United States Department of the Interior
National Park Service
National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form.* If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions.

1. Name of Property

Historic name: Acueducto de San Juan (San Juan Waterworks)
Other names/site number: Río Piedras Filtration Plan, Antiguo Acueducto del Río Piedras, Primer Acueducto de San Juan
Name of related multiple property listing**:** "Going with the flow: waterworks in Puerto Rico"

2. Location

Street & number: Pterocappos Road
City or town: Río Piedras State: Puerto Rico County: San Juan
Not For Publication: [ ] Vicinity: [x]

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended,

I hereby certify that this _x_ nomination ___ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60.

In my opinion, the property _x_ meets ___ does not meet the National Register Criteria. I recommend that this property be considered significant at the following level(s) of significance:

___national _x__statewide _x_local
Applicable National Register Criteria:

_x__A ___B _x__C ___D

Carlos A. Rubio Cancela May 21. 2020
Signature of certifying official/Title: Date

Puerto Rico State Historic Preservation Office
State or Federal agency/bureau or Tribal Government

In my opinion, the property _X_ meets ___ does not meet the National Register criteria.

Signature of commenting official: Date

Title : State or Federal agency/bureau or Tribal Government

4. National Park Service Certification

I hereby certify that this property is:

___ entered in the National Register

___ determined eligible for the National Register

___ determined not eligible for the National Register

___ removed from the National Register

___ other (explain:) _____

_____

Signature of the Keeper Date of Action

5. Classification

Ownership of Property

Private:	x
Public – Local	
Public – State	
Public – Federal	

Category of Property

Building(s)	
District	x
Site	
Structure	
Object	

Number of Resources within Property

Contributing	Noncontributing	
0	0	buildings
0	0	sites
0	0	structures
0	0	objects
0	**0**	**Total**

Number of contributing resources previously listed in the National Register **14**

6. Function or Use

Historic Functions

(Enter categories from instructions.)
GOVERNMENT: public works
INDUSTRY: waterworks
LANDSCAPE: natural feature

Current Functions

(Enter categories from instructions.)
LANDSCAPE: conservation area
VACANT/NOT IN USE

7. Description

Architectural Classification
Spanish Colonial
Bungalow
Classical Revival

Materials:
Brick
Concrete
Sandstone

Narrative Description

Summary Paragraph

Acueducto de San Juan, located in the Río Piedras neighborhood of San Juan, Puerto Rico contains a waterworks facility consisting of six (6) buildings, five (5) structures, and one (1) site located on two parcels – the Río Piedras meander on the banks of the river which supplies the waterworks and a hillside parcel, the Loma de Prim, 840 meters northeast of the river historically used as a storage facility. Constructed for the San Juan Waterworks, the property and its associated buildings and structures were established at this site for its capacity of the intake and quality of the water for the residents of San Juan. Initial planning for this site began in 1846 and construction began in 1892 with additional periods of construction continuing into the early twentieth century. The plant operated from the late 19th century until 1980, when it was permanently closed after having been previously transferred from municipal ownership to state ownership in 1945. Buildings included in the district reflect the architectural styles of the site's history and include Spanish Colonial, Bungalow, and Classical Revival styles. Buildings are generally constructed of brick, concrete, and sandstone and are situated on the east bank of Río Piedras and across from settling basins. The site has been vacant since 1980 and is owned by Conservation Trust of Puerto Rico and is run by a local non-profit organization, Para La Naturaleza, who use the site for environmental education activities. Despite long term vacancy, the Acueducto de San Juan retains integrity of location, setting, design, materials, workmanship, feeling and association and conveys its historic significance.

The district was added to the National Register of Historic Places in June 2007. After its listing, the site was evaluated in 2008. The initial nomination identified fourteen (14) contributing resources and one (1) non-contributing resource. Since its 2007 listing, selective removal occurred on the site including the removal of one (1) non-contributing resource, two (2) contributing resources; four (4) additions to contributing resources or ancillary components thereof; and four (4) previously unidentified ancillary bases/structures were removed, as was a portable filtration plant.

Narrative Description

Site/Setting

The historic district is comprised of a water intake (dam), processing facilities, pumping facilities, water settling basins, and a water storage tank. The district is comprised of two parcels - the Río Piedras meander on the banks of the river which supplies the waterworks and a hillside parcel, the Loma de Prim, 840 meters northeast of the river historically used as a storage facility, where the water storage tank is located (Figures #1-2).

The Río Piedras meander site in the Río Piedras ward of San Juan, the site is accessed via PR-1 to Calle Juan Ponce de Leon, which runs parallel to the Río Piedras. The University of Puerto Rico's botanical gardens are adjacent to the site and is also accessed via this roadway and occupies the area northeast of the site. Today, access to the San Juan Waterworks is only possible through one of the roadways of the botanical gardens.

The site is set back from Highway 1 and is surrounded with lush trees and shrubbery. In the past decade, the site has been cleared of previously overgrown vegetation to return the landscape to its historic appearance. Calle Ponce de Leon terminates on an access road to the west, where a guard shack marks the historic entrance of the site. The terrain of the site is sloped westward, toward the settling basins. The eastern side of the site is the highest point of the district. The Director's Residence (#6 – Photos #22-24), ruins of a gate (#9 – Photos #29-30), and the Engineers and Caretakers' Residence (#4 – Photos #15-17) are located on the site's eastern side and are connected by the old roadway. The Director's Residence slopes westward toward an adjoining Garage (#7 – Photos #25,27). The Garage adjoins the Maid's House (#8 – Photos #26, 28) to its west. A 1930s stone slab retaining wall runs along the western elevation of the Caretakers' Residence (Photo #1). The retaining wall projects westward from the southwestern corner of the Caretakers' Residence, and is interrupted by a short stair that lead to the Mixing Chamber and Valve House (#2 – Photos #7-9), Pumping House (#3 – Photos #10-14), Chemical & Engineering Filters' House (#5 – Photos #19-21), and the Settling Basins (#10 – Photos #33-37).

The Settling Basins are west of the operation buildings and are in a rounded-L shape configuration, with their north end aligning with the Pumping House and terminating at the Mixing Chamber and Valve House to the south. The west edge of the Settling Basins is rounded, following the curve of the Río Piedras. A weir is located to the southeast of the Mixing Chamber and Valve House, where the Río Piedras enters the site from the south.

The Acueducto de San Juan is associated with the 19th century San Juan Waterworks. The San Juan Waterworks was established at this site for the capacity of the intake and the quality of the water. The Waterworks were constructed in different stages during the second half of the 19th century and early 20th century. Ownership and management were transferred from the municipality of San Juan to the state-owned water company, Autoridad de Acueductos y Alcantarillados (AAA), in the 1940s. In 2005, the AAA assigned rights of the meander plot and

the buildings to the University of Puerto Rico. In 2006, the University of Puerto Rico transferred the assigned usufruct right to the Conservation Trust of Puerto Rico while the Trust finalized the legal procedures to own the property outright. The transfer between the AAA and the Trust was finalized in 2018.

Río Piedras

The Río Piedras Meander site was chosen as the location for the San Juan Waterworks for its favorable location due to the capacity of the intake and the quality of the water from this portion of the river.

The Río Piedras is an urban river that crosses the San Juan metropolitan area from Las Curias traveling north-south to the San Juan Bay (Photos #5-6). It is an important ecological resource to the highly urbanized city. Due to the close relation to the waterworks, a segment of river 1,725 meters long, from historic Río Piedras Bridge No. 3 (Photo #46) and up to, but not inclusive of the bridge on State Road #179 (originally the rights-of-way of the San Juan-Caguas railroad) is included in the historic district. This segment of the river remains practically un-altered since the establishment of the waterworks.

Mixing Chamber and Valve House (1894/1896) (#2)

Exterior

The 1894-1896 Mixing Chamber and Valve House is a two-story, stone and brick masonry Spanish Colonial style building with a flat roof and a rectangular plan (Photos #7-9). Designed by municipal engineer Arturo Guerra and based on the original scheme by Fernando Alameda in 1887, the building served as a gatehouse to distribute raw water from the weir to the settling basins. The upper level is at grade while the lower level is below grade. The building features arched window openings and doorways, though no windows or doors are extant. All openings are encased with brick masonry originally intended to be partially covered with plaster with exposed brick keys. Little of the plaster remains, exposing the brick in near entirety. Three elevations are visible (north, south, and west) while the east elevation is semi-interred.

The north façade has three openings, with a main, central entry door flanked by two window openings (Photo #8). The west elevation has one arched window opening that has been infilled with masonry and fixed concrete louvers. A cast-iron pipe extends from the bottom of the window and into the ground that once distributed water to the basins. The south elevation has three, asymmetrical openings – two window openings and an access door that leads to a protruding brick and stone masonry enclosure capped with concrete and with a cast-iron wheel used to access the self-contained pit below. The east elevation is largely obscured by a concrete addition and has an arched doorway at the southeast corner that has been infilled with masonry. In addition to the loss of plaster, the exterior also has bio-growth.

Interior

The floor plan of the Mixing Chamber and Valve House is a simple rectangle (Photo #9). The interior has two levels – one at grade and one below grade. Interiors were plastered, likely in

quicklime for the upper floor and hydraulic quicklime for the pit chamber below. The original flat roof and interior floor structure made of traditional ironwood beams and bricks for the roof and ironwood beams and shiplapped wood for the floors were replaced with reinforced concrete slabs in 1923. The original pit chamber was also altered during that period. The interior plaster was replaced with Portland cement plaster.

The cast-iron pipe at the building's west exterior elevation connects to two cast iron pipes in the interior and continue to the pit chamber below grade. A metal door immediately east of the cast iron pipes provides access to the pit chamber. A steel I-beam at the west end of the building, installed north-south, was added to stabilize the structure in the recent past. An interior light was also recently added.

Pumping House (1896) (#3)

Exterior

The Pumping House is a Spanish Colonial one-story, gabled roof building west of the access road and at the north end of the Settling Basin. It was designed in 1892 by Henry Thomas Granger,[1] consultant of the London-based company that was awarded the construction contract and completed in 1896 (Figure #5). The Pumping House housed three functions – the engine house, the boiler house, and coal storage (Figure #7). An underground 10-foot well connected the last of the settling basins to the steam-powered pump machine.

It is a limestone masonry and plastered brick structure. The southern portion of the building's gabled roof runs north/south while the northern portion, where the coal storage was housed, has a lower gable roof that runs east to west. The roofs are wrought iron trusses and wood purlins with corrugated metal panels (Photo #13). An octagonal, 80-foot tapering brick chimney with neoclassical elements is on the east elevation of the Pumping House, where the rooflines change (Photo #10).

The building features rectangular window and door openings. In recent years, many of the window openings have been partially infilled with cinder block topped with metal security bars. All openings are encased with brick and are covered with plaster in most instances. Some have been left exposed due to missing plaster. The west elevation, facing the Settling Basin, has five door openings – the two northernmost provide access to the engine house, the two central provide access to the boiler room, and the southernmost and smallest opening leads to the coal storage portion of the building (Photo #11). None of the door openings have doors.

The north and west elevations feature neoclassical elements. The west elevation includes plaster-covered brick pilasters that meet the masonry cornice. The north elevation includes a detailed pediment, plastered brick cornice, and an architrave supported by pilasters.

[1] Henry Granger was an English engineer and former army commander who retired in 1887 before working for Edward Crawford Corry. (The London Times, 13 April 1887).

Interior

The interior is divided into three distinct areas from north to south – the engine house, the boiler house, and coal storage. All walls are 1'-8" thick, except for the wall dividing the coal storage, which is 3'-4" thick. Interior walls were originally quicklime plaster but were replaced with Portland cement in several locations. Walls that retain original quicklime plaster are deteriorated and show signs of material damage due to water and humidity intrusion. Because the building has been open to the elements, it shows some signs of deterioration due to exposure, including bio-growth and water intrusion (Photo #14).

The installation of electrical pumps and filters in the Chemical and Mechanical Filters' House, constructed in 1917, made the Pumping House's steam operation obsolete. The building subsequently became a storage facility and the associated settling tanks were used for clean water reservoirs. None of the machinery from its original function survives. The Pumping House represents the site's steam powered era. The chimney is a visual landmark and can be seen from the Cupey Station, a quarter-mile away.

Engineers and Caretakers' Residence (1892/1894) (#4)

Exterior

The Engineers and Caretakers' Residence is a one-story, rectangular Spanish Colonial style building designed in 1887 by Fernando Alameda and constructed between 1892-1894 (Figure #3). The Engineers and Caretakers' House is southeast of the Chemical and Mechanical Filters' house, with its primary elevation on the west side, facing the access road. It is one of the oldest buildings on site and originally served as the Caretakers' Residence (Photo #15).

The building is constructed of limestone and brick masonry and features a flat roof. The longitudinal east and west elevations are symmetrical and are organized in three parts, with the central portion wider than the two flanking portions. The primary elevation features seven arched openings, two of which extend to grade and serve as entryways. It also has three concrete pilasters, an overhang, and water collection channels that appear to be later additions that also resulted in the removal of the original brick cornice on the east elevation. A parapet detail tops the roofline at the central entryway.

The fenestration seen on the west elevation is repeated on the east elevation, and also features two entryways, but at different locations. The north elevation has two arched openings, with the northwest opening serving as an entryway. The arched openings are brick covered plaster, though plaster is missing in many locations revealing brick.

Two arched window openings – one on the west elevation and one on the north elevation, retain metal frames, though all glazing is gone. A window opening on the east elevation retains the arched portion of a metal window frame. All other windows and entryways are open. The south elevation has a single, rectangular entryway that appears to have been a later alteration (Photo #16). The rectangular entryway is topped with a flat, concrete awning supported by concrete brackets.

