ESTADO LIBRE ASOCIADO DE PUERTO RICO
GOBIERNO MUNICIPAL AUTÓNOMO DE CAROLINA

September 29, 2016

Eng. Sergio Bosques
Regional Storm Water Coordinator
Caribbean Environmental Protection Division
City View Plaza II – Suite 7000
#48 Rd. 165 km 1.2
Guaynabo, PR 00968-8069

NOTICE OF INTENT-NOI- ***MUNICIPALITY OF CAROLINA***,
FOR STORM WATER DISCHARCHES FROM SMALL MS4's IN URBANIZED AREAS

As part of the provisions of the Clean Water Act, Section 402 (p), requires that storm water discharges, associated with municipal separate storm sewer system (MS4s) in urbanized areas, to waters of the US must be authorized by a National Pollutant Discharge Elimination System (NPDES) permit.

In order to comply with this requirement, we are submitting our Notice of Intent (NOI) for the NPDES Permit no. PRR040018. The updated SWMP document will be modified in the next 120 days as required in Section 1.11 of the 2016 signed permit, and pursuant to Title 40, Part 122.34 Subpart B, or Permit Application and Special NPDES Program Requirements. The Municipality of Carolina has the intention of comply with the Permit's provisions and EPA requirements.

If you need additional information, do not hesitate to contact us at the 787-757-2626 extension 8105 or via e-mail at iayuso@carolina.pr.gov.

Hon. José C. Aponte Dalmau
Mayor

Enclosure
Notice of Intent

IAE\CRQB\GIC\ADF

www.teleserviciogigante.com

United States Environmental Protection Agency
National Pollutant Discharge Elimination System
Notice of Intent (NOI) for coverage under the Small Municipal Separate Storm Sewer System (MS4) General Permit (PRR040000) for Puerto Rico

Part A. General Information

1. Name of Municipality or Organization:

Municipality of Carolina

2. Type: ○ Federal ○ State ● Municipality ○ Other: _____

3. Existing Permittee: ● Yes ○ No If yes, provide EPA NPDES Permit Number: P R R 0 4 0 0 1 8

4. Location Address:

a. Street: Fernandez Juncos St. Int. Molinillo St.

b. City: Carolina State: PR Zip Code: 00986-0008

5. Mailing Address:

a. Street: PO Box 8

b. City: Carolina State: PR Zip Code: 00986-0008

6. Telephone Number: 787-757-2626 ext. 8105 Fax: 787-768-3395

7. E-mail: iayuso@carolina.pr.gov

8. Standard Industrial Classification (SIC) Code (see instructions for common codes): 9199

9. Latitude: (use the format provided.) Longitude: (use the format provided.)

2.2.4.2 *Approximate center of the regulated portion of the MS4.*

18° 22′ 51″ N (degrees, minutes, seconds) 65° 57′ 24″ W (degrees, minutes, seconds)

Or

18.38083 N (degrees decimal) - 65.95667 W (degrees decimal)

Part B. Primary MS4 Program Manager Contact Information

1. Name: Iván Ayuso Expósito, PE

2. Position Title: Infrastructure Manager

3. Stormwater Management Program (SWMP) Location (web address or physical location):

Fernandez Juncos St. Int. Molinillo St., Pueblo Ward

4. Mailing Address:

a. Street: PO Box 8

b. City: Carolina State: PR Zip Code: 00986-0008

5. Telephone Number: 787-757-2626 ext. 8105

6. E-mail: iayuso@carolina.pr.gov

Part C. Eligibility Determination

1. Endangered Species Act (ESA) determination complete? ● Yes ○ No

a. Eligibility Criteria (check all that apply): ○ A ○ B ○ C ○ D ● E ○ F

2. National Historic Preservation Act (NHPA) determination complete? ● Yes ○ No

a. Eligibility Criteria (check all that apply): ○ A ● B ○ C ○ D

Part D. Map/Boundaries

1. MS4/Organization Description of regulated boundaries (narrative):

The Autonomous Municipality of Carolina has a land area of 45.4 square miles and lies in the eastern border of the San Juan Metropolitan Region, the most densely populated segment of the island. The Storm Water Management Program (SWMP) of the Municipality of Carolina comprehends the urban area, which has an extension of 13.8 square miles. According to official data from the U.S. Census Bureau, Carolina has a population of 176,792 persons (US Census 2010). That represents a decrease of 5.0% in comparison to the 2000 Census. The population density of Carolina is 3,900 persons per square mile, one of the highest on the island.

The Municipality of Carolina is delimited at the North by the Atlantic Ocean; at the South by the Municipalities of Gurabo and Juncos; at the Northeast with the Municipality of Loíza; at the East by the Municipality of Canovanas; and at the West by the Municipalities of Trujillo Alto and San Juan.

The territory of Carolina lies between two watersheds: the Rio Puerto Nuevo and the Rio Grande de Loíza, occupying the later most of the territory. The Rio Grande de Loíza watershed is the largest drainage basin in Puerto Rico (Webb and Soler-Lopez, 1997). The rural area in the upper lands of Carolina drains mostly into the Loíza River. The principal creeks draining into the Rio Grande de Loíza are Maracuto, Pastrana, Hoya Fria and Lagrimita. In the eastern border, the Canovanillas River, which also drains into Rio Grande de Loíza, receives water from Cambute, Limones and Las Lajas creeks.

The urban area of Carolina drains mostly into the San Juan Bay Estuary System of the Rio Puerto Nuevo watershed. In the west border, the San Jose Lagoon and Los Corozos Lagoon are located near the center of the estuary system. These water bodies have a surface area of approximately 1,129 acres or 457ha. (SJBEManagementPlan, 2000). In the south-west border, the San Anton creek drains into the San Jose Lagoon. The Suarez Canal, located on the eastern part of the San Jose Lagoon, connects the San Jose to La Torrecilla Lagoon through a 2.4 mile (3.9 km) long forested canal. The Blasina Creek, with respected tributaries including the Blasina Lake, crosses the center of the urban area of Carolina, draining in the Piñones Lagoon in the northern border.

Storm water sewer outfalls are located along the Blasina Creek, including tributaries such as Monserrate Channel and Blasina Lake. Also, there are storm sewer outfalls that discharge into San Anton Creek, the Flamboyanes Channel in

Los Angeles neighborhood and the Suarez Canal. There are also storm sewers that discharge into Smaller streams within the urban area but mostly all storm water runoff will eventually reach the water bodies mentioned above.

2. Location Map/Boundaries. A location map must be attached showing the pertinent city, town, wards, or boundaries, the boundaries of the Small MS4, including surface water body(s), and the "urbanized area" (UA) when applicable.

Is map attached? ● Yes ○ No

Part E. MS4 Infrastructure (if covered under the 2006 general permit)

1. Estimated Percent of Outfall Map Complete? (*Section 4.2.3 of 2006 general permit*): 54 %

   a. If 100% of 2006 requirements are not met, enter an estimated date of completion: 2021 (MM/DD/YYYY)

   b. Web address where MS4 map is published: Outfall map included

   If outfall map is unavailable on the internet an electronic or paper copy of the outfall map must be included with NOI submission.

Part F. Bylaw/Ordinance Development (if covered under the 2006 general permit)

1. Illicit Discharge Detection and Elimination (IDDE) authority adopted? ● Yes ○ No

   a. Effective Date or Estimated Date of Adoption: 07/13/2013 (MM/DD/YYYY)

2. Construction/Erosion and Sediment Control authority adopted? ○ Yes ● No

   a. Effective Date or Estimated Date of Adoption: 09/30/2018 (MM/DD/YYYY)

3. Post-Construction Stormwater Management adopted? ○ Yes ● No

   a. Effective Date or Estimated Date of Adoption: 09/30/2018 (MM/DD/YYYY)

Part G. Receiving Waters

List the names of all surface waterbody segments to which your MS4 discharges. For each waterbody segment, please report the number of outfalls discharging into it and, if applicable, any impairments. You may attach additional information.

Waterbody Segment that receives flow from the MS4	Number of Outfalls into receiving waterbody segment	Have any monitoring been performed to outfalls? (Yes/No)	List of Pollutant(s) causing impairment (if applicable)	List of TMDL Pollutant (s) (if any)
Rio Grande de Loiza River		No	Turbidity (2500)	N/A
Canovanillas River		No	Low Dissolved Oxygen (1200) Total Coliforms (1700)	N/A

Blasina Creek	18	No	Fecal Coliforms (1700) Enterococcus Bacteria (1700) Low Dissolved Oxygen (1200) Oil & Grease (1900) pH (1000) Thermal Modifications (1400) Total Coliforms (1700) Turbidity (2500)	N/A
Suarez Channel	12	No	Fecal Coliforms (1700) Enterococcus Bacteria (1700) Low Dissolved Oxygen (1200) Oil & Grease (1900) pH (1000) Thermal Modifications (1400) Total Coliforms (1700) Turbidity (2500)	N/A
San Anton Creek		No	Fecal Coliforms (1700) Enterococcus Bacteria (1700) Low Dissolved Oxygen (1200) Oil & Grease (1900) pH (1000) Thermal Modifications (1400) Total Coliforms (1700) Turbidity (2500)	N/A
San Jose/ Los Corozos Lagoon	8	No	Fecal Coliforms (1700) Enterococcus Bacteria (1700) Low Dissolved Oxygen (1200) Oil & Grease (1900) pH (1000) Thermal Modifications (1400) Total Coliforms (1700) Turbidity (2500)	N/A
La Torrecilla Lagoon		No	Fecal Coliforms (1700) Enterococcus Bacteria (1700)	N/A

			Low Dissolved Oxygen (1200) Oil & Grease (1900) pH (1000) Thermal Modifications (1400) Total Coliforms (1700) Turbidity (2500)	

Part H. Summary of Stormwater Management Program (SWMP) under the 2006 Small MS4 General Permit

For every measurable goal and associated Best Management Practice (BMP) listed in the adopted program, provide the following information (You may include additional pages):

