7. Critical Needs Projects

Task 5 of the Stormwater Master Plan Update also includes the identification and prioritization of Critical Needs Projects (CNPs), which are to be included within the stormwater CIP.

The initial CNP component of the updated CIP will consist of two (2) projects commencing each year for 10 years. The complexity of design and permitting and the duration of construction will vary by project. A detailed discussion on the methods and processes utilized in the identification, evaluation, proposed solutions, ranking and prioritization of the CNPs is provided in this section.

7.1 Definition of a Critical Needs Project

CNPs are defined as, “a Project aimed at addressing nuisance flooding to provide both beneficial and cost-effective solutions within targeted areas, and which are complimentary and adaptable to the future NIPs and may include one or more of the variety of solutions available in the ‘Drainage Toolbox’”. Toolbox tools include but are not necessarily limited to:

1. **Minor Road Raising, Repaving, and Regrading**: Raising the road surface can help prevent flooding in low-lying areas. It creates a higher elevation that stormwater runoff must reach before flooding occurs. Furthermore, proper road maintenance is essential for stormwater management. Cracked or damaged roads can contribute to runoff problems; repaving can help maintain a smooth, water-resistant surface. Finally, proper regrading can direct runoff away from critical areas or towards collection points.

2. **Upsizing Stormwater Infrastructure**: Upsizing the existing stormwater infrastructure to the NIP lengths and diameters of pipes is crucial for efficiently managing runoff. These pipes can direct runoff away from sensitive areas and provide additional storage.

3. **Connecting Drainage Areas**: Expanding the network of stormwater collection systems, i.e., curb inlets, catch basins, culverts, and drains, helps prevent runoff from pooling in critical areas.

4. **Water Quality Improvements**: Incorporating water quality treatment measures is crucial, especially in areas where pollutants may be present. This can involve the installation of a water quality pump, hydrodynamic separators, and membrane filtration structures.

In addition to these solutions, it is essential to consider blue-green infrastructure (e.g., rain gardens, tree pits, bioswales, etc.) as well as sustainable and nature-based approaches, which can enhance stormwater management while providing additional benefits (i.e., improved aesthetics and habitat for wildlife).

The specific combination of solutions should be tailored to the unique characteristics and challenges of the critical areas in question, considering factors like topography, soil type, land use, and regulatory requirements.

7.2 Development of Critical Needs Candidate Projects

For the CNP element of the CIP, a City-wide evaluation was performed to identify project areas that meet the fourteen (14) criteria developed. The following criteria were used in the evaluation/selection process of the CNPs:

1. **Flooding Complaints (Criterion Weight – 7):** These are reports or concerns raised by residents or stakeholders about instances of flooding in specific areas. Areas with high density complaints were more likely to be evaluated as a critical needs area.

2. **Low Topography / Tidal Inundation (Criterion Weight – 7):** Low-lying areas are more susceptible to flooding, especially during high tide or storm events. Tidal inundation refers to the flooding

caused by tidal movements in coastal areas. Tidal inundation (or sea level rise flooding) is more likely to occur in low-lying areas.

3. **Temporary Pumps (Criterion Weight – 7):** Temporary pumps are deployed by the City's Public Works Department in flood-prone areas to remove excess water during and after heavy rainfall or flooding events. Typically, if an area requires a temporary pump, it is a problem area and thus was taken into consideration as a critical needs area.

4. **Constructability (Criterion Weight – 7):** This criterion refers to the feasibility and practicality of implementing stormwater management solutions, considering factors like site constraints, materials, local conditions, and adaptability to the future CIP of the Stormwater Modeling and Master Plan.

5. **Neighborhood Improvement Project Ranking (Criterion Weight – 6):** This criterion involves evaluating and prioritizing areas that are lower on the NIP ranking since these areas are less likely to be improved in the near future.

6. **No Improvement Projects in the Last 10 Years (Criterion Weight – 6):** This criterion suggests that there has been a lack of recent investment or infrastructure improvements for addressing flooding issues in a specific area; it was inferred that these areas require improvements more urgently than areas that have been improved within the last 10 years.

7. **Exfiltration Trenches (Criterion Weight – 4):** Exfiltration trenches are underground structures designed to manage stormwater by allowing it to slowly infiltrate into the ground, reducing runoff. However, exfiltration trenches can be problematic in low-lying areas due to their susceptibility to high water tables, which decreases their functionality to both treat and remove runoff, and potential challenges in managing sediment and contaminants.

8. **Drainage Wells (Criterion Weight – 4):** Drainage wells are structures that collect and manage stormwater, directing it underground to be stored or infiltrated. Areas with a high density of wells indicate an area that is more susceptible to flooding. More specifically, gravity wells can be problematic in low-lying areas due to the potential for high water tables, contamination risks, limited gravitational flow, maintenance challenges, and the possibility of backflow during heavy rainfall events.

9. **Insufficient Drainage (Criterion Weight – 4):** This criterion indicates that there was a lack of drainage infrastructure in the area or that the existing drainage systems are inadequate for managing stormwater effectively, leading to critical flooding issues.

10. **Historic District (Criterion Weight – 3):** If an area is designated as a historic district, the preservation of the historic structures and landscapes is critical. Historic districts pose additional challenges for drainage improvements due to the need to preserve their cultural and architectural heritage, protect historic building foundations, and address permitting complexities.