Interior
The building has a simple, rectangular floor plan (Photo #17). When the building served as a Caretakers' Residence it had 11 living quarters and three vestibules. The original interior subdivisions were previously removed and is now a single open space with reinforced concrete columns and ceramic tile floors. The ceilings are reinforced concrete slab, which were installed in 1923 to replace the original ironwood beam and brick construction.

After 1923, the building was altered to accommodate new uses. It was a warehouse and then used as a water quality laboratory from 1923-1980s. In the 1980s, the laboratory was moved to another site and the building was abandoned.

Chemical and Mechanical Filters' House (1917-1918) (#5)
Exterior
The Chemical and Mechanical Filters' House is a one-story, flat-roofed, reinforced concrete building that was built in 1923 and replaced a previous wood structure built in 1917-1918 (Figure #9, 12, 13). Designed by Carlos del Valle Zeno[2], it is northwest of the Engineers and Caretakers' Residences. The building features a L-shape plan with the wider end to the north and tapering at the south (Photo #19). It has six arched openings at the west elevation of the south portion of the building and five arched openings at the north portion, with one previously central arched entry modified to extend its south side. There is a rectangular entryway at the northernmost portion of the west elevation. The arched windows corresponded to the placement of the mechanical filters. The windows originally had metal frames. Few windows retain the metal frames and those that remain are deteriorated or damaged.

The east elevation features a reinforced concrete colonnade with columns spaced every 10 feet. Between the columns, there are nine of the original twelve filters that begin at the south end of the building, align with the interior east wall and extend outside of the building (Photo #20). There are two rectangular openings to the north, identical to those where the current mechanical filters are, which are open and no longer have mechanical filters. The opening northernmost opening on the east elevation appears to have matched the others in size and shape, but has been partially infilled resulting in a smaller, square opening.

The mechanical filters are partially concealed from view by the masonry retaining wall of the Engineers and Caretakers' House to the east.
Interior
The interior plan is open and houses nine cylindrical mechanical filters, which were added to the facilities when the steam pumps were replaced by the electrical water pumps. The ends of the mechanical filters are set in between the east elevation columns and connect to pipes that run

[2] Carlos del Valle Zeno (1881-1965) was a local engineer. He graduated from the National School of Engineering of the Central University of Venezuela in 1903. He traveled to New York where he established an office for a short time before spending time in Cuba and then returning to Puerto Rico. He specialized in waterworks designs in Puerto Rico and abroad. (Sepúlveda, *Acueducto: Historia del agua en San Juan*, p. 343-345)

along the interior of the building (Photo #21). There are several concrete footings where additional machinery was once attached, but that no longer remains.

There is a small room at the northwest end of the building that was previously used to store alum and lime used during the filtration process. It is separated from the rest of the space by a short concrete wall the width of the building.

Director's Residence, Maid's House, and Garage (1930s) (#6,7,8)

Exterior

The Director's Residence, Maid's House, and Garage are among the newest buildings on the site having been largely built in the 1930s. Situated at the northernmost end of the site and on the west side of the access road, this portion of the site is comprised of two buildings – the Director's Residence, which is contributing and the non-contributing Maid's House that were later joined by a non-historic garage addition, which based on photographic evidence appears to have been constructed after the period of significance (Figure #14).

The former Director's Residence is a two-story bungalow style, concrete structure with a flat roof. It was designed by Carlos del Valle Zeno and served as the official residence of the waterworks' superintendent, Enrique Ortega who was the official responsible for the site's operations (Photo #22). The main elevation faces east and features a porch that extends three-quarters the length of the building with four columns on masonry piers surrounded by a short, masonry wall and has a tiled floor. The main elevation features three entrances, two on the porch portion of the building and third on the north side of the primary elevation where it appears the building was altered by a later addition. The northern door is a single solid, sliding door with a flat, concrete awning while the two porch entrances are man doors with metal security gates.

The primary elevation's first story is topped with a flat overhang that is higher over the sliding door on the elevation's north end. The second story is a later, non-historic addition, having been added after the period of significance. The primary elevation's second story has three openings, including a single window at the southeast corner and two, square openings at the enclosed second-story porch. A flat overhang extends the length of the primary elevation's roofline and continues to the building's south elevation.

The south elevation has concrete steps leading to a southwest entry door. A single window to the east features the same flat, concrete awning as the southwest door (Photo #23). Each also has a metal security covering. Like the primary elevation, an overhang separates the first and second stories of the south elevation. There are three openings on the second floor, including a single window above the porch at the southeast corner and a square opening to the south that is infilled with plywood. The third, square opening is above the door on the southwest corner where the roofline changes, suggesting this enclosed porch portion is a later addition.

The west elevation has a set of concrete stairs that leads to a central door with a flat, concrete awning and a security door. A single window is to the south and an outdoor concrete sink is located between the entry door and the window, at grade level. The landing at the short stair to

the west entrance connects to an exterior concrete stair to the enclosed porch at the southwest corner of the second story. The enclosed porch has a large, central hexagonal opening flanked with two, small square openings.

The north elevation has three windows at the first story, each with a flat concrete awning. The center window is a smaller, square window whereas the others are rectangular. Each window has metal security bars. The overhang separating the first and second stories on the primary elevation continues to the north elevation. There is an enclosed, concrete entryway between the easternmost and small, square window. The north elevation's second story features four irregular openings. Three are on the east portion of the elevation and the fourth is on the west portion of the elevation, where the roofline changes because of the enclosed porch addition. All of the openings are without frames or glazing.

Interior

The building's interior floorplan is comprised of a series of interconnected rooms (Photo #24). Generally, floors are tile walls are plaster over masonry and ceilings are exposed painted concrete. Tile floors are locally sourced and are decorated with geometric patterns in several areas, including the entry porch. The building was converted into administrative offices in the 1960s and many of the finishes and fixtures date to that period.

Garage (non-contributing) (#7)

A small, non-historic garage addition connects the Director's Residence to the Maid's House to the west. The garage addition begins at the northeast corner of the Director's Residence and joins the width of the east elevation of the Maid's House (Photo #25). The garage addition is a one-story, flat roof addition with a man door at the west elevation and two rectangular windows at the east elevation. The window and door openings of the garage addition do not have frames or glazing and feature the same security bars seen on the Director's Residence.

Maid's House (non-contributing) (#8)

The Maid's House is a rectangular, concrete building with a flat roof whose primary elevation faces west. Also designed by Carlos del Valle Zeno, this building was built to house the maid, who served the Director's Residence. As such, its construction and use do not relate to the district's significance for its importance to the social, developmental, and health of the city and county of San Juan. Furthermore, it does not relate to the district's contributions to engineering for providing water to San Juan.

The building is a simplified Art Deco design as evidenced by the straight lines, use of glass block, and stylized decorative use of cement block. The primary elevation has two louvered windows at the first story, and like the Director's Residence has a flat concrete overhang separating the first and second stories. The second story of the west elevation has a single louvered window at the northwest and an open porch at the southwest with concrete block detail below its opening (Photo #26). All the windows and doors have metal security bars.

The Maid's House's south elevation has a driveway covered by a corrugated metal shed roof on metal poles and a plywood double-door entry (Photo #28). The second story southwest corner has an opening to the covered porch with the same concrete block design seen on the west elevation. There is a glass block window east of the porch marching the height of the porch opening and a second window to the east.

As described above, much of the east elevation is obscured by the non-historic Garage Addition, which spans the width of the building's first story and appears to have been constructed after the period of significance. There are two windows above the Garage Addition roof, at the building's second story. The north elevation is the simplest of the three and features a single louvered window on the first story's northwest corner and two at the second story. The second story windows each have a slanted concrete awning.

Other Site Components

Entry Gate (1892-1893) (#9)
The entry gate is situated at the entry road, to the east of the Director's Residence, Maid's House, and Garage. The gate marks the beginning of the vehicular access to the Río Piedras parcel (Photo #29). This road was planned and built as a service road in 1892-1893. The design was suggested by the two English engineers, J.M. Grover and Henry Thomas Granger. The construction was supervised by another Eng1ish engineer living in San Juan, Lucas A. Scott (Figure #15). This path connected the site to the main road near the historic Río Piedras Bridge on the *Carretera Central* from San Juan to Ponce, State road PR-1. This path is still the only vehicular access to the site. The gate is no longer extant, but the road is flanked by two masonry piers capped with cast stone details. The eastern pier includes an adjacent arched opening for pedestrian access. The arched opening is supported by a second pier element which continues to a bell-curved wall which terminates at the sloping hillside.

When originally constructed, both sides of the gates included arched pedestrian entries. The west pier, however, was damaged at some point after the period of significance to its present condition with just the pier portion remaining (Photo #30).

Settling Basin (1898) (#10)
The settling basins occupy the western portion of the site and form a P-shaped footprint that follows the contour of the Río Piedras to the west (Figure #6). The basins are comprised of six distinct areas (Photo #31-37). The basins are masonry and have masonry curbs around the perimeter with masonry partitions. The basins were completed in 1898. The six settling basins are of different sizes and depths and ranged from a depth of 9 feet 4 inches to 14 feet 6 inches. The first four tanks were designed to separate sediment and allow cleaner water to enter tank number five, the *coagulating tank*, where alum was added. From there, the clean water was suctioned to the pumping station. The raw water from the river was kept in the settling basins for 24 hours before it was pumped to the nearby hill reservoir at the Loma de Prim. In 1989 the basins were filled with soil. The soil has since been removed, one again revealing much of the form of the basins.

Weir (1894) (#11)

The weir was built in 1894 (Figure #4,8). Its construction included a system of steel pipes to conduct raw river water from the weir to the mixing chamber and valve house and on to the settling basins. The weir is a polygonal structure 17.5 meters long, 3.0 meters high, and 2.6 meters wide (Photos #38-41). The original structure had a 6.75 meters semicircular segment located at the concave section to channel the overflow. The foundations are hydraulic lime mortar. Its main structure is made of different sizes of carved blue limestone. The body of the weir has two vaulted apertures designed for the collection of the overflow from the river. The embankments were made of compressed stones and mortar and covered by limestone blocks. At an unknown date, two hydraulic cement slabs were insta1led on the top of the structure, probably to enlarge the retaining capacity of the weir and increase the capacity of the water basins. In time, however, this alteration caused the deterioration of its embankments. The original embankment portions show signs of erosion.

Loma de Prim (1896-1897)

As previously described, the district is comprised of two parcels – the Río Piedras meander site and its buildings and features described immediately above and the Loma de Prim site. The Loma de Prim is located in Barrio Venezuela on a hillside above the Río Piedras meander site and houses a water reservoir historically associated with the San Juan Waterworks (Photo #45). The reservoir consists of masonry perimeter walls with a dividing wall down the center (Photos #42-44). There is a small valve house along its edge with masonry walls, cast stone details, a flat roof, and small arched openings.

First designed in 1878, it was constructed in 1896-1897. Described in 1899, "The primary reservoir is situated a hundred and sixty feet above the pumps and is a work of beauty. The walls are of rough masonry, topped with handsome stone fence. The, center of this great basin, holding three million seven hundred thousand gallons, is divided by a median wall, and the valve-house is situated at one side of this division."[3]

The reservoir was updated in 1917 and two steel cylindrical tanks were added. The tanks were 66 feet high x 28 feet in diameter with a capacity of 204,200 ga1lons each. The two tanks were visible from a great distance, and became reference landmarks for the community, known by the local population as *Calderas del Acueducto.* The tanks are no longer present, but intake and outtake pipes remain in the basins. Today the access road to this reservoir is named *Calle del Acueducto.*

[3] Description by William Dinwiddie, 1899

Río Piedras Bridge

The Río Piedras Bridge, constructed before the period of significance in 1853 is also included in the district boundary. The three arch limestone and masonry-built bridge is the oldest existing one of the *Carretera Central* [State Road PR-I]. The Colonial style structure is symmetric, with a main center arch (span length 9.1 meters) that is bigger than the two smaller lateral arches. Two triangular shaped pillars divide and articulate the three arches helping to funnel the river flow through the openings. A simple cornice runs the length of the bridge sides just beneath the parapet.

On January 9, 1999, major flooding in the Río Piedras River caused damages to the bridge when one of its smal1 arches on the eastern side collapsed and the center arch cracked at the center. In 2001, the bridge was stabilized, and the inner arch was held in place by metal scaffolding set underneath the structure. The eastern arch was reconstructed using new bricks brought from the Dominican Repub1ic.

Alterations

The site has been altered since its 2007 listing in the National Register of Historic Places. Although the 2007 National Register nomination made mention of fourteen (14) contributing resources and one (1) non-contributing resource within the district for a total of fifteen (15) identified resources, a subsequent on-site assessment resulted in the identification of several ancillary addition/sheds/connectors to identified resources, as well as the identification of previously unidentified ancillary buildings, bases and/or structures.

Following the updated assessment, selective removal occurred on the site including the removal of one (1) non-contributing resource, two (2) previously contributing resources; four (4) additions to contributing resources or ancillary components thereof; and four (4) previously unidentified ancillary bases/structures were removed, as was a portable filtration plant. As a result, the resource totals based on the current conditions are as described in detail above, twelve (12) identified resources – six (6) buildings, five (5) structures, and one (1) site.

The updated site evaluation and selective removal work was completed in response to a proposal from the United States Army Corps of Engineers to raze the area to facilitate engineering work in the Río Piedras. To fully expose and reveal latent historic resources believed to be on the site, as supported by subsequent historic research, site experts Dr. Aníbal Sepúlveda Rivera and architect Alberto del Toro identified several previously unidentified (not included or described in the previous nomination) non-contributing elements such as sheds, bases, connectors and small lean-to components attached to or connected to contributing resources through visual inspection. These elements were deteriorated, non-descript, and found to hinder the full appreciation of the original character of the most significant and character-defining components of the Río Piedras meander complex of the historic district. Removal of such elements were carried out sensitively, avoiding any damage to the resources, under the direction of architect Alberto del Toro.

