping channels, subsidence and the landfall of hurricanes over the years have jeopardized the transportation of fresh water to the island residents. JP proposes to use NDRC funding to retrofit the vulnerable infrastructure by securing the water line below the mud line in the water to ensure that clean water is consistently and dependably transported to the island. This retrofit will ensure that core amenities and livelihood on the island are resilient, protected, and prepared for future environmental impact.

MARSH Area: Moving up the parish into Lafitte and Barataria, coastal marshland provides the heart of JP's sportsman's paradise. The Town of Jean Lafitte is the home of swamp and air boat tours and a close-knit fishing community, both of which exemplify Louisiana culture. Currently, the Lafitte area is taking preventive measures to secure its residents against flooding and sea level rise by updating building codes, retrofitting homes and businesses, and installing tidal levees. JP proposes to protect these retrofits through pursuing the second increment of the Mississippi River Long Distance Sediment Pipeline that transports Mississippi River sediment into the marsh along a natural ridge to complete the reshaping of the inland marsh from the Mississippi River from JP to Lafourche Parish. In addition, the Rosethorne sewer treatment plant, which provides necessary balanced wastewater services to the residents, suffered crippling damages due to Hurricane Isaac. JP is proposing to retrofit this vulnerable piece of critical infrastructure to ensure safe sanitary conditions for the citizens of Jean Lafitte and continue the economic growth and revitalization for the unique tourism and fisheries industries within the area.

RIVER and LAKE Areas: As the parish moves inland, the strategy of Balancing Water continues with a focus on areas that touch the Mississippi River and Lake Pontchartrain. The winding river and expansive lake define the northern geography of JP. Both sides of the parish are shaped by a system of levees built to reduce risk from these powerful bodies of water. The parish is proposing green infrastructure activities and upgrades to traditional drainage methods in a two-prong approach: reshaping existing vacant lands into stronger, revitalized areas primed for development and retrofitting areas of high imperviousness to create pervious areas. This approach will pilot the multiple projects which portray the Balancing Water initiative allowing for increased infiltration, storage, and drainage of stormwater.

On the West Bank of the Mississippi River, JP will focus on reshaping vacant areas. JP will undergo a planning process to determine the revitalization of one of the remaining undeveloped subdivisions in Harvey, and based on this revitalization plan, will focus on implementing permeable streets, wastewater management systems that operate without traditional energy sources, and creation of parklands that connect the community and retain stormwater, institutionalizing green methods. Next, JP will reshape vacant parcels of land through the transformation of property into a parkland that retains stormwater and connects visitors to the Mississippi River bike path and historic Westwego. Additionally, JP will implement green infrastructure components into an area in Gretna which will provide resilient retrofits to impervious land, increasing stormwater retention and reductions to localized flooding. Just as the bike path proposed in Westwego provides connectivity, so will the proposed green infrastructure retrofits in Gretna.

Moving to the East Bank of the Mississippi River, JP is focusing on retrofitting areas of greatest imperviousness: the Elmwood Business Park, the Fat City neighborhood, and green

upgrades to current canals in the parish. Elmwood Business Park serves as a highly dense economic backbone of the region and suffers from flooding during tropical events and regular storm events, making it a target area to implement resilient measures outlined in the Greater New Orleans Urban Water Plan. Retrofitting the impervious areas surrounding the thriving shops and restaurants will lead to a transformed drainage system that balances the storage and pumping of stormwater, which can be replicated throughout other retail areas in the parish, sparking a chain reaction of resilient activities. By creating a green lush walkable retail area, the retail center will be a more reliant and resilient source of jobs and resources for the residents of JP and surrounding parishes.

For the areas touching the lake on the East Bank of the river, the parish is focusing on Fat City and the Metairie Central Business District by implementing drainage improvements which look at retrofitting the infrastructure around the canals to embrace green infrastructure including walking trails and bike paths. This area is not only prime for economic revitalization, but retrofitting drainage and sewer infrastructure to balance water will reshape this impervious community so it is prepared to balance water into the future.

Summary

JP is committed to champion innovative multi-purpose approaches to water management from the gulf to the lake to transform the future of the parish. Residents of JP have rebuilt homes, businesses and lives from five hurricanes in the last ten years. It is now evident that recovery alone will not sustain the community; however, embracing the future in a resilient manner will allow JP and its residents to thrive for generations to come. The parish is taking the Balancing Water initiative as an effort to strengthen vulnerable areas and embrace new resilient retrofits. The combination of these efforts will lead to a long-term transformation in the approach the parish uses to address recovery in the future. JP is requesting NDRC funding to implement resilient initiatives

throughout the parish. By creating a culture that embraces water, JP seeks to shift fears and perceptions to create a resilience legacy for future generations, to ensure the continuity of our communities, and to drive economic development of our region into an environmentally-friendly and culturally-unique home.

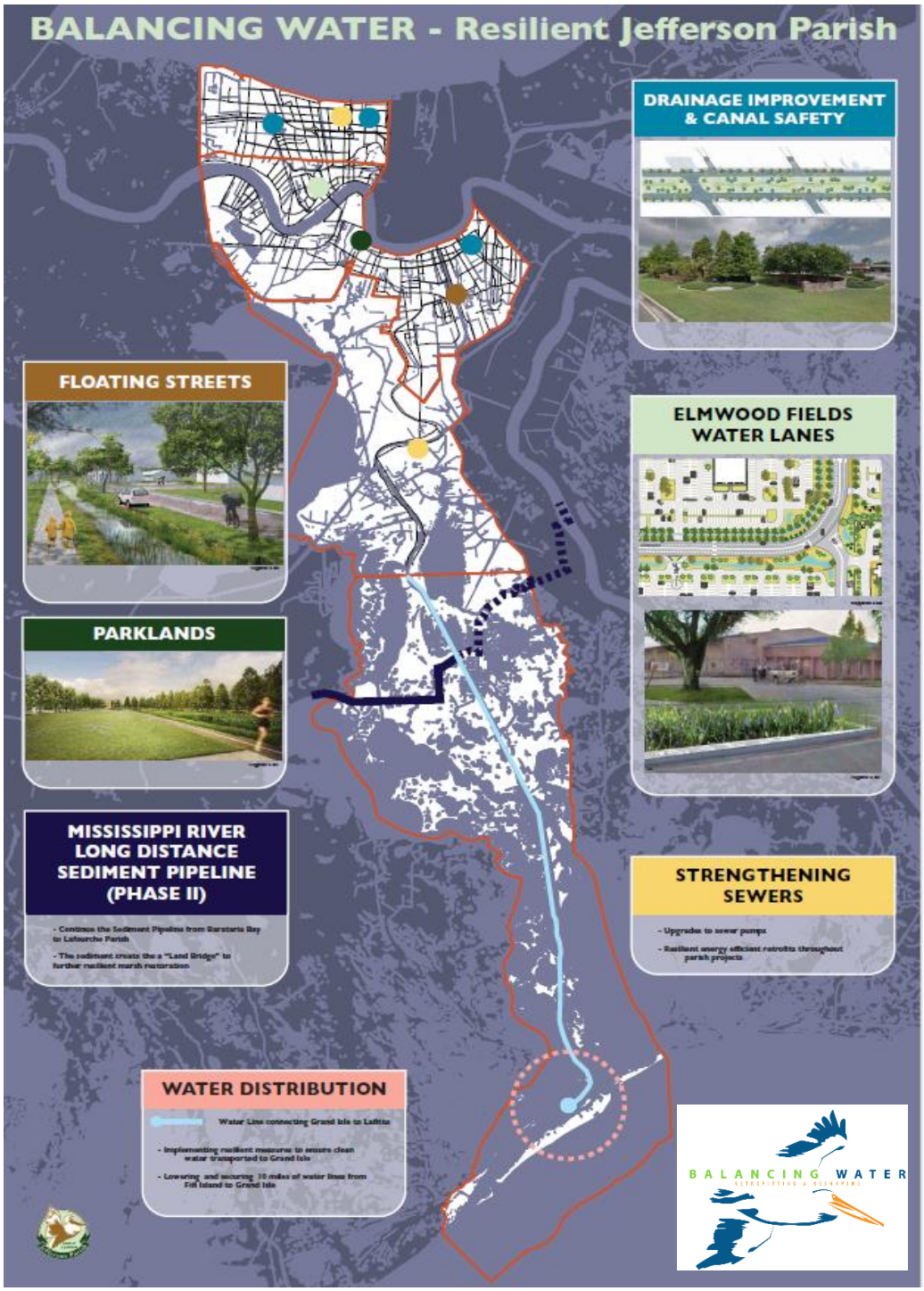


Exhibit B: Threshold Requirements

EXHIBIT B – THRESHOLD REQUIREMENTS

Eligible Applicant

This is the only Phase II NDRC application being submitted by JP. Per the NDRC NOFA, JP is considered an eligible applicant for the NDRC competition, applied to Phase I, and advanced to Phase II.

Eligible County

JP received a disaster declaration for the effects of Hurricane Isaac in 2012, therefore making it an eligible county for NDRC Phase I and II.

Most Impacted and Distressed Target Area(s)

As outlined in Appendix A, http://www.huduser.org/portal/CDBGRDR/Disaster-AppendixA.pdf, JP was previously determined by HUD to be most impacted. Therefore, it meets the Distressed characteristics listed in Appendix G of the NOFA.

Eligible Activity

All activities proposed for NDRC will meet at least one of the following eligible activities:

Project	***Eligible Activity***
Retrofit to Vulnerable Infrastructure	Public Facilities and improvements (570.201 (c))
Reshape of Marshland	Public Facilities and improvements (570.201 (c))
Retrofit of Impervious Land	Public Facilities and improvements (570.201 (c))
Reshape of Vacant Land	Public Facilities and improvements (570.201 (c)) Land Acquisition (570.201 (a))

Resilience Incorporated

On the heels of the recovery from four natural disasters and the BP oil spill, the impact from Hurricane Isaac identified the areas with remaining gaps creating vulnerability to future natural disaster risks. JP has approached the recovery with traditional methods from Hurricane Isaac in all areas: gulf, marsh, river and lake with the current CDBG-DR allocation, now through the NDRC application, the parish is focusing on four project types: retrofit of vulnerable infrastructure, reshape of marshland, retrofit of impervious land, and reshape of vacant land in these areas to further recovery in a resilient manner. JP understands that NDRC is not the only mechanism for resilience, and thus offers further commitments to resilience outlined in Exhibit G.

National Objective

All activities proposed in the Phase II application will meet one of HUD's National Objectives, either benefit a low to moderate income service area or meet an urgent of the community as outlined below.

Activity	***Estimated National Objective***
Retrofit to Vulnerable Infrastructure	Meeting an Urgent Community Need
Reshape of Marshland	Meeting an Urgent Community Need
Retrofit of Impervious Land	Low to Moderate Income Area Benefit
Reshape of Vacant Land	Low to Moderate Income Area Benefit

Overall Benefit

JP has an overall CDBG-NDR project budget of $269,475,043, of which $134,353,825 will be spent on projects which have a low to moderate income area benefit, creating an overall benefit of 50%.

Establish Tie-Back

All activities proposed in this application will have a tie-back to Hurricane Isaac and address an unmet need. A detailed description of each activity and its-tie back to the disaster is located in Exhibit E.

Benefit-Cost Analysis

JP completed the Benefit-Cost Analysis of the Balancing Water Initiative with a conclusion of a 3.41Benefit Cost Ratio. The complete Benefit – Cost Analysis can be found in Attachment F-*Attachment F_JPBCA.*

General Section Administrative Thresholds

Jefferson Parish, the applicant, is not subject to civil rights matters rendering it ineligible for funding under Section III.C.2. of HUD's FY2014 NOFAs for Discretionary Programs, nor it is ineligible under any other general section threshold.

Most Impacted Characteristics

On August 28th, 2012, Hurricane Isaac made landfall in Louisiana near the mouth of the Mississippi River almost exactly seven years after Hurricane Katrina. For nearly three days, JP suffered hurricane force winds, torrential rainfall, and flash flooding. The storm surge reached up to 11 feet in some areas of the State of Louisiana. Flooding overcame the drainage and sewage infrastructure, causing waste and water to back up into residences. Across the State, more than 600,000 households had no power for four to seven days, including nearly all of the Greater New

Orleans Area.

In JP which is home to more than 400,000 people, the storm surge reached up to 6 feet. JP sustained the largest number of damaged homes from Hurricane Isaac in the State of Louisiana. A count of 12,912 homes sustained storm damage according to FEMA's door-to-door inspections. The total estimated damage to the JP housing stock is over $224 million. Of that damage dollar value, 63% occurred to households qualifying as low to moderate income populations. The population of JP desperately needs broad assistance in meeting the housing challenges still present from Hurricane Isaac and exacerbated by the lingering effects of the 2005 hurricane season.

Housing: Prior CDBG-DR funding allocations, with other funding sources, are inadequate for addressing the remaining housing needs of JP. In its 2012 CDBG-DR Isaac Action Plan, the parish allocated $8,653,190 for the Housing Assistance Program (HAP) and $2,250,000 for the Elevation Support Program (ESP). Estimates include a potential for 130 households to receive up to $60,000 in rehab assistance through HAP and 75 households to receive up to $30,000 in elevation assistance through ESP. As of October 2015, environmental reviews are being performed on 104 active program applicants.

After environmental reviews are complete, damage and repair cost assessments will be performed by both JP and selected contractors. Not all of the accepted applicants will receive services, as the number of qualified program applicants well exceeds the funding capacity of these programs. The exact number of qualified applicants to be assisted through the HAP and ESP programs will not be determined until the individual home assessments are performed. Please reference the below table for further detail demonstrating 263 households are remaining on the waitlist or were denied services and are still in need.

Program	Program Capacity	# of Applicants	# of Applicants Accepted	# of Applicants on Wait List	# of Applicants Denied Services
HAP only	130	229	139	19	71
ESP only	75	111	56	9	46
Joint App*	N/A	250	132	22	96
TOTAL	205	590	327	50	213
*Joint App = household submitted one application for both ESP and HAP assistance					

In addition to the houses referenced in the above chart, Hazard Mitigation (HM) has a Hazard Mitigation Grant Program (HMGP) wait list of 20 households that sustained damage during Isaac and have not been elevated or repaired resiliently due to a lack of funding. See Threshold Data-*HousingThreshold_Data*.

Infrastructure: For damage sustained during Hurricane Isaac, the JP Department of Sewerage received $1,367,388.94 in FEMA funds for restoration of damaged equipment and an allocation of $4,975,957.89 in CDBG-DR Isaac funds to install Emergency Pump Out (EPO) devices at several lift stations to mitigate the impact of power outages. Permanent sewer infrastructure remains damaged due to inadequate resources; however, JP's annual capital budget does not contain the ability to address all of the parish's disaster recovery infrastructure needs. According to JP's Project Engineer, Rosethorne Wastewater Treatment Facility located at 964 Jean Lafitte Boulevard, Lafitte, LA 70067 needs to be mitigated to prevent flooding during future surge, flood, or hurricane events. During Hurricane Isaac, stormwater inundated the plant resulting in damaged equipment and disruption in treatment operations. The primary unmet need identified to date includes approximately 1,200 feet of levee that needs to be raised

to an elevation of +9.0 feet above mean sea level. The estimated cost for this project is $500,000. See Threshold Data-*InfrastructureThreshold_Data*.

Economic Revitalization: Unmet economic revitalization recovery needs due to Hurricane Isaac in JP have not been addressed with existing resources, including CDBG-DR Isaac funds. Numerous businesses within marsh and gulf areas of JP sustained damage during Isaac and have remaining repair/resilience needs. At least five businesses in the marsh area are currently situated below Base Flood Elevation (BFE), sustained flood damage during Hurricane Isaac, and have not been flood-proofed to BFE. Communication with the business owners and community leaders confirmed that indoor flooding occurred at each of the locations during Hurricane Isaac. None of these five businesses have received Hazard Mitigation Assistance (HMA) or CDBG funds, nor are they able to afford elevation expenses through business or personal means, including insurance disbursements. See Threshold Data-*EconomicThreshold_Data*.

Environmental Degradation: Environmental damage from Hurricane Isaac that has not been addressed and cannot be addressed with existing resources remains at the Caminada Headland Shoreline project site. Coastal erosion occurred at this project site, located on Grand Isle within JP, during the incident period of August 26, 2012 through September 10, 2012. This shoreline beach and dune construction project was nearing the construction phase when Isaac hit the Louisiana coast. The project scope was amended to include damage sustained during Hurricane Isaac in conjunction with the original shoreline and dune construction, but has not yet received funding. Further documentation is available in Threshold Data-*EnvironmentalThreshold_Data*.