11. **Community and Emergency Facilities (Criterion Weight – 3):** Ensuring that critical community facilities (e.g., hospitals, fire stations, schools, and recreation areas) are not affected by flooding is a key consideration in stormwater management. Drainage improvements for community and emergency facilities are vital to ensure public safety, continuous operation of essential services, community resilience during emergencies, and maintain healthcare access.

12. **No Permitting Complexity (Criterion Weight – 3):** Simplified permitting processes can expedite the approval and implementation of stormwater management projects.

13. **10-Year Design Storm Flooding (Criterion Weight – 1):** Areas that experience heavy flooding during a 10-year design storm were considered in the selection process.

14. **No Connection to Outfalls (Criterion Weight – 1):** In some cases, stormwater management systems may not be connected to natural outfall locations, which can impact the efficient discharge of stormwater.

Next to each of the fourteen (14) criteria listed above, there is as an assigned number in parentheses. The number in parentheses refers to the criteria weight of the criterion. Criteria weight, in the context of decision-making and evaluation, refers to the assigned importance or priority given to specific criteria when assessing or ranking options. It is a numerical representation of how much each criterion contributes to the overall evaluation process.

7.3 Evaluation and Selection of Critical Needs Projects

During the evaluation process, various factors were considered (including LiDAR data, complaint heat maps, and the established criteria), resulting in the identification of approximately sixty projects. Subsequently, all sixty projects underwent a comprehensive review in collaboration with the City. Further evaluation considered recent improvements, proximity to ongoing projects, and various other relevant considerations.

As a result of this meticulous process, the projects were narrowed down to thirty-four Critical Needs Projects that were subsequently incorporated into the evaluation matrix. This approach ensured a thorough and unbiased examination of all potential projects, leaving no aspect overlooked, and culminating in a comprehensive overview of the projects based on established criteria. ***Figure 15*** provides a map of the thirty-four identified CNPs.

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Figure 15, Thirty-Four Identified Critical Needs Projects

In order to evaluate and rank the thirty-four Critical Needs Projects, a matrix was created that considered the fourteen (14) distinct criteria, each of which was assigned a specific weight to reflect its relative importance in the evaluation as discussed in ***Section 7.2, Development of Critical Needs Candidate Projects.*** Each project was then individually assessed based on the criteria. For each criterion, projects were assigned a score that corresponded to the degree of impairment they experienced. The impairment rank was categorized into four levels: none (0), low (1), moderate (3), and high (5). To arrive at an overall assessment for each project, the individual criterion scores were aggregated. This resulted in a "criteria score" for each project, showcasing how they performed against the established criteria. The total performance of each project, referred to as the "total score", was calculated by adding the criteria scores. Projects with higher total scores were deemed to have a more pressing need for drainage improvements.

From the pool of projects, the top twenty with the highest total scores, indicating the most critical need for drainage enhancements, were selected for further evaluation. In the second evaluation round, these projects underwent a more detailed assessment. The second round of evaluation involved ranking these 20 projects based on their overall score, which reflected their general performance against the criteria. Additionally, geographic and chronological factors were considered to ensure that selected projects did not conflict with other planned projects in terms of location and timing.

A cost-benefit analysis was then conducted for each project. This analysis weighed the number of residents who would benefit from the drainage improvements against the project's budgetary cost. This step aimed to identify projects that provided the greatest benefits to the community in a cost-effective manner while addressing the most critical drainage needs.

By following this structured approach, the evaluation process systematically identified and prioritized the top twenty projects that demonstrated the most critical needs for drainage improvements, logistical feasibility, and cost-effectiveness, thereby ensuring that critical community needs would be addressed effectively and efficiently. ***Appendix 12*** includes the scoring matrix used to select the CNPs. ***Figure 16*** provides a map of the twenty selected CNPs.