Selective removal work included the following:

- A non-historic lean-to structure and a structurally unsound, non-descript 20th century rooftop addition from the Mixing Chamber and Valve House, thereby preserving the 19th century portion
- A non-descript addition to the Engineers and Caretakers' Residence
- A non-historic shed and connector portion of the Chemical and Mechanical Filters' House
- A previously un-identified building base
- Non-historic restrooms not previously identified in the original nomination
- A base for a former diesel tank not previously identified in the original nomination
- A base for a portable filtration plant not previously identified in the original nomination

Integrity

Acueducto de San Juan retains integrity to convey its historic significance. Both the Río Piedras meander parcel and the Loma de Prim parcel comprising the historic district are in their historic **location**. Acueducto de San Juan retains sufficient integrity of design as evidenced through the retention of the historic form and plan of the site. The most important aspects of the waterworks including the Loma de Prim reservoir, the access road and gate, and the settling basins and the buildings – the Mixing Chamber and Valve House, Pumping House, Chemical and Mechanical Filters' House, and the Director's Residence represent a largely intact late 19th and early 20th century waterworks **design.** The historic **setting**, along the Río Piedras, continues to convey the importance of the site's historic setting and integral relationship of the water source to the waterworks. The physical environment is largely how it appeared historically. Furthermore, historic materials used in the construction and design of the buildings conveys its historic significance. For example, the use of modern **materials** for the time like Portland Cement is present as are the blue-stone weir, masonry buildings, and the red brick smokestack for the Pumping House. Integrity of **workmanship** is present in several instances on the site. Workmanship is reflected through the use of modern technological engineering advancements, like the extant pumps for the Chemical and Mechanical Filters' House as well as through the architectural details like the Spanish Colonial elements of the Engineer and Caretakers' Residence as reflected in the arched openings and pilasters. These elements of integrity, when considered cumulatively also convey the district's historic **feeling** and **association**. The district continues to convey a direct link between the property and the use and operation of the waterworks. The district continues to effectively evoke a historic sense of a late 19th and early 20th century waterworks. Overall, the district retains a high degree of historic integrity.

8. Statement of Significance

Applicable National Register Criteria

[x] A. Property is associated with events that have made a significant contribution to the broad patterns of our history.

[ ] B. Property is associated with the lives of persons significant in our past.

[x] C. Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.

[ ] D. Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations

[ ] A. Owned by a religious institution or used for religious purposes

[ ] B. Removed from its original location

[ ] C. A birthplace or grave

[ ] D. A cemetery

[ ] E. A reconstructed building, object, or structure

[ ] F. A commemorative property

[ ] G. Less than 50 years old or achieving significance within the past 50 years

Areas of Significance
Engineering
Community Planning and Development
Health
Social History

Period of Significance
1892-1945

Significant Dates
1892
1894
1896
1898
1899
1917
1923
1945

Significant Person
(Complete only if Criterion B is marked above.)
N/A

Cultural Affiliation
N/A

Architect/Builder
Blume, Carlos
Lombera, Juan Manuel
Gadea, Enrique
Alameda, Fernando
Scott, Luke A.
Granger, Henry Thomas
Guerra, Arturo
Montilla, Fernando
Del Valle Zeno, Carlos

Statement of Significance Summary Paragraph

Acueducto de San Juan is a historic district significant both locally and statewide under Criterion A for its importance to the social, developmental, and health of the city and county of San Juan, Puerto Rico. It was a critical site in providing a reliable, consistent, and clean source of water for San Juan as well as the surrounding communities, helping to spur further urbanization and development. It is also significant under Criterion C for its contributions to engineering for providing drinking water to the city and county of San Juan. It is the best remaining example of a Puerto Rican waterworks dating from the 19th and early 20th century. It is a good example of the engineering works of Carlos Blume, Juan Manuel Lombera, Enrique Gadea, Fernando Alameda, Luke A. Scott, Henry Thomas Granger, Arturo Guerra, Fernando Montilla, and Carlos Del Valle Zeno. Construction began in 1892 and included periods of development in 1894, 1896, 1898, 1899 as well as significant updates in 1917 and 1923. The period of significance spans from 1892 to 1945, from the plant's first period of construction until it was transferred from the

municipality of San Juan to the state-owned water company, Autoridad de Acueductos y Alcantarillados (AAA).

Narrative Statement of Significance (Provide at least **one** paragraph for each area of significance.)

Acueducto de San Juan is significant for its contributions to the social, developmental, and health history of San Juan. It is the first aqueduct of the city of San Juan and the best remaining example of a Puerto Rican waterworks dating from the 19th and early 20th centuries. Additionally, it is significant for its engineering. Through the use of new materials like Portland Cement, and new technologies in steam power including influences from the United States, Mexico, Britain and Europe Acueducto de San Juan represents a state-of-the-art facility from the 19th and early 20th centuries. Its two sites, the bui1ding complex, structures, and the landscape associated with the old aqueduct remains as a fine example of the history of Puerto Rican public works.

Water Supply

The drinking water supply for the city of San Juan was always a precarious issue. As explained in the National Register Nomination *Going with the Flow: Waterworks in Puerto Rico, 1840-1988*, the pattern of human settlements in Puerto Rico have been determined by the availability of fresh water.[4] The success of early settlements depended on the availability and quality of the precious liquid. For example, the failure of the very first European settlement in Puerto Rico (Caparra), was described in the early chronicles as having been caused in great part by the absence of good quality drinkable water. Early chronicler, Gonzalo Fernández de Oviedo, described Caparra's problem when he said "*Mas este pueblo, por la indisposición del asiento, fue mal sano y trabajoso, porque estaba entre montes y ciénagas, y las aguas eran acejosas, y no se criaban los niños*". The resource was not only indispensable for sustaining life, but also essential in many other daily activities: basic hygiene, cooking, washing, and of course, agriculture.

Almost every town, with the ironic exception of the settlement of San Juan in the islet in 1519, was formed around either a river mouth or along a riverbank. By the end of the sixteenth century, the river mouths were the more populated and exploited areas throughout the island, with the settlements established along the flatlands and valleys of the coastline. On the northern coast permanent settlements developed along the rivers Loiza, Bayamón, Toa, Cibuco, Arecibo, Camuy, and Guajataca. In the west, towns were born along the Culebrinas, Guauabo y Guyanabo Rivers. The southern inhabitants established their European settlements in the mouths and banks of the Guadianilla, Tallaboa, Portugués, Jacaguas, Coamo, Salinas, and Guamani Rivers. A similar process took place on the east coast nearby the rivers Maunabo, Guayanes, Dagua, and Fajardo.[5]

[4] National Register of Historic Places, #64501274

[5] Memoria y descripción de la isla de Puerto Rico mandada a hacer por S. M. el Rey Don Felipe II en el año 1582 y sometida por el ilustre Señor Capitán Jhoan Melgarejo, Gobernador y Justicia Mayor en esta ciudad e isla. Eugenio Fernández Mendez. Crónicas de Puerto Rico, 107-134 from National Register of Historic Places, #64501274.

By comparison, San Juan had been settled as a military city critical for merchant and military ships traveling from Spain to the Americas. Focused on protecting its rich cargoes, local authorities did little to provide a steady water supply to the fortified city of San Juan. Early water needs were met by a freshwater lagoon at the walled city's southwest end. As the city grew, wells began to be established to provide water. Puerta de San Justo became the main access road into the walled city by the end of the 18th century and a well was built next to the entry gate. The well at San Justo was modernized and updated in the 1840s to better serve the growing city. However, well water was often described as brackish and was not always a reliable water source and other sources were clearly needed to sustain the city.

In the following years the city's water infrastructure continued to adapt to the increasing needs. Fountains were established to provide fresh water fed from natural spring water. The Aguilar fountain in Miramar was the primary source of spring water beginning as early as 1534. By the 18th century the fountain came to be called the San Antonio fountain for its proximity to the bridge of the same name and continued to be an important water source through the next century.

In addition to wells and fountains, reservoirs that collected and retained rainwater were common throughout the city. Household reservoirs collected rainwater through canals from the roofs of houses. Rainwater was generally a good source of water but was unstable due to droughts and varied in quality because cisterns collected water but did not filter it.

As the city continued to expand and mature, accessing and controlling the water sources became a matter of economic survival, class struggle and competition among a wide range of individuals and institutions in the social spectrum.

Through the years, there were several attempts to improve the quality and delivery of water to San Juan's urban dwellers. In 1806 an unnamed French engineer meticulously planned an aqueduct project that was never realized, likely due to the municipality's resistance to financing a project that size.[6]

At the beginning of 1846, Governor Rafael Aristegui y Velez decided to implement a new project for San Juan's aqueduct after an unsuccessful attempt by the municipality of San Juan to initiate an aqueduct project, after a prolonged drought that had reduced the reservoirs and wells of San Juan. The Central Government challenged the municipality to find financing to bring water 12 kilometers into the city and proposed that the government tax luxury goods brought to port to pay for the project.[7] The idea proved unpopular and the municipality struggled on how to implement a project of this size. Nonetheless, the government began to collect the necessary taxes to finance the project.

[6] Sepúlveda, *Acueducto: Historia del agua en San Juan*, 31.
[7] Sepúlveda, 71.

On April 21, 1847 the governor ordered announcement of the aqueduct and the first official request for proposals for the construction of an aqueduct was published in the *Boletin Instructivo y Mercantil* on April 27, 1847.

The following proposals were in response:

- **First Proposal:** On September 1847, Carlos Blume was the first engineer to propose a project. He envisioned an open channel similar to those in Mexico City and New York. In his proposal, he suggested a research visit to the facilities in New York and Philadelphia as possible models for the project in San Juan. The idea was well acclaimed, and two years later, site visits were made to the facilities in Philadelphia (Fairmont) and New York (Croton Aqueduct). Blume had support from three successive governors – Rafael de Aristegui y Velez (1844-1847), Juan Prim y Prats (1847-1848), and Juan de la Pezuela (1848-1851). The Municipal Government, however, was resistant to this plan because Blume suggested that the municipal government should be responsible to pay for preliminary work necessary to entice a professional company to undertake the work.[8]

- **Second Proposal:** After his visit to the aqueducts in the United States of America, local engineer, Juan Manuel Lombera, designed a complete project on October 1849. He proposed the use of technology and gear being used at West Point. The proposed aqueduct was going to use simple and efficient water hammer technology to produce the flow and pressure for the system. The proposed source of water was the Río Piedras River, flowing into the San Juan Bay through the coastal valley. At this time, the intake at the Río Piedras River was fixed. A few months later a commission appointed by the Municipal Government examined Juan Manuel Lombera's project and concluded that it was far too expensive to build, especially considering that many of the private dwellings and public buildings in the city had their own cisterns.

- **Third Proposal:** In 1853, Gustavo Stenacher proposed a third project. Although detailed drawings were not prepared, he did recommend the use of the site adjacent to Hacienda Solis, an estate owned by Jose Solis, a well-known landowner and sugar cane producer of the town of Río Piedras. Stenacher's proposal included various public fountains to be located in the plazas of the city. This proposal was also well received, but he soon left the Island and no further action took place.

- **Fourth Proposal:** Three years later (1856) engineer Baltazar Paniagua, (awarded the Medal of Distinction by the Spanish Monarchy in 1826) complained that too many studies had already been done and no action had been taken. He endorsed Lomberas' project, with some technical modifications, and referred to two major engineering wonders of the time located in Spain: The Canal de Castilla, (constructed from the late 18th century to the early years of the 19th century) and the Canal de Isabell II, providing

[8] Sepúlveda, 77.

drinking water to Madrid. Thus, in addition to the Mexican and United States of America experiences, the local aqueduct inherited the influence of the Spanish homeland.

- **Fifth Proposal:** For more than a decade, nothing happened with the updated Lombera plan. It was authorized by Royal Order in 1864. Unlike previous attempts to initiate the aqueduct project, the Municipal Government supported the project and on April 21, 1864 published announcements to call candidates to provide proposals. However, the Municipal Government only opened the project for proposals for three months and seemed to ignore previous engineers' suggestions that the Lombera plan was preferable, and instead suggested that the project should be run only with gravity, thereby disqualifying the use of Río Piedras as a source.

  By 1874, no final decision had been taken concerning this project. Governor Laureano Sanz, Marquis of San Juan de Puerto Rico, together with the chief of engineers, Timoteo Lubelza, revived the project. By that time, the population of the city was approaching 22,000. From 1875 to 1879, Engineer Enrique Gadea[9] researched and designed a complex aqueduct of nearly 39 kilometers of pipelines from the central mountains into San Juan. He proposed the intake of fresh water from the Rio Grande de Loiza. The capacity was about 50 liters per second. The last section of the proposed alignment intersected the Río Piedras and is almost identical to the final alignment built a few years later (see plan included).

- **Sixth Proposal:** Gadea's design was, as usual, well received, but for financial reasons it was not implemented. However, a general consensus was taking shape to use of the Río Piedras (about 10 kilometers from San Juan) for the intake of the aqueduct. In 1887, yet another commission was assembled to revise Gadea' s project. The engineering challenge of maintaining adequate water pressure was addressed by pumping the water from Río Piedras into a large reservoir to be constructed on a nearby hill called Loma de Prim. This system was relatively inexpensive since the pumps would only be needed to move water from the river into the high reservoir. From there, gravity would ensure distribution to San Juan. Engineer Fernando Alameda[10] modified Gadea's project and finally, in 1889, the local authorities approved his version.

The process of design, administration, bidding, and construction of the first aqueduct for San Juan took almost half a century to complete from 1847 to the turn of the 20th century.