Factor 1: Phase 2 Capacity

A I. PAST EXPERIENCE

JP's experience of managing previous projects similar in scope and scale to the proposed activities is quite extensive. JP has received more than $570 million in state and federal grant funds over the course of ten years from agencies including but not limited to HUD, Federal Emergency Management Agency (FEMA), the U.S. Army Corps of Engineers, Environmental Protection Agency (EPA), Louisiana Department of Transportation and Development (LA DOTD), Federal Transit Administration (FTA), Louisiana Office of Community Development Disaster Recovery Unit (OCD-DRU), and Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP). Departments have used these funds to administer public service, community development, infrastructure and emergency management projects both in targeted and parish- wide areas.

The departments across JP have recent experience within the last 3 years in managing resilient disaster recovery. Examples include Canal Street Corridor construction projects, FEMA Grants, and the Coastal Impact Assistance Program (CIAP).

Canal Street Corridor: In the wake of Hurricane Katrina, multiple and, potentially, conflicting road construction projects for the Canal Street Corridor surfaced within JP. The Submerged Roads Program (SRP) was the result of a settlement agreement which allocated the Parish $100 Million ($60 Million - Concrete Panel Replacement; $40 Million - Asphalt Resurfacing) in Federal funds for repair of local roads deemed submerged following Hurricane Katrina. This allocation had a stringent deadline and the Parish was allocated a finite amount of time to design and perform the construction work. Coinciding with this, a feasibility study was performed for the Regional Planning Commission (RPC) for the same corridor which would transform the open-

canal median into a safe and accessible recreational path. The estimated cost of the project was $15.64 Million, divided between Federal funds and the Parish, and was expected to take a significant length of time to proceed and complete. Parish departments partnered together to renovate two silo projects into one phased program. This team included the JP Drainage and Engineering Departments, the Regional Planning Commission, and LA Department of Transportation and Development. This coordination resulted in a rapid launch project which allowed the federal SRP fund to be utilized on time and within budget by August 2014, leading to the use of parish funds for the remainder of the improvements to the corridor throughout 2015 into 2016. This coordination is similar to how NDRC projects would be implemented in JP. Merging federal and local funds can be challenging; however, JP's history shows results to accomplish the established goals for the Parish and bring benefit to its residents in a much shorter timeframe. This specific coordination project produced a total savings of 2.58 Million or 33% to Federal funds.

FEMA Grants: JP has managed the following types of FEMA grants over the past three years: Annual Competitive FEMA grants, Hurricanes Katrina, Rita, Gustave and Isaac HMGP Elevation Programs, and the HMGP Grant for Hazard Mitigation Plan Update. In both Fiscal Year 2013 and 2014, JP applied and was awarded grants to elevate and reconstruct structures with total funding greater than $20 million. In the course of executing the elevation of 110 Severe Repetitive Loss (SRL) structures, staff consults with property owners to discuss the Base Flood Elevation as well as information about foundation types and soil conditions. The department is on target to complete all activities ahead of the end of the period of performance and has met all quarterly reports as required.

During the course of the Hurricane Isaac FEMA HMGP Elevation Program, JP staff have visited coastal areas such as the Town of Jean Lafitte and Grand Isle numerous times to meet with property owners to discuss mitigation techniques, view soil conditions, and determine the necessary elevation in reference to future predictions of land loss and sea level rise. Currently, 1.5 years into the period of performance, staff have completed more than half of the work in dealing with the complexity of insurance coordination, contractor estimates, and property owner preferences. All quarterly progress reports are up to date and have been for each quarter of the grant period.

Additionally, JP successfully received a $35,000 Hurricane Isaac HMGP Grant to update the Hazard Mitigation Plan. JP procured an outside firm to assist with the development of the plan, however, due to a small amount of funds, the Floodplain Management and Hazard Mitigation Department performed over 50% of the work to accomplish an updated Hazard Mitigation Plan that was successfully approved by FEMA within 12 months. JP met all of the required milestones as described in the subgrantee agreement with the State of GOHSEP as well as submitted all quarterly reports timely.

Coastal Programs: JP received funding through the Coastal Impact Assistance Program to implement five (5) coastal protection projects in the Barataria Basin. Projects included preliminary design of Goose Bayou Shoreline Protection and Ridge Restoration and design and construction of Bayside Segmented Breakwaters at Grand Isle, Fifi Island Restoration Extension and Lower Lafitte Shoreline Stabilization at Bayou Rigolettes. The Parish also partnered with the State of Louisiana, Lafourche Parish and Plaquemines Parish to design and construct Mississippi River Long Distance Sediment Delivery, Phase 1, a regional project to utilize river sediments to conserve, restore and sustain wetlands on the Barataria Basin Landbridge. Specific tasks

undertaken for the CIAP program included public outreach, stakeholder coordination preparing federal grant applications, administering federal grants, securing cooperative endeavor agreements (CEAs) with local and state funding partners, procurement of engineering and construction services in accordance with federal standards, environmental permitting, review of survey data, geotechnical analysis and construction plans and specifications, landowner identification, conducting property abstracts to facilitate landowner agreements and managing construction from bidding through project completion. Parish resources utilized for the CIAP program management and project implementation included the following departments: Environmental Affairs (lead agency), Finance, Accounting, Purchasing, Engineering, and the Parish Attorney's Office. CEAs were executed with the Grand Isle Independent Levee District (Fifi Island Restoration Extension), the Lafitte Area Independent Levee District (Lower Lafitte Shoreline Protection at Bayou Rigolettes) and the Louisiana Coastal Protection and Restoration Authority (Mississippi River Long Distance Sediment Pipeline, Phase 1). All projects were successfully completed, with the exception of the Lower Lafitte Shoreline Stabilization at Bayou Rigolettes which is slated to go to bid in January 2016. The hands on experience garnered through the implementation of these CIAP projects and the lessons learned as a cooperative partner in Phase 1 of the Mississippi River Long Distance Sediment Pipeline project have positioned Jefferson Parish to undertake the proposed coastal protection project which is the westward extension of the Mississippi River sediment delivery project.

i. General Administrative Capacity

JP Government staff members, both administrative and field personnel, have extensive experience managing small and large projects and programs. Internal controls for both project management and day-to-day coordination begins with all JP departments working with the

Parish Attorney and Finance offices. The Parish has standardized procurement processes and procedures that ensure all projects are implemented in accordance with all applicable local, state and federal rules and regulations. Once the necessary services and/or materials have been properly procured, the financial and legal departments work with the applicable project management department to issue purchase orders, execute contracts and coordinate the details of implementation with any contractors, suppliers, partners or consultants.

Within JP Government the Departments of Accounting, Budget, Finance, Governmental and Ethics Compliance, Parish Attorney's Office, Internal Audit, Purchasing, and Research and Budget Analysis all serve in various internal control capacities for the day-to-day functions of Parish Government.

Public Works departments have a proven history of quickly launching complex project in conjunction with other departments. JP Floodplain Management and Hazard Mitigation (HM) has the experience to quantitatively track positive outcomes from each project it undertakes. Utilizing an outcomes database allows that each project's outcomes can be tracked to prove success.

ii. Technical Capacity and Management Structure

JP Government consists of 37 departments, approximately 2,650 employees, and has administered thousands of large and small scale projects/programs to serve the second most populated parish in Louisiana. With a diverse geography of 665 square miles, of which 296 square miles is land with the remaining 295 square miles being water or wetlands, departments must be positioned to complete projects simultaneously throughout the parish. Parish administrative departments required qualifications, roles, and duties are codified in the JP Code of Ordinances Div. 2 ensuring continuity of operations from one administration to the next.

i. Description

The internal capacity in JP is extensive and has proven to be sufficient in implementing some of the largest infrastructure projects in the history of the parish. To demonstrate this capacity and the internal coordination for NDRC projects, JP has created a management structure for all NDRC functions. All internal JP Agencies contributing to the implementation of NDRC projects will enter into a Memorandum of Understanding (MOU) with the Department Floodplain Management and Hazard Mitigation to ensure all agencies are coordinating and working towards meeting the goals of the NDRC. Additionally, JP will have an NDRC Core Team, based out of the HM Department who will lead all implementation, as well as a Disaster Resilience Task Force which will support not only all NDRC activities, but all future resilience activities in the Parish.

NDRC Core Team:

JP Floodplain Mitigation and Hazard Mitigation (HM) will serve as the coordinator for the NDRC application and implementation of all projects that result from NDRC funding. HM has demonstrable management capacity and the ability to manage multiple funding sources at one time. HM reports directly to the Department of Public Works and regularly works in conjunction with the Departments of Emergency Management, Community Development, Environmental Affairs, Drainage, Planning, Sewerage, Water and many others. Individual project management, however, will fall to the applicable JP department head under which the selected project or program falls, with HM as the coordinator. HM will be responsible for ensuring that all projects, programs and activities are implemented efficiently, correctly, and that all internal and external partners operate in a compliance with all HUD CDBG requirements as well as all federal, state and local laws.

JP HM strives to lessen the risk of flooding and implement long-term actions now to reduce the loss of life and property from the impacts of future disasters in JP. JP staff members come into direct contact with those affected by past disasters on a daily basis. They are supremely familiar with the most flood-prone areas of JP, as are staff members from the Drainage, Streets and Emergency Management departments. The unique knowledge of hazard-prone and vulnerable areas is beneficial to all planning, outreach, and implementation aspects of current and future resilience programs. Additionally, the HM Department provides flood zone determinations and flood map inquiries, education and outreach for natural hazards, guidance to property owners and other departments on appropriate mitigation methods, oversight of Hazard Mitigation Assistance (HMA) Programs and the HM Plan update, coordination of natural hazards resilience efforts, coordination of the Community Rating System(CRS) Program for unincorporated JP, floodplain solicitation of views for other departments and Federal agencies doing work in JP's floodplains, and elevation certificate analysis. HM will house the NDRC grant and collaborate across all other JP Departments to accomplish the grant goals swiftly and effectively.

Michelle Gonzales is the Director of Floodplain Management and Hazard Mitigation for JP. She became a Certified Floodplain Manager (CFM) in 2009 and was able to assist homeowners and local governments statewide while working for FEMA and the GOSHEP from 2006 to 2013. Ms. Gonzales oversees the FEMA grants for JP and has successfully steered the parish to develop a long-range resilience framework moving forward. Ms. Gonzales will serve as the Chairperson of the Disaster Resilience Task Force as well as the lead on the NDRC application and any implementation.

Maggie Olivier is the Floodplain/Community Rating System (CRS) Specialist for JP in Louisiana. Ms. Olivier became a CFM in 2009 and has been working with CRS communities in

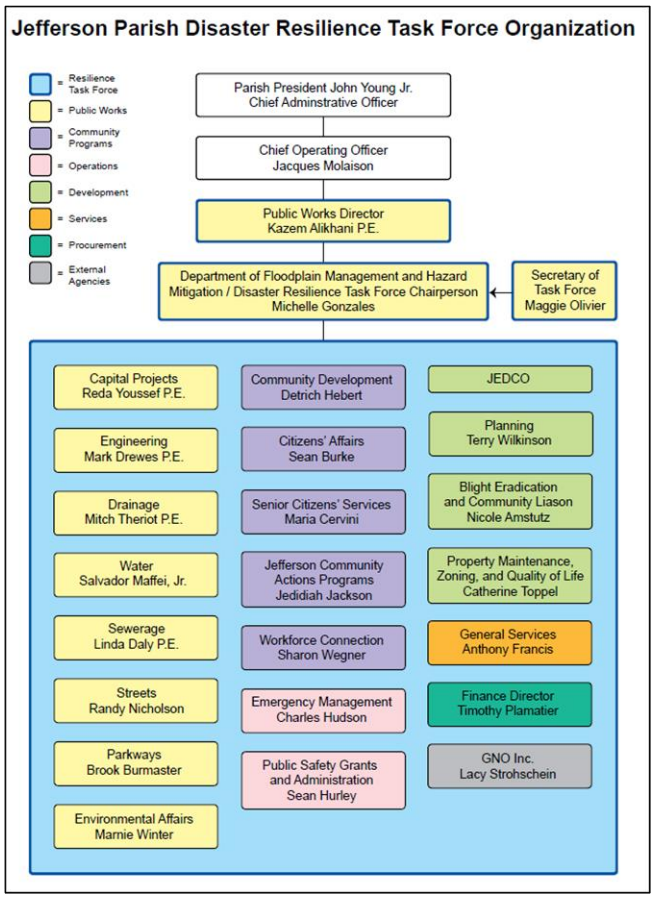
various capacities for almost four years. Through the CRS communities' Users Group, she has led the development of a multi-jurisdictional Program for Public Information (PPI) which created an outreach strategy around flood awareness and safety. Ms. Olivier serves as the Secretary of the Disaster Resilience Task Force. Additionally, in her previous position, over the course of five years, she helped develop and implement a risk literacy curriculum focused on hurricane preparedness for adults learning how to read.

Keisa Fascio is the Administrative Management Specialist for JP HM. Mrs. Fascio earned a BS in Business Administration and Management and has over 10 years of experience.. She is also certified in Mitigation Planning for Local and Tribal Communities and is an active member of the International Women's Leadership Association. She has been awarded the National Defense Service Medal, and the Global War on Terrorism Expeditionary and Service Medal.

Disaster Resilience Task Force:

Throughout the NDRC process HM has coordinated across departments including but not limited to public works, engineering, environmental, community development and planning in order to design innovative, collaborative projects. Regular cross departmental meetings cultivated large scale, large impact projects that incorporate the holistic resilience needs of the Parish and as a co-benefit, encouraged each department involved to collaborate and incorporate resilience measures in future projects. By enlisting in-house partners through the task force as outlined in the below org chart and attached in Attachment A-*Attachment A_Partners* and creating a MOU, JP is ensuring no partner will be lost and that all projects can be executed immediately upon award. Internal Partners were selectively chosen to maximize resources available and ensure a comprehensive approach to implementation of each project.

The purpose of the MOU is to clearly identify the roles and responsibilities of each party as they relate to the implementation of any projects funded by an award from the competition. HM will be responsible for executing and maintaining agreements with key departments necessary for the success of the implementation of NDRC. Copies of each internal MOU is available in Attachment A-*Attachment A_Partners.* MOUs provide leadership the commitment that the appropriate resources are available to them when needed and the flexibility to engage these resources when appropriate, ensuring sound fiscal responsibility. HM has extensive experience in successfully executing on complex program goals in partnership with each named department. This experience allows for intimate knowledge of the expertise available to the program and the ability to quickly deploy fitting resources.



In the event any internal partner fails to act or is untimely, HM will work with the Human Resources Department to openly advertise the vacancy to fill with the best qualified candidate as quickly as possible. Currently there are no vacancies at the Director level of each department as indicated by the parish wide org chart located in Attachment A-*Attachment A_Partners.* Below is the Resilience Org Chart which represents the management structure for NDRC implementation and outlines the Disaster Resilience Task Force.

The departments outlined below will not only be responsible for various tasks of the

NDRC program and projects but also provide in-house technical capacity and expertise from directors and other personnel who will pay a crucial role in the Disaster Resilience Task Force.

Public Works Department: Directed by Kazem Alikhani, brings 35 years of experience to this project. Mr. Alikhani holds a BS and MS in Engineering and is a Registered Professional Engineer in Mechanical and Environmental Engineering. He is also an active member of the American Waterworks Association (AWWA) and the Water Environmental Federation. The Parish has awarded him several high profile recognitions throughout the course of his career, showcasing him as a critical leader of the Parish.

This department, comprised of multiple sub-departments offers a comprehensive range of services which include a safe, reliable supply of drinking water; the efficient, effective collection and treatment of wastewater; maintenance of storm drainage infrastructure including drainage pump stations; repair and maintenance of roads and bridges; maintenance of grass, shrubs, trees, and flower beds in parish-owned right of ways including the management of beautification projects, managing maintenance and operation of traffic signals and signs; managing maintenance of street lighting; planning, engineering and construction management of all Public Works Capital Improvement projects including Southeast Louisiana Flood Control Program.

Capital Projects Department: This department is headed by Reda Youssef. Mrs. Youssef is a licensed Professional Civil Engineer. She along with the two members of her team hold an impressive 90 years of experience. Capital Projects provides support to other Public Works Departments, including Drainage, Sewerage, Water, Streets and Engineering, by assisting in planning, programming, and managing the engineering and construction of capital improvements.

Drainage Department: Mitchell T. Theriot has served as this department's Director for 4 years, and with the Jefferson Parish Public Works Department for 18. Mr. Theriot is certified as a

Professional Engineer - Civil Engineering, LAPELS. Together with his team, the Drainage Department holds well over 100 years of experience.

JP Drainage is responsible for the administration, direction, coordination and implementation of major drainage and flood control programs and direct operation, construction and maintenance of 340 miles of drainage canals and drainage ditches, 1465 miles of street subsurface drainage systems and operation and maintenance of 53 drainage pump stations.