BMP Description or BMP ID (e.g. MCM-1)	Goal Achieved? (Yes/No)	Continued in next permit cycle? (Yes/No)	Who was the targeted audience? Explain reason for not achieving goal.	Modification(s) to goals or BMP for next permit cycle
1. Promote educational activities to build awareness and appreciation of our natural resources.	Yes	Yes	All the audiences of different ages	Promote educational activities to build awareness, appreciation of our natural resources and stormwater pollution prevention.
2. Post educational and interpretive signs at highly visible heavy traffic areas throughout problems.	Yes	Yes	All the municipality	Educational signs at the Blasina Creek
3. Continue the implementation of the recycling programs and waste reduction in the Municipality of Carolina	Yes	Yes	All the municipality	Recycling and waste reduction programs in the Municipality of Carolina.
4. Establish activities to provide citizens with effective and organized volunteer opportunities to support awareness regarding the protection of surface waters.	Yes	Yes	All the municipality	Cooperate with organized volunteer opportunities to support awareness regarding the protection of surface waters.
5. Identify and promote low-impact and nature-oriented activities within selected areas of Carolina in order to encourage the recreational uses of the natural resources.	Yes	Yes	All the municipality	No new changes to the program goals.
6. Adopt a drain or stream	New	New	All the municipality	No changes to the established goals. Is new.
7. Develop a storm drain system map of the urban area of Carolina.	No	Yes	All the municipality	The program will continue until completed in 2023.
8. Develop an inspection program to identify wastewater discharges into the storm collection system.	Yes	Yes	All the municipality	No changes to the established goals and objectives.
9. Identify failing septic systems in the urban area of Carolina.	No	Yes	Areas without sanitary sewer systems	Identify susceptible areas that need new sanitary sewer systems
10. Develop a map of the catchment areas of the urban area of Carolina.	New	New	All the municipality	A new map is being developed by a local contactor.
11. Develop the protocols to detect and eliminate illicit discharges.	New	New	All the municipality	A new SOP will be developed by 9/30/2018 to address this task.
12. Monitoring the outfalls in dry and wet weather.	New	New	All the municipality	A new SOP will be developed by 9/30/2018 to address this task.
13. Develop and implement ordinances to address construction site runoff control in development or redevelopment projects proposed in Carolina.	No	Yes	All the municipality	The ordinances will be prepared by 09/30/2018.
14. Develop an ordinance to adopt the Regulation No.25 of the Puerto Rico Planning Board regarding Cut, Pruning and Reforestation of Trees in Puerto Rico.	Yes	Yes	All the municipality	Apply the Ordinance that adopt the Regulation No.25 of the Puerto Rico Planning Board regarding Cut, Pruning and Reforestation of Trees in Puerto Rico.
15. Protect areas within the upland	Yes	Yes	Rural areas of the	Protect areas within the upland

watershed through change in zoning codes.			Municipality	watershed through zoning codes.
16. Develop an ordinance for construction and redevelopment projects.	New	New	All the municipality	The ordinances will be developed by 9/30/2018.
17. Identify areas were illegal dumping is taking in order to develop an inventory.	Yes	Yes	All the municipality	Reduce the illegal dumping areas at the municipality.
18. Implement measures to control illegal dumping activities, especially near water bodies.	Yes	Yes	All the municipality	No changes to the program goals and objectives.
19. Develop an inventory of garages auto-shops and other automobile related businesses.	No	Yes	All the municipality	The task will be completed by 09/30/2018.
20. Develop a schedule for storm drain cleaning and debris removal from storm water open channels.	Yes	Yes	All the municipality	No changes to the program goals and objectives.
21. Develop Standards Operating (SOP) Procedures for the Municipal facilities.	New	New	Municipal facilities	The SOPs will be developed by 9/30/2018.
22. Trainings about the SOP's and general information about the program.	New	New	Municipal employees	The SOPs will be developed by 9/30/2018.

Part I. 2016 Stormwater Management Program (SWMP) Summary

Public Education and Outreach (See Section 2.4.2 for detailed information of required BMPs):

BMP Description or BMP ID (e.g. MCM-1)	Education Topic (Identify the issue your BMP is educating the public about.)	Outreach Method (Describe the method used to convey this topic, e.g. mailing, events, school, etc.)	Measurable Goal (What is the end result of this program? What indicator will determine the goal has been met? (e.g., number mailing sent, people at event, class participation, etc.)
Promote educational activities to build awareness, appreciation of our natural resources and stormwater pollution prevention.	• Illicit discharges • Stormwater pollution prevention • Recycling • Species in danger • Septic tanks fallings • Differences between sewer and stormwater systems	Presentations and talks to schools, church's, at communities, malls, etc.	25 people at the events 5 events 2,000 brochures distributed
Educational signs at the Blasina Creek	• Illicit discharges • Species in danger • Stormwater pollution prevention • Differences between sewer and stormwater systems	Areas identified to collocate the signs Design and installation of the educational and informational signs	5 identified areas 5 signs designed and installed
Recycling and waste reduction programs in the Municipality of Carolina.	• Recycling • Reduction of wastes • Reusing materials • Oils management	Educational campaign, regarding waste reduction and recycling. House by house recycling program Businesses and industries recycling program	10,000 educational materials distributed/annually Number of houses participating 20 businesses and industries participating

Part I. 2016 Stormwater Management Program (SWMP) Summary (continued)

Public Involvement and Participation (See Section 2.4.3 for detailed information of required BMPs):

BMP Description or BMP ID (e.g. MCM-1)	**Program Description (Describe the program and how it will inspire public participation, e.g. special events, volunteer sampling and monitoring efforts, household hazardous waste recycling, etc.)**	**Measurable Goal (What is the end result of this program? What indicator will determine the goal has been met? (e.g., participation, amount of sampling performed, waste collected, etc.)**
Cooperate with organized volunteer opportunities to support awareness regarding the protection of surface waters.	The program will coordinate coasts cleanup activities with volunteer groups and communities. In addition will coordinate reforestation activities in target areas. Celebrate April as "Month of the Environment"	2 activities per year 2 volunteer groups participating/activity 2 reforestation activities with communities/annually 100 of trees or plants planted/activity
Identify and promote low-impact and nature-oriented activities within selected areas of Carolina in order to encourage the recreational uses of the natural resources.	Interpretative trail in Julia de Burgos Lineal Park to identify birds, reptiles, vegetation, etc.) in order to educate and motivate the population to protect the species. Continue with the environmental educational center in the Public Beach of Carolina that gives information about natural resources and their value.	1 route identified 5 signs installed Continue with the Educational Center
Adopt a drain or stream	Communities, business or industries can adopt part of drains or streams to maintain and clean them.	5 drains or streams adopted by the community, business or industries

Part I. 2016 Stormwater Management Program (SWMP) Summary (continued)

Illicit Discharge Detection and Elimination (See Section 2.4.4 for detailed information of required BMPs):

BMP Description or BMP ID (e.g. MCM-1)	Program Description (Describe the program and how it will indentify and remove illicit connections from the MS4, e.g. new regulations, investigation practices, removal of illicit connections, etc.)	Measurable Goal (What is the end result of this program? What indicator will determine the goal has been met? (e.g., adoption of bylaws/ordinances, amount of investigation performed, identified and removed illicit connections, etc.)
Develop a storm drain system map of the urban area of Carolina.	Map all storm drains inlets, outfalls, pipes, etc., along the streams of the urban area with a GPS will identify suspicious discharges at the moment of take the information. The suspicious discharge will be investigated and determine who is the responsible for the discharge and will be advice about it. The ordinance about illegal discharges will be applied, including the tickets.	10% of the map developed yearly 20 suspicious discharges identified 20 suspicious discharges solved
Develop an inspection program to identify wastewater discharges into the storm collection system.	Perform a dry weather inspection to the system in order to identify illegal connections or discharges. Perform field tests (color test, smoke, etc.) in the sewage system in order to detect illegal connections. Notify PRASA about collapsed sewage pipeline, illegal discharges, complains, etc. Clean the critical areas of the stormwater system.	30 dry weather monitoring activities performed/annually Number of citizens' complaints reporting illegal connections (10) 5 field test conducted Number of notifications about situations made to PRASA(10) Numbers of areas cleaned(5-10)
Identify susceptible areas that need new sanitary sewer systems	Construction of new sewer systems at communities that don't have it.	1 community per year
Develop a map of the catchment areas of the urban area of Carolina.	Map all the catchments of the urban area to determine the potential of illegal discharges by low, medium or high. Using this ranking the catchments with high risk of illegal discharges will be inspected regularly to detect illegal discharges.	Catchments identify at the map Quantity of high, medium or low catchments
Develop the protocols to detect and eliminate illicit discharges	Establish the protocols to follow when illegal discharges are detected.	Ordinance submitted by September, 2018.
Monitoring the outfalls in dry and wet weather.	Dry and wet weather inspections to monitor coliforms, ammonia, pH, etc. in order to detect illegal discharges.	5 per year

Part I. 2016 Stormwater Management Program (SWMP) Summary (continued)

Construction Site Stormwater Runoff Control (See Section 2.4.5 for detailed information of required BMPs):

BMP Description or BMP ID (e.g. MCM-1)	Program Description (Describe the program and how it will help control stormwater runoff at construction sites, e.g. new regulations, construction practices, inspection protocols, etc.)	Measurable Goal (What is the end result of this program? What indicator will determine the goal has been met? (e.g., adoption of bylaws/ordinances, amount of inspections performed and sites actively regulated, etc.)
Develop and implement ordinances to address construction site runoff control in development or redevelopment projects proposed in Carolina.	Prepare an Ordinance requesting a Construction Site Runoff Control Plan (RCP) as part of the permitting process. This Train the personal that will be applying the Ordinance. Perform inspections to verify implementation of RCP submitted. This ordinance will help to reduce the sedimentation of the water bodies.	Ordinance submitted by September, 2018. At least 10 person trained. Number of RCP requested and submitted Number of inspections performed Number of inadequate site plans reported
Apply the Ordinance _____ that Regulation No.25 of the Puerto Rico Planning Board regarding Cut, Pruning and Reforestation of Trees in Puerto Rico.	Evaluate the permits submitted to the office of Environmental Affairs. Perform inspections to verify conservation of natural vegetation and reforestation activities in construction sites. This ordinance will help to reduce the sedimentation of the water bodies.	Number of permits submitted Number of sites inspected Number of non-compliance reported

Part I. 2016 Stormwater Management Program (SWMP) Summary (continued)

Post-Construction Stormwater Management in New Development and Redevelopment (See Section 2.4.6 for detailed information of required BMPs):

BMP Description or BMP ID (e.g. MCM-1)	**Program Description (Describe the program and how it will control stormwater runoff from properties after they are developed, e.g. new regulations, practices, or resources for contractors to use Low Impact Development (LID), etc.)**	**Measurable Goal (What is the end result of this program? What indicator will determine the goal has been met? (e.g., adoption of bylaws/ordinances, amount of implemented practices, development of capacity building resources, etc.)**
Protect areas within the upland watershed through zoning	The rural areas of the Municipality had zoning codes that protect the catchments of the water bodies, protect the land from segregation of small parcels and protect the woods and sensitive areas. This zoning codes help to avoid erosion problems and possible landslides.	Number of areas acres with each zoning code
Develop an ordinance for construction and redevelopment projects	Prepare an Ordinance for construction and post construction projects in order to manage the stormwater runoff. Train the personal that will be applying the Ordinance.	Ordinance submitted by September, 2018. At least 10 person trained.