[9] Enrique Gadea Vilardebo (1846-1910) was an esteemed engineer and was head of Public Works and is credited with transforming the island. The Gadea Plan of 1883 was responsible for the first strategic development for the island that included massive project like construction of roads, lighthouses, railroads, and works. The construction of the San Juan Waterworks was part of this plan. (Sepúlveda, 123-134).

[10] Fernando Alameda Liancourt (1833-1899) was a Spanish engineer who studied at the Academy of Military Engineering of Guadalajara in 1847. He had a successful military career where he worked on railroad and topographic projects. He became a General Commander in Puerto Rico in 1884 through 1888, before returning to Spain to finish his career. (Real Academia de la Historia, http://dbe.rah.es/biografias/68202/fernando-alameda-y-liancourt) .

Planning the Aqueduct

Another distinguished engineer named Jose A. Canals[11] revised Gadea's plan and the process of expropriation of the required land was initiated. The land expropriations were announced in the November 13, 1890 edition of the *Gaceta Oficial*. As expected, this brought new tensions among the landowners, especially for Enrique Flores, the owner of the land where the actual complex (weir, engine, boiler and coal store house, filtering tanks, and administration building) was to be built. As soon as Flores learned of the plans, he sold his land to the adjoining proprietor Joaquin Solis. Altogether, eleven properties were to be partially expropriated for the waterworks.

The request for construction proposals was published in the government newspaper, *Gaceta Oficial* on June 7, 1890. From this time on, the greatest challenges shifted to administrative issues in a city with little capacity to handle such a major project. Municipal architect, Patricio Bolomburu, was put in charge of the certification of all the stages. On March 9, 1891 the project was announced in the official newspaper in Madrid to include potential European bidders. The bidding process started in San Juan, but local contractors were apprehensive.

In 1891, Lucas A. Scott[12] presented a design-build and administration package based on Gadea's approved proposal, but it was revised by J. W. Grover, a hydraulic engineer based in London. Thus another influence was added to the local project. At the time, the British were on the leading edge of the hydraulic technology and engineering. On January 13, 1892 Governor José Lasso Pérez and the local authorities approved the project. In July 1892 a new London based engineer replaced Mr. Grover, and the official contract was signed between the Municipal Government and Edward Crawford Cory. Engineer Lucas A. Scott was still acting as the local representative of the company.

Building the Aqueduct

The approved proposal included some changes to the original. One of the most significant was the use of Portland cement. At that time, the use of this building material was rare in San Juan's public works. The proposal included the plans to build several sections of service roads to transport heavy equipment to the construction sites. The London firm provided the plans for the engine house and boiler building, an 80-foot octagonal chimney, a coal storage warehouse (Mixing Chamber and Valve House), a building for administrative uses and the workshops. A

[11] Jose Antonio Canals Vilaro (1859-19??) was a Cuban-born engineer who studied Civil Engineering at the University of Ghent in 1883. Between 1883 and 1885 he designed the irrigation system in Guayama. He served as a Municipal Architect in San Juan from 1886 to 1888. In 1887 he worked for the French Railroad in Puerto Rico where he participated in the design and construction of about 200 kilometers of road. He was named the Engineer of Public Works in 1898. In 1905, he ceased being a bureaucrat and opened his own private practice, though continued to consult on many public works projects, including the San Juan Waterworks. During a period of great draught in 1919, he returned to serve as the Superintendent of Public Works for San Juan for a short time and then returned to public practice. He was named Superintendent of Public Works for San Juan again in 1923 until political leadership shifted parties in 1924. Canals, however, did remain a consulting engineer for the San Juan Waterworks until his death. (Sepúlveda, 226-227).

[12] Lucas Agustin Scott was an English engineer based in Puerto Rico. He was the director of an English company that sold gas for lighting before becoming the head engineer of the San Juan Waterworks in 1891. (Sepúlveda, 161).

plan for a workers living quarters was also included (Engineer and Caretakers' Residence). As described above, these early initial buildings are still extant.

There was some question as to who would be served by the aqueduct. Scott was an early proponent of supplying Río Piedras, then its own municipality, with water from the project as the main pipeline would run through the center of town. In August 1890, the City Council of San Juan conceded that it only had the right to use 50 liters of water per second to supply San Juan, its neighborhoods of Puerta de Tierra and Santurce and as well as the municipality of Río Piedras.[13] The management company liked the idea of having more paying customers but denied Scott's request when made in 1892 and again in 1893.[14]

Work on the project began in October 1892 with the construction of a bridge over Río Piedras to give access from the road to the river meander where the aqueduct facilities would be built.

Though many foreign companies and engineers influenced the design of the site, its construction relied on local labor. For example, settling and filtration tanks built next to the dam and the steam pump house facilities were designed using ideas of the London consultants, but were carried out by Arturo Guerra[15], a prestigious local engineer/architect. The plans and the technical specifications for the filtering plant were approved on October 1896. A total of six tanks were built. The building process began on August 3, 1896, under the personal supervision of Arturo Guerra. In addition to Guerra, many local contractors were employed to provide sand, stone, and building materials. All of the construction workers were local residents. A few other local firms, as well as Municipal Government employees were in charge of the installation the many kilometers of pipelines. On February 28, 1898 the local contractor, Roque Paniagua[16] finished the construction of the water deposits; however, the distribution system was still pending since J.T. Silva and Company, who had the contract to provide the pipes, was unable to import them. The bulk of the building process was completed in only two years, a very brief time considering the local circumstances. The construction of the aqueduct was driven by local labor, helping to establish the much-needed infrastructure necessary to provide running water to the urban center, promoting the growth of the city and the health of its people.

In addition to the growth and health of the city, in 1898 the imminence of the Spanish American War created additional pressure to provide water to the Admiral Cervera's squadron, whose arrival was expected shortly. San Juan was under a naval blockade for many months, delaying

[13] Sepúlveda, 215
[14] Sepúlveda, 162.
[15] Arturo Guerra (1855-1931) was born in Puerto Rico and studied engineering at the Rensselaer Polytechnic Institute in Troy, New York, and graduated in 1876. He returned to San Juan and worked as an engineer in the Public Works department for several years before moving to Cuba from 1883 to 1889. He returned to Puerto Rico in 1889 to become Assistant General of Public Works, a position he held until 1892. He then worked as the Municipal Architect for the municipality of San Juan until his death. (Sepúlveda, 149).
[16] Roque Paniagua Garcia was a local contractor and engineer, who is also attributed with the construction of the Arenas Bridge in 1894, then the longest bridge in Puerto Rico as well as the Marvilla Bridge in 1903, the oldest concrete arch bridge in Puerto Rico. (Puente Marvilla fact sheet, Puerto Rico State Historic Preservation Office and National Register of Historic Places, "Historic Bridges of Puerto Rico, c. 1840-1950).

the arrival of crucial machinery from London. To add to the frustrations, a devastating hurricane flooded the area on August 9, 1899 and the aqueduct did not reach full capacity until 1900. Early users complained about the service, mostly due to lack of pressure. The mayor of Río Piedras complained in June 1903 that his municipality needed fire hydrants and two public sources to supply his residents. It was not until January that the government agreed to install four fire hydrants, but still refused to provide public sources for the residents of Río Piedras.[17]

Technological advancements helped to solidify the critical role of the aqueduct. In 1917, two clear-water hilltop cast iron tanks were built to enhance the water pressure to San Juan. These hilltop structures were visible from afar and were a well-known landmark. The local community, now called Barrio Venezuela, named the place *las calderas del acueducto.* The old iron tanks were later removed after a hurricane damaged them in 1928. In their place, new concrete reservoirs were built in the 1930s to perform the same function. Most of the gear and sophisticated equipment for this project was ordered from London, but many others, including pumps and metallic parts, corrugated iron for roofing purposes and many small parts were provided by Sucesores de Abarca, a local foundry that had acquired extensive experience designing and producing heavy equipment for the sugar industry and in producing parts for metal bridges built in the late 19th century.

The steam power machinery was in service until 1917 when it was replaced by electric pumps. It had become clear that the site had to be updated to respond the changing needs of the people, the increasing urbanization of the surrounding area, and the growing population. For example, the area of Santurce had a population of just 5,840 in 1899 and it jumped to 35,096 by 1920. The San Juan Waterworks had been planned for a capacity of 35,000 when it was designed in 1887.[18] The aqueduct was serving all of San Juan, Santurce, Hato Rey, and Río Piedras. With expanded populations came not only houses to provide for, but also schools, churches, hospitals, government buildings, and hotels. Because of the increased demand, at peak demand times the water was sometimes cloudy because of the loss of pressure or interruption in service. It became clear that the aqueduct had to be updated. In 1913, studies were undertaken to understand the conditions and needs for a serviceable water supply, ultimately concluding that a new aqueduct had to be built to complement Acueducto de San Juan.

Six mechanized filters were installed by the San Juan municipal authorities in 1917. This, undoubtedly, improved the quality of the water. At that time World War I was evolving in Europe and the United States was about to enter the conflict. The city of San Juan was chosen to locate a military training camp. The municipality promised safe drinking water to the nearly 12,000 new recruits and officials. Local bonds were sold through the Puerto Rico Chamber of Commerce, and the sum of more than $400,000 was collected to finance the project. Municipal engineers, Fernando Montilla[19] and Miguel Ferrer Otero, were commissioned to design the new facilities. Eight additional canister filters were speedily acquired from the Roberts Filters

[17] Sepúlveda, 228.
[18] Sepúlveda, 245.
[19] Fernando Montilla Jiménez (1870-1929) was a municipal engineer during the administration of Mayor Roberto Todd. (Sepúlveda, 277).

Manufacturing Company from Darby, Pennsylvania. The mechanized filters, 12 in all, were able to provide the military camp as wen as the local population with adequate drinking water. Nine of these filters are still in place today. The electrical pumps and filters of 1917 made the steam pumping house and settling tanks obsolete. The former was used as a storage facility and the settling tanks eventually became additional clean water reservoirs. The site continued to update and change through the 1920 and 1930s and included improvements to the new electric system and improvements to the existing buildings (Figures #10-11). In the 1930s, the last buildings were added with the construction of the Director's Residence and non-contributing Maid's House.

In December 1924, the Director of Public Works, Jose Antonio Canals, approved a new aqueduct project on the Bayamón River, thereby relieving some of capacity pressure of the aqueduct at Río Piedras.

The State Takeover

For most of the first half of the 20th century the old aqueduct was in use. The site had to adapt again when its ownership was transferred from a municipal to a state-owned agency. Up to this point in Puerto Rico's history, its economy had been largely driven by agricultural activities outside of San Juan. The sugarcane and coffee industries had been especially critical to the island's economy. During the 19th century owners of sugarcane and coffee haciendas, particularly those in the island's southern region had built private waterworks systems to meet their agricultural needs.

However, in the early 1940s Puerto Rico adopted a plan to re-orient its economy from an autonomous agricultural and industrial program to a massive industrialization program based solely on private foreign capital.[20] One of the effects of the reorientation, coined Operation Bootstrap, was to create a centralized planning agency with the ability to plan for and regulate all land. After the creation of the Puerto Rico Planning Board, and under the leadership of Governor Rexford Guy Tugwell, the government began to look at industrial development as the long-term solution to the island's economic problems. Before industrialization initiatives could be put in place, the government needed to strengthen the infrastructure of the economy. As a result, the government began a battle to take over the island's water, electric, and telephone companies and transform them into public corporations.

This plan included the takeover of Acueducto de San Juan. The San Juan mayor at the time, Gonzalo Diago, challenged the takeover in court. He recognized that the waterworks, in addition to being the largest and most complex municipal project was also a considerable source of municipal income. Diago's objections were not successful. In 1945, ownership and management were transferred from the municipality of San Juan to the state-owned water company, Autoridad de Acueductos y Alcantarillados (AAA), marking the end of the period of significance.

[20] Reinerio Hernandez-Marquez, "The Puerto Rican Industrial Policy Debate of 1940-1947: The Limits of Dependent Colonial Growth," *Berkeley Planning Journal (3):1,* 1986.

As part of the consolidation of several formerly municipally and privately owned water infrastructure sites, AAA continued to operate Acueducto de San Juan. However, it was operated as part of a network of state-run sites, ending its role as the singular community-need based water provider. The role of Acueducto de San Juan was further transformed in the years immediately following with the construction of the Carraizo dam in the Grande de Loíza river. Completed in 1954, the dam drove its waters to San Juan at a much greater capacity than the Río Piedras, serving the booming population of San Juan.

Acueducto de San Juan continued to operate as a secondary facility until it was closed in the 1980s. In 2005, the AAA donated the meander plot and the buildings to the University of Puerto Rico. In 2006, the University of Puerto Rico transferred the property to the Conservation Trust of Puerto Rico who plan to continue to use the site for educational purposes.

Period of Significance

The period of significance was reevaluated considering additional research completed after the initial nomination was prepared in 2007. Additionally, Aníbal Sepúlveda's 2016 book *Acueducto: Historia del agua en San Juan*, provided extensive documentation and analysis not available at the time of the initial nomination. The period of significance which had previously been established as 1892 to 1957, marking the start of construction and the 50-year mark from the time the district was first nominated in 2007 was refined. It was determined that the period should span from 1892 when the site's construction began to 1945, when the site was transferred from municipal ownership to state ownership marking an important shift in the role of the waterworks from the sole source providing water for a community to one of several contributing waterworks sites reorganized with the goal to bolster state-wide industrial development.