Engineering Department: Led by Mark Drewes, who holds a Bachelor of Science and a Master of Science in Civil Engineering, the JP Engineering Department serves as one of the most specialized and significant players in JP resilience efforts. Additionally, Mr. Drewes has over 33 years of experience in the engineering field and is a member of the American Public Works Association and the Regional Planning Commission Technical Advisory Committee. The in-house engineering staff is made up of 12 professional engineers with over 183 years of combined experience. The department assists the operational departments of the consolidated Department of Public Works which is comprised of the Department of Drainage, the Department of Sewerage, the Department of Water, the Department of Streets, and the Department of Parkways in matters requiring engineering design, construction supervision, and project management.

In addition, JP Engineering encompasses the following: Street Lighting –responsible for maintenance of street light facilities in the unincorporated areas of JP; SCADA – responsible for remote monitoring of water, sewer, and drainage facilities throughout the Parish; Drafting – responsible for maintaining records of Parish street and utility infrastructure; Surveying – responsible for assisting all Public Works Departments with field location layout and request for topographical information; Roads and Bridges – responsible for management/review of all major Parish road and bridge construction; Utilities – responsible for management/review of all major

public utility construction; Inspection – responsible for all work associated with tie-in or maintenance of existing public utilities along with roadway construction.

Environmental Affairs Department: Marnie Winter is the Director of this office. Mrs. Winter brought 33 years of experience to this current role and has received extensive recognition and awards including the 2012 Coalition to Restore Coastal Louisiana Coastal Stewardship Award; 2010 and 2014 Louisiana Department of Environmental Quality Environmental Leadership Award; and the 2001 NOAA Walter B. Jones Excellence in Local Government Award for Coastal & Ocean Resource Management. She is also certified as a Fellow from the 1999 Institute of Environmental Communications at Loyola University. The team reporting to Mrs. Winter holds almost 50 years of experience amongst them in various specialized fields, making her department a most valuable segment of Jefferson Parish government to glean for this specific project.

Environmental Affairs is responsible for **Industrial Pretreatment Program, Stormwater Management Program, the Coastal Zone Management Program, the Industrial Development and Research Program,** and **Solid Waste, Recycling, Mosquito and Rodent Control.** Environmental Affairs also assists all JP departments and agencies in maintaining overall compliance with federal, state and local environmental regulations and has the ability to identify and use science-based information on existing and future risks from climate change to achieve resilience initiatives. When necessary, procurement of professional service providers is attained for assistance to balance workloads. CPRA and HM also have the capacity to assess and address possible future conditions and outcomes; including resilience, of projects and programs over lifecycles.

Parkways Department: Brook Burmaster, the department's Director, brings to bear 20 years of experience in her current field. Mr. Burmaster is an ISA Certified Arborist and Louisiana licensed

arborist/horticulturalist. The Parkways Department Maintains authority over the trees, shrubs and plants growing on parish owned right of ways as well as on other parish properties. The Parkways Department uses available funds, manpower and equipment to accomplish essential tree work or to issue planting and tree work permits to citizens who wish to do the work themselves.

Sewerage Department: Linda Daly has held the position of Director since March 2010. In this position, Ms. Daly oversees a Department of 200 employees with a $30 million annual operating budget. Prior to being appointed to this position, she served as the Program Manager for the Jefferson Parish Sewer Capital Improvement Program. Before coming to Jefferson Parish, Ms. Daly served in St. Bernard Parish as Construction Manager for the Water and Sewer Division, Managing Director of Water & Sewer and finally Public Works Director. Ms. Daly is a licensed Professional Engineer in Louisiana.

JP Sewerage provides treatment of wastewater, pumping of untreated sewage, Collection of untreated sewage in gravity line system and pumping of the treated water to the Mississippi River for discharge

Streets Department: Randy Nicholson, Director. JP Streets Department is responsible for maintaining road surfaces, bridges and street drainage (24" and under) in unincorporated (which excludes Grand Isle, Gretna, Harahan, Kenner, Lafitte, & Westwego) Jefferson Parish. While maintaining over 3200 lane miles of streets, the Streets Department also does preventive maintenance, repairs, and rehabilitates existing streets. The Streets Department administers contracts to private contractors for various maintenance procedures and develops capital improvement programs for major streets. We also coordinate long range planning and work with the Engineering Department, the Department of Transportation and Development for Louisiana, as well as other agencies to facilitate improvements to roadways under municipality jurisdiction.

Water Department: Sal Maffei heads this department with 29 years of experience. Mr. Maffei is a member of the AWWA and is certified in LADHH Operator Class III, Treatment and Production.

JP Water produces and delivers a high quality, reliable water supply to all residences, businesses and industries located within the Parish on the East and West Banks of the Mississippi River. Currently, the water department provides water utility services to approximately 140,000 accounts.

In addition to Public Works Departments, the following additional departments also will be a part of the Disaster Resilience Task Force.

Community Development Department (JPCD): Detrich Hebert Johnson, Director, holds a Juris Doctorate and is licensed to practice law in Louisiana and Texas, and is a member of the 2 states' bar associations. He has also earned an MBA and is a Board Member for UNITY of Greater New Orleans. With 16 years of experience, Mr. Johnson is an asset to JP and this project specifically.

JPCD administers the entitlement grants received from the U.S. Department of Housing and Urban Development (HUD). These grants are:

1. Community Development Block Grant Program (CDBG) – Annual CDBG program provides funds to support the development of viable urban communities through decent housing, and expanding the economic opportunities of persons of low and moderate-income.
2. Community Development Block Gant Disaster Recovery Program (CDBG-DR) – In response to Hurricane Isaac, HUD allocated $16,453,000 in CBDG-DR funding to meet the unmet needs from Hurricane Isaac. JP Community Development is implementing a housing rehabilitation program and pubic infrastructure program.

Additionally, in coordination with JP HM CDBG-DR dollars are being used as the non-federal share match dollars to the FEMA HMGP elevation program.

3. HOME Investment Partnerships Program (HOME) – provides funds to expand the supply of safe, decent and affordable housing for low-income Americans, such as the First-Time Homebuyer Assistance and Housing Rehab programs.

4. Emergency Shelter Grant Program (ESG) – provides funds for emergency shelters for the homeless and other programs to prevent homelessness.

Jefferson Economic Development Commission (JEDCO): JEDCO is an independent arm of JP Government with the main objective of attracting, growing and creation new business in the Parish. JEDCO has assisted companies through business incubator and loan programs, tax incentives and rebate programs, workforce development and information services. JEDCO is also in the process of implementing quality of life initiatives in the Parish.

Jerry Bologna, Executive Director, was appointed in 2012, and holds 12 years of related experience. As a certified Economic Developer, Jerry has played a vital role in some of Jefferson Parish's most exciting business announcements in recent years. Jerry was actively involved in the retention of Peoples Health in Jefferson Parish, keeping 600 jobs in the region and creating an additional 125. He was also influential in the launch of NOLA Motorsports Park, a $70 million development. Not only has Mr. Bologna played an important role in bringing new business to the region, but he has also been recognized by both business and political leadership for his contributions to business recovery efforts in the aftermath of Hurricane Katrina. He was invited by the Business Civic Leadership Center of the US Chamber of Commerce and the IEDC to assist in the development of a business and economic recovery plan for Galveston, Texas following Hurricane Ike.

Department of Emergency Management: The Director, Charles M Hudson, brings 27 years of experience with him and is certified as a Louisiana Emergency Management Professional. Mr. Hudson is a member of the Louisiana Emergency Preparedness Association, the Louisiana Emergency Preparedness Committee, the Louisiana State Firemans Association, and is the Fire Chief of the City of Westwego.

Responsibility to provide emergency management planning for JP Departments and agencies and overall emergency management coordination and guidance during major emergencies within the Parish and providing for the continued safety of the citizens and visitors to JP.

Emergency Management's responsibility is to develop a coordinated and effective response for the protection of the lives and property of citizens in JP during natural or man-made disasters.

Department of Public Safety Grants & Administration: Directed by Sean Hurley. Mr Hurley brings 5 years of direct experience with him into this new role, as well as a Masters in Professional Studies (MPS), Homeland Security Studies. He is an active member of the Louisiana Emergency Preparedness Association, the International Association of Emergency Managers, and serves on the board of the Jefferson Parish Employee Diversity Board and the Jefferson Parish Homeland Security Committee.

The department is charged with implementation of a strategic framework that will oversee and administer all aspects of emergency preparedness, response, and recovery in Jefferson Parish, as well as business resiliency initiatives. It provides fiscal policy and administrative oversight on long term strategic plans that integrate budgets, grants, procurement, personnel, resources, and facility management to enhance the overall effectiveness of the departments under Operations. In addition, responsibility will include directing strategic public safety grant administration and federal compliance.

Planning Department: The Director, Teresa Wilkinson, PhD, AICP, is a Doctor of Philosophy in Urban Studies, Master of Urban and Regional Planning and has 29 years of experience in related fields. Mrs. Wilkinson is a member of the American Planning Association and Louisiana Chapter of the American Planning Association. The wide breadth of talent on her team holds almost 70 years of experience and, due to the nature of the NDRC project, will be critical in executing successfully.

Responsible for all planning activities in the unincorporated areas of JP. The Department accepts and processes applications for the resubdivision and rezoning of land in the unincorporated parish. It also does design review of new development and substantial redevelopment on major streets that have special zoning regulations. The Planning Department maintains the Comprehensive Zoning Ordinance, Subdivision Regulations, and Comprehensive Plan, and the zoning, land use, and parcel maps housed in the Parish's Geographic Information System (GIS) that are associated with these regulatory and planning tools.

Office of Blight Eradication and Community Liaison: Nicole Amstutz, Director, has been in her current position for one year and previously served Jefferson Parish for six years in a similar capacity. Ms. Amstutz hold numerous certifications is an active member of Louisiana State Bar Association, National Crime Prevention Association, Louisiana Chapter, International Association of Arson Investigators (LA-IAAI).

This coordinator serves as the centralized "clearing house" for all official crime prevention and quality of life complaints brought to the attention of the parish. They field incoming citizen concerns regarding violent crime in neighborhoods as well as department of inspection and code enforcement regarding violent crime in the Parish.

Property Maintenance Zoning and Quality of Life Department: Catherine Toppel is the Director of this department. Ms. Toppel brings with her into this role 28 years of experience. She has five national certifications including Code Administrator, Zoning Officer, and Housing Inspector from the American Association of Code Enforcement, as well as certified Zoning Inspector and Housing Inspector from the International Code Council. She actively serves on multiple boards within Jefferson Parish.

Property Maintenance Zoning and Quality of Life Department oversees all inspection and enforcement responsibilities related to Jefferson Parish zoning and code ordinances regarding the use and maintenance of privately owned property and structures, overseeing the Weed Control Division, and taxicab regulations.

ii. Community Engagement and Inclusiveness

JP has the capacity to engage community stakeholders using a variety of departments and methods. As noted in the org chart above, these departments are part of the Disaster Resilience Task Force, and also serve an important role in engagement with the community. JPCD and Jefferson Community Action Programs (JEFFCAP) work daily with the low-income, elderly, and disabled populations. Both departments maintain current data and information on demographics and needs of the most vulnerable populations in JP. JEFFCAP lead by Jedidiah Jackson is the Parish's agency dedicated to fulfilling its mission of empowering as many families of JP including elderly, disabled, economically disadvantaged and youth through our various programs. Linkages have been built with federal, state, local and private agencies to provide a wide array of services in order to help meet the needs of the clients the Parish serves. These departments play a central role in past and future community outreach and engagement for resilience initiatives.

JP's HM program managers come into direct contact with those affected by past disasters on a daily basis. HM staff are supremely familiar with the most flood-prone areas of JP, as are staff members from the Drainage, Streets and Emergency Management departments. The unique knowledge of hazard-prone and vulnerable areas is beneficial to all planning, outreach, and implementation aspects of current and future resilience programs. JP Public Information Officer provides beneficial information to the public including news releases, notifications, and emergency bulletins. PIO also manages the production and broadcast of JP government access television. JP has televised council, community, and public meetings that inform the public of activities that affect the residents and communities of JP. PIO has capabilities of providing broad outreach to residents parish-wide or to specific communities in targeted areas.

HM staff, as founding members of Jefferson United Mitigation Professionals (JUMP) CRS Users Group, initiated the creation of a Program for Public Information (PPI) Committee. This committee will primarily work on the CRS as it pertains to JP. The members of this organization, which consisted of representatives from the government, municipal, insurance, lending and housing sectors, were charged with both completing the NHP Survey themselves and engaging others in their professional and personal lives to do so as well. JUMP members and PPI Committee will play significant roles in the community outreach efforts of the Parish's resilience initiatives.

The Citizens Affairs department, led by Sean Burke provides services and outreach directly to vulnerable and minority populations as they administer JP's Hispanic outreach and citizens with disabilities programs. Additionally under the Citizens Affairs Department, Senior Citizens Services led by Maria Cervini coordinates all outreach and engagement of the elderly throughout the Parish.

JP works regularly with formal and informal community leaders from both

unincorporated and incorporated areas. During and after Hurricane Isaac, JP provided municipalities with sandbagging efforts; drinking water; levee repair; street repair; and debris removal. JP also worked with GNO, Inc. to lead a national effort to reform flood insurance, based on immediate needs presented by community leaders, local business owners, and economic development partners. The Homeowner's Insurance Affordability Act of 2014 is a positive nationwide product that started with the Southeast LA leaders. JP has extensive experience working with and coordinating with diverse stakeholders in the consultation process. The geography of JP consists of 305 square miles and six municipalities. Additionally Waggonner and Ball's Urban Water Plan projects were put together after extensive outreach to various public offices, residents and civic groups. To that end the Elmwood Business Association remains involved in the Plan's implementation and has met with JP leaders on the NDRC application process. While all of these geographic areas are located within one parish boundary, many differences exist between the geographies and populations from one municipality to another.

Outreach efforts are required to vary from one community to the next. Approximately seven months after Hurricane Isaac, JP received a Hazard Mitigation Grant allocation that required individual property owners to provide documentation. Simply mailing information to the residents of marsh and gulf areas did not provide sufficient results to meet the grant requirements. Staff amended procedure and spent more than ten days in the field visiting properties to deliver friendly reminders. During these field visits, face to face communication with owners revealed some individuals could not read the letters that were mailed. By sitting with property owners, explaining documents, and fostering trust, a positive influx of required documentation resulted in too many properties for the allocation of funds. In contrast to the required field visits in the marsh areas, in river and lake areas, a mailer to Severe Repetitive

Loss properties announcing the opening of a grant application resulted in more than 110 properties attending community meetings and supplying required information. Through the JP PPI meeting in March of 2015 brainstorming with realtors, insurance agents, bankers, and community leaders on affective messages for vulnerable populations provided great insight on ways to tailor a single message to meet the needs of multiple groups.

JP also has considerable experience working with local, nonprofit, and governmental entities. As a recipient of over $250 million in federal and state grant funds, JP is required to adhere to all grant requirements that often include extensive planning, development and outreach activities with various types of entities and communities. For example, CDBG Entitlement grant planning, requires consultation with the local housing authority, healthcare organizations, nonprofits, social service agencies, and faith-based communities. These consultations take place on an annual basis, so the framework is in place in order to engage diverse stakeholders as frequently as needed. The JP PIO assists departments by preparing documents that are visually appealing for outreach and coordinating any consultation process that is necessary.

The PIO is a comprehensive information resource for citizens and visitors of JP where service to provide helpful information to the public is the mission and goal. They distribute important notifications and news releases to the public and to media agencies, as well as provide media and public relations for local, national, and international media inquiries, in addition to managing the production and broadcast of Parish government access television.