Part I. 2016 Stormwater Management Program (SWMP) Summary (continued)

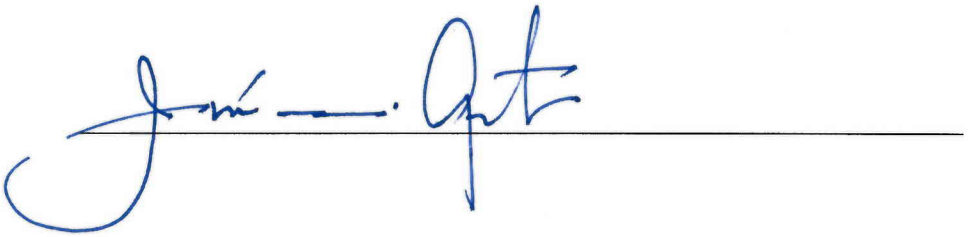
Good Housekeeping and Pollution Prevention in Municipal Operations (See Section 2.4.7 for detailed information of required BMPs):

BMP Description orBMP ID (e.g. MCM-1)	Program Description (Describe the program and how it will mitigate stormwater runoff at municipal properties or through municipal activities, e.g. installation of structural stormwater controls on the municipal properties, new practices to reduce pollutant exposure to rain events, runoff management, trainings, etc.)	Measurable Goal (What is the end result of this program? What indicator will determine the goal has been met? (e.g., structural BMPs installed, SOPs developed and implemented, etc.)
Reduce the illegal dumping areas at the municipality.	Identify illegal dumping areas to establish periodic cleaning activities. In addition to continue with the pick-up house by house of the voluminous waste materials. This will reduce the wastes that arrive to the water bodies.	Number of clean up days performed Pounds of voluminous waste materials that is collected
Implement measures to control illegal dumping activities, especially near water bodies.	Enforce Puerto Rico's antilittering law (No. 11 of 1995) to control the illegal dumpling activities. This will reduce the wastes that arrive to the water bodies.	Number of tickets granted
Develop an inventory of garages auto-shops and other automobile related businesses.	Identify automobile related businesses and map them with the GPS. Provide business owners and operators with educational materials and orientations regarding proper disposal of typical automobile-related fluids such as oil, antifreeze and gasoline, among others.	Number of businesses plotted with the GPS Number of businesses reached
Develop a schedule for storm drain cleaning and debris removal from storm water open channels.	Prepare an inventory of water bodies that will need cleaning and debris removal, giving priority to clogged systems and develop a schedule to clean up the water bodies on a regular basis.	Number of water bodies that need cleaning/annually Number of cleanings performed/annually
Maintenance and streets sweeping.	Maintenance of streets and pipelines, sweeping the streets, kerbs, etc. to reduce the quantity of debris that arrive to water bodies.	Streets that be cleaned/monthly Pounds of trash collected/annually
Develop Standards Operating (SOP) Procedures for the Municipal facilities.	The standard operating procedures for all Municipal facilities. This will reduce the oils, wastes, etc. that arrive to the MS4.	Plan with the SOP's developed by September, 2018.
Trainings about the SOP's and general information about the program.	Training the personnel about the SOP's to give them the knowledge about good housekeeping management. This will reduce the oils, wastes, etc. that arrive to the MS4.	2 trainings annually Quantity of personnel trained

Part J. Application Certification and Signature

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

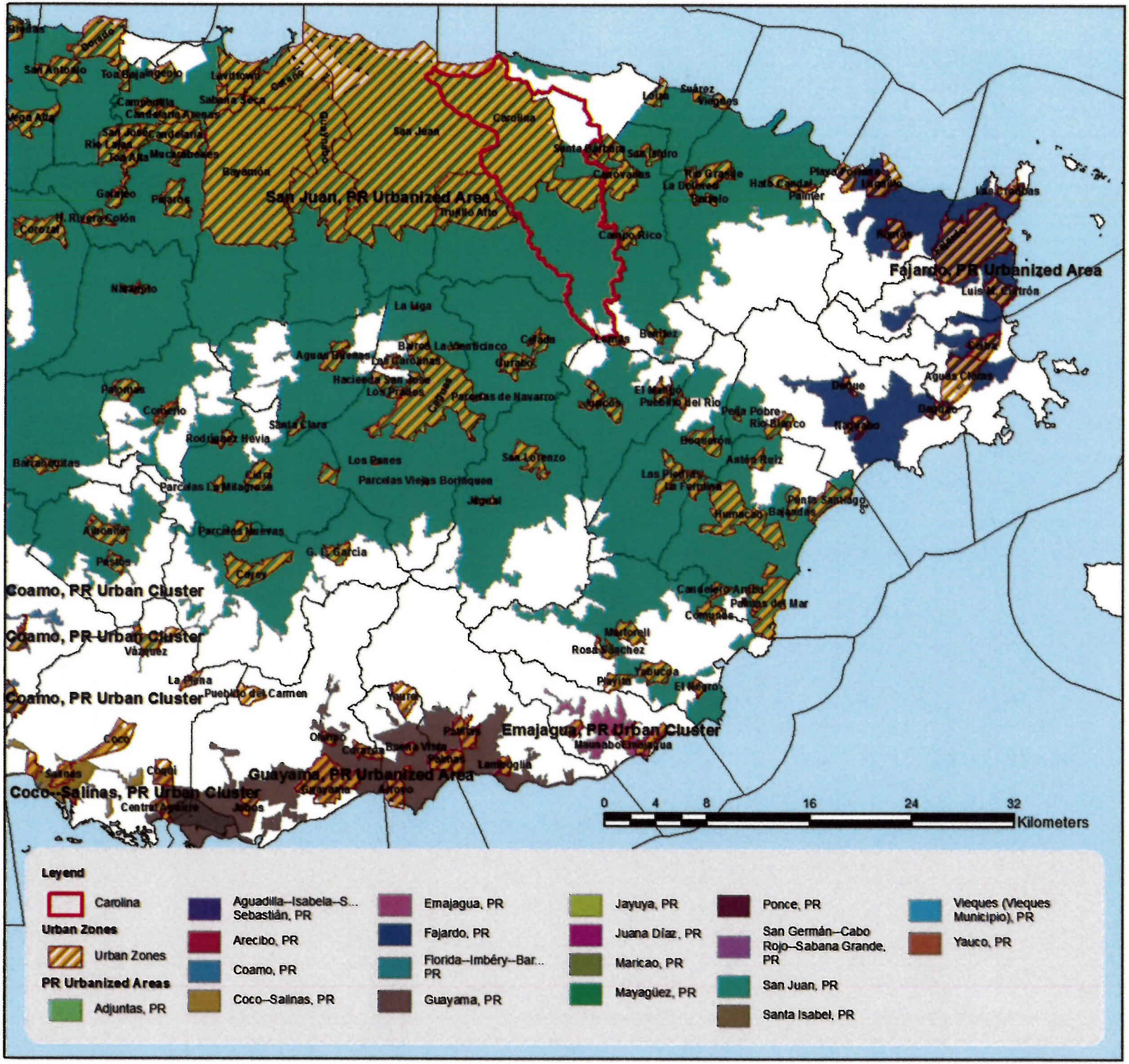
Signature of Mayor/Elected Official:



Print Name of Mayor/Elected Official:

José Carlos Aponte Dalmau

Title: Mayor Date: September 29, 2016.



