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Department of Environmental Protection
DIVISION OF WATER QUALITY
MUNICIPAL FINANCE AND CONSTRUCTION ELEMENT
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AUG 1 2018

To All Interested Government Agencies and Public Groups:

In accordance with procedures established to evaluate projects which have applied for assistance under the New Jersey Environmental Infrastructure Financing Program, a Level 2 environmental review has been conducted for the proposed project described below:

Project Name:	Water Storage Improvements Phase 1 – Levine Storage Tanks
Project Number:	Project No. 1605002-014
Purpose of the Project:	In order to be in compliance with the federal "Long-Term 2 Enhanced Surface Water Treatment Rule," the purpose of the project is to protect the quality of water within the Levine Reservoir located in Paterson, New Jersey, by containing the existing reservoir water within two newly constructed 2.5 million-gallon (MG) water tanks and to protect public health from microbial and acute contaminants, as well as reduce the public's exposure to lead in the potable water system.
Project Originator:	Passaic Valley Water Commission
Project Location:	Passaic County, New Jersey
Project Description:	The project is for the construction of two new 2.5 MG water storage tanks within the Levine Reservoir, piping modifications, the construction of a new access road and parking area, construction of a new utility building to house the water monitoring equipment, SCADA, standby power, and the chemical feeds for the water and stormwater management systems.
Project Loan:	$26,100,000
Proposed Cost:	$26,100,000

The environmental review for this project indicates that no significant adverse environmental impacts will result from the proposed action. The project will result in an adverse effect to historic properties. This decision is based on a careful review of the data submitted in support of this proposed project. All documents submitted are on file at the New Jersey Department of Environmental Protection (Department), and can either be accessed via the PVWC's website, www.PVWC.com, where they will be available for public review or through the Department, upon request. A copy of the Environmental Appraisal prepared by the Department for the proposed action is enclosed.

Based on the results of the environmental review, the Department has made a preliminary decision to assist this project under the New Jersey Environmental Infrastructure Financing Program. This decision allows the applicant to retain eligibility under this program but is not a commitment of federal or state funds for the project. Comments supporting or disagreeing with this decision, or the Environmental Appraisal, may be submitted to the Department for review. All comments with regard to this document must be received within thirty days of the date of this letter. Please address your comments to: Gautam Patel, Bureau Chief, Mail Code 401-03D, Bureau of Environmental, Engineering & Permitting, Municipal Finance and Construction Element, P. O. Box 420, Trenton, New Jersey, 08625-0420. After evaluating any comments received, the Department will make a final decision at the conclusion of the comment period.

Very truly yours,

Eugene J. Chebra, P.E.
Assistant Director
Municipal Finance and Construction Element
Division of Water Quality

Enclosure

Environmental Appraisal

I. Project Identification

Project Name:	Water Storage Improvements Phase 1 – Levine Storage Tanks
Name and Address Of Applicant:	Passaic Valley Water Commission 1525 Main Avenue Clifton, NJ 07011-2139
Project Number:	1605002-014
Project Location:	Passaic County, New Jersey

II. Project Description

The Passaic Valley Water Commission (PVWC) is located in Clifton, New Jersey, in Passaic County (Figure 1). The PVWC is a publicly-owned water purveyor for the Cities of Paterson, Passaic, and Clifton. The PVWC's service area has a population of approximately 800,000 and provides approximately 86 million gallons per day (MGD) to its users. Water distribution systems in Paterson, Clifton, Prospect Park, Lodi and North Arlington are owned and operated by the PVWC. Overall, there are approximately 600 miles of piping in PVWC's water distribution system, which range from 6 to 51 inches in diameter, and are mostly made of cast or ductile iron pipes, but a small percentage of concrete, steel, and transite piping do exist.

The PVWC's raw water is obtained from the two raw water sources: Passaic River and Pompton River. The Little Falls Water Treatment Plant (LFWTP), owned by the PVWC, has a treatment capacity of 110 MGD. The PVWC water system provides drinking water to over six different pressure gradients known as the Industrial Gradient (180 Gradient), 300 Gradient and 330 Gradient, Verona Gradient (673 Gradient), Morris County Gradient (610 Gradient), the Clifton High Service Gradient (427 Gradient) and the Totowa Gradient (460 Gradient). Water from the Wanaque Aqueduct and the LFWTP is conveyed by gravity to the Main Pump Station where it is distributed to each pressure gradient.

The PVWC has three elevated water storage tanks in Lodi, Prospect Park, and the Colonial Village areas, and three uncovered, finished water reservoirs known as Great Notch, New Street, and Stanley M. Levine (Levine). The New Jersey Department of Environmental Protection (NJDEP) considers the PVWC to be a "Type iii" system due to its multiple sources (Little Falls Water Treatment Plant (LFWTP) and interconnection to the North Jersey District Water Supply Commission's Wanaque Aqueduct), and interconnections (Newark and Jersey Cities), and reqnires that the PVWC have a minimum finished water storage capacity of 34 million gallons (MG) (50% of average daily demand = 0.5 x 30,000/365 = 41 MG) within its existing pressure gradients. A type iii system has a single prime source (which is the case with PVWC) and interconnections. Additional storage capacity is required to address daily, hourly peak and fire flow demands, supply the hydraulic gradients, plant outages, and regional resiliency. It is essential that the PVWC has significantly more storage volume than the regulatory minimum and can demonstrate by hydraulic modelling that it can maintain the required flows and pressures. N.J.A.C. 7:10-11.11(a)2 requires that when a water system provides fire protection, gravity storage is also provided. For this reason, the water storage

tanks have to be at elevations noticeably higher than the areas to which they are providing fire protection.

The PVWC owns three uncovered finished water reservoirs: Great Notch and New Street Reservoirs, located in Woodland Park, and the Levine Reservoir, located in the City of Paterson, which are identified in Figure 1. The Great Notch Reservoir holds 178.5 MG and is within the 427 Gradient, but is connected to the 330 Gradient by two 48-inch pipes that connect to a 51-inch transmission water main, which provides drinking water from the LFWTP. The New Street Reservoir, previously called the Garret Mountain Reservoir, holds 52.4 MG of drinking water and provides storage for the 300 Gradient and indirect storage for the 330 Gradient. The New Street Reservoir, located within the pressure gradient with the highest potable water demand, serves over 70% of all PVWC water system demands. The Levine Reservoir previously known as the Stony Road Reservoir and later, the Grand Street Reservoir, is within the 180 Gradient, and is primarily used to supply the 300 and 330 Gradients with emergency and fire flow storage that is pumped through the East Side, Botany, and Great Falls Pump Stations. The Levine Reservoir, which has a 19.2 million-gallon (MG) capacity, also provides equalization within the 180 Gradient, and acts as a suction for the Botany Pump Station, which is operated to assist with low pressure areas within the 300 Gradient. When power outages occur at the LFWTP, or when fire flow conditions occur in the 300 Gradient, water is pumped from the 180 Gradient to the 300 Gradient via the East Side and Great Falls Pump Stations.