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Previous documentation on file (NPS):

____ preliminary determination of individual listing (36 CFR 67) has been requested
__x_ previously listed in the National Register
_____previously determined eligible by the National Register
_____designated a National Historic Landmark
____ recorded by Historic American Buildings Survey #_____
_____recorded by Historic American Engineering Record # _____
____ recorded by Historic American Landscape Survey # _____

Primary location of additional data:

__x_ State Historic Preservation Office
____ Other State agency
____ Federal agency
____ Local government
____ University
____ Other
Name of repository: _____

Historic Resources Survey Number (if assigned): _____

10. Geographical Data

Acreage of Property: 24.18 acres

Use either the UTM system or latitude/longitude coordinates

Latitude/Longitude Coordinates
Datum if other than WGS84:_____
(enter coordinates to 6 decimal places)

1. Latitude: Longitude:

2. Latitude: Longitude:

3. Latitude: Longitude:

4. Latitude: Longitude:

Or
UTM References
Datum (indicated on USGS map):

[ ] NAD 1927 or [x] NAD 1983

1.	Zone: 19	Easting: 811072.25	Northing: 2036346.25
2.	Zone: 19	Easting: 811143.01	Northing: 2036373.72
3.	Zone: 19	Easting: 811036.25	Northing: 2036040.71
4.	Zone: 19	Easting: 810839.10	Northing: 2035812.07
5.	Zone: 19	Easting: 810844.16	Northing: 2035574.98
6.	Zone: 19	Easting: 810680.45	Northing: 2035494.96
7.	Zone: 19	Easting: 810729.60	Northing: 2035496.71
8.	Zone: 19	Easting: 810832.90	Northing: 2035358.57
9.	Zone: 19	Easting: 810795.75	Northing: 2035340.94
10.	Zone: 19	Easting: 810797.60	Northing: 2035178.71
11.	Zone: 19	Easting: 810591.20	Northing: 2035756.42
12.	Zone: 19	Easting: 810872.49	Northing: 2035955.92
13.	Zone: 19	Easting: 810927.53	Northing: 2036153.14
14.	Zone: 19	Easting: 811029.90	Northing: 2036159.58
15.	Zone: 19	Easting: 811533.03	Northing: 2036152.73

Verbal Boundary Description (Describe the boundaries of the property.)

The Acueducto de San Juan is formed by two separated parcels, the Río Piedras meander, and the Loma de Prim located 830 meters northeast. The nominated historic district has a total area

of 24.18 acres. The Río Piedras River meander parcel [9.44 acres] is bound to the North by historic Bridge No. 3, 630 meters Northeast of the pumping house; to the East by the old access road and the University of Puerto Rico's Botanical Garden and Agricultural Station; to the South by the intersection of the Río Piedras River and the bridge on State Road PR-176, 620 meters Northeast of the pumping house; and to the West by the Río Piedras River. The water channels that once connected Loma de Prim, the Río Piedras facility, and the city of Old San Juan have been demolished as the result of urban development.

This parcel is marked by UTM references numbers: 1 to 14. This parcel is subdivided in three smaller parcels: the Bridge No. 3 and the old access road parcel; the Río Piedras River meander parcel [9.44 acres]; and the South of the old weir river parcel. The Loma de Prim parcel [1.11 acres] is bound on all sides by Barrio Venezuela, a low-income community South of Río Piedras downtown. This parcel is mark by UTM reference number: 15.

Boundary Justification (Explain why the boundaries were selected.)

The nominated district includes the two parcels historically associated with the 19th Century San Juan waterworks: the Río Piedras River meander parcel with filtration and pumping facilities, the settling basins, the old access road and a segment of the river; and the Loma de Prim parcel with the filtered water storage facilities. Being an essential part of the San Juan waterworks, a segment of the Río Piedras River is included as part of the historic district, including the intersection between the river and the Guaracanal Creek which contributed a significant amount of the water volume available to the aqueduct. The segment selected is bounded by two adjacent historically important locations: the old Carretera Central's Río Piedras Bridge No. 3 to the North, built in 1853, and the intersection of the river and the old railroad line bridge from the cities of San Juan to Caguas of the Porto Rico Railway Light & Power Co. The railroad bridge was replaced by State Road #176 when the railroad ceased operations in 1952. The context between the two points was and is closely related to the meander facilities of the historic district.

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11. Form Prepared By

name/title: Anibal Sepúlveda Rivera, PhD; Arch. Alberto del Toro Agrelot updated by Jennifer Hembree and JulieAnn Murphy
organization: The Conservation Trust of Puerto Rico and MacRostie Historic Advisors
street & number: 991 W. Hedding Street_
city or town: San Jose_ state: CA zip code: 95126
e-mail: jhembree@mac-ha.com and jmurphy@mac-ha.com
telephone:408-217-1909
date: May 2019

Additional Documentation

Submit the following items with the completed form:

- **Maps:** A **USGS map** or equivalent (7.5 or 15 minute series) indicating the property's location.
- **Sketch map** for historic districts and properties having large acreage or numerous resources. Key all photographs to this map.
- **Additional items:** (Check with the SHPO, TPO, or FPO for any additional items.

Figure Log

Figure #1	Acueducto de San Juan location map, including boundary and UTM points *Source: Google Maps, 2019*
Figure #2	Site Map
Figure #3	1887 plan of Engineers and Caretakers' Residence *Source: Architecture and Construction Archives, University of Puerto Rico*
Figure #4	1887 plan of weir *Source: Architecture and Construction Archives, University of Puerto Rico*
Figure #5	1892 plan of Pumping House *Source: Architecture and Construction Archives, University of Puerto Rico*
Figure #6	1912 view of Settling Basins *Source: Puerto Rico Illustrado*
Figure #7	1912 view of Pumping House *Source: Puerto Rico Illustrado*
Figure #8	1912 view of weir *Source: Puerto Rico Illustrado*
Figure #9	1918 plans for Chemical and Mechanical Filters' House *Source: Roberts' Filter archives*
Figure #10	1919 view of Settling Basins, Engineers and Caretakers' Residence, Chemical and Mechanical Filters' House, and Pumping House *Source: Puerto Rico Illustrado, February 8, 1919*
Figure #11	1923 map of site *Source: Architecture and Construction Archives, University of Puerto Rico*
Figure #12	1944 view of Chemical and Mechanical Filters' House *Source: Cóndor Blanco, September 9, 1944*
Figure #13	1944 view of Chemical and Mechanical Filters' House *Source: Cóndor Blanco, September 9, 1944*
Figure #14	1944 view of Director's House *Source: Cóndor Blanco, September 9, 1944*
Figure #15	1944 view of Entry Gate *Source: Cóndor Blanco, September 9, 1944*