The Workforce Connection, led by Sharon Wegner, is the administrative entity of the Workforce Investment Act (WIA) in JP. This is a one-stop destination for employers and job seekers in JP and provides multiple programs to help its members successfully obtain their

workforce needs of the 21st century. They provide employers access to the most qualified workforce while giving the workers of this region centralized resources for improving their job skills, developing new career paths, and locating the best opportunities our region has to offer.

ii. References

Jeffrey Giering, GOHSEP, LA Office of Homeland Security and Emergency Preparedness, 1500 North Main Street, Baton Rouge, LA 70802, phone (225) 925-7500, email jeffrey.giering@la.gov

Bridget Zachary, U.S. Fish and Wildlife Service Wildlife and Sport Fish Restoration Program CIAP State Liaison, Louisiana, 400 Laurel Street Baton Rouge, LA 70801, phone: 225-244-1977, email: bridget_zachary@fws.gov

Factor 2: Phase 2 Need/ Extent of the Problem

I. Unmet Recovery Need and Target Geography

i. Identify Specific Target Geography

JP has experienced five hurricanes since 2005 including Hurricane Isaac that have caused widespread damage and continue to hinder resilience even today. JP has identified unmet needs from Hurricane Isaac in the gulf, marsh, river and lake areas. Housing and infrastructure repairs are needed primarily in the marsh and gulf areas; however, the lake and river areas also have repair needs. According to FEMA's door-to-door inspections, 12,912 homes in JP endured storm-related damage and the storm surge in JP was greater than 6 feet in some areas. In addition to flooding from surge, loss of power caused wastewater back-up. Infrastructure damage was sustained on sewer lift stations, sewer lines, water plants, street lights, drainage pumping stations, parks, streets and municipal buildings from wind, rain and surge. Much of the storm damaged infrastructure has been repaired; however, necessary repairs and mitigation are needed to JP facilities that remain vulnerable to surge and sea level rise. In addition, marsh areas such as Lafitte, Crown Point and Barataria suffered substantial economic and environmental damage which is not fully recovered. While JP and its citizens have made progress since 2005 (Hurricane Katrina) in its efforts to mitigate, prepare for and recover from natural disasters in a resilient manner, there remains a great need to increase a whole community approach to resilience. The target geography is outlined in two documents in Attachment E-*All Service Area Map 10.26.15_Final* and Attachment E-*JP NDRC Phase II Defined Geography* which includes the census tracts for the service areas.

To address these lasting unmet needs, JP is proposing implementing a Balancing Water initiative that includes four targeted projects; retrofit of vulnerable infrastructure, reshape of

marshland, retrofit of impervious land, and reshape of vacant land in the four areas described in the Phase I NDRC application; gulf, marsh, river, lake. Taking this targeted project approach, allows the parish to create not only build off of the framework proposed in Phase I, but create replicable and scalable projects that can be implemented throughout the parish. Each of these projects will retrofit and reshape areas, ensuring they are stronger and more resilient in the face of future disasters, and create pilots of resilience that can be implemented in other areas of JP.

JP is implementing projects throughout the parish which are replicable and scalable, therefore benefiting populations outside of the service areas defined and even larger areas into surrounding parishes.

First and foremost, recreating the Barataria Landbridge will reshape the parish's inland marsh providing decreased risk of flooding to all communities within the parish. This marsh creation project is located in mid-Barataria Bay south of Lafitte and Barataria. Historically, there was a limited hydrological connection between the fresher upper basin and the saltier lower basin. Canal networks, erosion and subsidence have eaten holes through natural barriers, exposing wetlands in the upper basin to saltwater intrusion and increased wave energy. Long identified as a critical landscape feature, this project will build on projects that are already in place or under construction to strengthen the Barataria Landbridge. Sediment conveyed from the river through a pipeline will be used to build new marsh, nourish existing marsh in the area, restore historic salinities in the upper basin and protect the nearby communities of Lafitte, Barataria, and Crown Point from storm surge and tidal flooding.

Retrofitting vulnerable infrastructure throughout the parish is vital to long-term resilience. Grand Isle, located at the southernmost portion of JP, is a first line of defense for JP and South Louisiana. The island relies on the protection of marsh cover to transport clean water to the island.

During Hurricane Isaac, Grand Isle reported two to five feet of water from the storm surge covered the island the day after Isaac hit shore. The impact of this storm surge was not only felt on the island, the water lines which lie slightly below the surface of the gulf's waters were also impacted. These lines are not securely fastened to the ground below the surface of the water; therefore, the water lines become increasingly vulnerable during a major impact to the waterway either through a natural disaster or manmade disturbance. Retrofitting the water lines will not only ensure that on a normal day clean water is accessible to the island, but that during a disaster event, the lines are secure and able to transport water back to the island as soon as power is restored to the island. Putting resilience measures in place is critical to fortifying Grand Isle so that the island can continue to provide the protection needed to the remainder of the parish.

Beyond Grand Isle, the safety of JP's water supply as a whole community has been taxed during recent hurricanes as well. During Hurricane Isaac, rainwater saturated soil plus strong winds uprooted trees that have grown under water lines, causing multiple water line breaks on private property and parish infrastructure. Water mains then lost pressure allowing for the potential of soil-borne organisms to enter the distribution system.

JP has sewer lift stations in all areas that are vulnerable to flooding, surge, subsidence, and power outages. As a result of power outages from Hurricane Isaac, approximately 98% of the 512 JP's sewer lift stations were out of service for up to seven days. Inoperable lift stations could lead to a secondary public health disaster for the community due to by-pass pumping or waste water backup into homes. In response, JP will be installing energy efficient sewer pumps throughout Fat City. Further, this area, home to numerous well-known restaurants as well as a dense residential population, was inundated with water and impassible during Hurricane Isaac and as recently as rain events in 2015. Additionally, JP is proposing to improve drainage capacity as

well as create resilient covered canals which will not only increase drainage in the Fat City area, but decrease the lives lost by drivers, driving into canals on the East Bank of JP. Retrofitting this canal to utilize a covered and pervious approach will set forth a safer, smarter and stronger methodology which can be replicated for other canals throughout the parish.

JP is also focusing on the retrofit of impervious land. The Urban Water Plan discusses the need to slow, store, then drain water from the area. By installing new parking lot features with rainwater retention capability at the Yenni Building, located at the corner of Citrus Blvd and Elmwood Park Blvd, as a pilot, other business owners will be able to see the benefit of storing and slowly releasing water into the ground to assist with stormwater runoff and slow the rate of subsidence .The parish has and will continue to engage the Elmwood Business Association and has secured their support for this project. These retrofits will secure the area's largest retail center and ensure that Elmwood will be the economic center for JP.

On the West Bank of the Mississippi River, JP will focus on reshaping vacant areas. JP will undergo a planning process to determine the revitalization of one of the remaining undeveloped subdivisions in Harvey. Additionally, JP will work to remove blighted vacant parcels of land through the transformation of property into a parkland that retains stormwater and connects visitors to the Mississippi River bike path and historic Westwego. JP will also implement green infrastructure components into an area in Gretna which will provide resilient enhancements to a blighted area prime for redevelopment.

According to the Data Center's December 2014 report, "The Water Workers: Workforce Opportunities in Water Management in Southeast Louisiana," the industrial field of "water management" is one of the fastest growing job sectors in Southeast Louisiana. By pursuing projects and programs that address water-related risks such as flooding, storm surge, coastal

erosion and subsidence, JP can contribute to job creation and economic growth while concurrently mitigating risks resulting in the community, region, state and nation in becoming more resilient. Additionally, through the JP CD Department, the parish has implemented a robust Section 3 program which will be utilized for all implementation for NDRC Phase II activities.

Furthermore, all four Louisiana NDRC applicants will be working with the regional economic development alliance for the Greater New Orleans region, GNO, Inc., on a regional workforce strategy. Leveraging the vast relationships GNO, Inc. has across the region with two-year schools, four-year universities, Workforce Investment Boards, small business associations and various firms working in resilience, this NDRC opportunity will extend beyond parish boundaries to fully engage all workforce assets in Southeast Louisiana. Already, over 30 individuals from the above stakeholder groups have been brought together with GNO, Inc. and the four NDRC applicants to learn about the projects being proposed and to align projects and programming around a resilient workforce.

ii. Narrative Description of Needs

Three hundred twenty-seven households have applied for JP's Housing Assistance (HAP) and/or Elevation Support (ESP) programs. Additional funding is required to ensure all households receive necessary repairs and mitigation measures. The current program contains more than 125 applicants that cannot be served. These applicant numbers do not include the households that are still damaged but did *not* apply for assistance through either the ESP or HAP programs due to either lack of knowledge or concerns about program complexity. Reference the table on page 9 in Exhibit B for further details. Resilient housing in marsh and gulf areas is important for the seafood and oil industry that employs the residents of these rural communities.

A visit in January of 2015 to the marsh and gulf areas of JP revealed that in addition to the homes remaining at risk of flooding due to the lowest floor's elevation below Base Flood Elevation (BFE), five (5) businesses also remain at risk. Conversations with business owners and employees demonstrate that these businesses remain in operation because the owners cleaned and repaired the facility with personal funds immediately after the flood waters receded. None of the five businesses have the lowest floor above the BFE. When another flood event affects any of these businesses, there is a high probability of the business closing indefinitely. Closure of any business in these small, marsh and coastal communities has a larger economic impact than it would in a larger city. Fuel stations, restaurants and grocery stores are limited in these areas and the failure of businesses could negatively affect tax bases and unemployment.

The Rosethorne Wastewater Treatment Facility located inside the town of Jean Lafitte remains at a high risk of flooding. In order to prevent high tide or coastal surge from damaging the plant repeatedly and subsequently disrupting treatment operations; the 1,200 feet of earthen berm that surrounds the plant needs to be raised to an elevation of greater than +9.0 feet above mean sea level.

The Caminada Headlands project, as described on page 11 in Exhibit B, was damaged during Hurricane Isaac. The Coastal Protection and Restoration Authority (CPRA) estimates that Isaac caused 210,000 cubic yards of beach fill on 14,000 feet of the Caminada Headlands. Funding to repair the damages was requested and denied through FEMA's Public Assistance (PA) program. As identified during JP's 2014 HM planning process, homes, businesses, environment and infrastructure are vulnerable to floods, storm surge, coastal erosion and subsidence.

As evidenced in the HM plan and citizen responses in the NHP survey, in January

of 2015, floods have been and continue to be the most frequent, destructive, and costly natural hazard facing JP. There have been 49 floods recorded in JP in the period from 1996 to 2014. Information on JP's flood history can be located on page 47 of the HM Plan. Based on a map of JP's marsh area obtained from CPRA's viewer, flood depths for a 100-year storm will increase from the current potential of 6 feet to 12 feet within the next 50 years. Additional maps show that, with future flood risks, there is potential for economic damages in amounts greater than $200 million in the lake area of JP.

With more than 60% of JP residents living at a first floor elevation at or below sea level, residents are particularly vulnerable to flooding and storm surge. There have been 16 instances of storm surge in JP between 1996 and 2014. Please refer to page 94 of the HM Plan for further information on past effects of storm surge on JP. The intensity and frequency of storm surge will increase in the future, as stated on page 125 of the HM Plan, "Rising sea levels coupled with subsidence – known as relative sea level rise – can accelerate coastal erosion and wetland loss, exacerbate flooding, and increase the extent and frequency of storm impacts."

Coastlines in gulf and marsh areas of JP are eroding with incoming water destroying wetlands that buffer the lake and river areas. Within the past 100 years, Louisiana's barrier islands have decreased in land area by more than 40 percent, and some islands have lost more than 75 percent of land area. JP hosts the only inhabited barrier island in Louisiana, Grand Isle, which has more unique natural hazard vulnerability than the rest of the state. For past effects from coastal erosion, refer to page 122 of the HM Plan.

While all areas in JP are at risk to subsidence, different land areas are sinking at different rates. According to CPRA, part of the lake area is sinking up to 35 mm a year, while the gulf and marsh areas are sinking at a rate of up to 25 mm per year. Land subsidence throughout

JP has caused damage to roads, sewer and drainage systems which can cause increased flooding. For past effects of subsidence, refer to page 125 of the HM Plan. According to page 50 of the GNO Urban Water Plan, "deep organic soil layers indicate the potential for continued subsidence if new approaches to managing stormwater and groundwater are not adopted."

By addressing critical infrastructure which manage impacts floods, storm surge, coastal erosion and subsidence, JP will address unmet housing, economic and infrastructure needs. The benefits of coastal protection and restoration projects are numerous and widespread. The objectives of CPRA's 2012 Coastal Master Plan are to "improve flood protection for families and businesses, recreate the natural processes that built Louisiana's delta, and ensure that our coast continues to be both a Sportsman's Paradise and a hub for commerce and industry." According to the GNO Urban Water Plan, alleviating subsidence through enhanced stormwater management practices will "not only lead to improved safety but also to economic vitality and enhanced quality of life in one of the most economically productive, culturally vibrant, and densely populated areas in Louisiana."

II. Resilience Needs within Recovery Needs

In the CDBG-DR Action Plan for Hurricane Isaac recovery, the parish outlined the total impacts from Hurricane Isaac to total $224 million dollars. Much of the damage which occurred impacted the housing stock directly. However, the parish must consider the impact of the infrastructure. The interventions proposed in this application would reduce the impacts of the disaster by retrofits which would decrease the impact recovery time. With over $40 million dollars in FEMA Public Assistance Worksheets as a result of Hurricane Isaac, the parish is committed reshaping areas and retrofitting to reduce these impacts in the future. Additionally, these interventions will increase the stormwater management which will reduce the residential flooding

and impacts to residential housing. The ultimate goal of the parish would have the impacts reduced to zero, however with the diverse geography of JP that is not possible with just the implementation of these projects, but using these projects as a pilot to the future

Estimate general amount of needed investment in resilience

After discussion with parish departments and actions in line with the parish HM plan, and the Urban Water Plan, the parish estimates more than $10 billion dollars of needed investment in resilience. These investments include flood reduction projects, coastal and marsh restoration, vulnerable infrastructure, covering drainage canals for life safety and subsidence relief, and street upgrades to alleviate subsidence rates. This cost does not include the beautification pieces that will need to accompany each of the projects as that piece has not been vetted completely, however is important for the full community development over the next 10 to 30 years to see a resilient JP.

Describe vulnerable populations and quantify disaster impacts

The population groups that are generally more affected by any disaster-related issues are the low-income and the elderly. Low-income individuals and households typically have a difficult time elevating, mitigating, or maintaining the necessary insurance for homes. In total, according to the Data Center, the parish has a total poverty rate of 14%. Children make up 36% of the poverty rate. Those living in poverty are likely to be in the lower lying areas which are more impacted by not only localized flooding impacts but impacts from tropical storms. Implementing an approach that can improve critical infrastructure will provide more efficient and cost effective services to the citizens and reduce the burden on this population after a disaster. Reducing the impacts to those vulnerable populations will allow them to recovery faster and more economically efficient in the future.

Additionally, when a disaster strikes, elderly households are more likely to sustain flood

damage and simultaneously not be compensated for that damage via an insurance carrier. Elderly populations are at greater risk as well as they often are unable to prepare their homes for a disaster. They may also be more sensitive to heat, water quality, and other public health hazards that occur during and after a disaster due to the lack of electricity or flooding. According to HUD FY 2014 LMISD data, 7.04% of the Barataria population is below the poverty rate and 32.48% is elderly. In the neighboring town of Lafitte, 15.47% of the population is elderly and lives below the poverty rate. If another flood event were to affect one of these marsh areas within the next few years, it would be devastating for these communities as much of the population would be financially and physically unable to return. By mitigating risks associated with floods, storm surge, subsidence, and coastal erosion, the low-income and elderly households will be better protected from environmental dangers and natural disasters and will recover in a more resilient fashion.

The parish is proposing a suite of projects to address needs on all areas of the diverse geography of the parish. Both projects proposed in Elmwood as well as Fat City area in high traffic areas that are regional retail corridors which benefit those individuals not only in JP but in neighboring parishes of Orleans and St. Charles. Orleans Parish has a poverty rate of 26% the highest in the metro area and St. Charles comes in line with Jefferson at 13% poverty rate. The reducing the impact to these retail corridors will have the areas back on line faster and able to assist these vulnerable populations after a disaster.

With impacts from the qualified disaster, Hurricane Isaac totaling over $224 million dollars, the parish as with the wider region faces an economic challenge to implement resilience in a forward looking manner. Though the parish understands that resilience decisions are the path of the future of JP, they are costly and cause increased burden to local and state

governments. Governments often must work to balance implementation of these needs as well as maintaining the daily operating needs of the parish to ensure a safe, secure and functioning government. As indicated in Phase I, JP intends to seek avenues for existing projects as well as implement new projects that create a multi-purpose approach to resilience. Projects should transition from mitigating a single hazard/stressor to a comprehensive approach for public health, environmental protection, housing affordability, economic development, and/or public safety. Projects will transition from mitigating a single hazard/stressor to a comprehensive approach for public health, environmental protection, housing affordability, economic development, and/or public safety.

To further this approach, for Phase II, JP has evaluated the geography of the parish and the shocks and stressors that occur after a disaster such as Hurricane Isaac and has created four project types to implement to further resilience throughout the parish; retrofit of vulnerable infrastructure, reshape of marshland, retrofit of impervious land, and reshape of vacant land. Each of these project types and their resilience are further described below.

Retrofit of Vulnerable Infrastructure: With constant impacts from sea level rise, subsidence, and climate change, there is critical infrastructure which is vulnerable to impacts from future disasters. Retrofitting select pieces of infrastructure with resilient measures will ensure that essential services are delivered to populations on a daily basis as well as during and after natural disasters.