Carolina, PR

Census Urbanized Aras

Projection: Lambert
Coordinate System: NAD83 PR StatePlane

N
W E
S

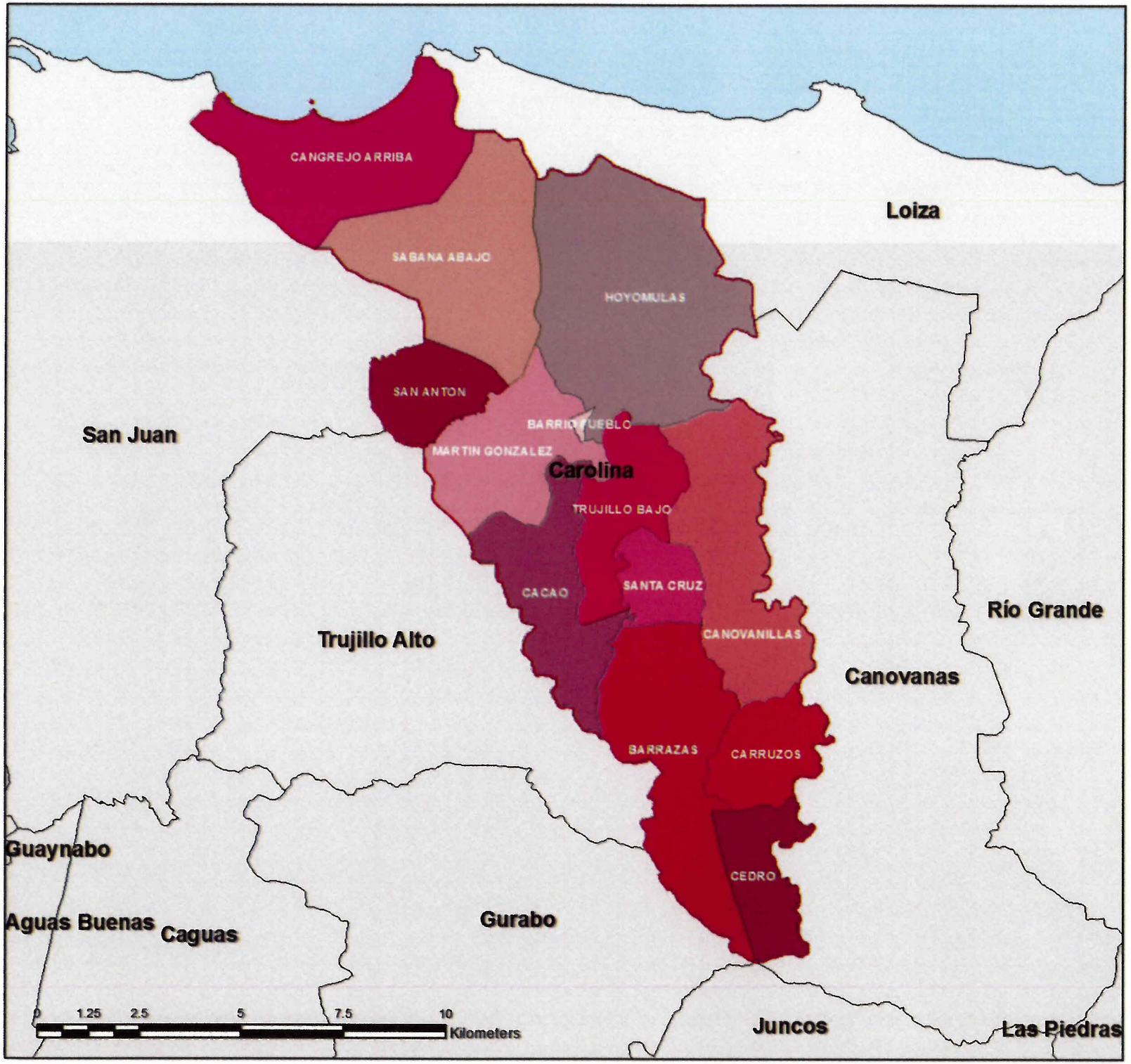
Source: JP, Census

1:400,000

Puerto Rico

ECO STAHLIA

2016



Carolina Wards & Bordering Municipalities

Leyend

- Carolina
- Municipalites

Projection: Lambert
Coordinate System: NAD83 PR StatePlane

N
W E
S

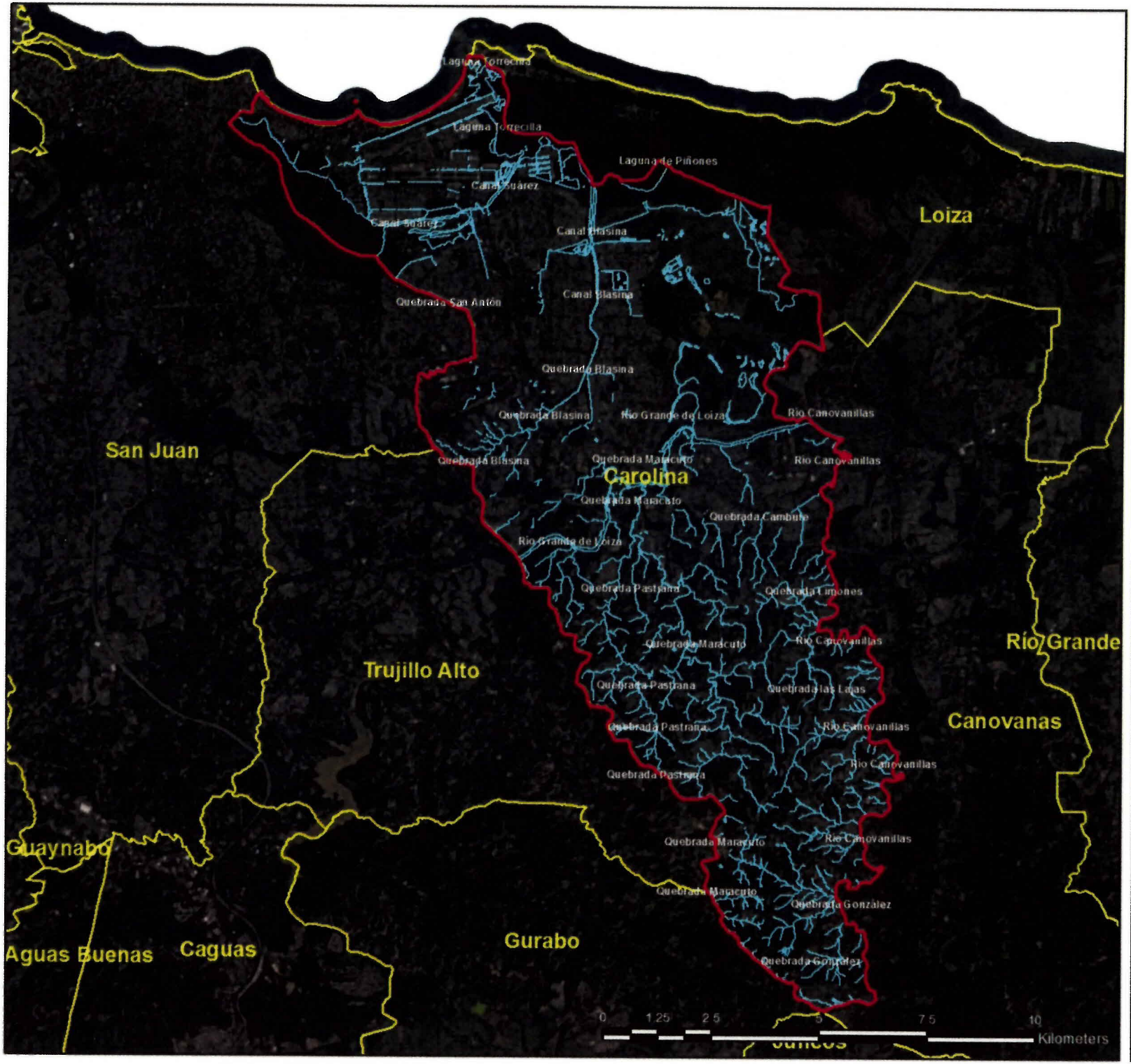
Source: JP

1:125,000

Puerto Rico

ECO STAHLIA

2016



Carolina Hydrography

Leyend

- Carolina
- Hydrography
- Municipalites

Projection: Lambert
Coordinate System: NAD83 PR StatePlane

N
W E
S

Source: JP

1:118,307

Puerto Rico

ECO STAHLIA

2016

Carolina MS4 Infraestructure Map Villa Carolina Ward

Cuadricula G7

Spot	16"	36"
MH	18"	42"
HW	21"	48"
Discharge	24"	54"
CB	27"	60"
SurfaceFlow	30"	
12"		

N

0 55 110 220 330 440
Mts

ECO STAHLIA

Viva Carolina

Luis BERRIOS MONTES
AGRIMENSOR CONSULTOR

Carolina MS4 Infraestructure Map Villa Carolina Ward

Cuadricula G8

Spot	18"	42"
MH	2-8"	48"
HW	21"	54"
CB	24"	8"
SurfaceFlow	27"	??
10"	30"	
15"	36"	

N

0 55110 220 330 440
Mts

ECO STAHLIA

Viva Carolina

BERRIOS MONTES
AGRIMENSOR CONSULTOR

Carolina MS4 Infraestructure Map Villa Carolina Ward

Cuadricula H7

Spot	15"	30"
HW	18"	36"
Discharge	21"	72"
CB	24"	
SurfaceFlow	27"	
12"		

N

0 55110 220 330 440 Mts

ECO STAHLIA

Viva Carolina

Luis Berrios Montes
Agrimensor Consultor

Carolina MS4 Infraestructure Map Villa Carolina Ward

Cuadricula H8

Spot	18"	48"
HW	21"	52"
CB	24"	54"
SurfaceFlow	27"	6"
10"	30"	66"
15"	36"	78"
16"	42"	84"

N

0 55110 220 330 440
Mts

ECO STAHLIA

Viva Carolina

BERRIOS MONTES
AGRIMENSOR CONSULTOR

Carolina MS4 Infraestructure Map Villa Carolina Ward

Cuadricula I7

Spot	18"	42"
MH	21"	48"
HW	24"	54"
CB	27"	60"
SurfaceFlow	30"	??
10"	36"	

N

0 55110 220 330 440
Mts

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Carolina MS4 Infraestructure Map Villa Carolina Ward

Cuadricula I8

Spot	18"	36"
MH	21"	42"
HW	24"	48"
CB	27"	
SurfaceFlow	30"	
10"		

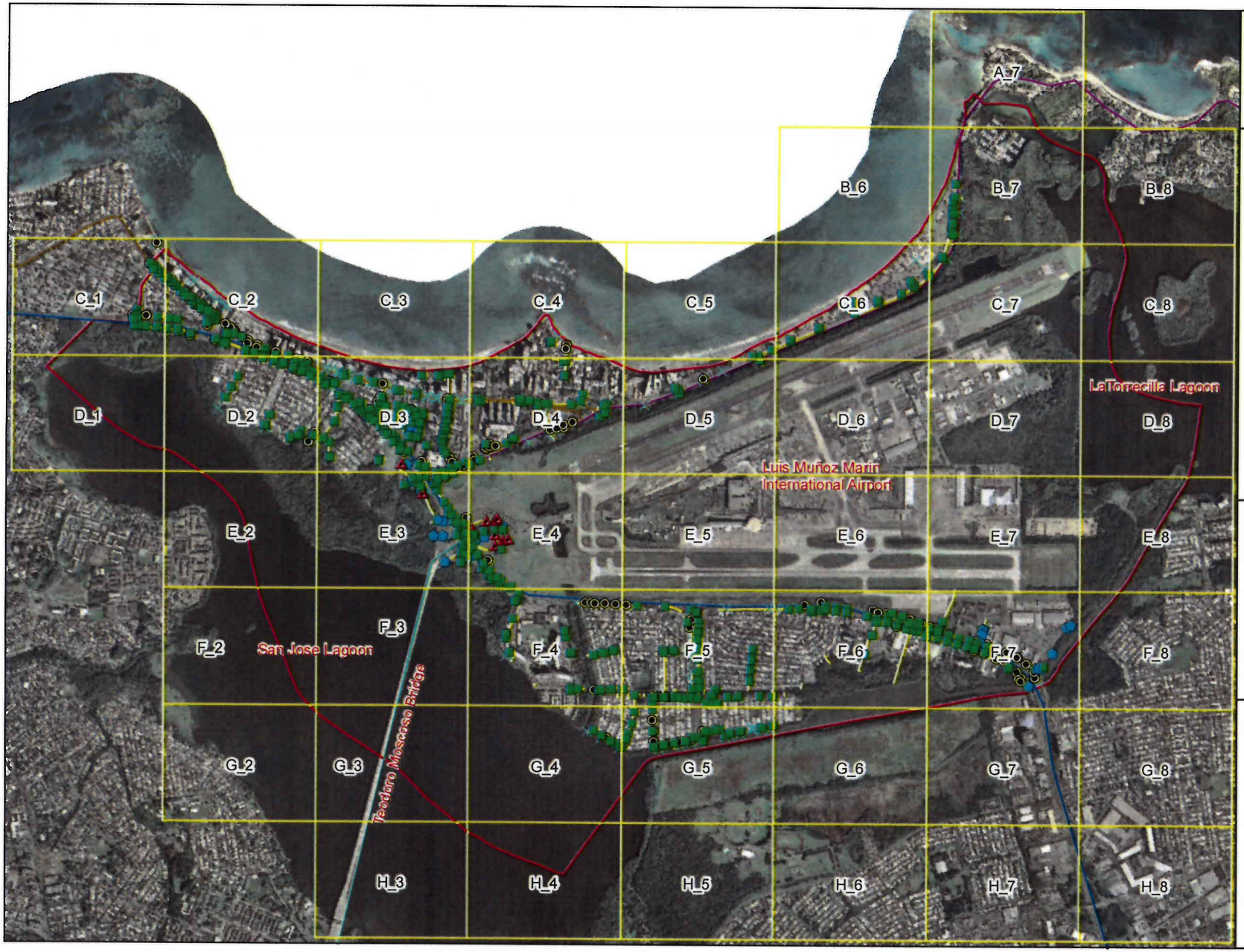
N

0 55110 220 330 440 Mts

ECO STAHLIA

Viva Carolina

Luis Berrios Montes
Agrimensor Consultor



Carolina MS4 Infraestructure Map Cangrejo Arriba Area Index Map

Legend:

- Cangrejo Arriba Area

Storm Sewer Infraestructure

- Storm Sewer Pipes
- Inlets
- Discharge
- HW
- MH
- Spot Elevation

Main Roads

- Ave. Baldorioty
- Ave. Isla Verde
- Ave. Piñeiro
- PR-187

N

Mts

0 250 500 1,000

Scale 1:20,000

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Consultores Ambientales

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AGRIMENSOR CONSULTOR

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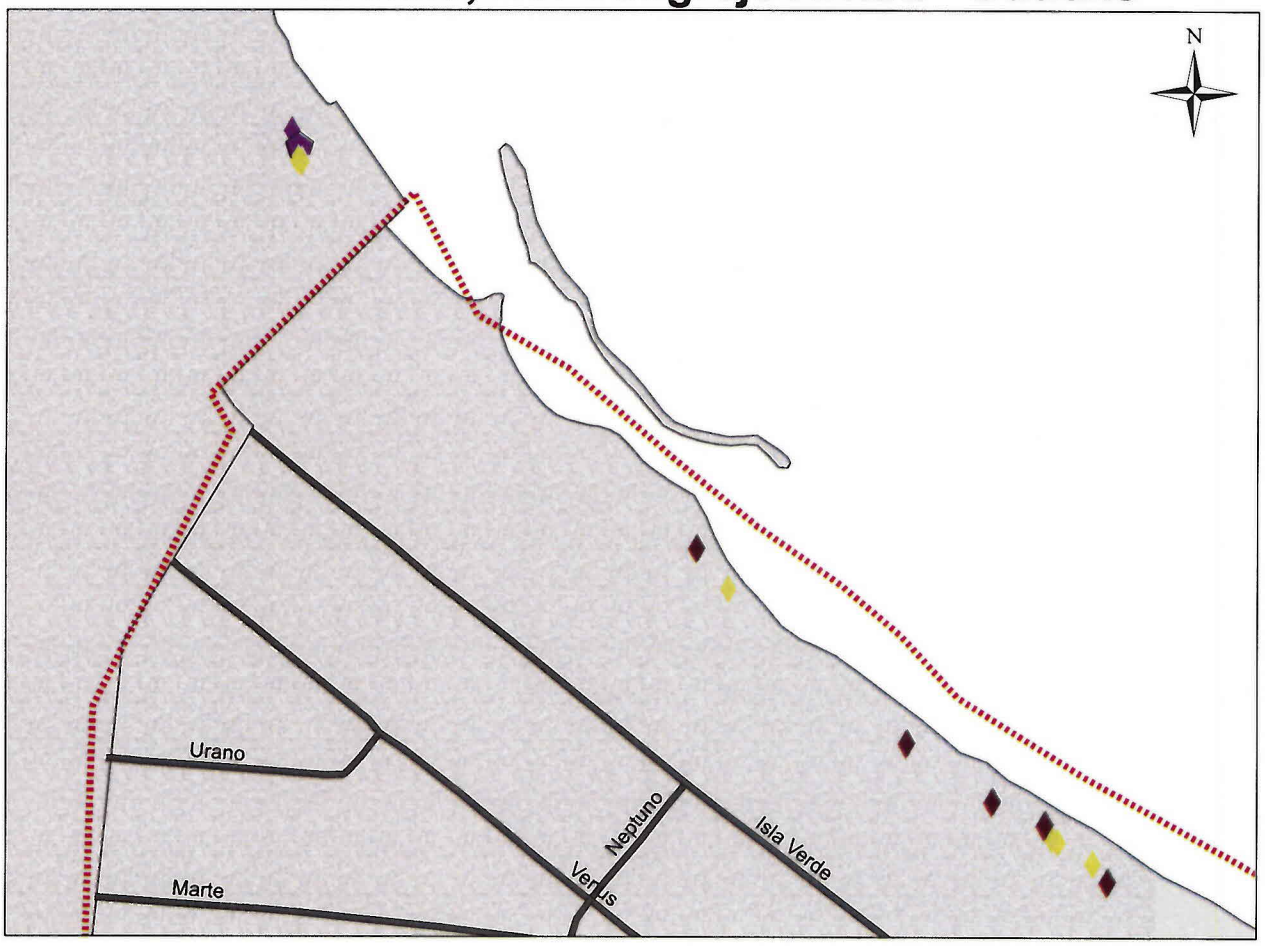