The Levine Reservoir is located on Block 4802, Lot 28, in the City of Paterson. The Levine Reservoir originally served the water demands of local industries, but as many industries left the area, the function of the reservoir shifted to providing residential supply in other areas of the system. Drinking water from the LFTP is pumped to the Levine uncovered finished water reservoir where it is stored and subsequently rechlorinated prior to being distributed to the water service area (Figure 2). The Levine Reservoir is partially bordered by Upper Raceway Park (part of the Paterson Great Falls National Historic Park) to the east and north and also bordered by Grand Street to the south and Reservoir Avenue to the west.

The United States Environmental Protection Agency's (USEPA) "Long-Term 2 Enhanced Surface Water Treatment Rule" (LT2ESWTR) required that by April 1, 2009, all finished water reservoirs throughout the Nation complete one of two options (below) to modify their water storage and treatment facilities, in order to protect against contamination of water that occurs in open reservoirs. All three of PVWC's uncovered finished water reservoirs must be brought into conformance with the NJDEP's and USEPA's regulations for finished water storage, by:

- Cover any uncovered, finished water storage facilities; or
- Provide treatment to and/or removal of the discharge of water from the uncovered finished water storage facility to the distribution system to achieve at least 4.0-log virus, 3.0-log Giardia lamblia, and 2.0-log Cryptosporidium inactivation and/or removal using a state-approved protocol.

Since the PVWC was not able to meet the April 1, 2009, compliance date, it entered into an Administrative Consent Order (ACO) (no. NEA080001-1605002 – most recently amended as NEA150001-1605002, July 2015) with the NJDEP in March 2009 to perform a feasibility study. The PVWC's feasibility study is titled "Water Storage Improvements Feasibility

Study," dated September 2010, revised April 2011, and addresses the requirements of the LT2ESWTR. The ACO was amended and reissued in March 2013 and included recommended phases of work that must be done as per the feasibility study.

The PVWC developed a three-phased approach based on the results of the feasibility study to address the LT2ESWTR for all three reservoirs. Phase 1 is proposed to include the installation of two new 2.5 MG water storage tanks within the Levine Reservoir, piping modifications, the construction of a new access road and parking area, construction of a new utility building to house the water monitoring equipment, SCADA, standby power, the chemical feeds for the water system and stormwater management systems, and an additional water tank in Verona, which is now constructed and in service. Phase 2 and Phase 3 are currently being evaluated and discussed.

Phase 1 includes replacement of the 19.2 MG uncovered Levine Reservoir (circa 1885) with two 2.5 MG covered concrete storage tanks; a new 46-foot long by 36-foot wide, 18.66-foot high utility building to house equipment for water monitoring; SCADA; and the chemical feed system. Each new concrete storage tank will be approximately 160 feet in external diameter. The tank vertical sidewall height will be approximately 15 feet above the finished grade of elevation 180. The tanks will have dome shaped roofs with a maximum height of about 8 feet above the sidewall. The overall height of the tanks from finished grade to top of roof will be 23 feet. Permit number WCP160001 was issued from the Division of Water Supply and Geosciences on August 1, 2016, for this project.

The existing 19.2 MG Levine Reservoir has a perimeter of 1,800 feet and serves as finished water storage for the water pressure gradients, discussed above. The Levine Reservoir has a surface area of approximately four acres and is interconnected to the other pressure gradients through several pump stations and regulating valves. The maximum depth of the existing reservoir is approximately 18 feet, but averages approximately 10 feet. The bottom of the reservoir is bedrock and some of the existing walls are constructed of concrete. The lowest historical operating elevation of the reservoir is reported to have been approximately 168 feet when the reservoir had approximately 4 MG of water storage left in it. The hydraulic grade line (normal high-water level) for the Levine Reservoir is at elevation 180 feet.

Finished water is conveyed into the Levine Reservoir from an inlet chamber on the northwestern side of the reservoir and exits at the southern end of the reservoir after chlorination. The southern outlet connects with an existing 48-inch transmission water main (believed to be constructed of cast iron) that serves the City of Paterson. During times of maintenance, the existing 48-inch bypass line, proposed to be replaced with a 36-inch ductile iron line, will be used to connect the water inlet and outlet within the tank area. The existing 48-inch pipe located inside the existing reservoir, which connects to the 48-inch transmission mains, will be disconnected and removed, and each tank will then be reconnected to the transmission mains via a 36-inch ductile iron pipe. Please see Figure 3 for the proposed "Removal, Salvage and Disposal Plan."

Overall, this project will include approximately 85 feet of new 18-inch reinforced concrete piping, 400 feet of new 6-inch polyvinyl chloride drain pipes, and approximately 1,650 feet of new ductile iron 24-inch, 30-inch and 36-inch piping (Figure 4). Access to the project area will be provided by a new construction driveway that will connect with Reservoir Street. From Reservoir Street, the driveway will go past the Chemical Feed/Utility Building and around each new water tank. In order to allow access for chemical deliveries and emergency

vehicles, the driveway will be approximately 18 feet to 20 feet wide, with a 50-foot turning radius from Reservoir Street to the Chemical Feed/Utility Building, and around the southernmost water tank. The remainder of the driveway that will go around the northerly tank is expected to only serve maintenance vehicles and will be approximately 10 feet wide. The entire perimeter of the facility will be enclosed by a constructed security fence, which will be installed at the driveway entrance, and will have an automated slide gate that requires an access card to operate it. A double-leaf gate will be installed at the other entrance. Existing security cameras will be re-mounted in strategic locations around the site and will be connected to the PVWC's existing closed-circuit television system.

For this project, finished water will be conveyed to two newly constructed 2.5 MG pre-stressed concrete water storage tanks (5 MG total), which will be constructed within the footprint of the existing Levine Reservoir, as identified in Figures 4 and 5. Each new 2.5 MG tank will be about 160 feet in diameter by about 23 feet high (including the dome height of 8 feet). The high-water level within the tanks will be 192 feet high (Water Surface Elevation (WSEL)), with an overflow elevation of 193 feet, and a floor elevation of 175 feet (low WSEL). The tanks will include interior baffling or mixing to enhance water quality within the tanks. Once drinking water is contained within the two proposed tanks, and no longer exposed to the outside environment, the required chlorine application will be reduced, and corrosion control chemicals used in other areas of the PVWC water distribution system will be able to be applied to reduce lead and copper levels in the water distribution system.