Reshaping Marshland: The CPRA Coastal Master Plan and GNO Urban Water Plan both advocate for actions to remediate hazards caused by climate change that include: bank stabilization, shoreline protection, barrier islands restoration, and marsh creation. Additionally, the impact of marshland restoration reaches beyond coastal protection to include increases in

the coastal industries which impact Louisiana as well as benefit the entire nation.

Retrofitting Impervious Land: For generations, the best practices for protection from flood water was guided by a simple position, remove the water to protect the area. The parish has created elaborate pumping and drainage systems to remove the water from the parish at rapid paces. However, after future looking resilient studies such as the CPRA Coastal Master Plan and the GNO Urban Water Plan, it is clear that while pumping is necessary, there is a balance that must be struck to continue to hold water to decrease subsidence and to prime the land for continued absorption. JP has assessed the parish and chosen areas where retrofits to the current impervious land create a balanced water landscape which reduce flooding and subsidence.

Reshaping Vacant Land: With vacant land a premium in the parish, JP is committed to a development strategy which changes the way the parish undertakes development to ensure that resilient features such as those outlined in the Urban Water Plan are implemented creating resilient models which can be used throughout the parish and the region. Additionally, there are individuals who currently reside in vulnerable coastal areas throughout south Louisiana whose residents are looking for higher ground inland. Preparing these areas in a resilient manner will ensure that the best practices are defined and able to be scaled to other reshaping projects with in JP as well as the surrounding region or in similar geographical areas throughout the country.

Factor 3: Phase 2 Soundness of Approach

I. Project Approach

The vast geography and diverse population, has led JP to take a comprehensive approach to resilience that is expansive of all areas within the community. JP as a whole suffers from a devastating impact of subsidence, sea level rise effects, increased rain events, and extreme heat temperatures. Each of these climate factors touch the vast geography of the parish in a unique way. The combination of the parish wide needs with geographic specific unmet needs required the parish to look at a cohesive approach in all four geographies: gulf, marsh, river and lake. JP has developed a Balancing Water approach to include interventions that will retrofit and reshape areas allowing JP to implement projects which will revive the future of JP.

As outlined in Exhibit C, the parish government is comprised of a depth of knowledge and experience in each department. The creation of the Disaster Resilience Task Force at the beginning of Phase I of the NDRC allowed individual JP departments to meet and discuss shocks and stresses from natural disasters. The taskforce further met during the Phase II development to collaborate around coordinated interventions that strengthen and transform JP by retrofit of vulnerable infrastructure, retrofit of impervious areas, reshape of vacant lands, and reshape of marshlands, JP is proposing a diverse suite of retrofitting and reshaping interventions for the parish, which alone have direct benefits to a specific geographic areas, however all work together as a comprehensive initiative of resilience and will serve as a guide to the future landscape of JP.

i. Describe Project(s) (and alternatives)

Area: GULF

Grand Isle, Louisiana's only inhabited barrier island, serves as not only Louisiana's first line of defense from natural disasters, but also as a tourism mecca driving an estimated 12,000

visitors each year to join in world class fishing and recreational activities. Though the island sits 35 miles off of the main land of JP in the Gulf of Mexico, the island shares the struggle of Balancing Water with the rest of the parish. Over the years, Grand Isle has undertaken numerous efforts to reduce the risks to the community which inhabits the island. In 2006, following Hurricane Katrina, the Island issued new building codes which required building construction to incorporate sea level rise in design. The island also adopted 2008 Preliminary DFIRM for regulatory purposes prior to any other area of the parish to ensure protection of new construction. JP Environmental staff work closely with the Grand Isle elected officials to ensure projects are implemented to secure the future life of the island.

After the release of the NDRC Phase II selection, JP HM staff met with the Mayor of Grand Isle and the District 1 Councilman to discuss area vulnerabilities in relation to water. The Mayor discussed the unmet housing needs in the area needs and funding sources for unmet needs. The Mayor expressed the greatest needs of the residents to creating a balance on the island immediately following a disaster and on a daily basis is the need for clean drinking water. Providing clean drinking water will allow residents to return to their homes and begin the rebuilding process. Therefore, securing clean drinking water will address the unmet housing needs through providing this essential service to residents of the island. Based on the discussion with the Mayor, JP Resilience Taskforce has decided to pursue the following project type for the Gulf area.

Project type: Retrofit of Vulnerable Infrastructure

Grand Isle Water Distribution

Grand Isle is dependent on man-made infrastructure connecting it to the mainland for many essential services including distribution of clean drinking water to the island residents and visitors. The impacts of sea level rise, marsh degradation, shipping channel traffic, subsidence and natural

disasters, have threatened and damaged the thirty-two mile water pipeline, and halted the secure delivery of clean water to the island. JP currently delivers 600,000 gallons of water to Grand Isle per day. During peak tourism season, this amount increases to 1,000,000 gallons. When the lines are damaged not only is the island cut off from clean water access, but sanitation is also jeopardized. JP spends an average of $350,000 in water diversion and repair costs each time the waterline breaks. Retrofitting the water lines secures them and ensures that there is reduced vulnerability to water infrastructure during large scale outages.

JP is proposing to retrofit the most vulnerable 10 miles of water lines and ensure the delivery of clean water to the island. Clean water is a necessity for all aspects of life anywhere, and without clean water the island is not able to survive. Retrofitting this vulnerable critical infrastructure in a resilient process which will ensure that the water lines are not only secured now, but it will develop a replicable process to be used for the remaining 22 miles of the water lines as they become more vulnerable with the increase of sea level and marsh degradation. This forward looking technique can also be scaled to other types of transportation pipes used in the parish by public utilities and private companies. The first phase of this project would be located in Bayou Rigaud Channel, and span from Grand Isle to Fifi Island. JP Water will secure water lines 10 feet below the mud line of the water with cement blocks to ensure that the lines will not be impacted and will deliver clean sanitary water from mainland JP to Grand Isle. Attachment E-*ROVI Renderings*, pages 84 to 119 provides maps, images, drawings, and renderings of the water lines. This retrofit will transform the ability of the parish to respond to impacts of natural disasters. After Hurricane Isaac, Grand Isle Firefighters not only aided with the immediate disaster response, but also were faced with fighting a fire as result of damage from Isaac. Strengthening the water lines

will provide first responders with the means to protect the island after a disaster as well enhance the resilience of the island community.

Area: MARSH

Since the announcement of NDRC Phase II participants, JP HM has spent time consulting with the Mayor of Lafitte, District 1 Councilman, the CPRA and Public Works departments regarding the infrastructure needs for the area. Based on conversations, the need for coastal protection, sewer upgrades, and sustainable housing is of utmost importance. In addition to these retrofits, conversations have been had regarding innovative ways to bring tourism to the area including water taxi, bed and breakfasts, RV parks, ferry to Grand Isle; however, each of these tourism activities need additional marsh protection prior to attracting investors to the area.

Based upon sound engineering and consultation with stakeholders, JP is proposing a pair of activities in the Marsh area of Jean Lafitte/Barataria area. First, the reshaping of marshland through the continuation of the Mississippi River Long Distance Sediment Pipeline will recreate approximately 385 acres of marsh land which will reshape the coast line, providing not only protection for the residents all throughout the West Bank of JP, but also will work to reshape marshland to protect the freshwater areas from future saltwater contamination. Second, JP will address the retrofit of vulnerable infrastructure by addressing the continued unmet needs at Rosethorne Wastewater treatment plant which effects all of the residents of Jean Lafitte.

Project Type: Retrofit of Marshlands

Mississippi River Long Distance Sediment Pipeline – Barataria Landbridge

One of the strategies proposed in the Louisiana Coastal Master Plan and priority projects (listed in pages 18 and 19 of *ROML Renderings* in Attachment E) of the Restore the Mississippi River Delta Coalition is the restoration within the Barataria Basin by increasing sediment from the

Mississippi River into the Basin. The area was built over hundreds of years of the Mississippi River overflowing into the area. Freshwater and sediment input was virtually eliminated with the construction of flood protection levees along the Mississippi River and the closure of Bayou Lafourche at Donaldsonville in the early 1900's. Long-term deprivation of natural floodplain function of flooding and sediments deposits has limited the capacity of these wetlands to withstand natural and anthropogenic stresses.

The proposed project is to complete the design and construction of an efficient sediment delivery pipeline system from a renewable resource in the Mississippi River through strategic locations in the Barataria Basin. Marsh creation will be performed by pumping hydraulically dredged sediment from the river into designated contained and uncontained areas. Low-ground pressure dozers will be used to help place hydraulically dredged materials in the marsh creation areas. The project would re-establish a contiguous reach of emergent wetlands along the Barataria Landbridge by using sustainable sediment sources to restore and nourish wetlands in an area where sediments are limited, and provide an access corridor from the Bayou Barataria Waterway west along the north shore of Little Lake into Lafourche Parish. A map of the proposed sediment pipeline location can be found in Attachment E *ROML Renderings* pages 2 to 5 and 15 to 17.

When completed, this project would provide a continuous ridge habitat across the central Barataria Landbridge. This ridge would enhance restoration and sustainability of fresh and intermediate marshes in the central and the upper basin by providing a barrier to salt water intrusion. In addition, the ridge serves as a platform for pipeline sediment delivery for marsh creation across the sediment-starved basin, and would reduce damage from storm surge in upper

basin communities, including Lafitte, Barataria and Crown Point, which have flooded repeatedly, as well as communities in St. Charles, Plaquemines and Lafourche Parishes.

This project is innovative as seen in the LA CPRA 2016 Annual Plan report, (page 143 of *ROML Renderings* in Attachment E) which depicts the first use of Mississippi River sediment was used to create marsh in 2009. This innovation has led to over 560 acres of marsh created as well as created permit arrangements with the US Army Corps of Engineers and property landowners reducing red tape for future projects. The first reach of the Barataria Landbridge stretches from the Mississippi River in Plaquemines Parish to Bayou Barataria in Jefferson Parish. The project is funded through various sources noted in the CPRA 2016 plan. The permit application as well as engineering specs for the first phase of the Barataria Landbridge are included in Attachment E *ROML Renderings* pages 20 to 123. These documents are all important to understand the feasibility of the NDRC proposed phase two of the Barataria Landbridge. Completing this second phase to reach from Bayou Barataria into Lafourche parish will complete the bridge of sediment that will link the other projects that are being completed in the Barataria Basin. A video of Phase One of the Landbridge and the reach of Phase Two of the Landbridge can be found at this link https://youtu.be/yXZ5mz42ibs and within Attachment E *ROML Renderings* page 193.

Upper basin communities, including Lafitte, Barataria and Crown Point, are communities that are rich in culture, the creation of marshland will serve to meet the unmet housing needs outlined in Exhibit B.Many of the individuals residing in these communities are low to moderate

income persons/households and are currently receiving Federal assistance from CDBG and HMGP to assist with the cost of elevating their homes. FEMA HMGP alone is providing over $39 Million total in funds for elevation of hundreds of structure that will be mitigated against the impacts of flooding and sea level rise creating over $200 Million in benefits. The impacts of Hurricane Isaac were clear: over 12,000 homes were impacted in JP. Many of these residents still suffer due to the inability to return home. While elevated homes provide a relief for some residents, it doesn't completely solve the source of the problem - a disappearing coastline. In an ongoing effort to increase resiliency, it is necessary to also enhance the natural infrastructure to protect these communities.

Project Type: Retrofit of Vulnerable Infrastructure

Rosethorne Wastewater Treatment Plant

During Hurricane Isaac, stormwater inundated the Rosethorne Wastewater Treatment Plant resulting in damaged equipment and disruption of treatment operations for the residents that utilize the services of the Rosethorne Wastewater Treatment Plant (Rosethorne) for nearly two weeks after the disaster. The impacts from Hurricane Isaac caused a serious threat to public health, life safety and the environment for citizens in Lafitte and continues to be an ongoing risk for all citizens due to the daily vulnerability of high-tide, storm surge, power failure, and outdated technology. Rosethorne is the only wastewater treatment plant which serves the town of Jean Lafitte, creating a serious risk to public health of this close knit coastal fishing community. Surrounded by marshland and coastal waters, the residents within the town of Lafitte, which have been impacted by five named hurricanes in the past ten years, are resilient and have committed to undertake personal mitigation measures; but with the lack of critical infrastructure able to withstand natural

disasters and future risks, the community and residents still have critical vulnerabilities. Maps and renderings of area are located in Attachment E *ROVI Renderings* pages 2 to 4.

Mitigating the treatment plant against storm surge and sea level rise will ensure that in the event of future threats, plant equipment is secure and not susceptible to damages as well as remain operational for the residents, and ultimately prevent raw sewage overflows, system failures, business and residential losses. JP is proposing to construct a new resilient wastewater treatment plant which incorporates green infrastructure components. New generators including collaborative equipment such as motors, control panels, UV equipment, and blowers will be installed to an elevation level of at least +10, providing protection against flood overtopping two feet above the current base flood elevation as well as mitigating sea level rise for at least the next thirty years without constructing a levee or berm around the plant. As a result of Hurricane Isaac's impact and in an effort to mitigate future damages from storm/flood events, the need for a more resilient approach was realized. Furthermore, upgrades such as UV disinfection which is physical process rather than a chemical disinfectant will eliminate the need to generate, handle, transport or store toxic and hazardous chemicals, thus leaving no residual effect that can be harmful to humans or aquatic life. Additionally, the project offers an environmental quality component by providing a wetland assimilation value that will help to remove direct discharges of treated wastewater into state waterbodies, help prevent saltwater intrusion into the wetland, provide an abundance of needed nutrients into wetland to stimulate plant growth, and assist with carbon sequestration. Once the new plant is fully operational the existing plant will be decommissioned and demolition of existing aeration basin, clarifier, blower building, effluent pumps, electrical, piping, existing berm and any related equipment will occur. A similar plant has been built in the vicinity. Plans and specifications can be found in Attachment E *ROVI Renderings* pages 6 to 66. Although the

specifications for Rosethorne will be different than the neighboring plant, JP recently built a new plant to serve a neighboring sewer service area. This project directly meets the unmet infrastructure needs as outlined in Exhibit B. JP will implement best practices in the implementation of the previous plant which will result in a reduced start up time to begin construction on this plant.

Areas: RIVER and LAKE

JP's urban areas are surrounded by an interconnected system of levees that stretch from Lake Pontchartrain to the Mississippi River and from Marshlands to the Mississippi River. Leveed areas are often described by the directional position relative to the Mississippi River. Although when viewing a map of the area, it appears the Mississippi River divides the parish by North and South, the Northern area closest to Lake Pontchartrain is referred to the East Bank and Southern portion is the West Bank. See *JP Area Map* in Attachment E for reference of areas. In these leveed areas, JP has focused on the need to retrofit impervious areas, reshape vacant land, and retrofit vulnerable infrastructure.

Project Type: Reshape of Vacant Land

JP has identified areas on the West Bank which are outside of a Special Flood Hazard Area (SFHA), are vacant or undisturbed, and are the prime locations to plan for increased smart resilient development. With the threat of sea level rise, subsidence and future natural disasters, JP understands that vulnerable areas in the region have populations that will look for residential areas inland. These lands can serve not only for current JP resident's use, but also regional residents. JP HM staff conducted outreach throughout the parish outlined in Attachment D-*Attachment D_ConsultSummary_PC* regarding the specific approaches to resilience, including the approach to

reshape vacant land. Fifty-five percent of the individuals surveyed selected the "hate" option when shown the current conditions of vacant lots covered with concrete or dense forest. When given the option to change vacant land to clear open space or a parkland option, 68% "loved" the parkland approach opposed to 38% that "loved" the space remaining open without water retention capabilities.

Harvey

The South New Orleans Subdivision in Harvey (herein referred to as 'SNO Sub') is the perfect location for a reshape of land (see maps on pages 2 to 4 in *ROVL Renderings* in Attachment E). The SNO Sub was plotted for development in 1919; however, was never fully developed, resulting today in an expanse of over 500 acres within an urban/suburban area, an extreme rarity for JP. This blank canvas is the perfect opportunity for piloting several of the Greater New Orleans Urban Water Plan project concepts as the area infrastructure has never been developed, thus hindering housing growth in the area. By initiating these green techniques of installing streets that incorporate porous design features, drainage adjacent to streets that lead to retention areas, and power-independent sewer; a model will be created not only for JP vacant lands, but also regional areas. Through the NDRC proposal, this area will see a balance in the treatment of stormwater and wastewater in an effort to reshape the vacant land to create a hub of residential and commercial value. This area will be prime higher ground needed for relocation or resettlement of regional populations that are seeking resilient places to inhabit. Thus, this project addresses the unmet housing needs throughout the parish. Providing a prime higher ground for regional populations is a key regionally aligned resilient approach.