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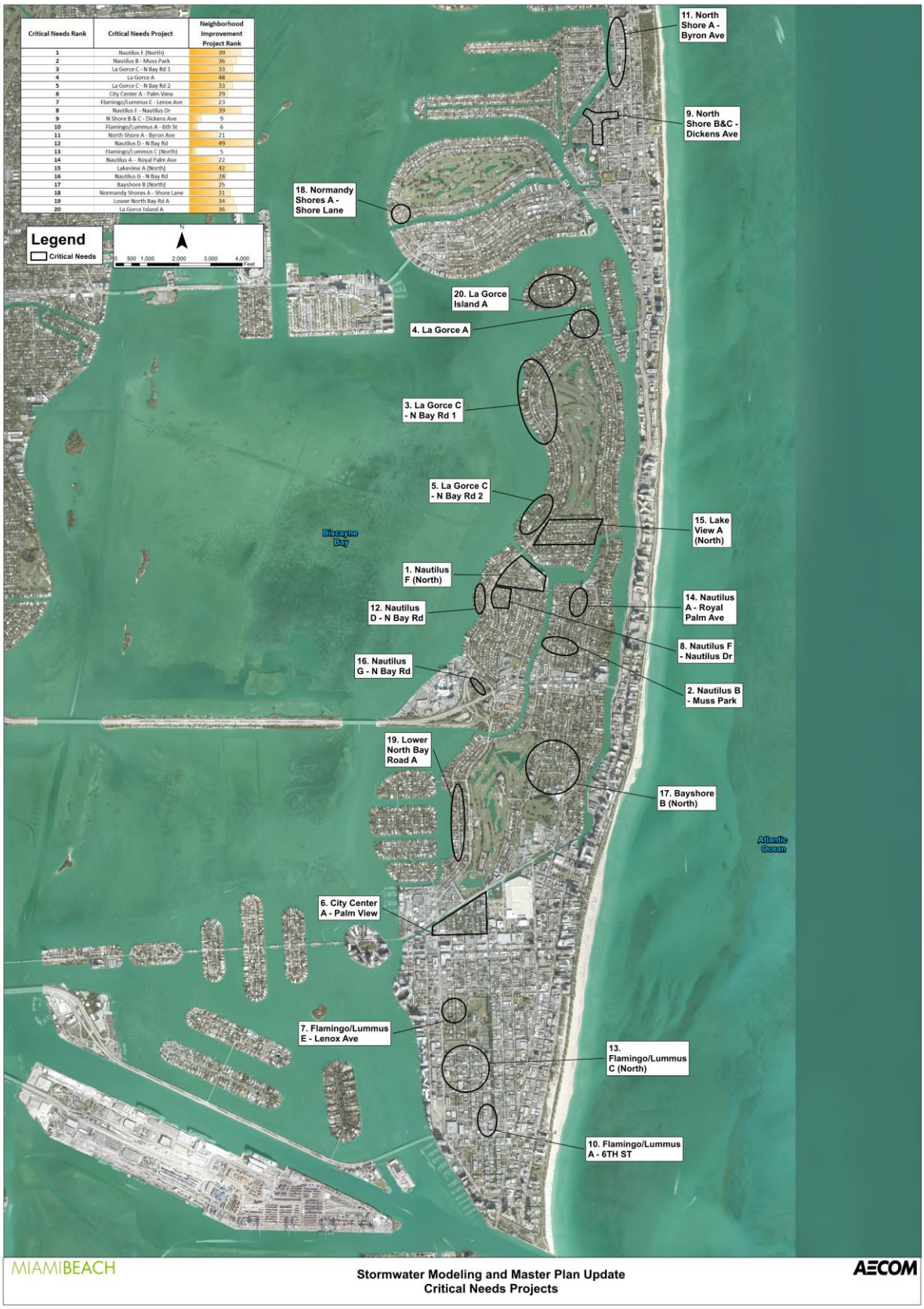


Figure 16, Twenty Selected Critical Needs Projects

Figure 17 provides a map of the twenty selected CNPs and a flood complaints "heat map".



Figure 17, Critical Needs Projects and Flood Complaints "Heat Map"

Figure 18 provides a map of the twenty selected CNPs, existing drainage infrastructure, tidal inundation, and historic districts.