During construction of the two tanks, part of the Levine Reservoir will be modified and will remain connected to the water distribution system, which will provide storage in the 180 Gradient during construction. An earthen berm that is approximately 75 feet long and approximately 20 feet high from the reservoir bottom is proposed to be constructed, prior to the construction of the tanks, and will require a complete outage and dewatering of the reservoir. The earthen berm, which will have a slope that is greater than 20%, will be constructed within the lower one-third of the reservoir footprint to separate the construction area in the reservoir from the existing portion that will temporarily enable the reservoir to operate until construction is complete. Once the new 2.5 MG tanks are constructed, the rest of the storage reservoir will be disconnected from the main distribution system. The existing water level monitoring equipment that is located at the inlet chamber will be out-of-service and relocated once the berm is constructed. The life cycle of this project is expected to be approximately 50 years.

In order to adequately capture storm water from the site's developed areas, two storm water detention basins will be constructed: one at the southern end of the reservoir and one at the northern end of the reservoir, as identified on Figure 4. The southern storm water detention basin will have a capacity of approximately 2.77 acre-feet at a maximum water elevation at 178 feet. The northern storm water basin will have a capacity of 0.83 acre-feet at the maximum water elevation of 178 feet. The two basins will not require groundwater recharge since the bottom of the reservoir area is bedrock. The roof drains for each of the 2.5 MG tanks and the utility building will convey runoff via 6-inch diameter PVC pipes, to the storm water basins. The northern storm water basin will be designed to drain through an 18-inch diameter reinforced concrete pipe (RCP) within 72 hours, in order to prevent the breeding of mosquitoes. The southern storm water basin will also drain accordingly, but through a 12-inch diameter RCP.

III. Evaluation of Alternatives

Selection of the proposed tanks as the solution to achieve compliance with the ACO was the result of an evaluation of multiple alternatives as described in the aforementioned "Water Storage Improvements Feasibility Study." A brief summary of the alternatives evaluation is presented below.

With regard to the tank selection, also discussed below, during final design of the project, PVWC directed its design team to prepare an evaluation of alternative sites for the tanks. This was done in an effort to find a solution consistent with the concept selected in the 2011 "Water Storage Improvements Feasibility Study," but which could possibly allow Levine Reservoir to remain as an open water body no longer connected to the public water system. The result of this evaluation was the August 2014 report, "Water Storage Improvements Phase 1 - Levine Water Tanks - Alternative Site Evaluation." This report included evaluation of three alternative sites in addition to the Levine Reservoir site. Construction cost estimates for the alternative sites ranged from $32.0 to $37.5 million. In comparison to the final design estimate of $18.7 million at the Levine Reservoir site, the alternative sites, discussed in E, F, and G below, are far costlier than the selected alternative.

A. No Action

Under the No Action alternative, the Levine Reservoir would remain in its current state, and the applicant would not be in compliance with the USEPA's LT2ESWTR for finished water storage. In addition, PVWC would not be able to move forward with the use of a phosphate-based corrosion inhibitor, which would make it difficult for the PVWC to stay under lead action levels. This alternative is not protective of water quality and leaves the reservoir vulnerable to outside contamination. It is also not compliant with existing regulations and the ACO discussed previously, which leads to further enforcement action. Therefore, this alternative was not selected for this project.

B. Membrane/Media Filtration Treatment at the Levine Reservoir

Under this alternative, the open water reservoir would need to be equipped with treatment that is capable of achieving at least 4.0-log virus, 3.0-log *Giardia lamblia*, and 2.0-log *Cryptosporidium* inactivation and/or removal using a state-approved protocol. The installation of filtration technology, such as dual media filtration or membrane filtration, is one method of achieving this level of treatment. Due to the complexities of operations and maintenance and siting limitations, a membrane filtration facility specific to the Levine Reservoir was not evaluated since remote operations would be required for this alternative and the membrane cleaning requirements would demand more time intensive operations and maintenance, including a back-up power source. Additionally, downstream finished water storage would be necessary to accommodate daily, hourly, and transient flow demands. Further, the continued use of an open finished water reservoir would not allow the use of a phosphate-based corrosion inhibitor, which would make it difficult for the PVWC to stay under lead action levels. This alternative also requires the installation of a separate chlorine contact basin to treat the reservoir water for a minimum of 30 minutes to produce a minimum-free-chlorine residual level, as required for open reservoirs.

The capital construction cost estimate for membrane filtration, in 2011, was $1.50 per gallon per day of capacity. Although a facility specific to Levine Reservoir was not considered, if it was, it would have to be sized at about 20 MGD and would therefore be estimated to have about a $30 million construction cost in 2011. This does not include a pumping station that would likely be required to pump water from the reservoir outlet through the treatment process. Since this option is less feasible than the selected plan, this alternative was not selected.

C. Install Ultraviolet (UV) Disinfection at the Levine Reservoir Outlets

Under this alternative, in order to achieve at least 4.0-log virus, 3.0-log *Giardia lamblia*, and 2.0-log *Cryptosporidium* inactivation and/or removal, UV disinfection treatment would be installed at the reservoir's outlets. This alternative would also need to support peak hour demands for the distribution system. As with the alternative B above, this alternative was considered only as a single facility at Great Notch Reservoir. This alternative would also require more operations and maintenance: remote operation and sleeve cleanings would be required, including a power back-up for the UV system. Also, as previously discussed, an open reservoir does not allow the use of a phosphate-based corrosion inhibitor, making it difficult for the PVWC to stay under lead action levels. The capital cost for this alternative was estimated in the 2011 feasibility study to be approximately $0.40 per gallon per day capacity. As noted for the membrane alternative, capacity for a UV facility dedicated to Levine Reservoir would be 20 MGD. The capital construction cost estimate in 2011 would have been $8 million, which would provide *Giardia* and *Cryptosporidium* inactivation and expected to be about four times higher for virus inactivation, if was required. Alternatively, chlorine disinfection could be applied for virus inactivation. A pumping station would also be required for such a facility, which was not considered in the estimate, nor was a contact basin.

While capital cost from the conceptual study appears competitive with the tank alternative, it does not include all the required components and the capital cost of UV treatment would be expected to increase once a viable design concept is fully developed. Further, operation and maintenance costs for UV treatment would be much greater than that of the tanks, affecting the life cycle costs. Considering these uncertainties in life cycle costs, and the inability to implement use of a phosphate-based corrosion inhibitor as identified for providing optimal corrosion control with the open reservoir, this alternative was not selected for this project.