JP will first initiate a study that will look at the tracts of land at hand and determine the best development plan for the area. A previous study was conducted in 2003; however, since

Hurricane Katrina in 2005, changes in surrounding economic development as well as urbanization, warrants a new assessment of the area. The study will focus on two primary areas: Planning and Zoning and Public Works. The two departments will work together to establish a cohesive plan that outlines the best types of structures that would be appropriate for businesses and housing as well as ensure that new development will not increase this area or surrounding areas into a higher flood risk.

One aspect of the planning study will determine the impact of implementing resilient development policies when proposing development concepts in this area. JP would use this as a requirement that could be replicated in future planning studies throughout the parish. The development plan will further access the strategies form the Greater New Orleans Urban Water Plan to determine the best practice to reshape this vacant land based upon existing soil conditions and needs for water retention to transform this area into a resilient subdivision that can be a model for future development in the parish. JP will release an RFP, and as a requirement, request responders to include resilient practices including but not limited to those outlined in the Urban Water Plan and others such as restricting or limiting the amount of fill allowed for new development, creating a freeboard requirement, strict regulations regarding removal of trees, and onsite retention of water requirements. Studying the impact of these upgrades to development practices prior to development will ensure that the reshape of this land is resilient, forward-looking, and creates an area where residents have a reduced risk for repetitive flooding and impact from natural disasters.

In addition to the study conducted with local funds, JP is requesting NDRC funding to construct strategic streets in a resilient manner as dictated by the outcomes of the study of the land on the servitude that is currently owed by JP in the area. Porous concrete or pavers shall be used

to allow water to infiltrate into the ground for storage and replenishing the water table to alleviate the future threat of flooding and subsidence that would occur should traditional concrete streets be placed on vacant ground. Adjacent to the streets will be resilient critical infrastructure that is placed in a manner that carries potable water, wastewater, and power in a sustainable way that minimizes the risk of subsidence and high wind events. Drawings and renderings of these strategic streets, labeled "Floating Streets" in the Urban Water Plan, are in Attachment E *ROVL Renderings*, pages 5 to 13.

Westwego

Traversing the West Bank of JP further towards the Mississippi River in the City of Westwego, JP is proposing the second reshaping of vacant land intervention. JP has identified nearly 4 acres of land prime to reshape close to both the Mississippi River and the bike baths which wind through the West Bank of the parish (see pages 14 and 15 in *ROVL Renderings* in Attachment E for maps of the proposed area). This reshape includes removing concrete remnants of old buildings then installing parking fields that absorb water, bike paths extensions, and a parkland that retains stormwater. The parkland will serve as a model for other vacant lots and lands throughout JP, as well as areas through the gulf coast region (see Attachment E *ROVL Renderings*, pages 16 to 21, for parkland images and drawings). The parking field will provide a missing infrastructure piece to the current bike path, allowing cyclists and tourists the ability to park up to 8 vehicles in the historical Westwego area and traverse the Mississippi River levee visiting sites in Westwego and neighboring communities of Gretna to the east and St. Charles Parish to the West. Additionally, this green infrastructure project will address the housing unmet need outlined in Exhibit B by creating resilient parklands which will reduce the impact of flooding and

stormwater to the residential homes, thus reducing the recovery costs for homeowners near the parkland.

During dry weather conditions, the Westwego Parkland will create recreational opportunities for children, adults, and seniors, promoting healthy activities and an increased quality of life. During wet weather, the park will serve as a wetland that holds rain water allowing water to seep into the ground of the park or slowly bleed out into the drainage system. This reduction in the runoff will create a downstream benefit to the residences and businesses that are in Westwego by slowing the water that flows through the drainage network of the city. This dual functionality will allow this project to not only demonstrate resilient infrastructure to balance water, but will also provide co-benefits for the community through the creation of a recreational infrastructure which will enhance the community's resilience.

Project Type: Retrofit of Impervious Land

In addition to Infrastructure, Marshlands, and Vacant Land interventions, a comprehensive approach to Balancing Water will look at the impervious built out environment that encompasses most of JP's urbanized areas.

Though years of urban development with a history and fear of flooding, JP has used numerous impervious materials which have resisted the absorption of water, allowing water to flow faster to drain rapidly through a pumping system; however, pumping has led to subsidence rates that creates a huge vulnerability for JP Citizens. With the impacts from climate change, sea level rise and hurricanes, the parish is proposing a future-looking approach to current areas of impervious land. Retrofitting these pilot areas will allow for JP to balance water in a manageable, replicable and resilient manner. Through the retrofit process, JP proposes to study the ground water

levels to make the project defensible and encourage citizens, business owners, and regional Balancing Water concepts. Additionally, all of the retrofits in Fat City and Elmwood address the economic revitalization unmet needs outlined in Exhibit B, as they are centered near the largest retail areas in the region and implementing the retrofits will ensure that businesses are equipped with the best public infrastructure which will decrease the loss in revenue as business owners will be back on line faster and are able to service the residents of JP and the surrounding regions after a disaster,.

Raise Water Level inside Covered Canals

The Central Business District of Metairie (see pages 4 and 5 of Attachment E *ROIL Renderings* for maps of the area), known by locals as Fat City, is located on the East Bank of JP and is home to numerous of the area's well known restaurants as well as a dense residential population. The area was inundated with water and impassible during Hurricane Isaac and as recently as rain events in 2013 and 2015. The area is bound to the east with Causeway Blvd. This roadway is the regional corridor and bridge that connects JP and the City of New Orleans to areas north of Lake Pontchartrain. The area includes Veterans Blvd., which is an important east to west corridor that connects Jefferson Parish to the City of New Orleans and hosts JP's largest tourist attraction Metairie Mardi Gras and Family Gras. In addition to the travel routes that bound "Fat City", the area's largest mall is located at the corner of Causeway Blvd. and Veterans Blvd. creating jobs for not only JP residents, but also regional employment opportunities. Another geographic boundary marker for the area is the open drainage canals that are within the median space of Veterans Blvd called Veterans Canal. Although JP has undergone successful revitalization efforts in the past five years for this area including a Strategic Redevelopment Plan to bolster

economic development and revitalize housing, the area still suffers from street flooding and subsidence due to the expansive amounts of concrete.

In the past year, three casualties and multiple injuries have occurred in the canals of JP due to accidents that caused the vehicle to turn over into the canal, and with the high water level, resulted with the victim drowning prior to escaping the vehicle. When conducting outreach in the public, HM staff received positive comments from residents, EMS workers, and police regarding the need to protect lives by covering canals.

JP proposes to mitigate this impervious land and address future flood damages, subsidence, and life safety risks with a pilot retrofit to the open drainage canals surrounding Fat City. Retrofitting canals will set forth a safer, smarter, and stronger methodology which can be replicated for other canals throughout the parish.

To determine the best approach model JP conducted survey efforts at parks, senior centers, and food bank outreaches and gathered feedback that 64 percent of residents “hate” the current look of the canals. On the contrary, 54 percent “love” the approach of covering the canal and including walking trails and park spaces.

In addition to the covered canal approach, supporting projects are occurring in the area that will create a resilience district. Local funds in combination with highway department funds will install subsurface drainage along two streets that are create a pass through for tourist, residents, and shoppers to the area. These street projects will include a bike path that will allow individuals to travel along the Lake Pontchartrain bike path into the shopping area, then connect to the covered canal to travel from one shopping center to another without the risk of injury from non-dedicated bicycle routes. In addition to safety and economic connectivity, these bicycle paths will connect this business district of JP to the City of New Orleans through the Lakefront bike path.

Therefore, JP is proposing to cover the currently open Veterans Canal, representing 8,240 linear feet of covered canals throughout the parish. The covered canal will be constructed of concrete box culverts that will convey runoff and flood waters to flow faster increasing protection from a two-year event to a ten-year event lowering the possibility of street and structure flooding. Then bioswales, porous pavement, and a bike path will be placed atop the box culverts to allow rain water to soak into the ground and add connectivity from residential neighborhoods to the local businesses. The covered-canal approach will allow for the parish to maintain a higher water level in in the canals which will assist with a necessary increase in the water table and decrease subsidence. Retrofitting these canals from an open unsightly canal into a covered and pervious approach will set forth a safer, smarter and stronger methodology which can be replicated for other canals throughout the parish to achieve less subsidence, less flooding, and greater life safety. Pages 38 to 45 of Attachment E *ROIL Renderings* provide details of the conceptual drawings for the covered canals and allow for visualization of the approach.

Covered Canal Option

Gretna Retrofits

Another type of canal retrofit is a partially-covered canal concept as highlighted in the Greater New Orleans Urban Water Plan (see image of proposed concept Attachment E, *ROIL Renderings* page 43). This is being proposed in the City of Gretna along two main streets - Stumpf Blvd and 25th Street (see map on page 6 of *ROIL Renderings* in Attachment E). The section of Stumpf Boulevard bound by the West Bank Expressway and future 4th Street Extension is one of the primary commercial corridors of the City. During Hurricane Isaac, the open outfall canal was at capacity, the street flooded and adjacent properties were difficult to access. Currently,

stormwater passing through the canal has little to no filtration prior to being discharged into the wetlands; pollutant loads are likely very high. Outside of stormwater events, the open canal presents a public safety issue for area residents as the severity of the slopes buffering these open canals have been a hazard to drivers. The 25th Street Canal intersects a section of the City with a high concentration of repetitive loss properties. Based on a review of FEMA NFIP repetitive loss and severe repetitive loss properties, the most flood-prone areas in Gretna are concentrated along Azalea Drive, Claire Avenue, Hero Drive and Rose Drive – all of which intersect the proposed 25th Street Canal improvements. As expected, the canal's capacity was stressed during Hurricane Isaac and adjacent roadways experienced flooding. Thus, this project will impact homeowners and reduce flooding all while addressing the housing unmet need identified from Hurricane Isaace and outlined in Exhibit B.

The canal retrofit is proposed for Stumpf Boulevard from Franklin Avenue to 5th Street and along 25th Street Canal from Lafayette Street to the Hero Canal. These retrofits would provide approximately 4,600 linear feet of green space along these currently impervious canals. The canal coverings and curb bump outs would function as bioswales tied into the subsurface drainage network and landscaped with native species. Roughly half of the project would include canal and street green infrastructure improvements; the remaining half would be strictly street level green infrastructure improvements. Combined, these would: address localized flooding at the intersections, on the adjacent roadways and residential properties; encourage the revitalization of the commercial center and surrounding residential areas by providing a thoughtful and connected recreational feature for the community; improve alternative transportation access and safety; beautify the streetscape; improve urban ecological conditions; and, reduce the City's contribution to pollutant loads in the peripheral wetlands.

The proposed improvements would increase the upstream drainage capacity of the City's stormwater management system while relieving the downstream pressures contributing to the repetitive loss in the areas above.

Elmwood and Lafreniere Area Retrofits

The Elmwood area (see map in Attachment E of *ROIL Renderings*, pages 2 and 3), located on the East Bank of JP, is susceptible to street, structure, and vehicle flooding during minor and major rain events due to the high amount of impervious surfaces located within the footprint of the Elmwood Industrial Park and the surrounding area. The Elmwood Industrial Park, stretching along S. Clearview Parkway and bound by Airline Highway to the north and the Mississippi River to the south, has grown rapidly over the last 20 years. This commercial epicenter is covered in sprawling concrete parking lots and is home to over 60 businesses as well as the JP Government East Bank hub, the Joseph Yenni Government Building, (Yenni Bldg). Known for frequent street and parking lot flooding, this Elmwood area makes a great pilot site for retrofitting the current impervious areas.

The Lafreniere area, also located on the East Bank of JP, surrounds the largest park in Metairie and second largest park in the Greater New Orleans area. The streets and homes in this area are also susceptible to flooding during minor and major rain events due to the imperviousness of the streets and sidewalks. The area to the northwest of the park, encompassing Wytchwood Dr, Madewood Dr, Ridgefield Dr, Longwood Dr, Trenton St, York St, Rosebank Dr, and Oak Grove Dr., provides a great neighborhood pocket for piloting impervious land retrofits (see map in Attachment E, page 7 of *ROIL Renderings*).

Parking Fields. The Greater New Orleans Urban Water Plan discusses the need to slow, store, then drain water from the area urban areas and provides the Yenni Bldg parking lot as one

of the demonstration projects for the plan. By installing new parking lot features with rain water retention capability under and water lanes around the Yenni Building, located at the corner of Citrus Blvd and Elmwood Park Blvd, as a pilot, other business owners will be able to see the benefit of the storing and slowly releasing water into the ground to assist with stormwater runoff and slow the rate of subsidence. In a meeting held with the Elmwood Business Association to discuss the Balancing Water approach, the president of the association appreciated the effort the parish is taking to study the parking lot. It was suggested that small business owners often do not have the resources to study their parking lots, therefore by JP creating a road map to retrofit; innovation can continue through the area. One business owner also mentioned that he would like to see the benefits of the water retention for street flooding and subsidence before spending funds to retrofit the parking lot at his business. This parking fields approach is essential to seeing exponential benefits to the area as shoppers and business owners commented about the need for greenery and walkability. Installing parking fields will provide vegetated storage ponds, lagoons, pervious pavement, rain gardens, bioswales, and subsurface storage cavities to store large quantities of stormwater thereby reducing the flooding problem (diagrams of the example set forth in the GNO Urban Water Plan labeled Elmwood Fields can be found in Attachment E *ROIL Renderings* pages 27 to 37 – specifically page 31 details the ability to scale the project up or down to achieve the full level of protection). JP PW with the assistance of the district Councilman have hired a firm to assist with the first step to take the conceptual drawings from the GNO Urban Water Plan into a full design of the parking lot and anticipates this road map to construction to be completed within the second quarter of 2016.

Education is still needed with the public regarding the benefits of parking fields. Of the individuals surveyed, 56 percent “hate” the current concrete approach to parking, however 38 percent “hate” the approach to have grass integrated into parking spaces. Some comments included fear of snakes or mud puddles in parking areas. JP will integrate these concerns into parking designs and ensure education components and signs are added to this pilot project resulting in visitors to the centralized government building being educated as water is slowed and stored.

Water Lanes. In addition to the parking lot alterations, streets near the parking lot will be retrofitted in a way that will transform the streets from having the single role of transporting cars into a mechanism to store water while transporting cars and creating space for pedestrians and bicyclists. This project, labeled by the GNO Urban Water Plan as Water Lanes, will create 2.4 miles of green infrastructure such as bioswales and planted trees along Elmwood Park Blvd from Citrus Blvd to Mounes Blvd as wide streets with other narrow streets in the area being retrofitted

per the design plans that will be established once engineering begins. Water Lanes will also be installed along eight streets behind Lafreniere Park (see page 7 in *ROIL Renderings* in Attachment E for map of area). Conceptual drawings can be seen in Attachment E *ROIL Renderings* pages 8 to 26. Stormwater will permeate into Water Lanes and also can be stored beneath the street, helping to increase the water table and decrease subsidence rates. In consultation with internal departments and citizens in the area, it is apparent that the need for green spaces and bike paths are wanted by the majority. The fear of many polled about the Water Lane approach is the potential for mosquitoes and the potential failure of porous concrete. JP understands the concerns of the public and will ensure the design of this intervention will mitigate the concerns through the design and construction.

Opposite of the parking fields outreach, the individuals surveyed regarding street alterations, embraced the need to add rain gardens and pedestrian walkways with over 60% of surveys noting "love" the concepts of streets that retain water. In a discussion with citizens at the JP Chamber of Commerce Tour de Jefferson, individuals were fascinated with the innovation of creating streets that served a dual purpose of water retention and traffic conveyance.

Strengthen Drainage. While the parking lots and streets are slowing and storing rainfall, an upgrade to subsurface drainage capacity along Mounes Blvd can alleviate flooding in the area at a 10 to 100-year event depending on the rainfall conditions by connecting Elmwood to the South East Louisiana Harahan Pump to the River. Currently under construction, the Harahan Pump to the River has three pumps that are needed to drain the neighboring communities of River Ridge and Harahan; however, with the tie-in of subsurface drainage from Elmwood through the Mounes Blvd upgrade, the Elmwood area can be drained with this pump when the pump capacity is not needed for River Ridge and Harahan. The cost of this pump station, aligning with the GNO Urban Water Plan need to split JP drainage areas at the ridge south of Airline Hwy to the Mississippi River (see diagram from page 51 of *ROIL Renderings* in Attachment E), has been paid for by the USACE and JP with years of coordination to innovatively route stormwater in a direction that has never been done in JP or any other drainage basis in southeast Louisiana. The Harahan Pump to the River will redirect the flow of runoff to the Mississippi River rather than the current route to Lake Pontchartrain. This can help balance groundwater by raising water levels in low areas. Connecting Elmwood will take advantage of the work that has been coordinated for years and

ensure the residents in Harahan and River Ridge as well as businesses in Elmwood all receive protection from the frequent rain events that occur in JP. Images and technical specifications for the Harahan Pump to the River are located pages 48-72 of *ROIL Renderings* in Attachment E.