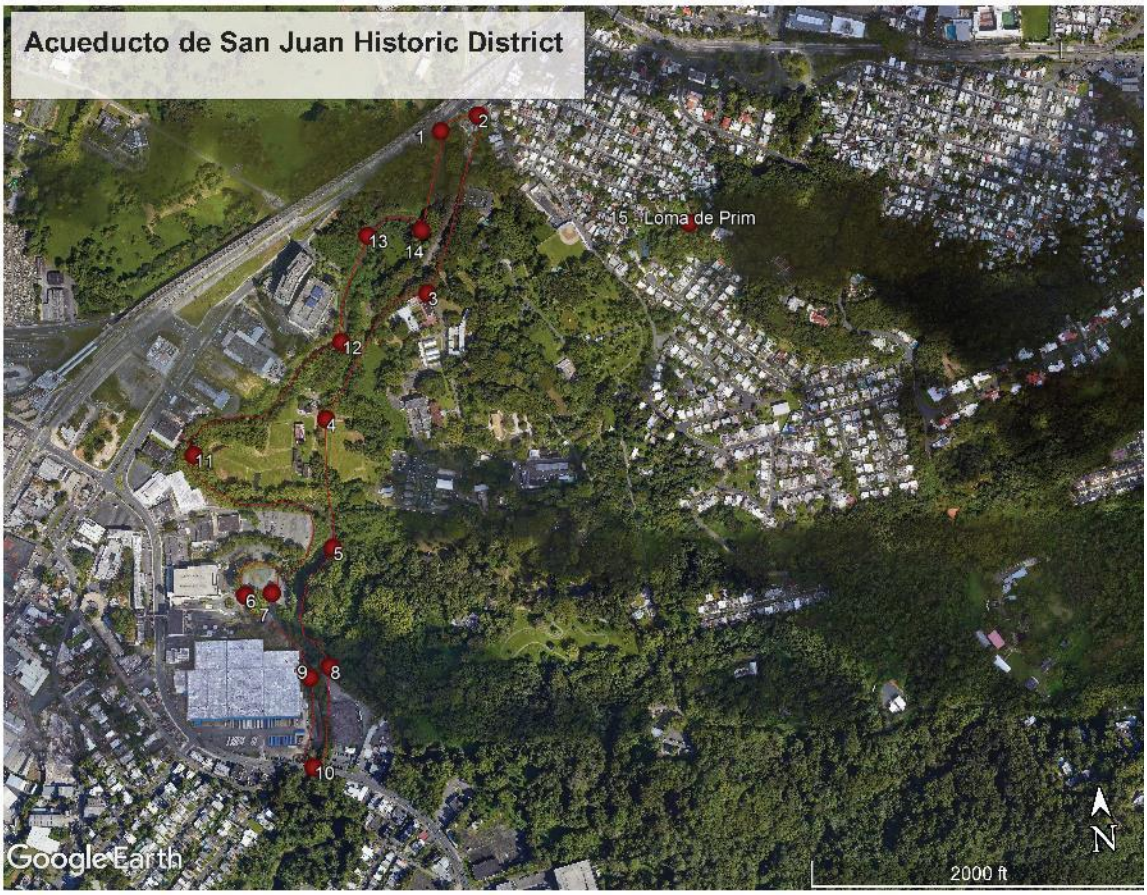

Figure #1: Acueducto de San Juan location map, including boundary and UTM points

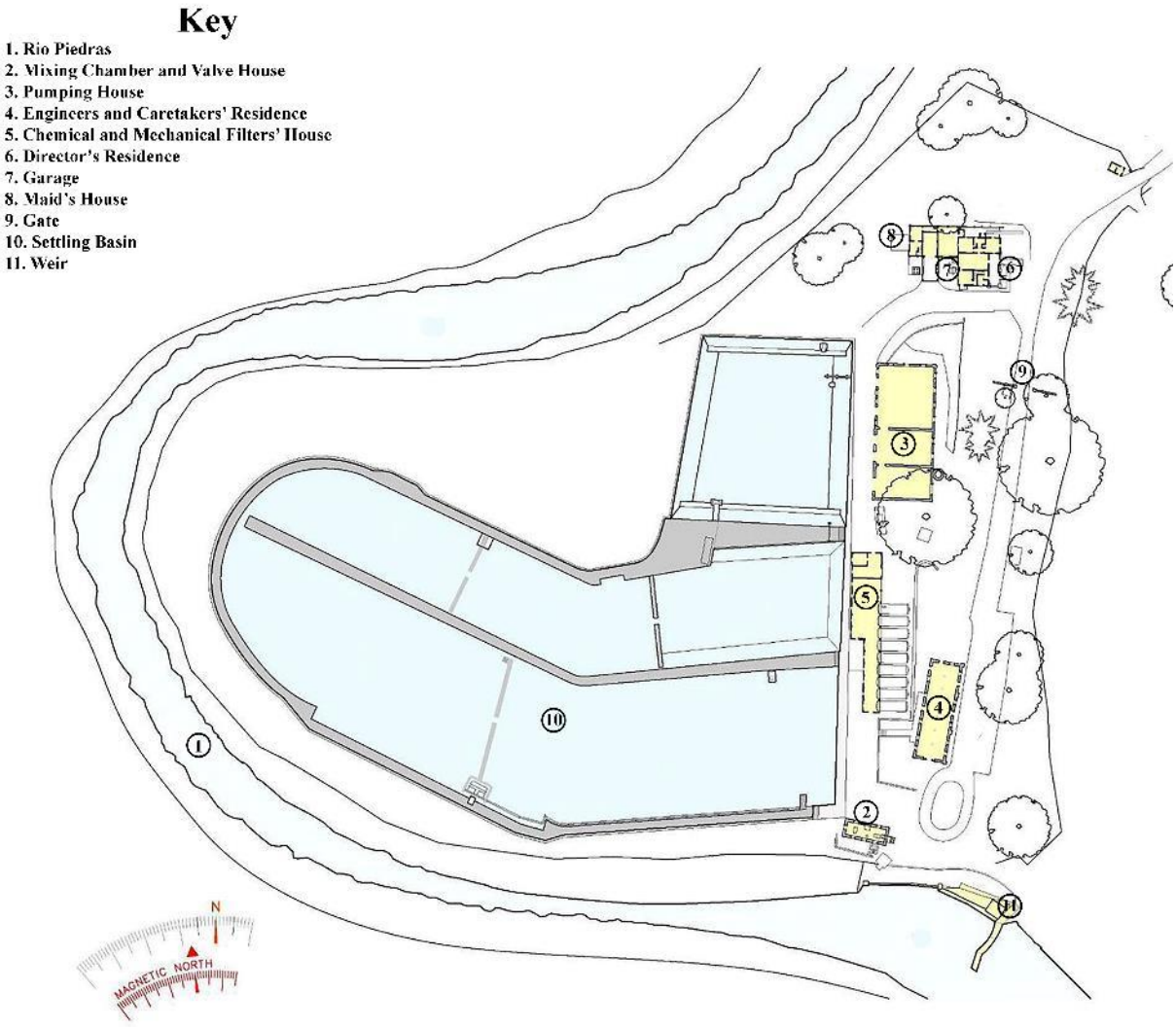

Figure #2: Site Map

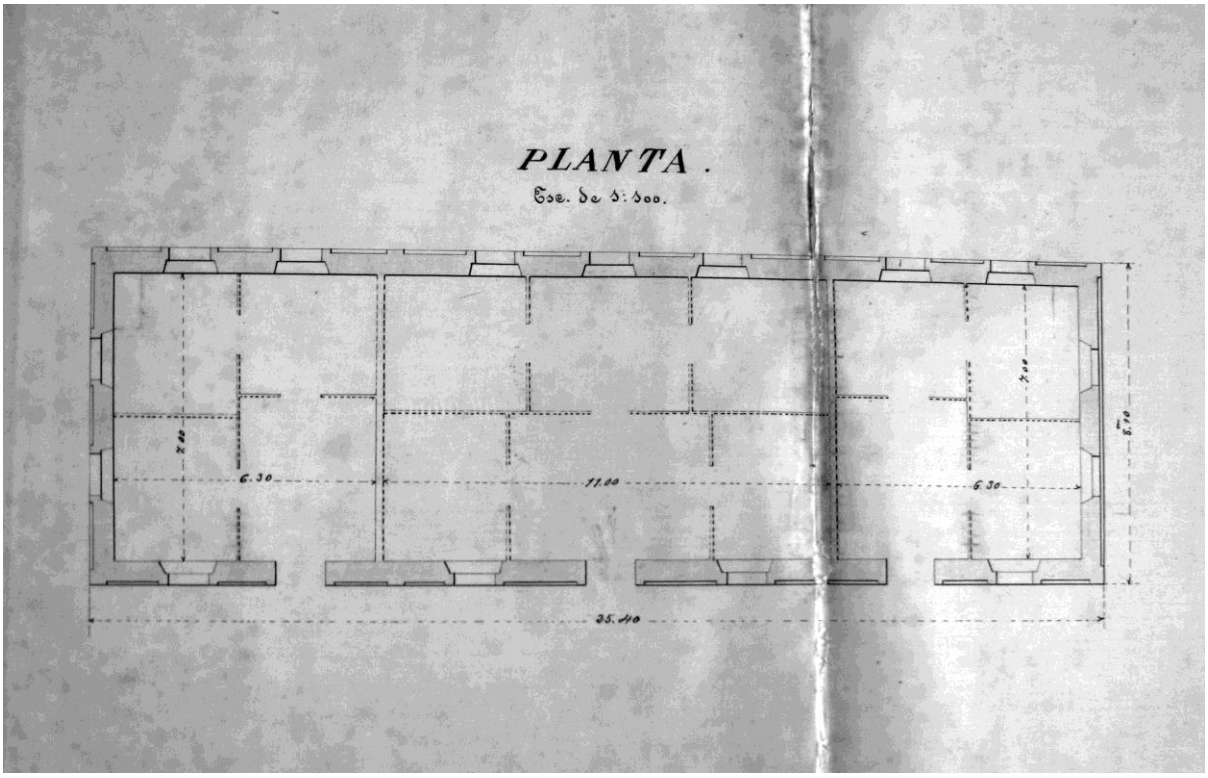

Figure #3: 1887 plan of Engineers and Caretakers' Residence

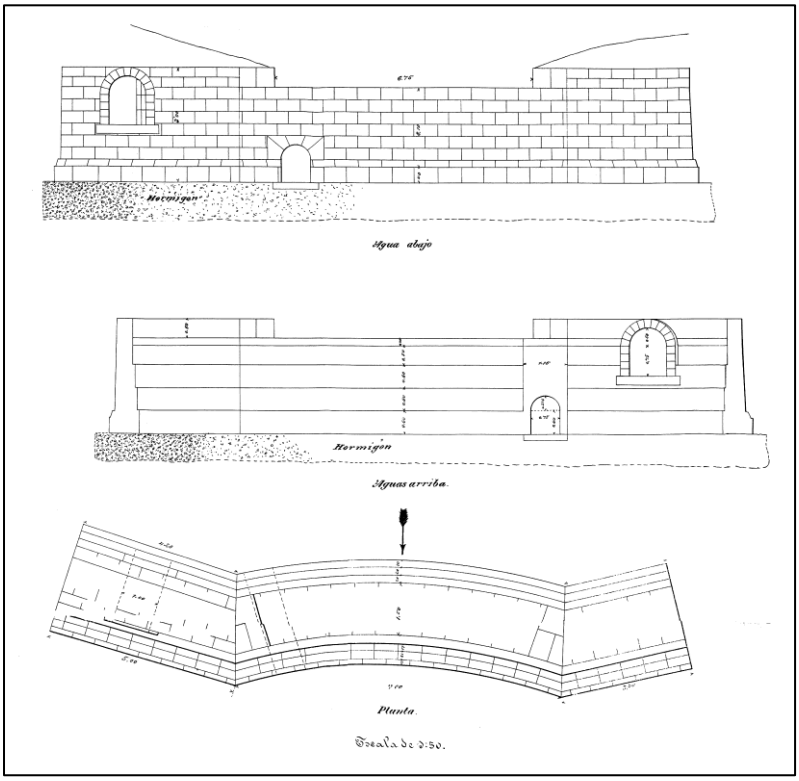

Figure #4: 1887 plan of weir

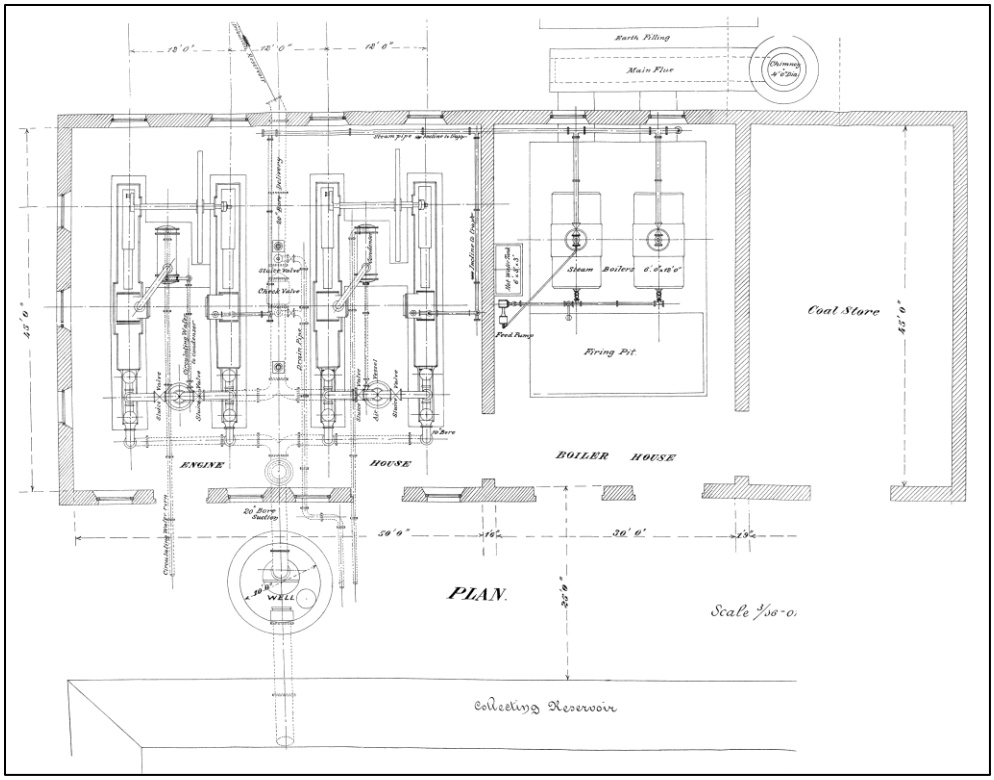

Figure #5: 1892 plan of Pumping House

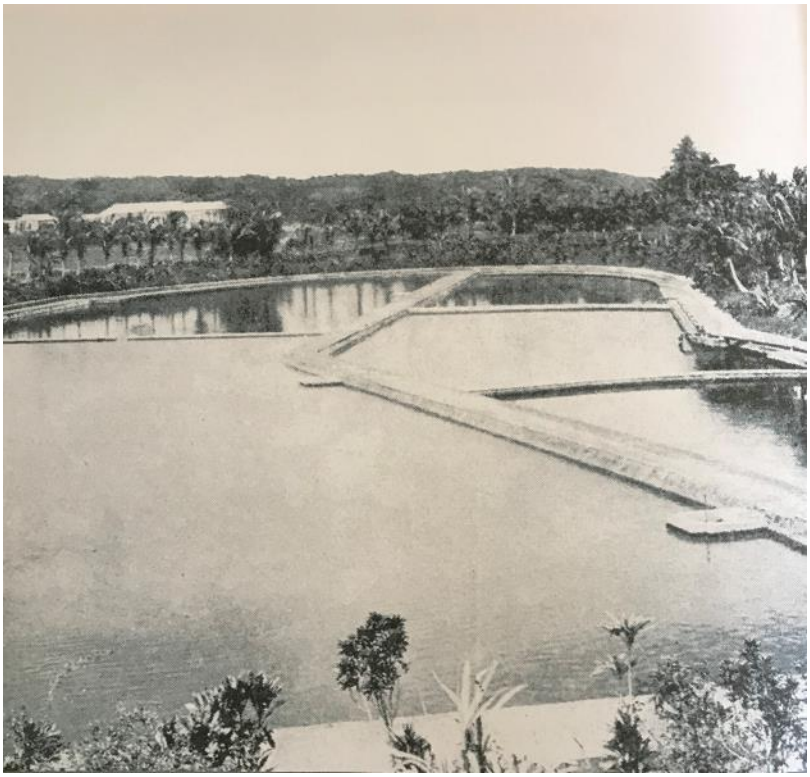

Figure #6: 1912 view of Settling Basins

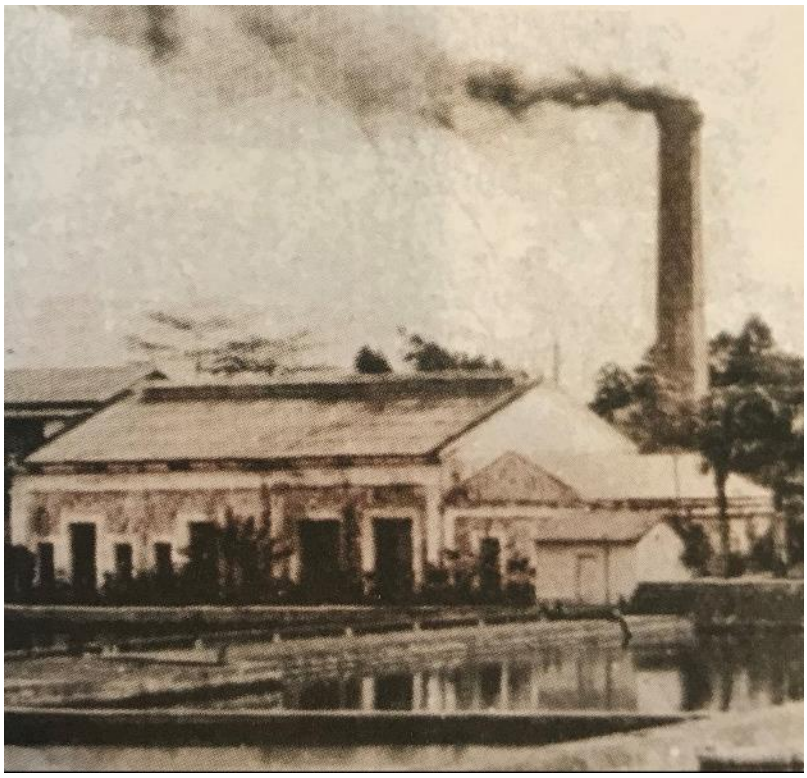

Figure #7: 1912 view of Pumping House

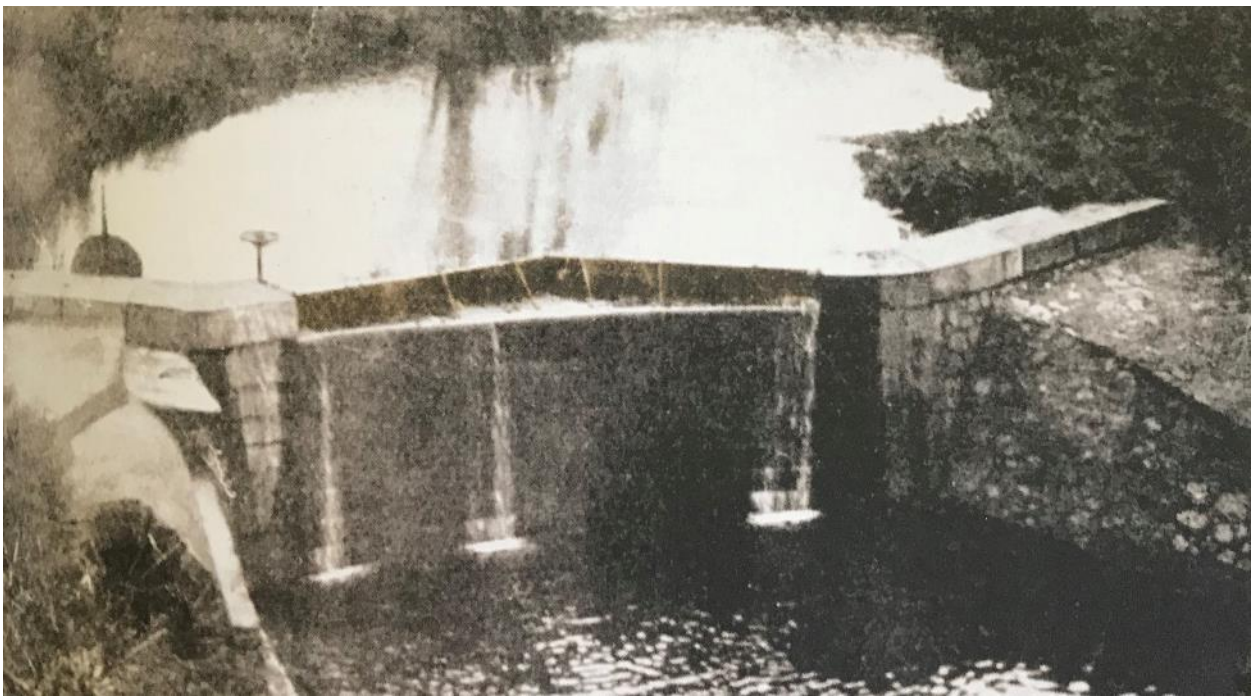

Figure #8: 1912 view of weir

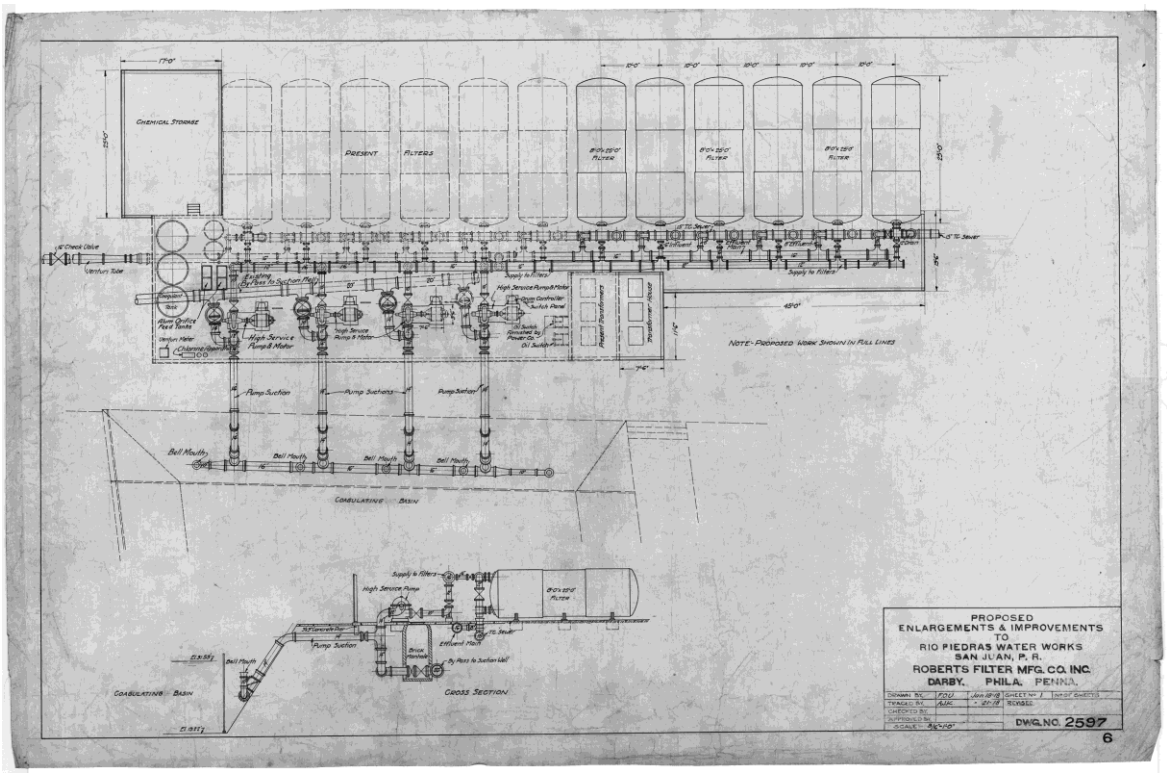

Figure #9: 1918 plans for Chemical and Mechanical Filters' House

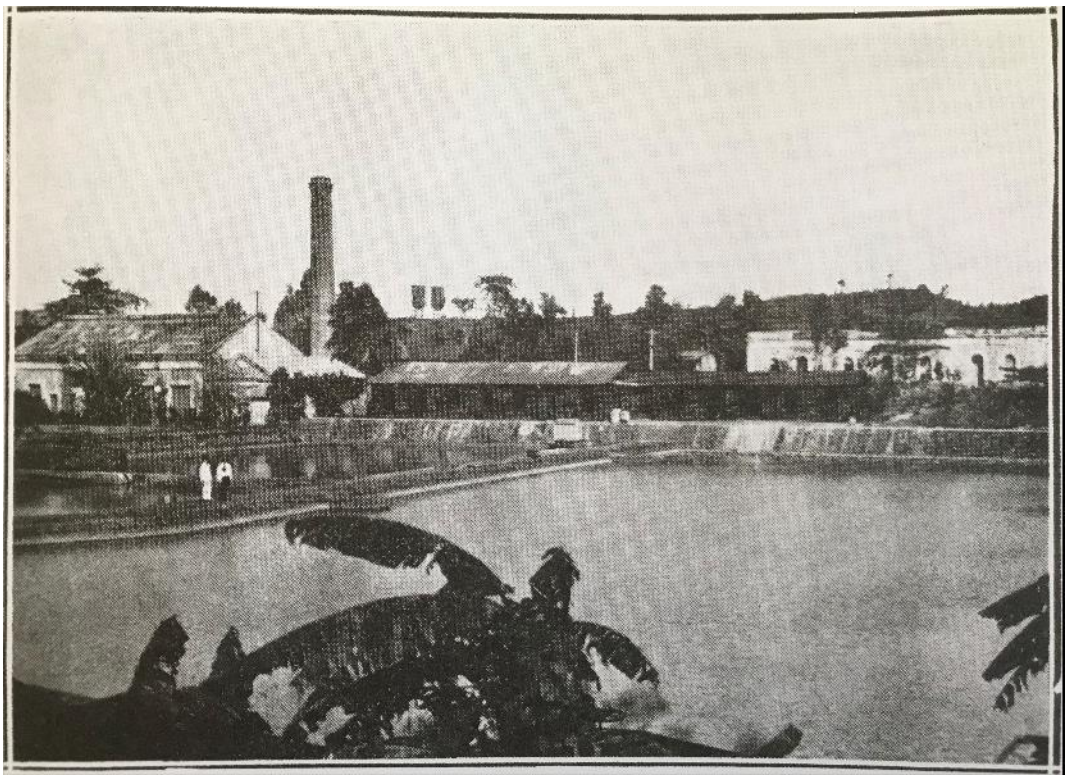