D. Reservoir Cover and Liner

Under this alternative, the reservoir would be lined and covered and would eliminate the appearance of an open water body. A cover would be installed in order to minimize contamination from animals, humans, air-borne contaminants, and algal blooms, and reduce chlorine residual degradation. A liner within the reservoir would be used to protect the reservoir from external water sources (i.e., runoff and infiltration) and minimize the effects of existing materials in the unlined portion of the reservoir that would otherwise mix with the potable water. The construction costs for this alternative was estimated in 2011 to be $0.38 per gallon and $7.3 million total for Levine Reservoir. Although this alternative would maximize the largest volume of water (19.2 MG) that could be stored at this site, the age and quality of the drinking water would be a concern for the PVWC under this alternative, and damage could occur to the cover/liners as a result of the elements (i.e.,

ice, snow, rainwater ponding) and possible vandalism. Therefore, this alternative was not selected.

E. Construction of Two New 2.5 MG Water Storage Tanks at Block 5103, Lot 24 (Site 1)

Under this alternative, two new 2.5 MG water storage tanks would be constructed within a former quarry site on New Street at Block 5103, Lot 24. This location was determined to be technically infeasible due to the elevation of the site and the higher costs associated with the design and construction of the two tanks at this site rather than the location of the selective alternative (below). Extensive excavation would be necessary on this rocky site, and longer and larger pipes would need to be installed under Route 80 in order to convey flows to and from the site. Additionally, the difference in elevation at this location would cause an unacceptable increase in pressure on the water distribution system. This alternative would also be approximately $18.8 million more than the selected alternative. For these reasons, this alternative was not selected.

F. Construction of Two New 2.5 MG Water Storage Tanks at Block 5107, Lot 1(Site 2)

Under this alternative, two new 2.5 MG water storage tanks would be constructed within Block 5107, Lot 1, on New Street. This location is very rocky and would require extensive excavation, in addition to the need for large pipes to be installed under Route 80 in order to convey flows to and from the site. This site would not be suitable for the 2.5 MG water storage tanks, the utility building, roads and storm water management facilities that would be necessary at this location. Additionally, this site would cause unacceptable pressure within the water distribution system and would be approximately about $15.1 million more than the selected alternative (below). For these reasons, this alternative was not selected.

G. Construction of Two New 2.5 MG Water Storage Tanks at Block 801, Lots 21 and 22 (Site 3)

Under this alternative, two new 2.5 MG water storage tanks would be constructed within Block 801, Lots 21 and 22, near the Vistas at the Great Falls in Paterson, NJ. Although this location satisfies engineering considerations relative to the size of the site and the configuration and compatibility with hydraulics, this location would require excavations through rock and there would be a 170% increase from the selected alternative below. In addition, approval for this site location would be also needed from the State Historic Preservation Office and the area would have a larger visual impact. For these reasons, this alternative was rejected.

H. Construction of Two New 2.5 MG Water Storage Tanks (Selected Alternative)

Under this alternative, water storage tanks will be constructed to ensure an adequate supply of potable water to the service area. Several sub alternatives were evaluated and discussed in the PVWC's *Levine Reservoir Water Storage Improvements NJEIT Project No. 1605002-014 Supplement to Level II Environmental Assessment Alternatives Review*, dated June 2016, prepared by CH2MHill, which included various options to use backup power sources and pumping facilities to service PVWC's water service area. Note that the only backup power planned for this project is a connection for a portable generator to the chemical feed building.

In the 2011 "Water Storage Improvements Feasibility Study," the capital construction cost estimate for this alternative was $14 million. This alternative met the minimum storage requirements (5 MG) for the area serviced by the Levine Reservoir, and met the pressure gradient requirements (180 Gradient) and the fire flow protection and maximum daily demand (134 MGD) requirements.

Under this alternative, the Levine Reservoir will be separated into two sections by an earthen berm, during construction. The southern section will continue to serve as an open finished water reservoir during construction of the water storage tanks. The northern section will be used for the location of the two new 2.5 MG pre-stressed concrete water storage tanks, discussed in more detail above. The tanks will provide the necessary water storage for this gradient and will provide sufficient reliability and redundancy during maintenance so that one tank can operate when the other is offline. Additionally, the two tanks will be kept at an aesthetically acceptable height, will have the lowest long-term energy costs, will improve the security of the drinking water, and provide the lowest water service costs to the users. This option proves to be cost-effective and requires low maintenance. Additionally, due to the geometrical constraints of the reservoir, this alternative proved to be the best alternative for these site constraints. Therefore, this is the selected alternative for this project.

The various costs for the various alternatives described above are summarized in the following table and adjusted to a July 2018 cost basis for equitable comparison.

Alternative	**Estimated Capital Construction Cost**
Membrane treatment	$36.9 million
UV treatment	$9.8 million
Cover and liner	$9.0 million
Tanks at current reservoir site - concept	$14.0 million
Tanks at current reservoir site – final design	$21.1 million
Tanks at Alternative sites	
Site 1	$42.4 million
Site 2	$38.5 million
Site 3	$36.2 million

As explained in preceding paragraphs, although capital cost was important, it was not the only evaluation criteria. Operations and maintenance costs vary widely for these alternatives, with tanks having the lowest O&M cost and providing the simplest, most secure, and most reliable way to provide water storage in compliance with the ACO and current regulations.

IV. Environmental Consequences of the Selected Plan

A. Direct and Indirect Impacts

Topography, Water Quality, and Hydrology

The Levine Reservoir, which is a potable water infrastructure and not a free-flowing lake, is classified as "water" on the Passaic County Soil Survey. This reservoir is at an elevation

of approximately 180 feet. The area to the north and west, slopes steadily downward to an elevation of approximately 50 feet towards the Passaic River. To the east, the area slopes steadily downward to approximately 80 feet towards Spruce Street and NJ State Route 19. To the south, the elevation rises steeply to approximately 300 feet and consists of rocky cliff faces that border Interstate 80.

The Levine Reservoir has a contributing drainage area of 5.72 acres. The boundary of the drainage area follows the top of the northern reservoir wall and the western and southern ends, and along the higher ground along the east end of the reservoir. Excess flows from the reservoir currently drain through an existing stormwater outlet to a 34-inch concrete conveyance pipe located within the inlet chamber at the west end of the reservoir. This pipe runs along Reservoir Avenue, crosses McBride Avenue and discharges to the Passaic River.

During construction, an earthen berm will be installed to enable the northern portion of the Levine Reservoir to be drained of finished water and two 2.5 MG tanks will be constructed within the existing footprint of this portion of the reservoir. Following completion of construction, water from the storage tank overflows, and storm water from the two proposed detention basins, which will also be within the reservoir footprint, will ultimately be discharged through the existing outfall system in Reservoir Avenue to the Passaic River. During construction, pressure will be maintained in the 180 Gradient by feeding the 180 Gradient from the 300/330 Gradient.