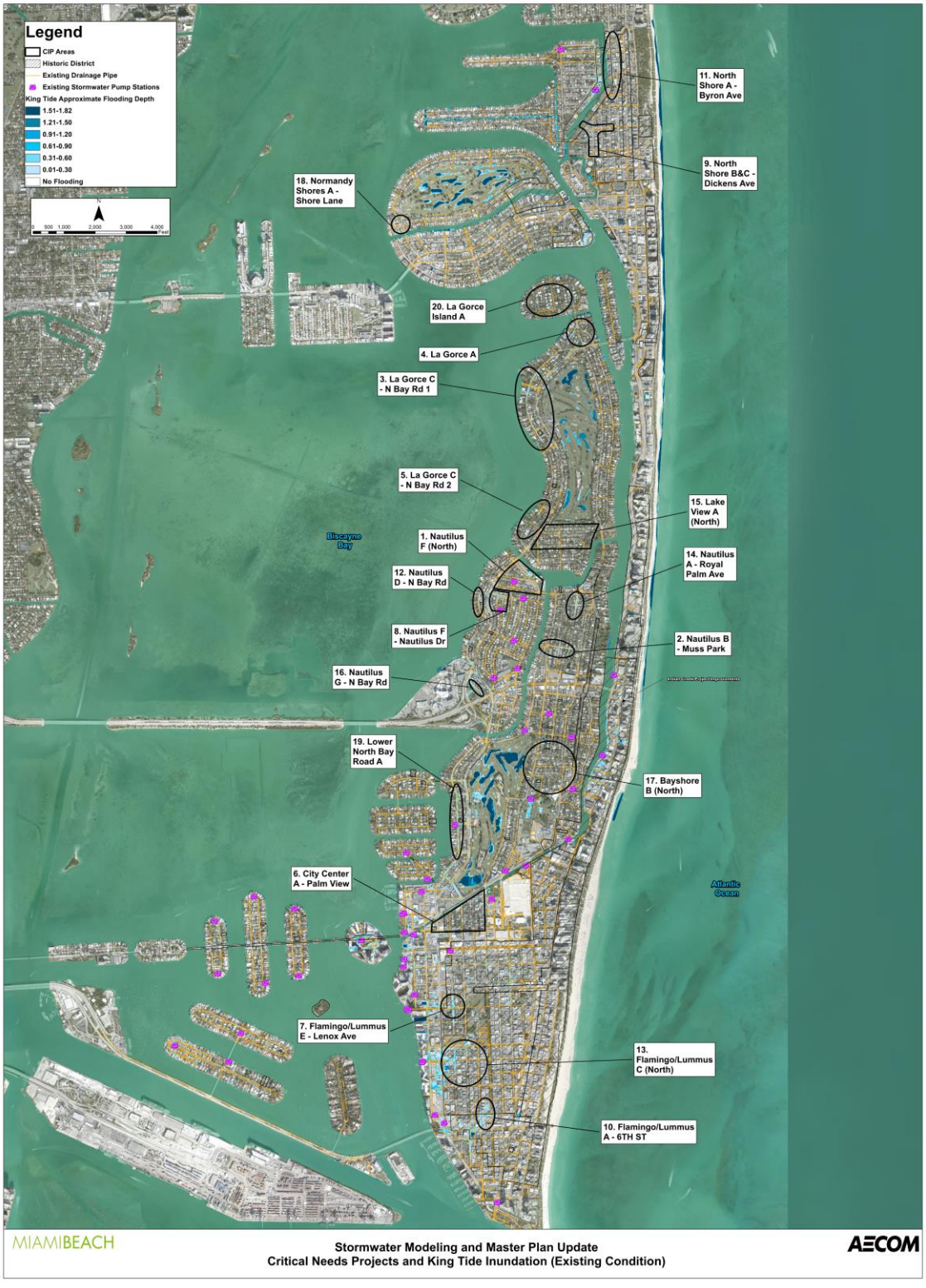


Figure 18, Critical Needs Projects, Existing Drainage Infrastructure, Tidal Inundation, and Historic Districts

7.4 Prioritized Ranking of Critical Needs Projects

Based on the second-round evaluation criteria and final verification of the proposed implementation schedule assuring no conflicts with NIPs, other City projects, or other CNPs, the twenty Critical Needs Projects were prioritized and ranked as shown in **Table 19**.

Table 19, Prioritized Ranking for the Selected Critical Needs Projects

Critical Needs Rank	NIP Rank	Critical Needs Project Name	FY 2023 Budgetary Estimate	Anticipated Construction Commencement	Escalated Budgetary Estimate	Critical Needs Score
1	39	Nautilus F (North)	$ 4,000,000.00	FY 2026	$ 4,900,000.00	Ongoing
2	36	Nautilus B - Muss Park	$ 4,300,000.00	FY 2026	$ 5,300,000.00	Ongoing
3	33	La Gorce C - N Bay Rd 1	$ 4,300,000.00	FY 2027	$ 5,400,000.00	247
4	48	La Gorce A	$ 3,000,000.00	FY 2027	$ 3,800,000.00	243
5	33	La Gorce C - N Bay Rd 2	$ 4,000,000.00	FY 2028	$ 5,200,000.00	239
6	29	City Center A - Palm View	$ 4,800,000.00	FY 2028	$ 6,200,000.00	236
7	23	Flamingo/Lummus E - Lenox Ave	$ 1,300,000.00	FY 2029	$ 1,800,000.00	216
8	39	Nautilus F - Nautilus Dr	$ 800,000.00	FY 2029	$ 1,000,000.00	216
9	9	N Shore B & C - Dickens Ave	$ 2,600,000.00	FY 2030	$ 3,700,000.00	202
10	6	Flamingo/Lummus A - Jefferson Avenue	$ 1,900,000.00	FY 2030	$ 2,600,000.00	200
11	21	North Shore A - Byron Ave	$ 5,900,000.00	FY 2031	$ 8,600,000.00	194
12	49	Nautilus D - N Bay Rd	$ 3,500,000.00	FY 2031	$ 5,100,000.00	192
13	5	Flamingo/Lummus C - Lenox Ave	$ 3,100,000.00	FY 2032	$ 4,600,000.00	187
14	22	Nautilus A - Royal Palm Ave	$ 2,400,000.00	FY 2032	$ 3,600,000.00	187
15	42	Lakeview A (North)	$ 3,200,000.00	FY 2033	$ 5,000,000.00	185
16	28	Nautilus G - N Bay Rd	$ 3,400,000.00	FY 2033	$ 5,300,000.00	175
17	25	Bayshore B (North)	$ 4,200,000.00	FY 2034	$ 6,700,000.00	170
18	31	Normandy Shores A - Shore Lane	$ 1,200,000.00	FY 2034	$ 1,900,000.00	170
19	34	Lower North Bay Rd A	$ 1,800,000.00	FY 2035	$ 3,000,000.00	167
20	36	La Gorce Island A	$ 6,800,000.00	FY 2035	$ 11,300,000.00	164
		TOTAL	**$ 66,500,000**		**$ 95,000,000**	

A conceptual implementation schedule of the City's CIP (including ongoing and upcoming NIPs, the twenty selected CNPs, and ongoing water quality projects) is illustrated in **Figure 19**.

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10-Year Conceptual Projects Schedule