Figure #10: 1919 view of Settling Basins, Engineers and Caretakers' Residence, Chemical and Mechanical Filters' House, and Pumping House

Figure #11: 1923 map of site

Figure #12: 1944 view of Chemical and Mechanical Filters' House

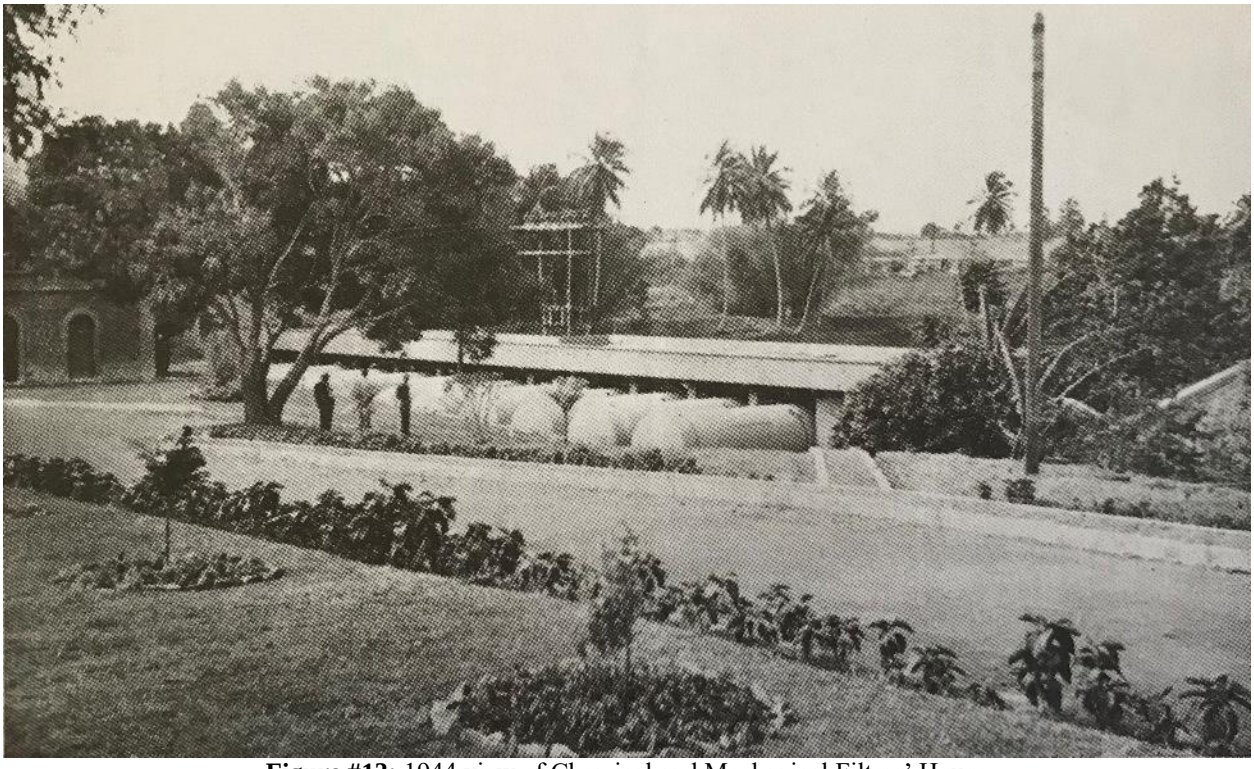

Figure #13: 1944 view of Chemical and Mechanical Filters' House

Figure #14: 1944 view of Director's House

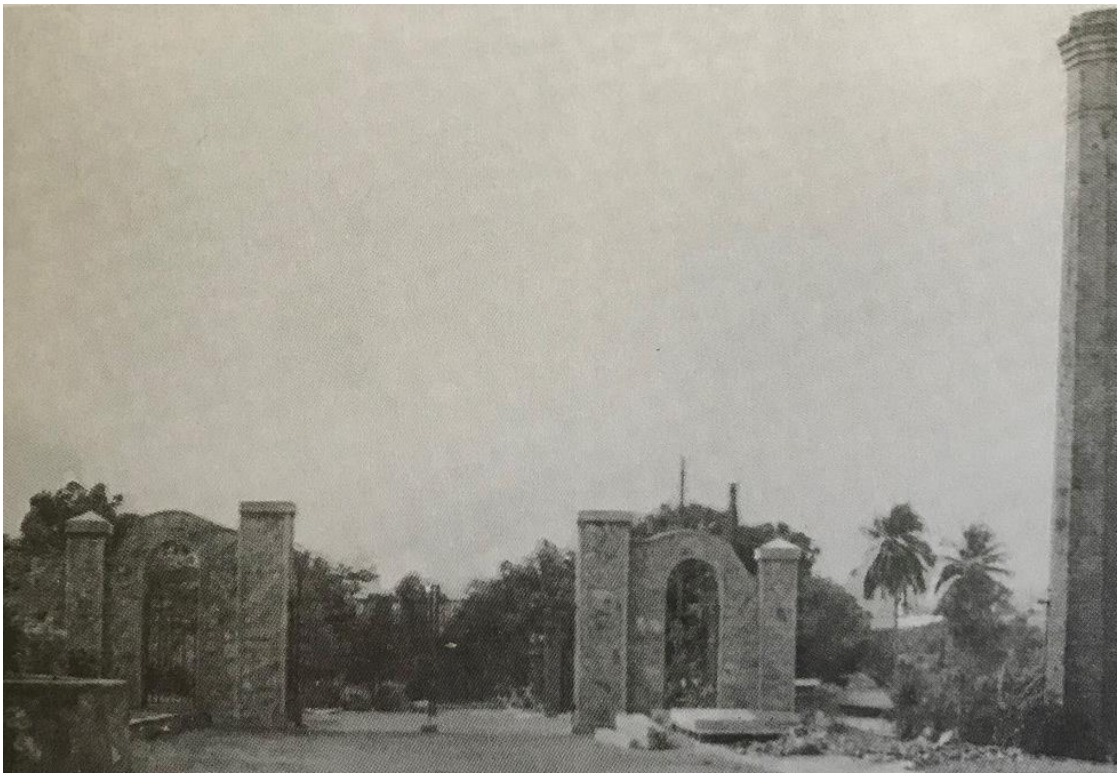

Figure #15: 1944 view of Entry Gate

Photographs

Submit clear and descriptive photographs. The size of each image must be 1600x1200 pixels (minimum), 3000x2000 preferred, at 300 ppi (pixels per inch) or larger. Key all photographs to the sketch map. Each photograph must be numbered and that number must correspond to the photograph number on the photo log. For simplicity, the name of the photographer, photo date, etc. may be listed once on the photograph log and doesn't need to be labeled on every photograph.