To control and remove approximately 80% of the total suspended solids (TSS) from the proposed paved areas, the PVWC proposes to construct a nonstructural conveyance system, which will consist of a vegetated filter strip and a bioswale that will occupy approximately 3,900 square feet of predisturbed soils. Runoff will be routed to the new storm water bioretention basin, with a 6-inch perforated underdrain, located at the southern end of the reservoir, south of the berm. Flow from this basin will then be conveyed to the existing stormwater discharge pipe in Reservoir Avenue.

The PVWC treats water from the Passaic and Pompton Rivers for its public drinking water supply. PVWC's maximum permitted water allocation is 75 MGD as per Water Allocation Permit (number WAP040001). (An average of 35.48 MGD is received from the North Jersey District Water Supply Commission.) As a result of this project, the quality of drinking water in the Levine Reservoir will be protected from environmental exposures and potential threats of contamination since the finished water will be contained within the proposed 2.5 MG tanks.

Construction activities may result in some short-term impacts to water quality from erosion and sedimentation. These impacts will be minimized or avoided entirely by requiring the use of proper erosion control measures during construction. These measures will include control of wind and water erosion from stockpile areas, minimizing clearing, and prompt restoration of disturbed areas as well as other measures as required by the "New Jersey Standards for Erosion and Sediment Control in New Jersey" and the "Environmental Assessment Requirements for State Assisted Environmental Infrastructure Facilities" (N.J.A.C. 7:22-10).

Some dewatering will be required for construction of the proposed facilities. The dewatering could result in temporary and localized depression of groundwater. This

lowering can affect the stability of structures located adjacent to construction. Stability of structures will be monitored when dewatering occurs. Should problems arise, corrective measures will be implemented immediately. Groundwater will return to normal levels following construction. Dewatering may contain silt, which can adversely affect environmentally sensitive areas such as surface waters and wetlands. Control devices, such as settling basins for silt control, will be required to be in use during construction to remove sediment from dewatering prior to discharge. If dewatering occurs in excess of 100,000 gallons per day, a temporary dewatering permit will be required, and the quantity of water diverted must be reported to the Bureau of Water Allocation.

If the PVWC modifies or discontinues the use of the existing retaining wall, adjacent to Grand Street, which acts as a dam, a permit from the Department's Division of Engineering & Construction, Dam Safety Section may be required.

Air Quality

The State of New Jersey has an ongoing State Implementation Plan (SIP) development process for air quality, which provides measures for the prevention of violations of the National Ambient Air Quality Standards (NAAQS). Current control measures focus on transportation strategies and industrial stationary sources. The NJDEP routinely collects, compiles, analyzes and summarizes Ambient Air Quality Monitoring Data from a number of air quality monitoring locations throughout the State of New Jersey.

To avoid adverse air quality impacts during short-term construction activities, compliance with the regulatory requirements of New Jersey's Air Rules continue to remain in effect. Activities must still meet the State's Air Pollution Control requirement, such as obtaining permits when necessary, adherence to idling limitations, implementation of all reasonable measures to mitigate dust and fugitive emissions from demolition and construction, and complying with all state and federal rules for demolition of structures which may contain asbestos. This project will require a General Permit #4 from the Department's Air Quality Permitting Program if the PVWC uses an emergency generator that is greater than 100 kilowatts for its chemical feed systems.

Short-term impacts on air quality that may be associated with construction due to increased vehicular emissions from construction equipment and generation of dust from earth-moving operations may occur. However, these impacts will be temporary and localized. Further, these impacts will be minimized by requiring proper operation and maintenance of construction equipment and daily sweeping and wetting of the construction areas for dust control. Vehicles transporting fill, dirt, or other materials will be covered, and no new point sources of air pollution will be created as a result of this project.

The NAAQS were established by the US Environmental Protection Agency for six common air pollutants, also known as "criteria pollutants" (Code of Federal Regulations, Part 81, also identified as 40 CFR 81). These six common air pollutants are as follows: particle pollution (particulate matter), ground-level ozone, carbon monoxide (CO), sulfur oxides (SO_2), nitrogen oxides (NO_x), and lead. Permissible air quality levels are determined based on science/environmental guidelines and human health criteria.

On May 21, 2012, all of New Jersey was designated as a nonattainment area for the 8-hour 0.075 parts per million (ppm) ozone NAAQS. The project area is within the New York-

New Jersey-Connecticut (NY-NJ-CT) nonattainment area for ozone. The scope of this project is not expected to be a significant contributor to ozone in the tristate nonattainment area.

The project area is within the tristate area (NY-NJ-CT) that was designated as a non-attainment area for fine particles in 1997. Fine particles are defined as being 2.5 micrometers (μm) in diameter or smaller (PM2.5). In 2013, the attainment requirement was changed from 15 micrograms per cubic meters ($\mu g/m^{3)}$ for the annual air quality standard and 65 $\mu g/m^3$ for the 24-hour air quality standard to 15 $\mu g/m^3$ for the annual air quality standard and 35 μg/m3 PM2.5 for the 24-hour NAAQS. The scope of this project is not expected to be a significant contributor to fine particles within the tristate nonattainment area.

In 2011, Warren County and portions of Hunterdon, Morris, and Sussex Counties were designated as non-attainment areas for the 75 parts per billion (ppb) one-hour sulfur dioxide NAAQS that was adopted in 2010. It is not expected that this project will contribute to the one-hour sulfur dioxide levels of 75 ppb.

There were eleven nonattainment areas within New Jersey that did not meet the 8-hour 9 ppm NAAQS for carbon monoxide (CO); however, those areas have now been redesignated as *attainment* and are only considered maintenance areas, which maintain compliance with the current CO standards. The project area is within one of the three areas that have an 8-hour 9 ppm carbon monoxide maintenance plan, but the project is not expected to adversely affect air quality.

New Jersey did not exceed the 1971 USEPA NAAQS for nitrogen dioxide (NO_2), which was an annual (arithmetic mean) standard set at 0.053 ppm (100 $\mu g/m^3$). This standard was revised on January 22, 2012, to a new 1-hour NO_2 standard at 100 ppb, retaining the current NAAQS of 0.053 ppm or 53 ppb. On February 12, 2012, the project was within an area that was designated as unclassifiable attainment by the USEPA.

The proposed project is not anticipated to impede implementation of the control measures. New industrial/commercial facilities, to be developed within the project service area, will be required to comply with applicable air quality regulations. Therefore, this project is consistent with the New Jersey State Implementation Plan for air quality.