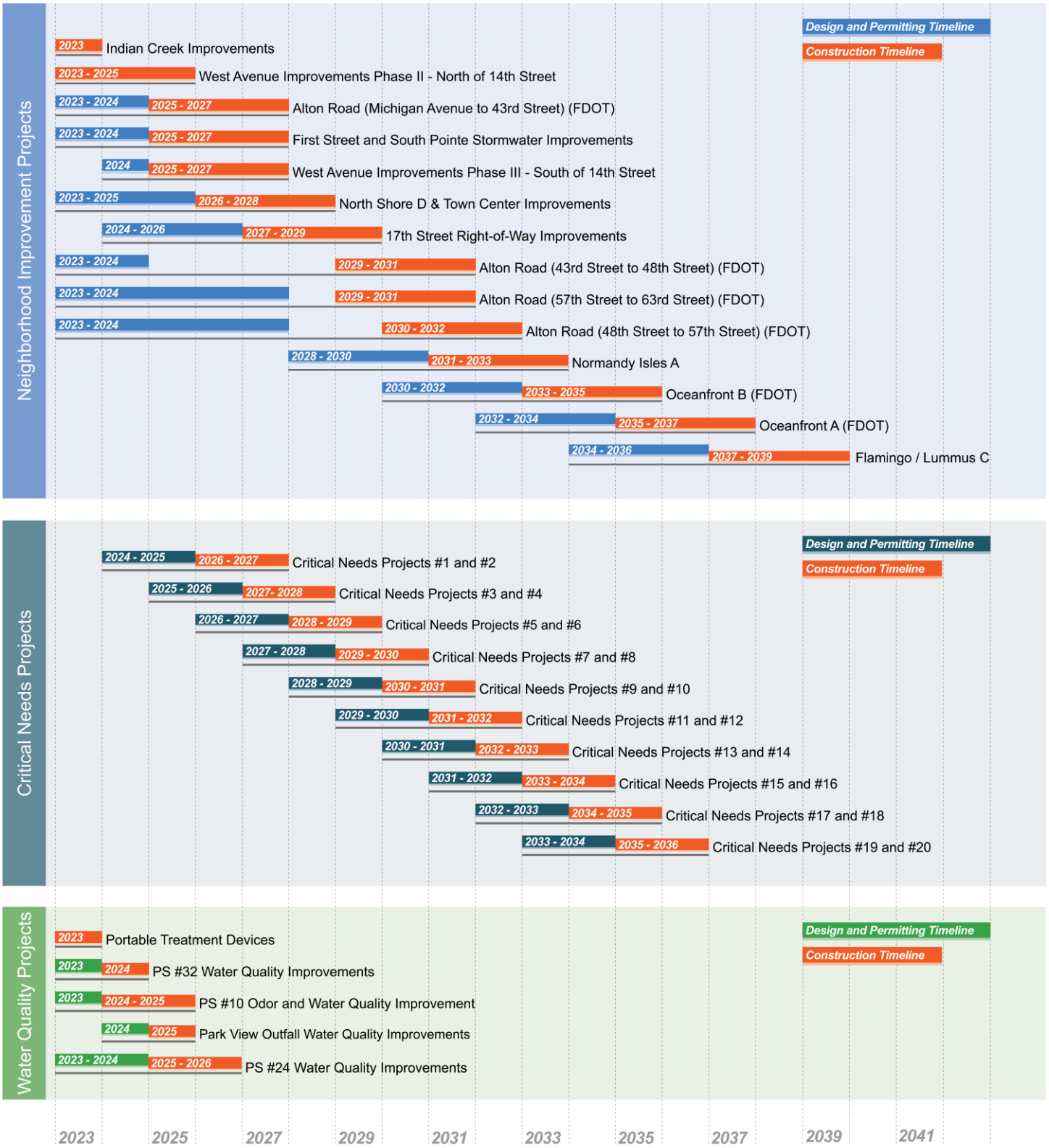


Figure 19, Conceptual Implementation Schedule

7.5 Description of Selected Projects

Descriptions and budgetary estimates of the twenty selected CNPs are provided below. ***Appendix 13*** includes preliminary construction cost estimates for the twenty selected CNPs; additionally, ***Appendix 14*** includes conceptual exhibits of the proposed improvements for the twenty selected CNPs.

1. **Nautilus F North**: Nautilus F North is situated on Meridian Ave, between W 48th and W 47th Streets, and falls within Basin 5 of the SWMP. In this low-lying area prone to tidal inundation, several proposed solutions were considered. One solution involves adding stormwater pipes, sized per the SWMP, along W 46th and W 47th Streets. This expansion of the stormwater pipe network aims to improve drainage in the area. Additionally, increasing the capacity of the lateral pipes is proposed. This enhancement can help manage and convey stormwater runoff more effectively. Minor road raising, repaving, and regrading is also proposed for the area. These proposed solutions collectively aim to address the challenges posed by the low topography and significant tidal inundation in the Nautilus F North area, ultimately improving its resilience to flooding and enhancing the overall stormwater management infrastructure. The budgetary estimate for the stormwater improvements in 2023 Dollars is approximately $4,000,000.

2. **Nautilus B – Muss Park**: Muss Park, situated between Chase Ave and W 46th Street within Basin 2 of the SWMP. presents several challenges. These include a substantial volume of flooding complaints, low-lying topography, pronounced flooding, insufficient drainage infrastructure, and the need for temporary pumps. Proposed technical solutions encompass the addition of the SWMP-prescribed drainage infrastructure along W 46th Street, as well as minor road raising, regrading, and repaving measures primarily along W 46th Street. Additionally, the plan entails the removal of all existing exfiltration trenches and the incorporation of a 4.5-cfs water quality pump, hydrodynamic separators, and a membrane filtration structure designed to enhance water quality treatment. The budgetary estimate for these proposed solutions in 2023 Dollars is approximately $4,300,000.