Leyenda:

Diametros

- 24
- 12
- 18
- 24
- 30
- 36
- 42
- 4
- 8
- 10
- 12
- 18

Material

- ??
- Cast Iron
- Concreto
- Concreto y PVC
- PVC
- Pipe Rubber
- Rampas
- Tajeas
- Maquina
- vial cangrejo arriba
- MS4 MAP Study Area
- MUN_SJ_Bo_Cang_Arriba

0 20 40 60 80 Meters

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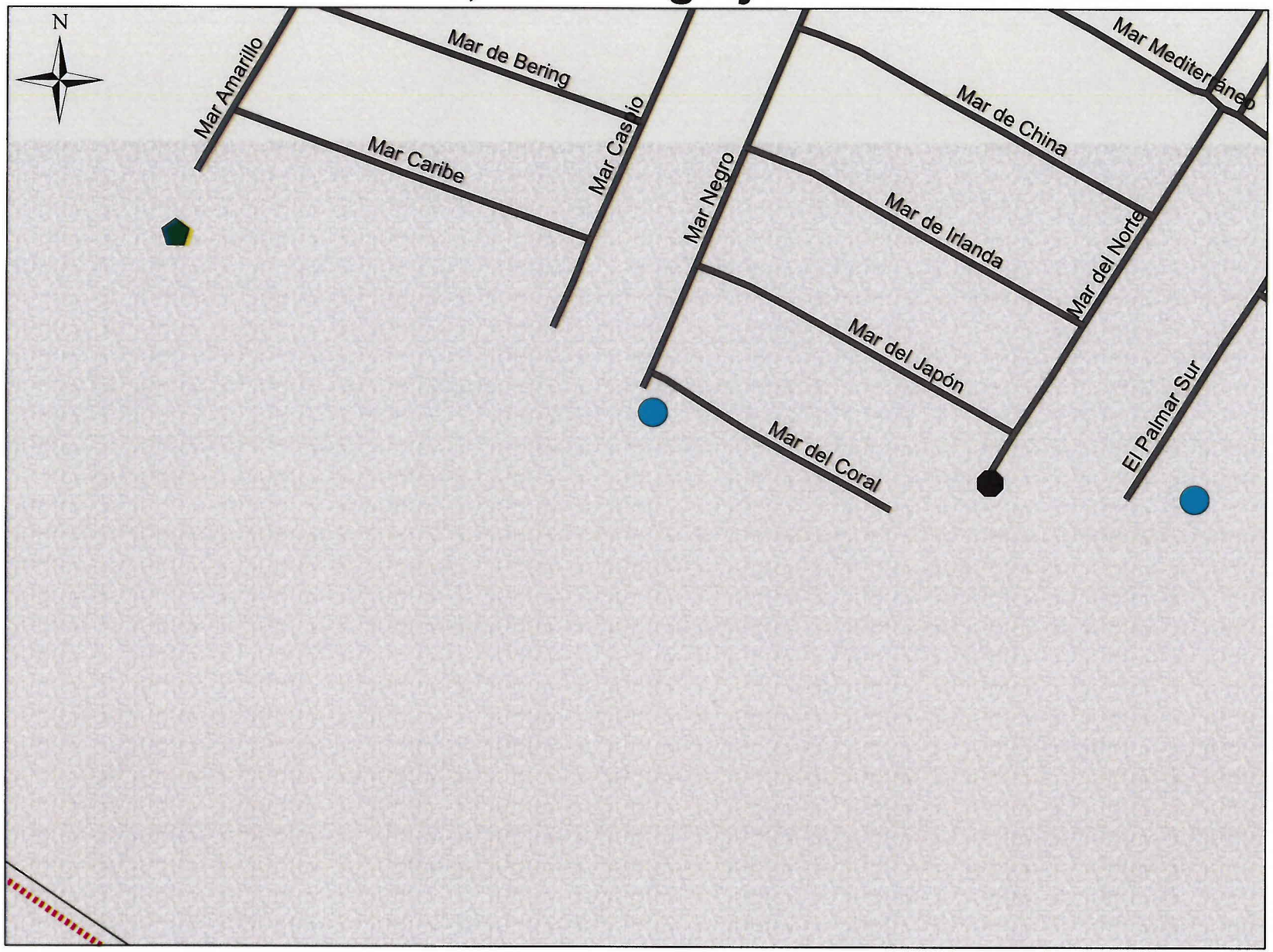

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0 30 60 90 120 Meters

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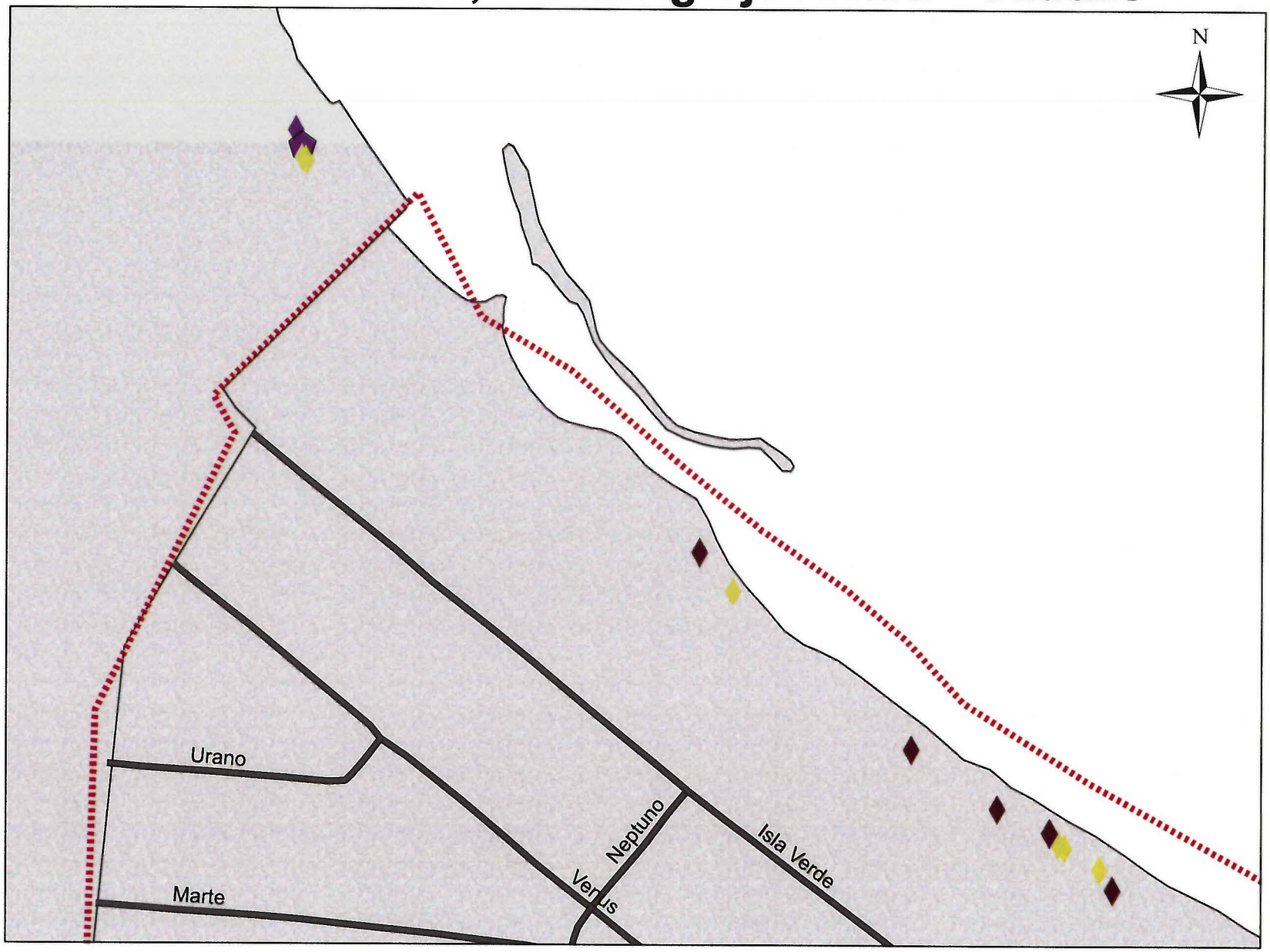