Noise

There will be some short-term, localized noise impacts during construction. These impacts are unavoidable but will be temporary and localized and will be minimized by requiring machinery to be equipped with proper mufflers, limiting construction to normal working hours and limiting construction to avoid holidays and weekends. There are no long-term noise impacts anticipated with this project.

Natural Resources

Most of the project area is located within the existing Levine Reservoir footprint, which is surrounded by a mix of woodland and rock outcrops along the east end of the reservoir. Common vegetation reported to be in the surrounding project area includes the following:

- American elm (*Ulmus americana*), native;
- Black oak (*Quercus velutina*), native;
- Black locust (*Robinia pseudoacacia*), native;
- Gray birch (*Betula populifolia*), native;
- Norway maple (*Acer platanoides*), non-native;
- Blackhaw (*Viburnum prunifolium*), native;
- Elderberry (*Sambucus canadensis*), native;
- Serviceberry (*Amelanchier arborea*), native;
- Wreath goldenrod (*Solidago caesia*), native;
- Indian hemp (*Apocynum cannabinum*), native;
- Virginia creeper (*Parthenocissus quinquefolia*), native, and;
- Japanese knotweed (*Fallopia japonica*), non-native.

The total disturbance area for the project will occupy approximately 7.45 acres (most of which is currently water), which includes 4,540 square feet of sidewalk and shrubby areas for the new access road and approximately 8,200 square feet of shrubby and predisturbed areas for the construction of the new utility building, which will be constructed within the reservoir footprint. The site can be accessed from Grand Street and Reservoir Avenue. The proposed access road will be constructed on fill, placed on predisturbed soils, and will be approximately 327 feet long and 20 feet wide from the existing site entrance, continuing for approximately 1,030 feet around the tanks, with an additional 175 feet between the two tanks. Approximately three trees will be removed as a result of the construction of the new access road. Additionally, approximately 844 linear feet of new fencing and 1,700 linear feet of replaced fencing will also be disturbed with the 7.45-acre disturbance area. Approximately 3,900 square feet of predisturbed soils will be disturbed for the construction of a bioswale and vegetated strip at the northern end of the reservoir. The two 2.5 MG water tanks will disturb approximately 1.89 acres (approximately 82,328 square feet) within the reservoir footprint. Disturbed areas that will not be occupied by impervious surfaces or structures will be restored as lawns.

The staging and stockpiling areas will be located within the limits of the existing reservoir. The constructed northern detention basin area, which will be approximately 26,000 square feet in area, and the utility building/paved parking area, which is approximately 10,000 square feet in area, will be the locations of the stockpiling and staging areas.

At the project site, any unsuitable soils above the existing bedrock are proposed to be removed prior to construction. PVWC's bathymetric surveys identified that there is no more than three feet of soil over the existing bedrock. Structural fill material is proposed to be used to bring the subgrade up to the tank slab elevation in some areas of the reservoir. Additionally, due to the V-shaped bottom of the reservoir, some bedrock will need to be removed for the construction of the new tanks, piping, and isolation wall.

Adverse impacts will be minimized by requiring the implementation of appropriate erosion control measures and retainment of an environmental inspector during construction to ensure that mature vegetation is avoided to the maximum extent practicable. All vegetated areas disturbed temporarily for the construction of the project will be restored with like vegetation to the maximum extent practicable. See Figure 5 for the planting details. Please note that a general timing restriction on trimming or removal of trees from 4/1 – 8/31 is recommended to protect nesting birds covered under the NJ Endangered & Non-game Species Conservation Act.

Critical Areas

As stated above, the Levine Reservoir is located adjacent to the Paterson Great Falls National Historic Park. The Passaic Falls, also known as the Great Falls, is located within the boundaries of the Great Falls National Historic Park and is approximately 1,100 feet north of the Levine Reservoir. The Passaic River is approximately 350 feet west of the Levine Reservoir. Although the reservoir area has the potential to be a habitat area for Great Blue Heron (*Ardea herodias*), this project is not expected to adversely impact fauna or their native habitats.

The Levine Reservoir is a manmade reservoir that is used for water storage. The PVWC obtains raw water from the Pompton and Passaic Rivers, which are located within the Central Passaic Basin in the Buried Valley aquifer system, identified as a sole source aquifer. The Buried Valley sole source aquifer is situated below the Two Bridges area and extends under the Passaic River for approximately one mile downstream, then under the Pompton River for approximately three miles and below Deepavaal Brook. Since this project does not require an increase in water allocation, no adverse impacts are expected to occur to the Buried Valley sole source aquifer system.

The PVWC provided a Jurisdictional Determination to the NJDEP to ensure that this project does not fall within the jurisdiction of the Flood Hazard Area (FHA) and Land Use regulations. The Levine Reservoir's total contributory area of 5.72 acres does not fall within the FHA jurisdiction of the regulations. Additionally, the Levine Reservoir is not part of a stream corridor since it is a manmade structure, and therefore, is not within the jurisdiction of the Bureau of Land Use Regulation. Any required dewatering permits will be obtained for this project prior to the disbursement of funds. As required by the ACO, the project must be advertised for bids within 180 days of after receipt of all permits and funding approvals are received.

The Levine Reservoir will not result in any direct or indirect adverse impacts to wetlands/wetlands transition areas, Important Farmlands, vernal habitats, floodplains (i.e., 100-year and 500-year floodplains), steep slopes, stream corridors, endangered/threatened species or Species of Concern and their designated habitats, Agricultural Development Areas, tidal areas, or important aquifer recharge areas. The NJDEP's Land Use Regulation Program has confirmed that no wetlands exist within the boundary of the Levine Reservoir project area and the Levine Reservoir is located outside of the 100-year and 500-year floodplains. Additionally, although the Levine Reservoir is identified as meeting the habitat-specific requirements for the Blue Heron (*Ardea herodias*), a Species of Concern, there are no documented occurrences of this species within the proposed construction area of this project.

Cultural Resources

The proposed project has been reviewed for its potential to affect significant cultural resources. The Levine Reservoir is located within the Great Falls of the Paterson/Society for Establishing Useful Manufacturers (S.U.M.) Historic District (Great Falls/S.U.M.), which is listed in the State and National Registers of Historic Places (SR 5/27/1971; NR 4/17/1970) the Great Falls of the Paterson/Society for Establishing Useful Manufacturers (S.U.M.) Historic District Addendum; (SR 10/15/1974, NR 1/8/1975). The original District and the Addendum were subsequently combined and listed as the Great Falls of the Passaic/Society for Establishing Useful Manufacturers (S.U.M.) National Historic Landmark District (NHL 5/11/1976). The Levine Reservoir is also located adjacent to the Paterson Great Falls National Historical Park. In addition to the reservoir and the Great Falls-related properties, other properties identified in the area of potential effects include Hinchliffe Stadium, a National Historic Landmark; and a section of the Morris Canal.