3. **La Gorce C – N Bay Rd 1:** This project is located along N Bay Road, spanning the stretch between W 58th Street and W 56th Street within Basin 5 of the SWMP. The challenges in this area encompass inadequate drainage infrastructure and limited connectivity to outfalls, exacerbated by significant tidal inundation attributed to the low-lying road; this has resulted in a multitude of flooding complaints. To address these issues comprehensively, the proposed technical solutions consist of the installation of a 60-inch reinforced concrete pipe along N Bay Road, establishing vital connections to the outfalls along W 56th Street and W 57th Street, while extending the drainage system halfway towards W 58th Street. Additionally, the plan entails the incorporation of strategically positioned inlets and the implementation of minor road raising, repaving, and regrading measures. Finally, the plan entails the incorporation of a 6-cfs water quality pump, hydrodynamic separators, and a membrane filtration structure designed to enhance water quality treatment. The budgetary estimate for these proposed solutions in 2023 Dollars is approximately $4,300,000.

4. **La Gorce A:** The project site, spanning the region between Pine Tree Drive and La Gorce Drive within Basin 5 of the SWMP, experiences a multitude of complex challenges. These challenges include a significant volume of flooding complaints, a low-lying topographical profile, recurrent flooding, inadequate drainage infrastructure, and limited connectivity to outfall systems. To comprehensively address these issues, the proposed technical solutions encompass the implementation of SWMP-proposed drainage infrastructure west of the project area, facilitating crucial connections to the outfalls located along Pine Tree Drive and N Bay Road. Moreover, essential measures consist of minor road elevation adjustments, regrading, and repaving efforts, primarily along Pine Tree Drive, La Gorce Drive, and a designated section of N Bay Road. Furthermore, the plan entails the removal of the existing exfiltration trench on La Gorce Drive and the integration of a 3-cfs water quality pump, hydrodynamic separators, and a membrane filtration structure designed to improve water quality treatment. The budgetary estimate for these proposed solutions in 2023 Dollars is approximately $3,000,000.

5. **La Gorce C – N Bay Rd 2**: The project is located along N Bay Road, spanning the stretch between W 52nd Street and W 56th Street within Basin 5 of the SWMP. The challenges in this area involve inadequate drainage infrastructure and significant tidal inundation due to the low-lying road, which has resulted in significant complaints. To address these issues, the proposed solutions consist of the installation of a 60-inch diameter reinforced concrete pipe along N Bay Road, connecting to the outfall along W 52nd Street, while extending the drainage system almost to W 51st Street and a few feet past W 52nd Street. Additionally, the plan entails the incorporation of collection inlets, removal of existing exfiltration trenches, and the implementation of minor road raising, repaving, and regrading measures. Finally, the plan entails the incorporation of a 6-cfs water quality pump, hydrodynamic separators, and a membrane filtration structure designed to enhance water quality treatment. The budgetary estimate for these proposed solutions in 2023 Dollars is approximately $4,000,000.

6. **City Center A – Palm View:** The designated improvement zone encompasses Michigan Avenue, Jefferson Avenue, and 19th Street, strategically located within Basin 1 of the SWMP. This area holds significant importance as it resides at the heart of Miami Beach, in proximity to the City Center. Notable challenges include insufficient drainage infrastructure, undersized outfalls, intermittent tidal flooding occurrences, and a high volume of flooding complaints from the community. The enhancements are proposed to address these issues effectively using a multifaceted approach. A pivotal component involves the installation of additional drainage infrastructure along 19th Street. This expansion will establish vital connections to the outfalls on Meridian Avenue and Jefferson Avenue. Furthermore, the drainage network will be extended by approximately 300 linear feet along Jefferson Avenue, accompanied by the incorporation of strategically positioned inlets. To align with the proposed SWMP pipes, the drainage system along Michigan Avenue will be upsized. This enhancement will significantly improve drainage capacity in the area. Additional improvements include minor road raising, repaving, and regrading in areas where new drainage infrastructure is proposed. Collectively, these improvements are proposed to address the challenges faced in this critical Miami Beach area, ultimately enhancing drainage efficiency and minimizing the impact of tidal flooding, thereby improving overall community resilience. The budgetary estimate for these proposed solutions in 2023 Dollars is approximately $4,800,000.

7. **Flamingo/Lummus E – Lenox Ave**: The project site is situated at the intersection of Lenox Avenue and 14th Street, located within Basin 1 of the SWMP. Lenox Avenue, characterized as a low-lying road lacking drainage infrastructure, experiences severe flooding issues, prompting community complaints. The proposed improvements aim to alleviate these concerns through a multifaceted approach. Addressing the need for improved drainage, the plan entails minor road raising, regrading, and repaving measures. These efforts are designed to mitigate flooding and enhance road quality. A pivotal component involves the installation of a 30-inch diameter Reinforced Concrete Pipe (RCP) along Lenox Avenue. This addition will significantly enhance the drainage capacity of the area. The project includes improvements to the existing inlets along 14th Street, contributing to more efficient stormwater management. The budgetary estimate for the implementation of these improvements in 2023 Dollars is approximately $1,300,000. These measures collectively aim to address the flooding issues along Lenox Ave and improve overall drainage in the vicinity.

8. **Nautilus F – Nautilus Drive**: This project site is situated along W 46th Street and Nautilus Drive in Basin 5 of the SWMP. The project is characterized by a notably low road profile that frequently experiences extensive flooding. This area is further complicated by the presence of numerous injection wells and a speed table along W 46th Street, which disrupts the natural sheet flow of water. The proposed improvements for this location include redevelopment of the existing drainage well, enhancing its capacity and efficiency. Furthermore, to improve the sheet flow of runoff and mitigate flooding issues around the existing speed table on W 46th Street, the road will be regraded, repaved, and slightly raised. Additional inlets will be added along W 46th Street and Nautilus Drive to improve the overall drainage system, allowing for more effective runoff capture and conveyance. Another enhancement involves the installation of a 36-inch diameter RCP connection between

Nautilus Drive and W 46th Street facilitating improved stormwater management. The budgetary estimate for the implementation of these proposed improvements in 2023 Dollars is approximately $800,000. These measures are designed to address the persistent flooding challenges and enhance the drainage infrastructure in the area, ultimately improving quality of life in this community.