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0 20 40 60 80 Meters

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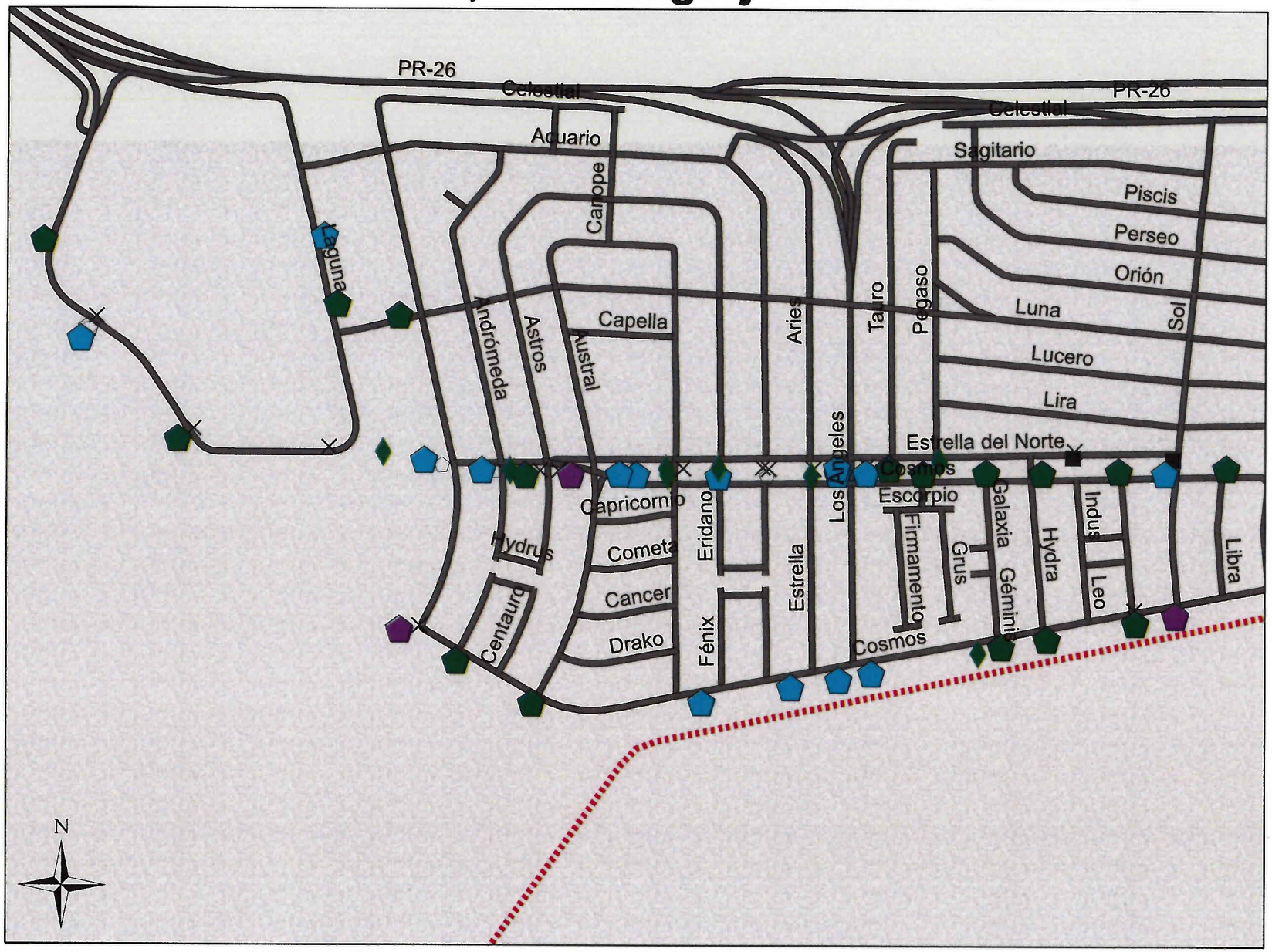

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0 75 150 225 300 Meters

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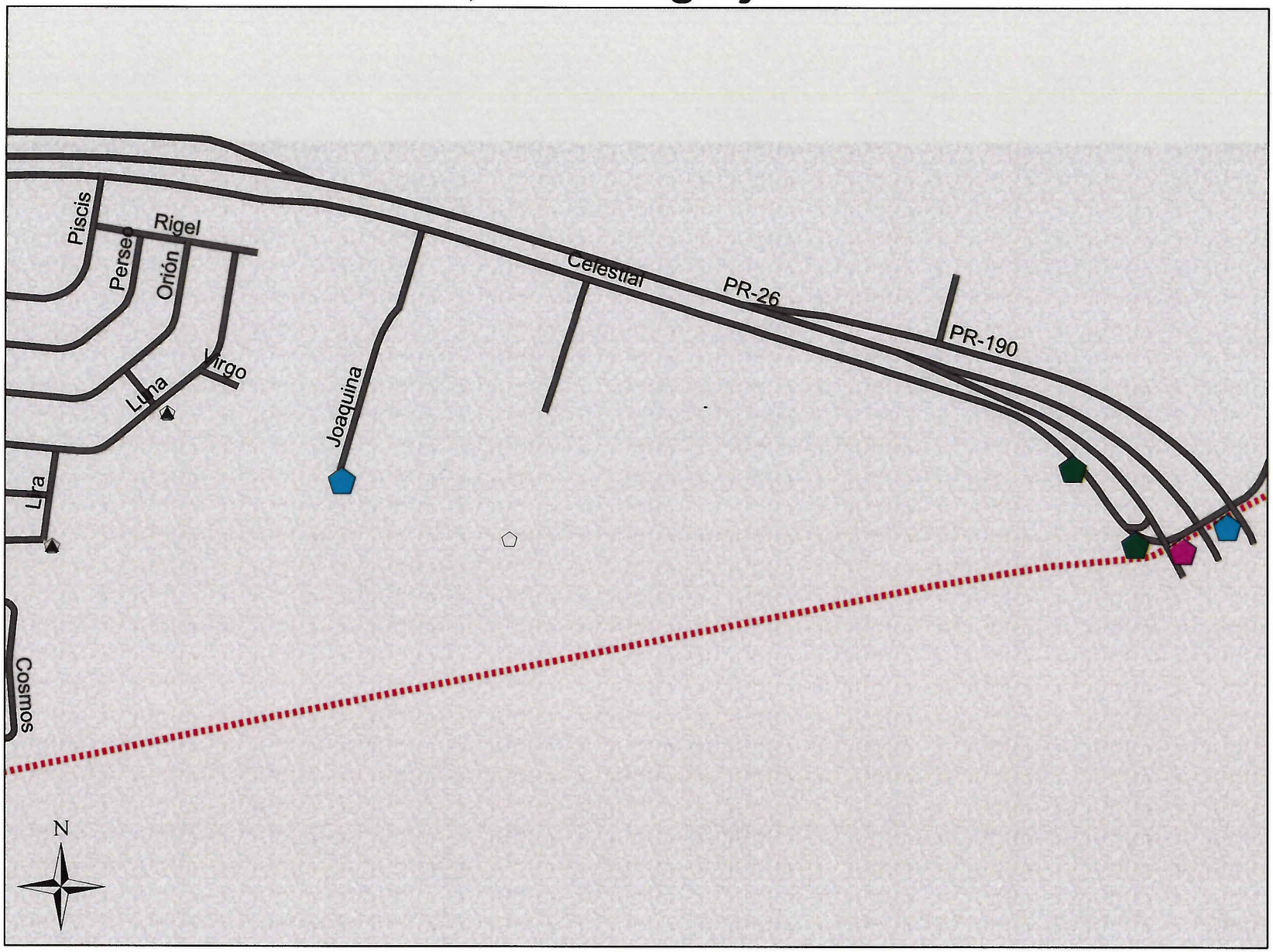

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0 60 120 180 240 Meters

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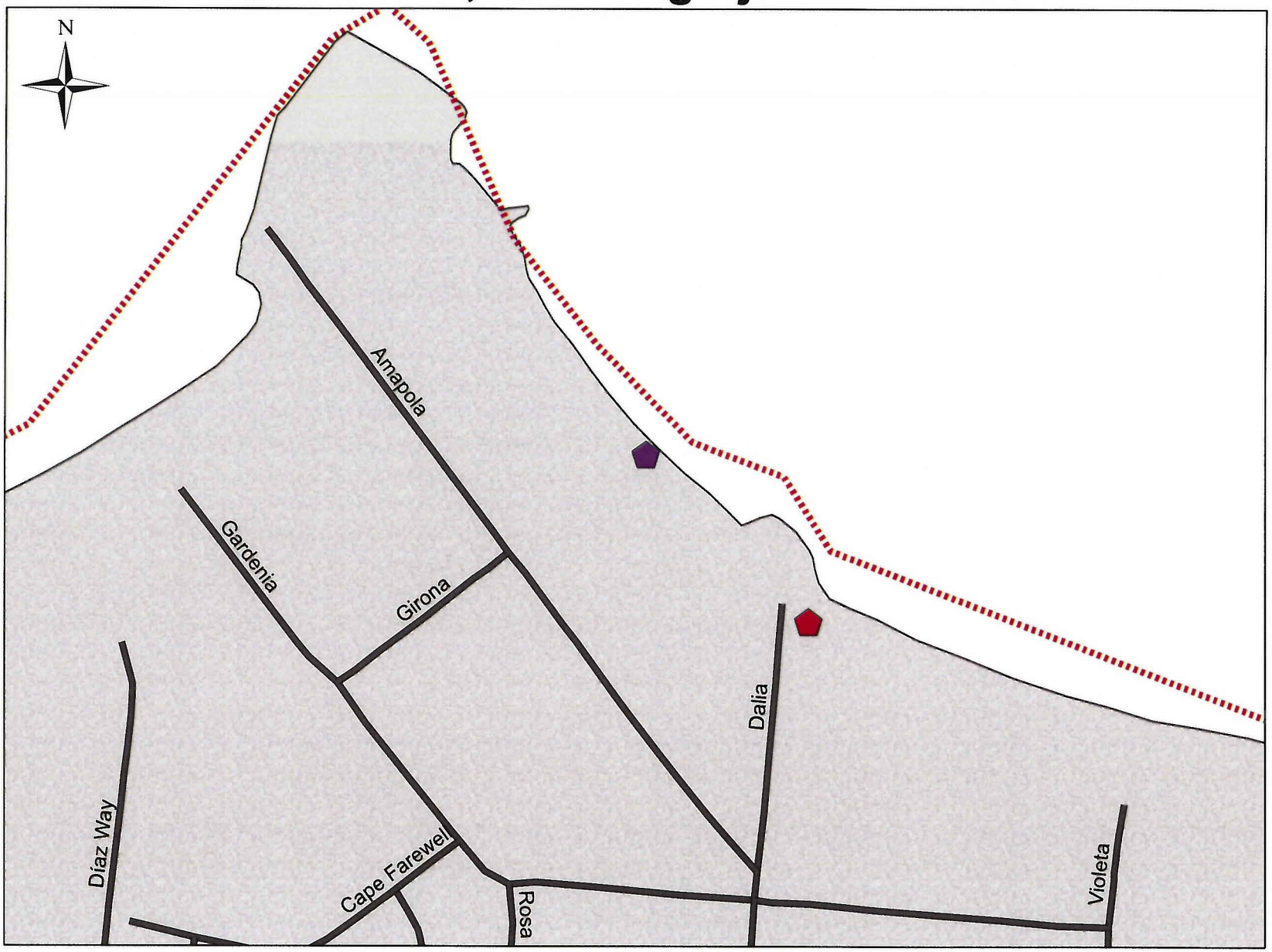