The S.U.M. was established by Alexander Hamilton and others in the late 1700s to produce and trade in goods, to help the United State achieve independence from the British economy, and to demonstrate the profitability of American manufacturing. Despite early financial challenges, the S.U.M. was inaugurated in 1794, and the extensive raceway system provided water power for numerous mills along the Passaic River until 1945, when the S.U.M. sold its charter and remaining property to the City of Paterson. Community efforts resulted in the recognition of the Great Falls as a historically important area, its listing in the National Register of Historic Places, recognition as a National Historic Landmark, and ultimately a portion of the district was established as a National Historical Park in 2011.

In May 2016, as part of its Cultural Resources (CR) review under 7:22-10, the Municipal Finance & Construction Element/State Revolving Fund (MFCE/SRF), as delegated by the Clean Water Act and the USEPA, initiated Section 106 review of the project, summarized previous cultural resources review efforts, and identified an Area of Potential Effects. In addition, as the S.U.M. is also listed in the New Jersey Register of Historic Places, the MFCE informed the applicant that, pursuant to the New Jersey Register of Historic Places Act of 1970 (N.J.S.A. 13:1B-15.128 et seq.) and N.J.A.C. 7:4, they must submit an Application for Project Authorization to the New Jersey Historic Preservation Office (NJHPO).

Upon receiving comments in March and July of 2017 from the federal Advisory Council on Historic Preservation, USEPA determined that it would be the lead agency for the Section 106 review under 36 Part 800 – Protection of Historic Properties. On June 29, 2017, USEPA submitted a letter to the NJSHPO in continuing consultation, in order to complete the identification of the Area of Potential Effects and of historic properties that was begun by the MFCE, and assumed responsibility for the remainder of the Section 106 review of this project for the remainder of the Section 106 review of this project. On April 3, 2018, the USEPA determined that the proposed project will have an adverse effect upon the Great Falls of the Passaic/S.U.M. National Historic Landmark District and the Paterson Great Falls National Historical Park and will have no adverse effect on the Morris Canal or Hinchliffe Stadium. In consultation comments dated May 1, 2018, the New Jersey Deputy State Historic Preservation Officer (NJSHPO partially concurred with the USEPA's assessment but stated that the project would also adversely affect the Great Falls of Paterson/S.U.M. Historic District Addendum Extension, particularly the Grand Street

Pumping Station. The USEPA agreed with the NJSHPO comments and therefore, it has been determined that the proposed project, as currently designed, will have an adverse effect on the Great Falls of the Passaic/S.U.M. National Historic Landmark District, the Great Falls of Paterson/S.U.M. Historic District Addendum Extension, and the Paterson Great Falls National Historical Park.

On June 5, 2018, the USEPA invited representatives from MFCE, NJ Historic Preservation Office, City of Paterson, PVWC, the National Park Service, and other consulting parties to meet to discuss measures to avoid, minimize, or mitigate the effects of the project on historic properties. Measures discussed included HABS/HAER recording of several significant buildings, rehabilitation of two contributing historic structures that are owned by PVWC, the creation and installation of signage, the rehabilitation and re-watering of the historic raceway system, and design features to camouflage and minimize the appearance of the tanks. The meeting concluded without reaching an agreement on measures, and therefore consultation remains ongoing. If an agreement regarding such measures is reached, the USEPA will develop a Memorandum of Agreement (MOA) that memorializes the measures to avoid, minimize, or mitigate the effects of the project. If consultation fails to resolve the adverse effects, consultation may be terminated, in accordance with 36 CFR Part 800.7.

In addition, the PVWC has submitted an Application for Project Authorization to the NJHPO. The application was complete, and the project determined to constitute an encroachment on historic properties. The project will be presented at the August 15, 2018, meeting of the New Jersey Historic Sites Council (NJHSC). The NJHSC will review the project and make a recommendation to the Commissioner of the NJDEP, who will issue a decision to either authorize the project as described in the application, or authorize the project with conditions, in accordance with the New Jersey Register of Historic Places Act, N.J.A.C. 7:4.

The MFCE will issue Authorization to Advertise after both the Section 106 CR review and the New Jersey Register of Historic Places review process have been completed, and any additional measures required as a result of these reviews are incorporated into the design documents.

Water Allocation

The PVWC has a permitted water allocation of 75 MGD from the Passaic and Pompton Rivers, and is permitted under Water Allocation permit number PI5099X WAP040001 and WAP040002. Note that the PVWC also receives approximately 35.48 MGD from the North Jersey District Water Supply Commission (NJDWSC). All permit approvals must be obtained prior to the disbursement of funds.

Dewatering

A New Jersey Pollution Discharge Elimination System (NJPDES) Discharge to Surface Water (DSW) permit will be needed for any wastewater resulting from construction dewatering that may be discharged to surface water, regardless of the amount of water. Provided that the discharge is not contaminated, the appropriate discharge permit will be the Category B7-Short-term De Minimis Discharge General Permit (see http://www.state.nj.us/dep/dwq/pdf/b7-rfa-checklist.pdf). This determination will be

made by running a pollutant scan, described in the application checklist, where the data can be collected up to a year in advance of the discharge. If, however, the analytical results demonstrate levels greater than the Appendix A standards as specified in the Category B7-Short-term De Minimis Discharge General Permit (see http://www.state.nj.us/dep/dwq/pdf/b7-deminimis-final-permit-5-20-15.pdf), the appropriate NJPDES DSW permit will be either the B4B-General Groundwater Petroleum Product Clean-Up Permit or the BGR – General Groundwater Remediation Clean-up Permit (see http://www.state.nj.us/dep/dwq/pdf/sw-gp-chklst.pdf). Either of these permits can generally be processed in fewer than 30 days, although a Treatment Works Approval may be needed for any type of wastewater treatment. Contact information is listed on the checklists found at the websites identified above.

Social and Economic Factors

Water service will continue to be provided to customers during Phase 1 construction. Construction of the proposed facilities may cause inconveniences to local residents in the form of noise, dust, and traffic congestion. These impacts will be temporary and minimized by incorporating requirements for mufflers, limiting construction hours and requiring daily dust control in the construction procedures.

This project not only protects public health from microbial and acute contaminants but will also reduce the public's exposure to lead in the potable water system.

The PVWC is a partial owner of the NJDWSC. As a partial owner, the PVWC pays 34 percent of the NJDWSC's annual budget.