Additionally, the area behind Lafreniere Park will also benefit from subsurface drainage upgrades. The project will include improving drain line capacity along Wytchwood Dr, Madewood Dr, and Longwood Dr, by installing larger culverts. The increased-sized culvert installation will require replacement of the concrete roadways. This project can be done in tandem with the Water Lanes installation, allowing for the concrete to be replaced with pervious pavers and maximizing resources. A combined installation will lessen the amount of time homeowners will have limited access to their homes due to construction, providing lush, green bioswales and improved drainage to the area even faster.

The streets of Elmwood and Lafreniere were inundated with water and impassible during Hurricane Isaac and as recently as rain events in 2015. The Parking Fields and Water Lanes interventions will assist with mitigating future flood damages. More importantly, these upgrades will decrease flooding, allowing businesses to remain open as well as make the area more attractive to new business development.

Since 1978, NFIP holders within JP have filed insurance claims producing a total loss value of approximately $2.7 billion. This impervious area retrofit will assist in minimizing loss of property, life in some situations and ultimately create communities that are more resilient to extreme weather conditions with a greater capacity to rebuild a little more quickly. The implementation of simple and proven technologies can change this all-to-common condition, making the urban landscape of Elmwood, Lafreniere, and the rest of JP more sustainable as a whole.

Project Type: Retrofit of Vulnerable Infrastructure

Wastewater Upgrades

In addition to stormwater upgrades in Metairie Central Business District and Elmwood Industrial Park, wastewater upgrades will be performed in conjunction with the street and canal work that will take place. The electrically dependent sewer lift stations throughout Fat City and pumps that make up the sewer plant nearest the Yenni Building service the full areas. A video describing previous wastewater upgrades in Jefferson Parish illustrate how the proposed upgrades will improve the overall system and save money (see video link https://youtu.be/8MrSM0Q2dYQ or description and video on pages 83 to 85 of *ROVI Renderings* in Attachment E). The proposed lift station pumps and control work offers many innovative qualities. The new pumps will have impellers that move axially when needed to allow trash and debris to pass, prevent clogging, and increase efficiency. The pumps also initiate an automatic cleaning sequence by momentarily reversing the pump. Variable frequency drives with key pre-programmed functions and parameters already preset will steadily secure speed to optimum energy levels. Proven to reduce clogs at several Parish lift stations from regular occurrences to zero, the proposed lift station pumps are up to four percent higher in motor efficiency than the nominal premium efficiency motor standard and utilizes the latest cellular SCADA technology with remote monitoring and control. Pages 71 to 82 of *ROVI Renderings* in Attachment E describe the pumps that have been used previously in JP and detail the innovation that can change the face of JP sewer infrastructure for years to come.

The innovative interventions proposed can be found in the chart below:

Area/Project Location	Lift Station No.	Lift Station Description	Resilience Improvements
Lake Fat City	E7-6	Harvard & Veterans	New non-clog energy efficient pumps and controls, Install electrical equipment above 100-year, update SCADA system.
	F7-4	Houma and Veterans	
	F7-5	Lake Villa & Jasper	
	F7-1	Cleary & Melville Dewey	
	E7-4	Kawanee & Woodlawn	
	F7-12	Rockford and Grace King	
	F7-14	Taft and 17th	
	F7-9	Turnbull & 17th St.	
	G8-4	Severn and W. Esplanade	
	F7-17	Houma and Ithaca	New non-clog energy efficient pumps and controls, update SCADA system.
	F7-13	Neyrey and Veterans	
	F7-13B	Stefano and Wanda Lynn	
	F7-10	Cleary and Veterans	
	F7-7	Houma & Ithaca	
	F8-3	Houma and W. Esplanade	
	F7-3	Neyrey and Melville Dewey	
	F7-15	Edenborn and 18th	
	G7-10	Severn and 14th	
River Elmwood	LS E3-7	Camp Plauche	Install permanent backup pumps, New non-clog energy efficient pumps and controls, update SCADA system.
	LS E3-2	Elmwood and Citrus	

ii. Describe How Project(s) Will Increase Resilience

Project Type: Retrofit of Vulnerable Infrastructure

Resilience Value: The direct resilience value for Retrofit of Vulnerable Infrastructure will be the continuation of service for all sewer systems as well as the continuous delivery of water to Grand Isle. Reduction in the repair costs as well as time off line will increase the resilience of these communities and bolster the strength of this infrastructure to better protect and serve the communities.

Environmental Value: Reduction in Sanitary System Overflows will not only benefit individuals that inhabit the upgraded areas, but the regional area as SSOs travel through the drainage canal network into Lake Pontchartrain which touches multiple parishes directly in addition to an outlet to the Gulf of Mexico. As part of the retrofit of impervious areas, JP will upgrade Sewer stations within the Fat City and Elmwood areas. JP will track throughout the project lifecycle the reduction to the Sanitary System Overflows. The 2015 and 2016 SSOs will be as a baseline to show the improvements that will be accomplished.

Social Value: Quality of Life on Grand Isle will increase due to less boil water advisories. JP will track the number of boil water alerts for Grand Isle for the 10 years post project. The last 10 years of boil water alerts will be used as the baseline. Additionally, with the retrofits proposed, sewer systems will stay on-line during and after a disaster. Securing these services will decrease the stress and anxiety to individuals who are forced out of their homes. Securing clean water will provide a decrease in the risk to water borne diseases on the island.

Economic Value: Economic benefit will be garnered with the Sewer upgrades in Elmwood and Fat City. The energy savings will create a reduction in operating costs that can be applied to future capital projects as well as create a potential savings for residents on their wastewater costs. The

current operating cost for the Fat City truck line will be the baseline for the monitoring of the outcome of reduced energy costs.

Project Type: Reshape of Marshlands

Resilience Value: The marshland created by the Long Distance Sediment Pipeline will provide additional flood protection to the vulnerable Barataria Bay/Lafitte area. The parish will track the additional flood protection by tracking the impacts from future natural disasters over a 10 year period. The baseline will be the flooding in the Barataria Bay/Lafitte area during Hurricane Isaac.

Environmental Value: As evidence from the first phase of the Long Distance Sediment Pipeline, the environmental value will be measured on the marshland created and sustained over 10 years. The baseline for this is zero as all of the marshland created will be new.

Social Value: It is estimated that the impact of the marshland will not only provide flood protection which along with other mitigation measures will reduce flooding which will increase the resilience of the community during times of a disaster. When homeowners are forced to evacuate this causes an increased stress level. The parish will measure reductions in evacuations during flooding events to estimate the decreased stress levels to citizens.

Economic Value: The Barataria Bay/Lafitte's economy is largely based on tourism which includes air boats rides and swamp tours. The increase in the marshland will provide additional areas and space for airboat and swamp tours. The parish will monitor the number of tours in the area over the next 10 years to gage the economic value on the area.

Project Type: Reshape of Vacant Lands

Resilience Value: Reshaping vacant land through resilient practices will result in better management of stormwater in these areas. JP will measure the resilience by tracking these lands as they transform into resiliently developed areas. Once the areas are fully completed, JP will

document the decreased flooding in surrounding areas for 5 years as a result of the resilient measures.

Environmental Value: Resilient development will result in a better balance of water thus lessening the impact of subsidence in these areas. JP will monitor the subsidence rates and ground water levels in these areas to track the impacts of the resilient development practices.

Social Value: The full development plans for each area, outline a parkland which will have increased resilience for the community. JP will monitor the use of the walking trails in the created parklands once they are completed.

Economic Value: The Urban Water Plan estimates that there will be a 1.9% increase in values of properties that are within a 200 meter area of the implementation of an Urban Water Plan feature. The parish will track and measure the increase in property values in the defined area for 5 years after the implementation of all Urban Water Plan features are implemented.

Project Type: Retrofit of Impervious Areas

Resilience Value: One of the main areas where the resilience value will be measured is with the covering of the canals. With 3 lives lost in canals per year, the parish is proposing improvements to a canal in the center of the East Bank retail area. The parish will track both severe injuries and deaths over 5 years after the completion of the project to monitor impacts of the project.

Environmental Value: All components of retrofits to impervious areas will reduce subsidence by retaining water in strategic manners. Once the retrofits are complete, the parish will monitor the retention of stormwater, the reduction of subsidence, and the level of groundwater in the areas.

Social Value: The retrofit of impervious areas will create greenspace throughout the parish covering canals and connect to existing bike paths. Once all supporting connections are complete, the parish will track the usage of the greenspace created over the next 5 years.

Economic Value: The Urban Water Plan estimates that there will be a 1.9% increase in values of properties that are within a 200 meter area of the implementation of an Urban Water Plan feature. The parish will track and measure the increase in property values in the defined area for 5 years after the implementation of all Urban Water Plan features are implemented.

iii. Describe Benefits to Section 3 Persons and Vulnerable Populations

All projects described in the NDRC application have been designed to not only address unmet needs from Hurricane Isaac with an eye to ensuring that the focus was incorporating those vulnerable and LMI populations. JP has proposed a suite of four projects which will bolster resilience throughout the parish impacting all citizens in some way. Currently, JP has over 4,000 households receiving subsidized housing from the Section 8 voucher process. Retrofitting vulnerable infrastructure will ensure that the surrounding housing stock is equipped with resilient infrastructure which will decrease the risk of flooding and the burden to these populations. Additionally, Grand Isle is home to 220 elderly individuals. Strengthening the water lines to provide quality water will bolster the health and wellbeing of this population. Reshaping higher land in Harvey will open the opportunity for Overall, the suite of NDRC projects proposed will benefit a total of 50% percent of LMI individuals throughout the parish and surrounding areas. The service area maps located in Attachment E-*All Service Areas Map 10.26.15_Final* outline this benefit. Additionally JP HM in coordination with Senior Citizens Services Department will also look at strategies to engage senior citizens in these resilience projects. From the Mississippi River to Lake Pontchartrain and south to the Gulf of Mexico, JP is committed to the ongoing need to protect and monitor water-related risks, which creates an ongoing employment opportunity both LMI and non LMI citizens. JP HM working with JPCD is committed to meeting all Section 3 goals required by HUD. JPCD has implemented a robust Section 3 plan which all CDBG and CDBG-

DR programs are compliant with. Currently JP has over 200 labor types in a Section 3 database. JP undergoes continuous outreach with this population. The parish is always striving to reach more Section 3 individuals and businesses. If awarded NDRC dollars, the parish will continue the robust outreach and coordination with these individuals and businesses. All contractors implementing NDRC projects will be required to meet Section 3 goals, and the parish will work with these entities to facilitate outreach to the current pool of Section 3 individuals and businesses as well as additional outreach to additional populations.

iv. Describe How Proposal is a Model (Replicable, Scalable, Integrated)

JP carefully selected model projects which not only can be replicated throughout the parish but can be scaled up if needed as well as scaled down to accommodate the needs of the community. As outlined below, each project is integrated with each other to create the whole Balancing Water initiative. Through initiating this suite of pilot projects throughout the parish, JP will continue to educate the public on the benefits of these projects and supporting green, resilient practices. As noted in Exhibit G, JP has applied for an EPA grant to design a curriculum to begin the education of resilience at an early age. These children are the future of JP, and instilling resilient practices at an early age will continue the parish on a path to a resilient future for years to come.

Project Type: Retrofit of Vulnerable Infrastructure: JP has proposed retrofitting vulnerable sewer, drainage, and street infrastructure. As noted in this application, subsidence and localized flooding occur throughout the parish. JP has chosen pilot areas which will address unmet needs from Hurricane Isaac while benefitting vulnerable populations. However, looking at the future, resilience is needed throughout the parish. Currently, JP Drainage manages 1465 miles of street subsurface drainage systems, operation and maintenance of 53 drainage pump stations, and JP Sewer manages five treatment plants which treat 57,000 gallons of wastewater daily, over 500 lift

stations, and 21,120 manholes. Therefore, as these pilot projects are implemented, the parish has the ability to replicate and scale current and future retrofits of vulnerable infrastructure throughout the parish over time. Additionally, vulnerable infrastructure is constant challenge for all governments, local, state and federal, scoping the pilot projects with resilient infrastructure can be something that can be implemented throughout the country

Project Type: Reshape of Marshlands: According to Louisiana's 2012 Coastal Master Plan, the state has lost 1,880 square miles of land since the 1930s. Given the importance of so many of south Louisiana's assets—our waterways, natural resources, unique culture, and wetlands—this land loss crisis is nothing short of a national emergency. Therefore, designing a project with the ability to reshape some of the lost land not only will address the environmental degradation impacts from Hurricane Isaac, but will also increase the wetlands surrounding the coast of Louisiana. This project has already proven to be both scalable and replicable. Phase 1 of the Long Distance Sediment Pipeline began pumping sediment in January 2015 and has recently completed the process creating marshland from Plaquemines Parish to JP. JP is proposing Phase II of the project for NDRC funding. Additionally, this model can be used throughout coastal areas of the country suffering from the similar loss of land impacts.

Project Type: Reshape of Vacant Lands: JP has identified two areas throughout the parish where for a reshape of vacant land. Using practices outlined in the Urban Water Plan, JP will ensure that these vacant areas are developed in a resilient manner benefitting the surrounding community. JP has committed to implement resilient building codes in these areas. Therefore, this model of using the Urban Water Plan as well as resilient building codes can be used throughout the parish for addressing blight as well as in the neighboring parishes such as New Orleans which manages over

30,000 blighted properties according to Data Source. Additionally, on a large scale, many cities on the national level can take this approach as they address blight in their jurisdictions.

Project Type: Retrofit of Impervious Areas: Addressing impervious areas to reduce subsidence as well manage water retention and reduce flooding is a priority to address the impacts from not only Hurricane Isaac but from serious rain events. The parish is looking at these projects as pilots which can then be implemented over additional areas of the 2300 lane miles of streets JP Streets manages and over the 340 miles of drainage canals and drainage ditches which JP Drainage manages daily. As the parish moves forward in a resilient manner, the impacts generated from these pilot projects will be used to further retrofits throughout the parish. Additionally, many of the parishes with in the region also suffer from similar impacts of subsidence and localized flooding which could be remediated if these retrofits are implemented. As seen throughout the nation, flooding is not centralized to the coastal communities, which also lends these projects to be scaled to another city's needs and utilized nationwide.

v. Describe Project Feasibility and Effective Design

The projects depicted in this draft were all developed with feasibility and effective design and are described below. Additionally, JP has indicated in Exhibit C that the parish has the expertise and technical capacity to ensure compliant implementation of these projects.

Project Type: Retrofit of Vulnerable Infrastructure: With well over 40 years of experience between the JP Water, Sewer and Drainage Departments, each team worked with staff and consultants to develop feasible and effectively designed activities to implement in this competition.

Project Type: Reshape of Marshlands: CPRA's Louisiana Coastal Master Plan as well as the Coalition have both worked to ensure feasibility and effective design in the Long Distance

Sediment Pipeline construction. The completion of Phase I of the pipeline has also demonstrated that this project is feasible and effective.

Project Type: Reshape of Vacant Lands: The Greater New Orleans Urban Water Plan carefully considered project feasibility as it proposed practices throughout the Greater New Orleans Area. The reshaping of vacant land will look to additional planning to ensure that these are designed to meet local codes and when construction begins will be feasible and effective.

Project Type: Retrofit of Impervious Areas: Again, implementing activities outlined from the GNO Urban Water Plan ensures an effective design and feasibility. The American Planning Association awarded the GNO Urban Water Plan the National Planning Excellence Award for Environmental Planning, further confirming the intricate detail outlined in this plan and its readiness for implementation. **vi. Describe Consultation and Coordination with Regional Partners**

Hurricanes, man-made disasters, and detrimental environmental effects such as subsidence and sea level rise have had a devastating impact on not just JP but on Louisiana as a whole. Therefore, the regional coordination of this impacted area cannot be denied. With four applicants to the NDRC in Louisiana, the coordination of approach has bene an undertaking that all parties have engaged together. As outlined in Exhibit G, there are numerous regional long term commitments which all four partners are engaged tougher to implement. Additionally, the State of Louisiana has drafted Louisiana's Strategic Adaptations for Future Environments – or Louisiana SAFE, a policy framework which is intended to compliment the Coastal Master Plan in three areas of resettlement, Retrofit and Reshape. In this regard, Louisiana SAFE fills a resilience gap in it articulates a development strategy combining the world class science behind the Coastal Master Plan with the community-building planning and policy techniques the state has honed over its

decade-long post-Katrina recovery effort. If the Coastal Master Plan focuses on techniques to reverse negative environmental trends while remaining mindful of the cultural and social uniqueness of our communities and our way of life, Louisiana SAFE compliments the Coastal Master Plan by taking a people-driven approach to maintain that uniqueness and way of life while remaining mindful of the world class future risk projections at the state's disposal.