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0 10 20 30 40 Meters

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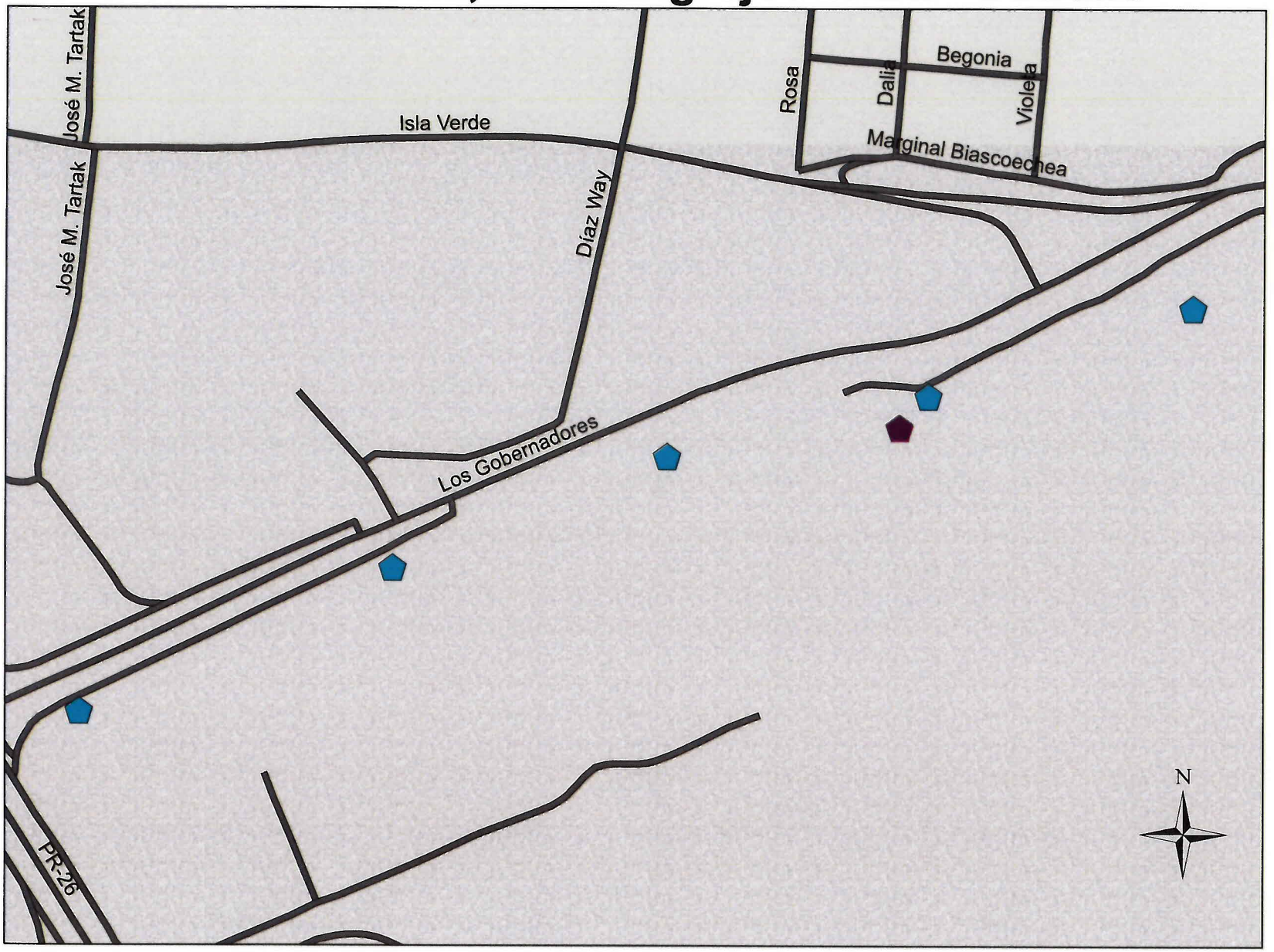

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0 30 60 90 120 Meters

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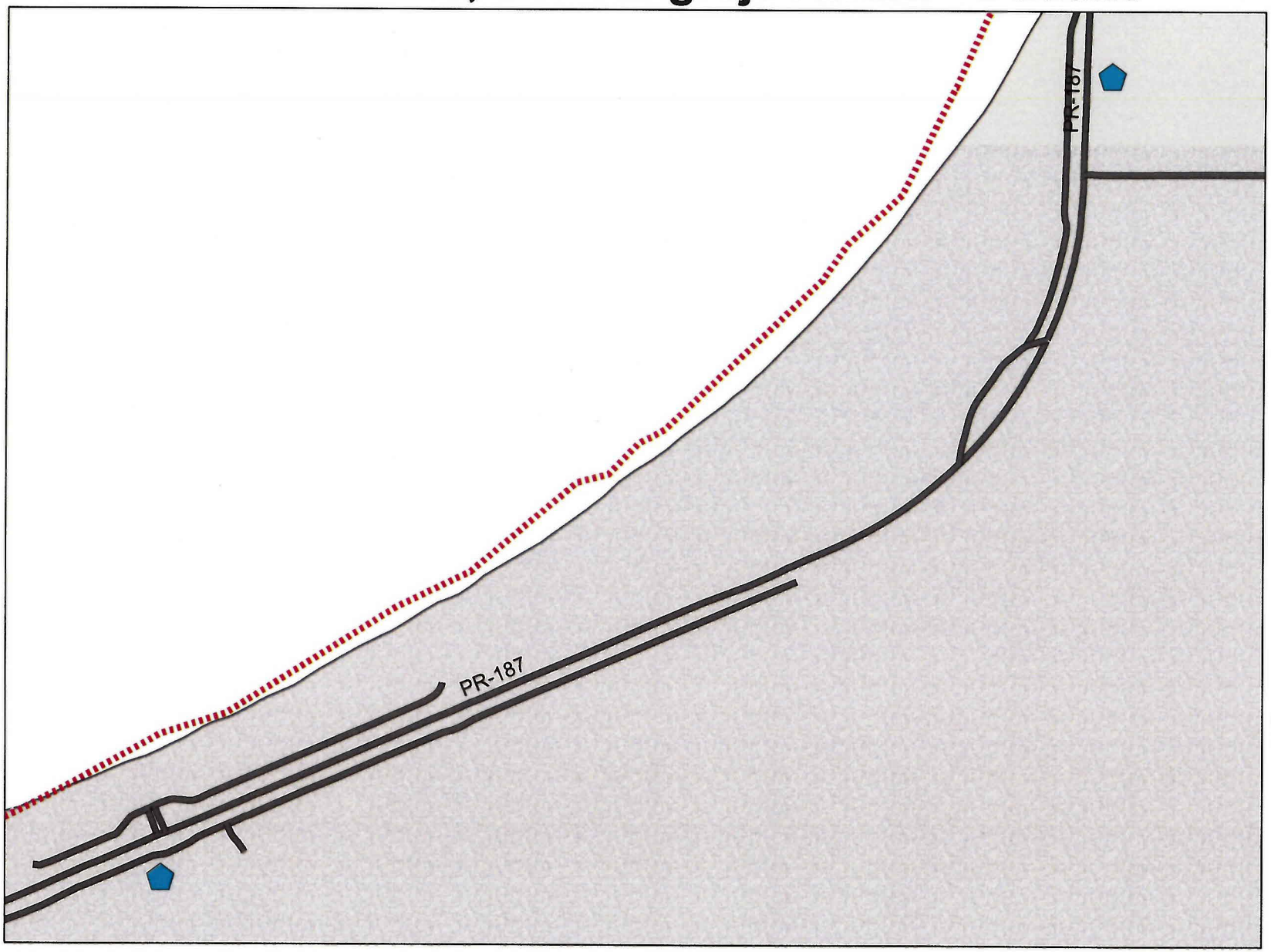

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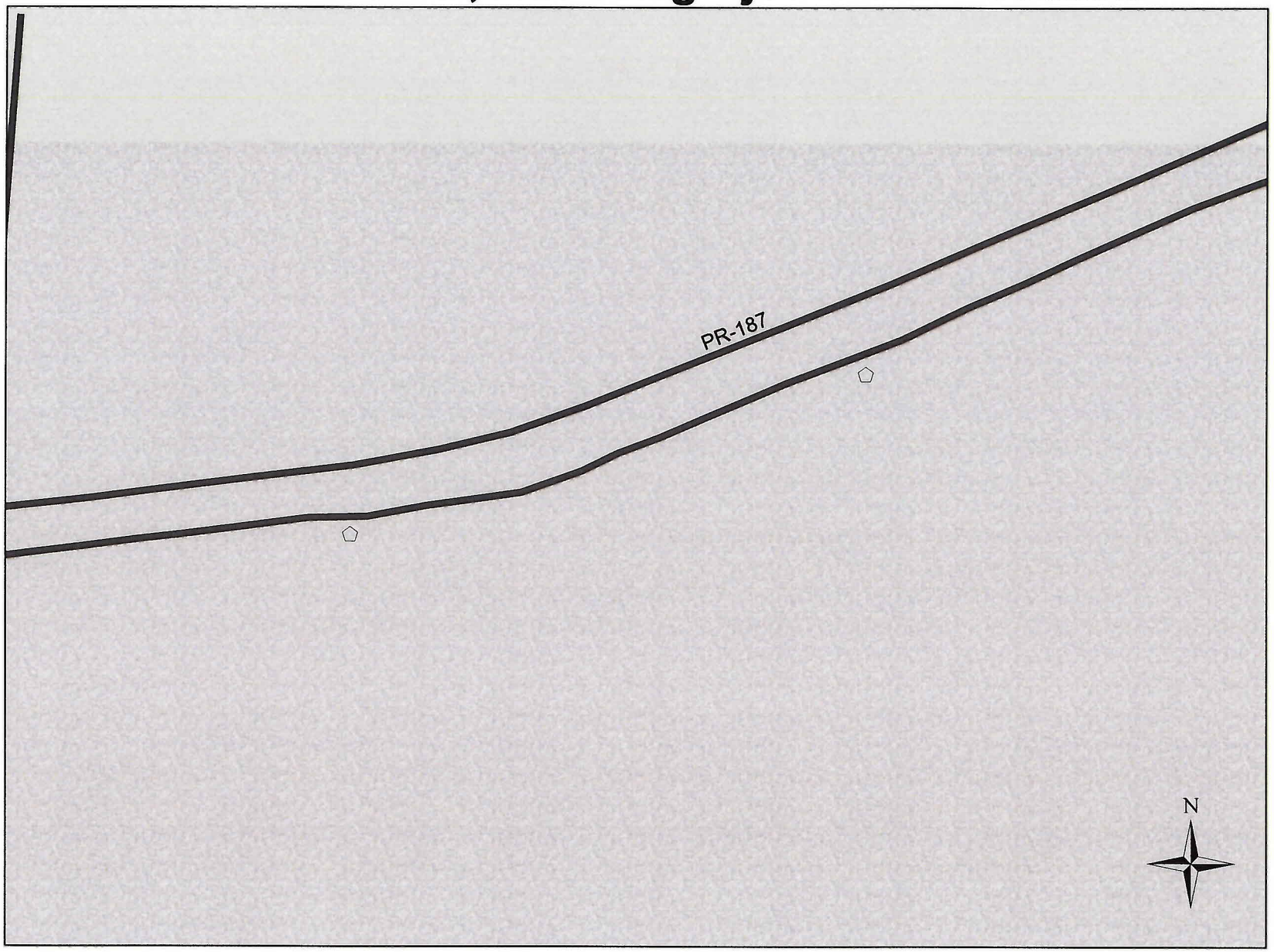