Photo Log

Photo #1 Acueducto de San Juan, San Juan, Puerto Rico
Settling basins, Chemical and Mechanical Filters' House, and Engineers and Caretakers' Residence, camera facing northeast
Jennifer Hembree, August 2017

Photo #2 Acueducto de San Juan, San Juan, Puerto Rico
Settling basins, Director's Residence, Garage, Maid's House, Pumping House, and Chemical and Mechanical Filters' House, camera facing northeast
Jennifer Hembree, August 2017

Photo #3 Acueducto de San Juan, San Juan, Puerto Rico
Settling basins, Pumping House, Chemical and Mechanical Filters' House, and Mixing Chamber and Valve House, camera facing east
Jennifer Hembree, August 2017

Photo #4 Acueducto de San Juan, San Juan, Puerto Rico
Settling basins, Chemical and Mechanical Filters' House, Engineers and Caretakers' Residence, and Mixing Chamber and Valve House, camera facing southeast. Jennifer Hembree, August 2017

Photo #5 Acueducto de San Juan, San Juan, Puerto Rico
Río Piedras, camera facing south
Arch. Jorge Rigau, April 2019

Photo #6 Acueducto de San Juan, San Juan, Puerto Rico
Río Piedras, camera facing north
Arch. Jorge Rigau, April 2019

Photo #7 Acueducto de San Juan, San Juan, Puerto Rico
Mixing Chamber and Valve House, camera facing southeast
Jennifer Hembree, August 2017

Photo #8 Acueducto de San Juan, San Juan, Puerto Rico
Mixing Chamber and Valve House, camera facing northeast
Jennifer Hembree, August 2017

Photo #9 Acueducto de San Juan, San Juan, Puerto Rico
Mixing Chamber and Valve House, interior, camera facing south
Jennifer Hembree, August 2017

Photo #10 Acueducto de San Juan, San Juan, Puerto Rico
Pumping House, camera facing southwest
Jennifer Hembree, August 2017

Photo #11 Acueducto de San Juan, San Juan, Puerto Rico
Pumping House, camera facing northwest
Jennifer Hembree, August 2017

Photo #12 Acueducto de San Juan, San Juan, Puerto Rico
Pumping House, camera facing south
Jennifer Hembree, August 2017

Photo #13 Acueducto de San Juan, San Juan, Puerto Rico
Pumping House, camera facing southwest
Jennifer Hembree, August 2017

Photo #14 Acueducto de San Juan, San Juan, Puerto Rico
Pumping House, camera facing northwest
Jennifer Hembree, August 2017

Photo #15 Acueducto de San Juan, San Juan, Puerto Rico
Engineers and Caretakers' Residence, camera facing northeast
Jennifer Hembree, August 2017

Photo #16 Acueducto de San Juan, San Juan, Puerto Rico
Engineers and Caretakers' Residence, camera facing southwest
Jennifer Hembree, August 2017

Photo #17 Acueducto de San Juan, San Juan, Puerto Rico
Engineers and Caretakers' Residence, camera facing south
Jennifer Hembree, August 2017

Photo #18 Acueducto de San Juan, San Juan, Puerto Rico
Chemical and Mechanical Filters' House, camera facing north
Jennifer Hembree, August 2017

Photo #19 Acueducto de San Juan, San Juan, Puerto Rico
Chemical and Mechanical Filters' House, camera facing southeast
Jennifer Hembree, August 2017

Photo #20 Acueducto de San Juan, San Juan, Puerto Rico
Chemical and Mechanical Filters' House, camera facing west
Jennifer Hembree, August 2017

Photo #21 Acueducto de San Juan, San Juan, Puerto Rico
Chemical and Mechanical Filters' House, interior, camera facing north
Jennifer Hembree, August 2017

Photo #22 Acueducto de San Juan, San Juan, Puerto Rico
Director's Residence, camera facing west
Jennifer Hembree, August 2017

Photo #23 Acueducto de San Juan, San Juan, Puerto Rico
Director's Residence, camera facing north
Jennifer Hembree, August 2017

Photo #24 Acueducto de San Juan, San Juan, Puerto Rico
Director's Residence, camera facing north
Jennifer Hembree, August 2017

Photo #25 Acueducto de San Juan, San Juan, Puerto Rico
Garage, camera facing north
Jennifer Hembree, August 2017

Photo #26 Acueducto de San Juan, San Juan, Puerto Rico
Maid's Residence, camera facing east
Jennifer Hembree, August 2017

Photo #27 Acueducto de San Juan, San Juan, Puerto Rico
Director's Residence, Garage, and Maid's Residence, camera facing south
Jennifer Hembree, August 2017

Photo #28 Acueducto de San Juan, San Juan, Puerto Rico
Maid's Residence, camera facing east
Jennifer Hembree, August 2017

Photo #29 Acueducto de San Juan, San Juan, Puerto Rico
Entry Gate, camera facing south
Jennifer Hembree, August 2017

Photo #30 Acueducto de San Juan, San Juan, Puerto Rico
Entry Gate, camera facing north
Jennifer Hembree, August 2017

Photo #31 Acueducto de San Juan, San Juan, Puerto Rico
Settling Basins, camera facing northwest
Arch. Jorge Rigau, April 2019

Photo #32 Acueducto de San Juan, San Juan, Puerto Rico
Settling Basins and Chemical and Mechanical Filters' House, camera facing north
Arch. Jorge Rigau, April 2019

Photo #33 Acueducto de San Juan, San Juan, Puerto Rico
Settling Basins, camera facing northwest
Arch. Jorge Rigau, April 2019

Photo #34 Acueducto de San Juan, San Juan, Puerto Rico
Settling Basins and Pumping House, camera facing south
Arch. Jorge Rigau, April 2019

Photo #35 Acueducto de San Juan, San Juan, Puerto Rico
Settling Basins, Chemical and Mechanical Filters' House, and Engineer and Caretakers' Residence, camera facing east
Arch. Jorge Rigau, April 2019

Photo #36 Acueducto de San Juan, San Juan, Puerto Rico
Settling Basins, Pumping House and Director's Residence, camera facing northwest
Arch. Jorge Rigau, April 2019

Photo #37 Acueducto de San Juan, San Juan, Puerto Rico
Settling Basins, camera facing east
Arch. Jorge Rigau, April 2019

Photo #38 Acueducto de San Juan, San Juan, Puerto Rico
Weir, camera facing east
Arch. Jorge Rigau, April 2019

Photo #39 Acueducto de San Juan, San Juan, Puerto Rico
Weir, camera facing southeast
Arch. Jorge Rigau, April 2019

Photo #40 Acueducto de San Juan, San Juan, Puerto Rico
Weir, camera facing west
Arch. Jorge Rigau, April 2019

Photo #41 Acueducto de San Juan, San Juan, Puerto Rico
Weir, camera facing west
Arch. Jorge Rigau, April 2019

Photo #42 Acueducto de San Juan, San Juan, Puerto Rico
Loma de Prim site, camera facing northwest
Arch. Jorge Rigau, April 2019

Photo #43 Acueducto de San Juan, San Juan, Puerto Rico
Loma de Prim site, camera facing southwest
Arch. Jorge Rigau, April 2019

Photo #44 Acueducto de San Juan, San Juan, Puerto Rico
Loma de Prim site, camera facing southwest
Arch. Jorge Rigau, April 2019

Photo #45 Acueducto de San Juan, San Juan, Puerto Rico
Loma de Prim site, camera facing south
Arch. Jorge Rigau, April 2019

Photo #46 Acueducto de San Juan, San Juan, Puerto Rico
Bridge No. 3, camera facing southeast
Arch. Jorge Rigua, February 2020

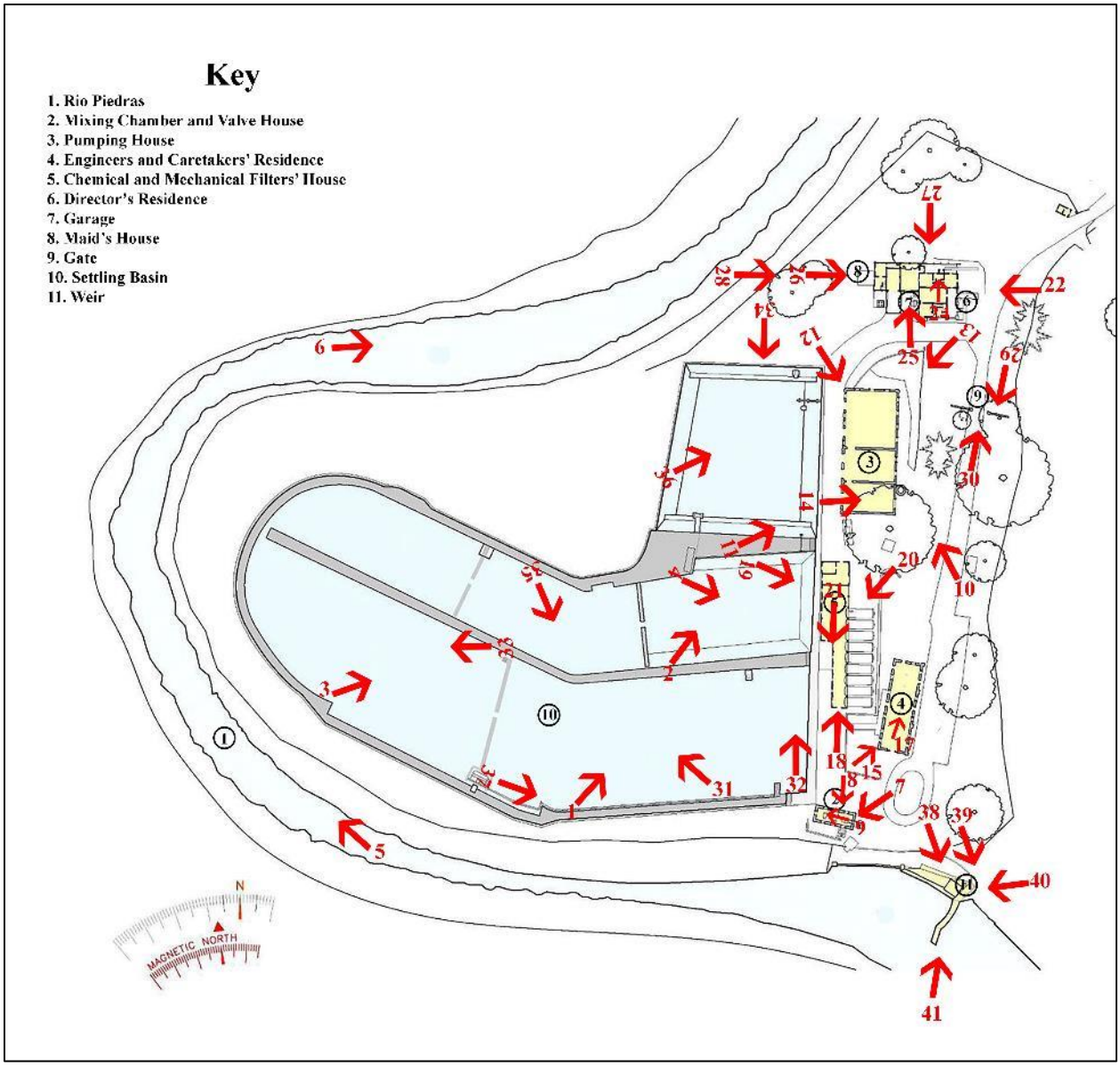
Key
1. Rio Piedras
2. Mixing Chamber and Valve House
3. Pumping House
4. Engineers and Caretakers' Residence
5. Chemical and Mechanical Filters' House
6. Director's Residence
7. Garage
8. Maid's House
9. Gate
10. Settling Basin
11. Weir
N
MAGNETIC NORTH

Photo #1: Settling basins, Chemical and Mechanical Filters' House, and Engineers and Caretakers' Residence, camera facing northeast

Photo #2: Settling basins, Director's Residence, Garage, Maid's House, Pumping House, and Chemical and Mechanical Filters' House

Photo #3: Settling basins, Pumping House, Chemical and Mechanical Filters' House, Mixing Chamber and Valve House

Photo #4: Settling basins, Chemical and Mechanical Filters' House, Engineers and Caretakers' Residence, Mixing Chamber and Valve House

Photo #5: Río Piedras

Photo #6: Río Piedras

Photo #7: Mixing Chamber and Valve House

Photo #8: Mixing Chamber and Valve House

Photo #9: Mixing Chamber and Valve House, interior

Photo #10: Pumping House

Photo #11: Pumping House

Photo #12: Pumping House

Photo #13: Pumping House

Photo #14: Pumping House

Photo #15: Engineers and Caretakers' Residence

Photo 16: Engineers and Caretakers' Residence

Photo #17: Engineers and Caretakers' Residence

Photo #18: Chemical and Mechanical Filters' House

Photo #19: Chemical and Mechanical Filters' House

Photo #20: Chemical and Mechanical Filters' House

Photo #21: Chemical and Mechanical Filters' House, interior

Photo #22: Director's Residence

Photo #23: Director's Residence

Photo #24: Director's Residence, interior

Photo #25: Garage

Photo #26: Maid's Residence

Photo #27: Director's Residence, Garage, and Maid's Residence

Photo #28: Maid's Residence

Photo #29: Entry Gate

Photo #30: Entry Gate

Photo #31: Settling Basins

Photo #32: Settling Basins and Chemical and Mechanical Filters' House

Photo #33: Settling Basins

Photo #34: Settling Basins and Pumping House

Photo #35: Settling Basins, Chemical and Mechanical Filters' House, and Engineer and Caretakers' Residence

Photo #36: Settling Basins, Pumping House and Director's Residence

Photo #37: Settling Basins

Photo #38: Weir

Photo #39: Weir

Photo #40: Weir

Photo #41: Weir

Photo #42: Loma de Prim site

Photo #43: Loma de Prim site

Photo #44: Loma de Prim site

Photo #45: Loma de Prim site

Photo #46: Bridge #3

Paperwork Reduction Act Statement: This information is being collected for nominations to the National Register of Historic Places to nominate properties for listing or determine eligibility for listing, to list properties, and to amend existing listings. Response to this request is required to obtain a benefit in accordance with the National Historic Preservation Act, as amended (16 U.S.C.460 et seq.). We may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid OMB control number.
Estimated Burden Statement: Public reporting burden for each response using this form is estimated to be between the Tier 1 and Tier 4 levels with the estimate of the time for each tier as follows:

Tier 1 – 60-100 hours
Tier 2 – 120 hours
Tier 3 – 230 hours
Tier 4 – 280 hours

The above estimates include time for reviewing instructions, gathering and maintaining data, and preparing and transmitting nominations. Send comments regarding these estimates or any other aspect of the requirement(s) to the Service Information Collection Clearance Officer, National Park Service, 1201 Oakridge Drive Fort Collins, CO 80525.