JP has taken the principles of Louisiana SAFE and as applicably applied them locally to the Parish. Jefferson is presenting an approach of both reshaping and retrofitting areas throughout the parish to fall in line with the retrofits and reshaping of areas outlined in LA SAFE.

II. Benefit-Cost Analysis

JP completed the Benefit-Cost Analysis of the Balancing Water Initiative with a conclusion of a 3.41 Benefit Cost Ratio. The complete Benefit – Cost Analysis can be found in Attachment F-*Attachment F_JPBCA*.

III. Scaling/Scoping

ii. Identify opportunities for Scaling Proposed Project(s)

Project Type: Retrofit of Vulnerable Infrastructure: Vulnerable infrastructure retrofits proposed are best scaled in the activities in Fat City. Though implementing all of the retrofits as a whole output the greatest benefit for the community, there is opportunity to scale the number of sewer lift stations retrofits in the community.

Project Type: Reshape of Marshlands: The Long Distance Sediment Pipeline as a whole project began in Plaquemines and will potentially end in Lafourche Parish. This pipeline and marsh creation has been scaled into two phases, one of which is already completed. The second phase of the pipeline is being requested through the NDRC.

Project Type: Reshape of Vacant Lands: Through the reshape of vacant lands, the best opportunity for scaling is in the Harvey, South New Orleans Subdivision. The NDRC funding requested is for a connection of pervious streets in the area. The streets can be scaled back to include partial sections of implementation. The scalability should be based on the outcome in of the revitalization plan.

Project Type: Retrofit of Impervious Areas: The retrofit of impervious areas allows for the best opportunity for scalability. All canal coverings, street retrofits (water lanes), and parking fields and activities requesting NDRC funding can be scaled both larger and smaller. For example, JP originally planned to request three separate areas of canals to be implemented with NDRC funds; however, due to demographics and benefit limitations, two of the canals will need to be placed on a list to be completed after the pilot of Veterans canal. Although not all canals meet the NDRC criteria, each canal is part of a larger canal network throughout the parish, which lends itself to scalability not only in terms of only three canals as a whole. Additionally, same is true for the street retrofits (water lanes). JP has proposed street retrofits on both the East and West Bank of the parish. While best scaled by street block, these streets can be scaled to fit funding appropriately. Finally, both the Elmwood Fields and the parking fields can also be scaled to implement in a phased approach.

IV. Program Schedule

i. Detailed Schedule for Completion of Proposed Activities

JP has proposed projects which are implementable with in the requirements set by HUD. All projects will be completed by September 20, 2019.

Project Schedule	Start Date	End Date
Retrofit of Vulnerable Infrastructure		
Planning	4/1/2016	7/30/2016
EHP/Permit	8/1/2016	1/30/2017
Design/Engineer	8/1/2016	3/31/2017
Construction	4/1/2017	9/30/2018
Closeout	10/1/2018	9/20/2019
Reshape of Marshland		
Planning	4/1/2016	7/30/2016
EHP/Permit	8/1/2016	1/30/2017
Design/Engineer	8/1/2016	3/31/2017
Construction	4/1/2017	9/30/2018
Closeout	10/1/2018	9/20/2019
Retrofit of Impervious Land		
Planning	4/1/2016	7/30/2016
EHP/Permit	8/1/2016	1/30/2017
Design/Engineer	8/1/2016	3/31/2017
Construction	4/1/2017	9/30/2018
Closeout	10/1/2018	9/20/2019
Reshape of Vacant Land		
Planning	4/1/2016	7/30/2016
EHP/Permit	8/1/2016	1/30/2017
Design/Engineer	8/1/2016	3/31/2017

Construction	4/1/2017	9/30/2018
Closeout	10/1/2018	9/20/2019

V. Budget

i. Budget in DRGR Format

Project Title	Activity Title	Source	Responsible Org.	Project Budget	Activity Budget
Administration				**$13,978,387**	
	Administration	CDBG-NDR	JP		$13,978,387
Retrofit of Vulnerable Infrastructure (ROVI)				**$23,232,521**	
	ROVI- Grand Isle LMA	CDBG-NDR	JP		$1,874,771
	ROVI-Grand Isle-UN	CDBG-NDR	JP		$2,812,156
	ROVI - Lafitte - LMA	CDBG-NDR	JP		$1,605,223
	002ROVI - Lafitte- UN	CDBG-NDR	JP		$2,319,527
	ROVI- Fat City - LMA	CDBG-NDR	JP		$2,492,537
	ROVI - Fat City- UN	CDBG-NDR	JP		$3,833,699
	ROVI - Elmwood - UN	CDBG-NDR	JP		$2,892,058
	ROVI - Elmwood - LMA	CDBG-NDR	JP		$2,318,857
	ROVI- Leverage Elmwood	JP-Sewerage	JP		$576,489
	ROVI- Leverage Lafitte	JP-Sewerage	JP		$423,675

	ROVI-Leverage Grand Isle	JP-Sewerage	JP		$1,400,000
	ROVI-Leverage Fat City	JP- Water	JP		$683,529
Reshape of Marshland (ROML)				**$110,457,100**	
	ROML-Landbridge-UN	CDBG-NDR	JP		$60,476,405
	ROML-Landbridge-LMA	CDBG-NDR			$49,480,695
	ROML-Leverage	JP-Environmental	JP		$500,000
Retrofit of Impervious Land (ROIL)				**$121,328,157**	
	ROIL-Fat City UN	CDBG-NDR	JP		$43,822,852
	ROIL- Fat City - LMA	CDBG-NDR	JP		$28,492,085
	ROIL- Gretna - UN	CDBG-NDR	JP		$7,862,198
	ROIL-Gretna - LMA	CDBG-NDR	JP		$4,757,702
	004ROIL-Elmwood - UN	CDBG-NDR	JP		$10,981,056
	004ROIL-Elmwood - LMA	CDBG-NDR	JP		$13,695,474
	004ROIL - Lafreniere - UN	CDBG-NDR	JP		$3,206,726
	ROIL-Lafreniere - LMA	CDBG-NDR	JP		$3,460,064
	ROIL-Leverage - Fat City	JP- Drainage	JP		$2,500,000

	ROIL-Leverage-Elmwood	JP-Drainage	JP		$2,550,000
Reshape of Vacant Land				**$24,549,959**	
	ROVL - Harvey - UN	CDBG-NDR	JP		$9,353,775
	ROVL - Harvey -LMA	CDBG-NDR	JP		$10,547,875
	ROVL - Westwego - UN	CDBG-NDR	JP		$1,129,015
	ROVL - Westwego - LMA	CDBG-NDR	JP		$2,060,294
	ROVL-Leverage-Harvey	JP Engineering	JP		$1,459,000
	Total Leverage			**$10,092,693**	
	Total CDBG-NDR			**$283,453,430**	
	Total Project Costs			**$293,546,123**	

ii. Narrative Description of How Budget Was Developed

The budget was developed both with subject matter experts with in JP as well as external contractors. JP is continuing to analyze and review budget numbers to ensure efficiency and cost effectiveness. For retrofit of vulnerable infrastructure, JP worked with the engineers and their contractors in the Drainage, Water and Sewer Departments at the parish to develop the budgets and timelines. For reshape of marshland projects, JP coordinated with CPRA and JP Environmental Department to finalize the budget and timeline for the Long Distance Sediment Pipeline. For reshape of vacant land, JP worked with the Urban Water Plan as well as JP Capital Projects Department. Finally for the retrofit for impervious land, the parish worked with the GNO

Urban Water Plan and previous Canal Street covering to finalize the budget and timeline for projects.

iii. Sources and Uses Statement (inclusive of all funding)

JP has prepared a full sources and uses statement to depict these projects. It is available in Attachment_B.

VI. Consistency with Other Planning Documents

i. Consolidated Plan and/or Regional Sustainability Plan (HUD-2991)

Activities proposed in these projects were selected and designed with to align with other plans. JP is has determined that the resilient retrofits will align with the Consolidated Plan and the JP Hazard Mitigation Plan. The completed HUD-2991 form, indicating compliance with the Consolidated Plan is completed and located in Attachment E-*HUD_2991 Form*, as well as the consolidated relevant section from the consolidated plan is located in Attachment E-*2015-2017 ConsolidatedPlan_consistency references* and the whole Consolidated Plan for reference, Attachment E-*2015-2017 ConsolidatedPlan.* JP has certified to the consistency with the JP Hazard Mitigation Plan in Attachment_E-*Cert Consistency w HM Plan_Final* and has also provided relevant sections with in the certification as well as provided the whole plan as a reference in Attachment_E *HM Plan2015-Final.*

Factor 4: Phase 2 Leverage and Outcomes

JP has identified a suite of projects in Exhibit E which will bolster infrastructure and align the parish to begin balancing the water which not only surrounds the parish but serves as a lifeline to the parish's economy. The parish has identified $10,092,693 in direct leverage from JP for implementation of NDRC Phase II activities. Additionally, JP has identified $102,912,125 in supporting leverage for the NDRC Phase II projects. However, following the NOFA calculations, the JP may use $15,139,040 as leverage which brings the total leverage to $24,731,733 which is 8.7% of the total CDBG-NDR budget. Additionally, JP has $100,000 in parish leverage committed to undergo the revitalization plan for SNO Sub, however this commitment will not be available until November 2015, after this application will be submitted to HUD. All supporting leverage mentioned in leverage letters are for project which will be completed during the NDRC implementation period, January 2016-September 2019. Required leverage letters and a leverage chart are located in Attachment B-*Attachment B_Leverage_Sources*.

Factor 5: Phase 2 Regional Coordination and Long-Term Commitment

I. Commitment to Resilience

i. Update on Phase I Commitments

In the NDRC Phase I application, JP indicated areas of long-term commitment to resilience. The parish understands that resilience in the parish will last well beyond the NDRC, and to demonstrate the commitment, the following updates to the Phase I commitments are outlined below.

Blighted Structures: The blighted structures were a public health and safety hazard and decreased property values in their vicinity. In Phase I, JP noted that the parish had demolished 117 blighted properties since September 2012. Since Phase I, JP is continuing the demolition of blighted property through NDRC (Harvey and Westwego areas). To date, JP has demolished an additional 245 properties in 2015 bringing the total to 371.

Disaster Resilience Task Force: Prior to Phase I, JP lacked interdepartmental coordination. A formal process or group to encourage the coordination and sharing of information did not exist for resilience. For the Phase I application, JP created a JP Disaster Resilience Task Force. Since Phase I, the Disaster Resilience Task force has met and will continue to meet to look at resilience in projects throughout JP after the NDRC. Additionally, throughout the Phase II application drafting process, JP HM has also met with individual departments which are part of the Disaster Resilience Task Force to provide updates on the status of the application and to get input on the parish's approaches for the competition.

Resilience Position: No single employee is dedicated to implementing resilience in JP. For Phase I, created a permanent Disaster Resilience position and advertised for applications for the position. Since Phase I submittal, the position of Administrative Management Specialist – Disaster Resilience was created and has been filled.

Critical Parish Infrastructure: Prior, to Phase I, critical buildings of JP government during or immediately after a disaster would be offline due to the power failure or damaged windows, therefore JP mitigated buildings that are critical in the event of a disaster. These steps included updating windows and moving electrical equipment off of the ground floor. The Parish has a long term commitment to updating and mitigating public buildings and since phase 1, has installed a generator at Fire Training Center Fire Building. Additionally, $1.5 million dollars was secured for roof and windows at the EB consolidated fire.

West Bank Revitalization: Civic leaders and elected officials were concerned that the West Bank is moving into decline. The JP council commissioned a study to investigate specific issues facing the West Bank of JP, titled "West Bank Revival." For the Phase II application, both Gretna and Harvey Reshape and retrofit projects are part of the NDRC proposal and are supported by the "West Bank Revival."

ii. Actions Taken Since NOFA Publication

As noted in the application, JP is committed to ensure that the approach to recovery is paved with resilient measures. The parish is actively recovering from Hurricane Isaac with a forward look to the next disaster, has committed to the following resilient measures since the publication of the NOFA in September 2014.

Program for Public Information (PPI): An outreach and education campaign for resilience did not exist. JP HM used the partnerships to initiate a Resilience Outreach campaign to inform

citizens on resilience measures. Since implementation of the campaign the PPI committee has met several times since Phase 1 was submitted. The PPI will be officially adopted by the council for CRS credit and as commitment to outreach about floodplain objectives in October 2015.

CRS Rating: Currently, JP's CRS rating is Class 6. Through the CRS user's group, JUMP, steps are being taken to improve JP's rating within the CRS by increasing resilience. The combination of one additional staff member who has gained Certified Floodplain Manager (CFM) status, the adoption of the PPI and the adopted +2 freeboard outside the levee will lead JP to move into a better CRS class.

JP Hazard Mitigation Plan (HM Plan): The previous HM Plan was drafted in 2009. The Parish and all municipalities updated and adopted the multijurisdictional plan and FEMA approved in April 2015. Parish applied for FMA and PDM 2015 from projects proposed in the plan.

Implementation of the Greater New Orleans Urban Water Plan: JP participated in the development process of the Greater New Orleans Urban Water Master Plan which was released in September 2013. This plan is the first urban water plan of its kind in the United States. Since the NOFA publication, Parish Council selected an engineer to design the Yenni parking lot (Elmwood Fields) in August 2015.

Regional Workforce Strategy: All four Louisiana NDRC applicants will be working with the regional economic development alliance for the Greater New Orleans region, GNO, Inc., on a regional workforce strategy. Leveraging the vast relationships GNO, Inc. has across the region with two year schools, four year universities, Workforce Investment Boards, small business associations and various firms working in resilience, this NDRC opportunity will extend beyond parish boundaries to fully engage all workforce assets in Southeast Louisiana. Already, over 30 individuals from the above stakeholder groups have been brought together with GNO, Inc. and

the four NDRC applicants to learn about the projects being proposed and being to align projects and programming around a resilient workforce.

Regional Planning Commission (RPC) - Resilience Committee: The Resilience Committee would serve as a key forum for all member parishes to convene and discuss the implementation of projects that build the region's resilience. The focus will be on critical infrastructure and services such as coastal restoration, flood protection, storm-water management, potable water, and energy infrastructure, among others. These systems will also be examined in how they intersect with other vital services such as transit, economic development, and the environment. The committee members will deliver project updates from each parish, discuss how the projects can create complementary outcomes and shared benefits, and share best practices and lessons learned. In addition to member parishes, stakeholders in the public, private, and non-profit community will be invited to present on their projects and initiatives. The goal is to create a region that is more aware of its shared risks and vulnerabilities and more equipped to address these challenges as a coordinated region. By creating a more resilient region, the committee will contribute to the region's growth, prosperity, and sustainability.

Regional Resiliency Exchange: Via a partnership with the Rockefeller Foundation, the four Louisiana applications will have the opportunity uplift best practices in the form of case studies to share with one another and other communities as well. While the Regional Resilience Committee will be the place for sharing on an ongoing basis, this online portal will serve as a mechanism to memorialize and share success and challenges far beyond the grant period and with partners outside of the NDRC process.

iii. Actions to Be Taken within One Year of Award Announcements

The parish will continue the focus on recovery and resilience for years to come. However, in the

immediate future, JP has outlined the following actions which will be undertaken within one year of a potential CDBG-NDR award.

Green Infrastructure at Government Buildings: Currently, runoff from buildings and flooding issues in parking lots can be mitigated with minor improvements. However, the parish has implemented a pilot program for green infrastructure at government buildings The Parish has selected a contractor, and will anticipate ratification and construction by September 2016.

Elevation of Flood Prone Structures: Since 2006, 1,100 structures have been elevated. An additional 200 properties have been elevated since the NOFA publication, and the parish anticipates elevating 218 structures by the end of 2017.

Incorporation of Resilience in Policies and Procedures: Currently, no formal resilience measures are included in written policies and procedures for JP HM. In the next year, JP JM has committed to amend current policies and procedures to include resilient measures.

Resilience Education: JP will coordinate with JP Schools to implement a program that engages students into a discussion about creating a resilient environment JP. Educating children and teenagers who are often unfamiliar with conditions and issues that affect their environment, through educational curriculums, JP can instill resilient values in these students. To assist with the funding for this curriculum, JP submitted an EPA grant on September 15, 2015 and anticipates funding in 2016.