9. **N Shore B & C – Dickens Avenue**: This project is located along Dickens Avenue, spanning the area between 76th Street and 78th Street within Basin 6 of the SWMP. Dickens Avenue currently lacks drainage infrastructure, leading to occasional tidal flooding issues, the need for temporary pumps, and a significant number of community complaints. To address these challenges, the proposed plan includes the installation of the SWMP-prescribed pipes along Dickens Avenue, connecting to the outfalls while incorporating additional storage capacity. Additionally, the project involves the addition of extra inlets for enhanced stormwater collection. The budgetary estimate in 2023 Dollars is approximately $2,600,000.

10. **Flamingo/Lummus A – Jefferson Avenue**: The project site is situated along Jefferson Avenue between 7th Street and 5th Street, within Basin 1 of the SWMP. Jefferson Avenue is a low-lying road lacking drainage infrastructure that experiences severe flooding issues, prompting community complaints. Addressing the need for improved drainage, the plan entails minor road raising, regrading, and repaving measures. These efforts are designed to mitigate flooding and enhance road quality. A pivotal component involves the installation of a 30-inch diameter Reinforced Concrete Pipe (RCP) along Jefferson Avenue. This addition will significantly enhance the drainage capacity of the area. The project includes improvements to the existing inlets along the side streets and the addition inlets along Jefferson Avenue, contributing to more efficient stormwater management. The budgetary estimate for implementation of these improvements in 2023 Dollars is approximately $1,900,000. These measures collectively aim to address the flooding issues along Jefferson Avenue and improve overall drainage in the project vicinity.

11. **North Shore A – Byron Avenue:** The project is located along Byron Avenue, spanning the area between 85th Street and 81st Street within Basin 6 of the SWMP. Byron Avenue currently lacks drainage infrastructure, leading to occasional tidal flooding issues, the need for temporary pumps, and flooding complaints. To address these challenges, the proposed plan includes the installation of the SWMP-prescribed 72-inch trunk line along Byron Avenue, connecting to the outfalls while incorporating additional storage capacity. Additionally, the project involves the addition of extra inlets for enhanced stormwater collection and upsizing of the existing laterals to 24-inch diameter RCP. The budgetary estimate in 2023 Dollars is approximately $5,900,000.

12. **Nautilus D – N Bay Road:** This project is located along N Bay Road, spanning the stretch between W 46th Street and W 45th Street within Basin 5 of the SWMP. The challenges in this area involve undersized drainage infrastructure and significant tidal inundation due to the low-lying roads, which has resulted in significant flooding complaints. To address these issues, the proposed solutions consist of the installation of a 60-inch diameter reinforced concrete pipe along N Bay Road and connecting to the outfall along W 45th Street, while extending the drainage system almost to W 46th Street. Additionally, the plan entails the incorporation of collection inlets, upsizing of the existing laterals, and the implementation of minor road raising, repaving, and regrading measures. Finally, the plan entails the incorporation of a 6-cfs water quality pump, hydrodynamic separators, and a membrane filtration structure designed to enhance water quality treatment. The budgetary estimate for these proposed solutions in 2023 Dollars is approximately $3,500,000.

13. **Flamingo/Lummus C – Lenox Avenue:** The project site is situated along Lenox Avenue between 11th Street and 8th Street, located within Basin 1. Lenox Avenue, characterized as a low-lying road lacking drainage infrastructure, experiences severe flooding issues, prompting multiple flooding complaints. The proposed improvements aim to alleviate these concerns through a multifaceted approach. Addressing the need for improved drainage, the plan entails minor road raising, regrading, and repaving measures. These efforts are designed to mitigate flooding and enhance

road quality. A pivotal component involves the installation of a 48-inch diameter Reinforced Concrete Pipe along Lenox Avenue connecting to the existing drainage infrastructure on 11th and 8th Street. This addition will significantly enhance the drainage capacity of the area. The project includes incorporation of additional collection inlets and improvements to the existing inlets along the side streets, contributing to more efficient stormwater management. The budgetary estimate for the implementation of these improvements in 2023 Dollars is approximately $3,100,000. These measures collectively aim to address the flooding issues along Lenox Avenue and improve overall drainage in the project vicinity.

14. **Nautilus A – Royal Palm Avenue**: This project is located along Royal Palm Avenue, spanning the stretch between W 47th Street and W 45th Street within Basin 2 of the SWMP. The challenges in this area involve insufficient drainage infrastructure and significant tidal inundation due to the low-lying road, which has resulted in many flooding complaints. A pivotal component involves the installation of approximately 150 linear feet of 48-inch diameter RCP and 150 linear feet of 66-inch diameter RCP along Royal Palm Ave, accompanied by the incorporation of strategically positioned inlets. Furthermore, the drainage system along W 46th Street and W 47th Street will be extended to align with the proposed SWMP pipes. This enhancement will significantly improve drainage capacity in the area. Additional improvements include minor road raising, repaving, and regrading in areas where new drainage infrastructure is proposed. The budgetary estimate for implementation of these improvements in 2023 Dollars is approximately $2,400,000.