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0 10 20 30 40
Meters

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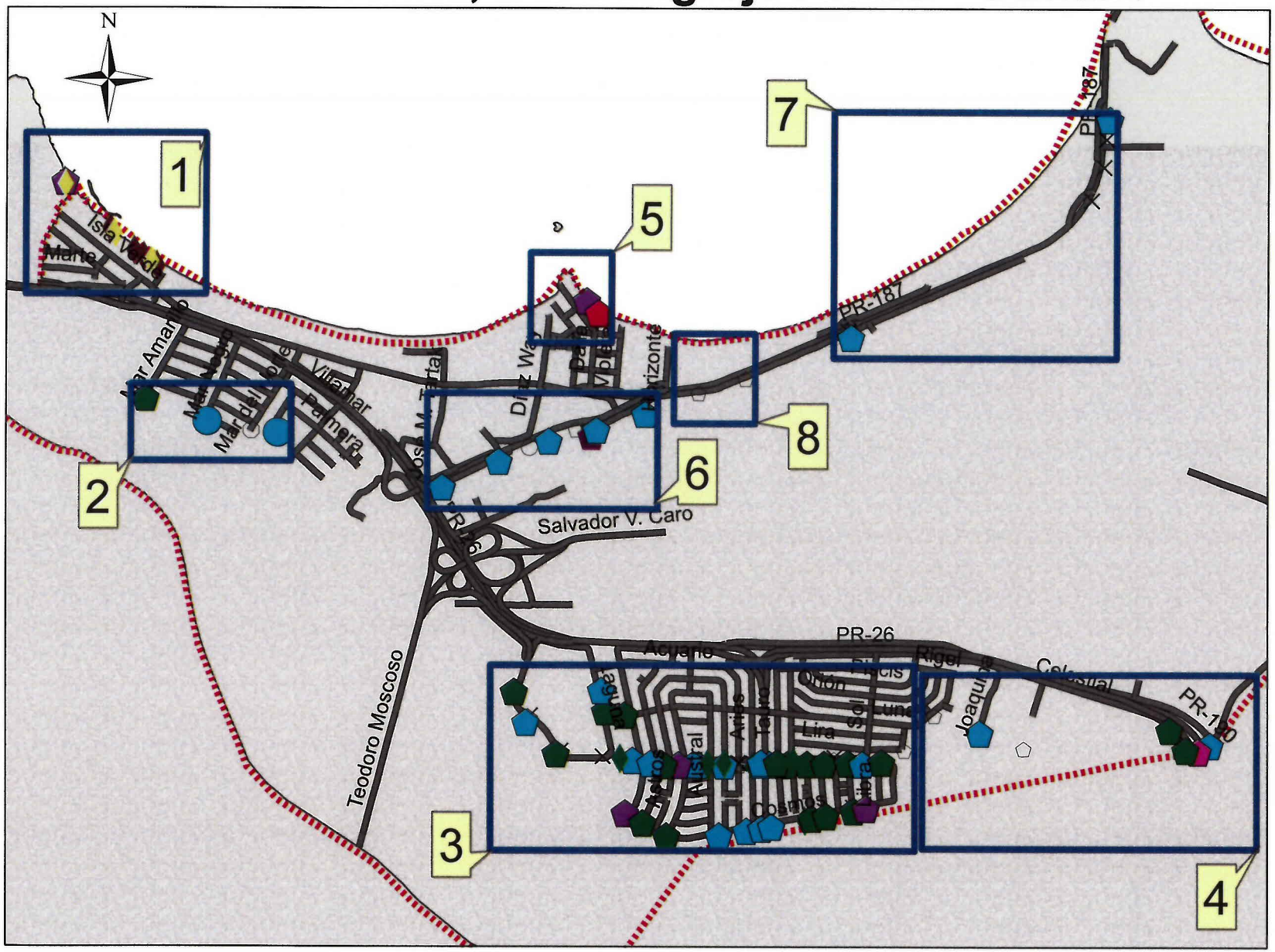

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0 200 400 600 800 Meters

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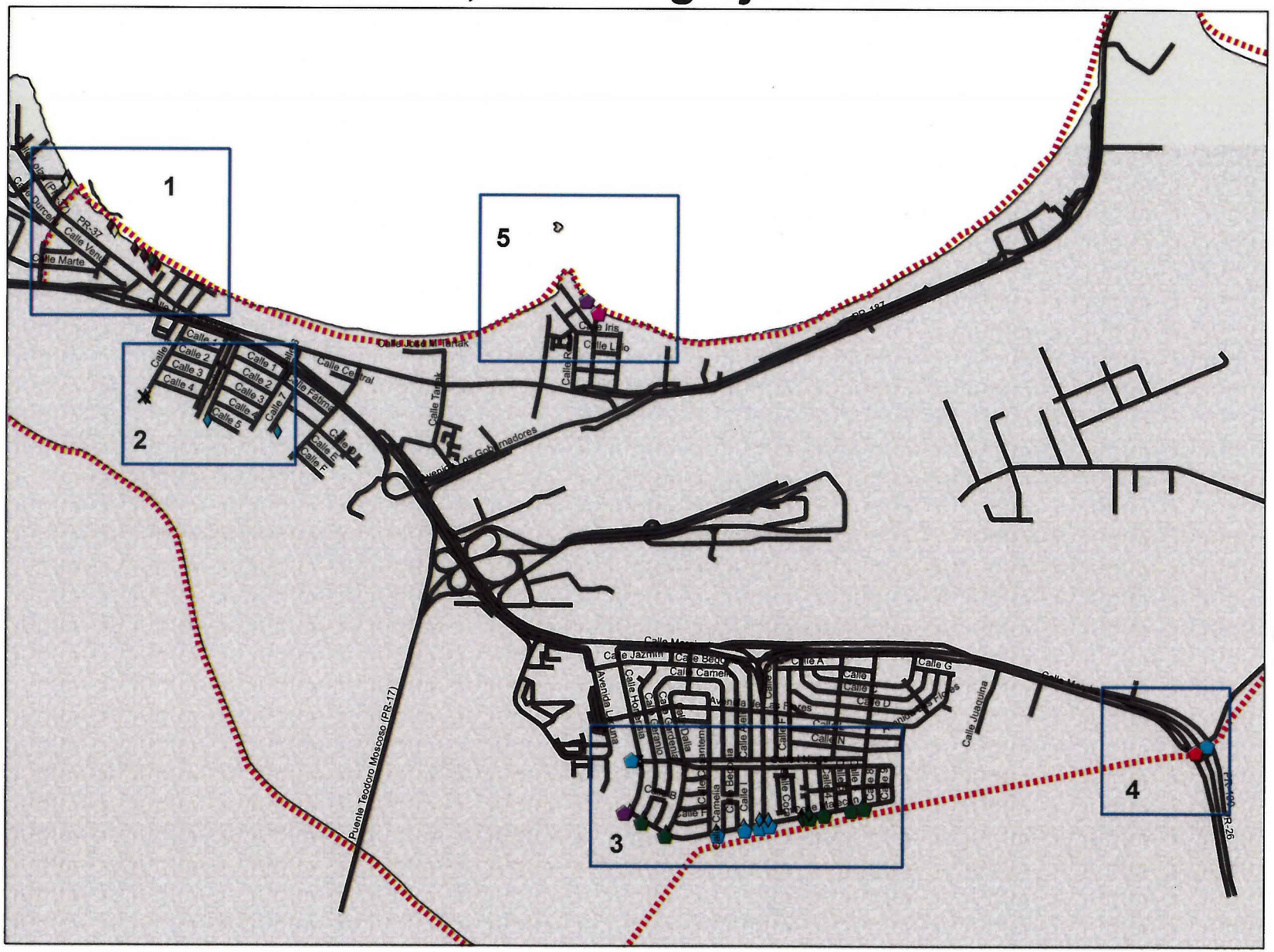

Legend:

Diameters

- 4
- 8
- 10
- 12
- 18
- 24
- 30
- 36

OBJECT

- ??
- HEAD WALL
- PIPE
- Carreteras_MS4
- MS4 MAP Study Area

N

0 240 480 720 960 Meters

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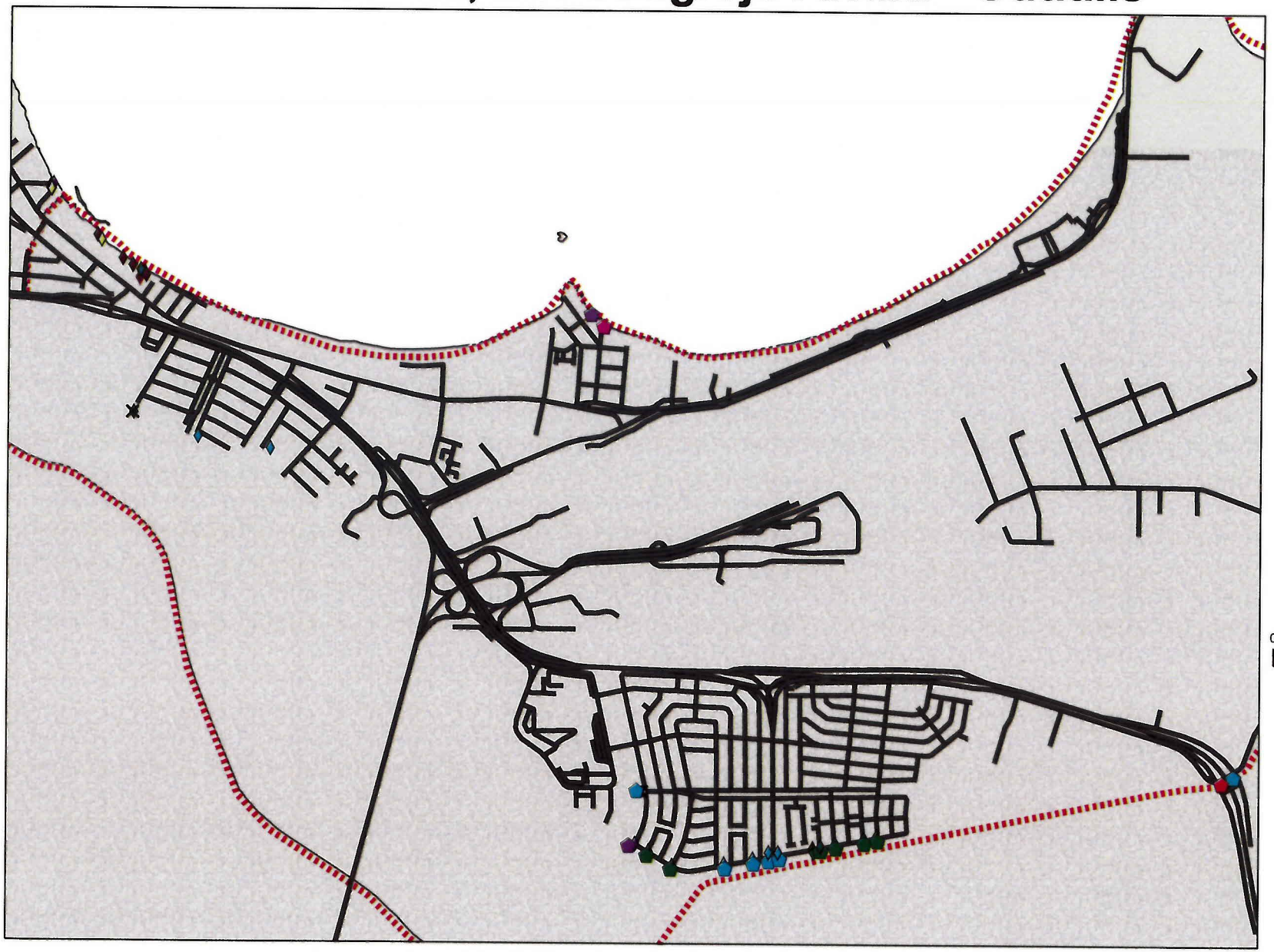

Legend:

Diameters

- 4
- 8
- 10
- 12
- 18
- 24
- 30
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OBJECT

- ??
- HEAD WALL
- PIPE
- Carreteras_MS4
- MS4 MAP Study Area

N

0 225 450 675 900 Meters

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