15. **Lakeview A (North)**: This project is situated along W 51st Street and W 50th Street, between Delaware and Cherokee Avenues. The area is slightly low-lying and has significant community concerns. The proposed improvements aim to alleviate these concerns through minor road raising, regrading, and repaving measures. Furthermore, additional solutions consist of the installation of the proposed SWMP pipes along W 51st Street and W 50th Street, connecting to the drainage pipes along the avenues. The project includes incorporation of additional inlets for stormwater runoff collection. The budgetary estimate for implementation of these improvements in 2023 Dollars is approximately $3,200,000.

16. **Nautilus G – N Bay Road**: This project is located along N Bay Road, situated between I-95 and Alton Road in Basin 5 of the SWMP. This area is characterized by its low-lying topography and the absence of adequate drainage infrastructure, resulting in frequent and severe flooding issues; this has led to flooding complaints. To address these challenges effectively, the proposed solutions encompass several key components. A vital aspect of the plan involves the installation of an injection well, which will contribute to improved stormwater management and add water quality. To enhance drainage capacity, a 42-inch diameter RCP will be installed along the road. Finally, to optimize water flow and mitigate flooding, the road will undergo regrading, establishing an inverted crown design complemented by strategically positioned catch basins. These measures collectively aim to address the persistent flooding issues in the area and improve stormwater management. The budgetary estimate for implementation of these improvements in 2023 Dollars is approximately $3,400,000.

17. **Bayshore B (North)**: This project, situated along W 29th Street and Prairie Avenue in Basin 2, responds to a range of concerns, including a notable number of flooding complaints and occasional tidal flooding. The proposed solutions are designed to comprehensively address these issues. Key components of the project entail the installation of a 72-inch diameter RCP along Prairie Avenue, establishing a vital connection to an existing pump station on W 28th Street. Additionally, the existing drainage infrastructure on W 29th Street, connecting to Prairie Avenue, will be upsized to a 48-inch diameter pipe, significantly enhancing the area's drainage capacity. Moreover, supplementary improvements will encompass minor road raising, repaving, and regrading in areas slated for new drainage infrastructure along W 29th Street. The budgetary estimate for implementation of these improvements in 2023 Dollars is approximately $4,200,000. These measures collectively aim to improve stormwater management, alleviate flooding concerns, and bolster the overall resilience of

the area, with the pump station connection and additional pipe storage capacity serving as notable benefits.

18. **Normandy Shores A – Shore Lane**: The project site, situated at the intersection of Biarritz Drive and Shore Lane in Basin 4 of the SWMP, is characterized by a low-lying topography that leads to periodic tidal flooding, prompting concerns from the local community. To address these challenges effectively, the proposed solution comprises several key components. First, at the intersection, minor road raising, regrading, and repaving measures are planned to mitigate flooding and improve road conditions. Additionally, to enhance drainage, a SWMP-prescribed pipe will be installed along Biarritz Drive, establishing a critical connection to the outfall system. To further optimize drainage, the existing exfiltration trench linked to the outfall will be removed. The budgetary estimate for implementation of these improvements in 2023 Dollars is approximately $1,200,000.

19. **Lower North Bay Road A**: The project is situated along N Bay Road, covering the area between W 27th Street and W 21st Street within Basin 2 of the SWMP. Although recent improvements have been made, the primary concern in this area is the low road elevation. To address this issue comprehensively, the proposed solution involves multiple components. Firstly, the road will undergo minor elevation raising, regrading, and repaving. This aims to raise the road to a suitable level, mitigating flooding concerns and enhancing road quality. Additionally, to optimize stormwater management, extra inlets and yard drains will be strategically added to capture a larger volume of runoff efficiently. Furthermore, a membrane filtration structure dedicated to water quality enhancement will be integrated into the project. This structure will be connected to the outfall on W 23rd Street, contributing to improved water quality treatment. The budgetary estimate for implementing these comprehensive improvements in 2023 Dollars is approximately $1,800,000. These combined measures are designed to address the low road elevation issue effectively, optimize stormwater drainage, and ensure water quality improvements for the community.

20. **La Gorce Island A**: The project area situated on La Gorce Island primarily focuses on the southern part of La Gorce Circle. Characterized by a slightly low-lying topography, insufficient drainage infrastructure, and a lack of recent improvements, this area has raised concerns within the community. To address these issues comprehensively, a multifaceted solution has been proposed. A significant aspect of the plan involves the installation of drainage infrastructure along the southern stretch of La Gorce Circle, with the drainage network extending a few feet up Brevity Lane. This addition aims to improve stormwater management in the area. Furthermore, strategically positioned inlets will be added to enhance stormwater collection, allowing for more effective runoff capture. Additionally, the plan includes the removal of existing exfiltration trenches to improve drainage efficiency, and the incorporation of a 6-cfs water quality pump, hydrodynamic separators, and a membrane filtration structure. These elements are designed to enhance water quality treatment. Finally, in areas where the proposed drainage infrastructure is being added, the plan calls for minor road raising, repaving, and regrading. These combined measures aim to comprehensively address the low-lying topography, drainage issues, and water quality concerns in the project area. The improvements will not only benefit the community but also contribute to the overall resilience and quality of the environment. The budgetary estimate for implementing these comprehensive improvements in 2023 Dollars is approximately $6,800,000.

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