The 2015 Median Annual Household Income (MAHI) within the PVWC water service area was updated using current US Census Annual Data in conjunction with the Consumer Price Index to determine inflation. The 2018 MAHI is approximately $75,278 for Clifton City, $35,484 in Passaic City, $35,676 in Paterson City, $56,601 Prospect Park Borough, and $73,856 in Woodland Park Borough. The current (2018) average annual water user charge for these municipalities is approximately $434, which is expected to increase to approximately $489 by 2022. That increase includes inflation (the portion associated with the new Levine Tanks is estimated at $19.08 per year). The proposed user charge for 2022 will be approximately 0.65% of the existing MAHI in Clifton City, 1.38% of the existing MAHI in Passaic City, 1.37% of the existing MAHI in Patterson City, 0.86% of the existing MAHI in Prospect Park Borough, and 0.66% of the existing MAHI in Woodland Park Borough. Each municipality sited above is below the 1.75% affordability threshold, which is not considered to be excessive, except for the Cities of Clifton and Passaic.

B. Steps to Minimize Adverse Effects to the Environment

1. Siting of facilities to avoid important natural resources and critical areas to the greatest extent possible has been the main mechanism to ensure that there will not be any significant adverse impacts to the environment. In addition, the use of proper construction techniques and constraints will minimize and mitigate any potential for adverse effects of the proposed construction to the environment. Included are:

   - Use of proper erosion and sediment control measures such as hay bales and mulching, in accordance with the "Standards for Soil Erosion and Sediment Control

in New Jersey" and the "Environmental Assessment Requirements for State Assisted Environmental Infrastructure Facilities" (N.J.A.C. 7:22-10);

- Dust control by wetting down and sweeping the construction sites. No chemicals will be used;

- Noise control by requiring equipment to have proper mufflers, limiting the number of machines in operation, limiting the hours of operation to normal working hours and limiting construction to avoid weekends and holidays;

- Testing and treatment, as necessary, of dewatering to control silt and other contaminants that may be present;

- Restoration of vegetated areas temporarily disturbed during construction;

- Avoidance of environmentally sensitive areas, such as wetlands and floodplains, in locating stockpile, storage and erosion/siltation control measures; and

- Requiring that all necessary state and federal permits must be obtained prior to the initiation of construction activities and adhered to during construction.

- Any measures required as a result of the Section 106 cultural resources review, and/or the New Jersey Register of Historic Places review will be incorporated into the final design documents prior to issuance of Authorization to Advertise by the MFCE.

2. To reduce the potential for indirect impacts to environmentally critical areas in the study area of this project, these critical areas have been eliminated from the sewer service area and no sewer hook-ups from new development in wetlands and floodplains will be permitted unless specifically permitted by the Department.

V. Coordination of Environmental Review

A. Public Participation

A public notice will be advertised by the PVWC in a local newspaper upon the issuance of this Environmental Decision Document and Environmental Appraisal and will be posted on the PVWC's website (www.PVWC.com). The public is allowed 30 days from the time of advertisement of the Pubic Notice of this project in accordance with N.J.A.C. 7:22-10.10.

A number of public outreach meetings, conducted by the JGSCGroup on behalf of the PVWC, were held from June to November in 2015, which informed the public of the need for this project and the expected environmental and cultural impacts/disturbances that would result from it. More than 125,000 households and businesses within PVWC's primary water service area (municipalities of Paterson, Clifton, Passaic, and Prospect Park) were the focus of these outreach sessions, which resulted in more than 4,800 survey responses and over 1,200 public comments. The tools that were used to notify the public included direct mail, flyers, an informational website, distributed tear-off pads with the PVWC website, and social media, using online surveys, and offering an online public

suggestion "box." The public was informed and educated about the importance of this project, and as identified in the report entitled *A record of public outreach and engagement for the Levine Water Storage Improvement Project*, prepared by JGSCGroup, dated January 8, 2016, about 72% of the respondents supported the construction of the water tanks. PVWC also solicited public opinion with regard to the location of the new tanks and after evaluating the possibility of suggested alternative locations, about 97% of the respondents were reported to support the tanks being constructed within the existing Levine Reservoir.

The main items that the public voiced its concerns about with regard to this project were potential increases to user charges, aesthetics and locations of the tanks, the quality of the drinking water and the possible environmental contamination that would occur if drinking water was not protected.

In addition to the outreach sessions identified above, the PVWC also included a cultural resources consulting party meeting on June 5, 2018. Members of the public who requested to be consulting parties, representatives of various government and private organizations, and representatives of the PVWC met to attempt to develop measures to avoid, minimize, or mitigate the effects to the Levine Reservoir. A consensus was not reached, and consultation in accordance with Section 106 of the National Historic Preservation act is continuing. An Application for Project Authorization was submitted to the new Jersey Historic Preservation Office and the application is scheduled to be on the agenda for the August 15 Historic Sites Council public hearing.

B. Agencies Consulted About the Project

- New Jersey Department of Environmental Protection
  - Land Use Regulation
  - Division of Water Quality
  - Office of Environmental Planning
  - Bureau of Water Allocation and Well Permitting
  - Historic Preservation Office
  - Natural Heritage Program
  - Office of Permit Coordination
  - Division of Engineering & Construction, Dam Safety Section
  - Air Quality Permitting Program
  - Water Quality Management Planning Program
  - Division of Water Supply and Geoscience
  - Water and Land Use Compliance and Enforcement

- Hudson-Essex-Passaic Soil Conservation District
- North Jersey District Water Supply Commission
- Passaic Valley Water Commission
- Advisory Council on Historic Preservation
- National Park Service
- Paterson Great Falls National Historical Park
- Paterson Historic Preservation Commission
- New Jersey Community Development Corporation

C. Reference Documents

Passaic Valley Water Commission. *Passaic Valley Water Commission Water Storage Improvements Phase 1 — Levine Storage Tanks Environmental Planning Document.* Rep. N.p.: n.p., October 2015 and February 2016.

CH2MHILL and Hatch Mott MacDonald. *Water Storage Improvements Phase 1 – Levine Water Tanks – Alternative Site Evaluation.* Report. August 2014.

CH2MHill, and Hatch Mott MacDonald. *Levine Reservoir Water Storage Improvements NJEIT Project No. 1605002-014 Supplement to Level II Environmental Assessment Alternatives Review.* Rep. N.p.: n.p., June 2016.

CH2M, and Hatch Mott MacDonald. *Passaic Valley Water Commission Water Storage Improvements Phase 1 Levine Water Tanks Basis of Design Report.* Project no. 477186. N.p.: n.p., February 2016.

Tylin International/Media. Carolla Engineers. *Passaic Valley Water Commission Water Storage Improvements Feasibility Study.* April 25, 2011.

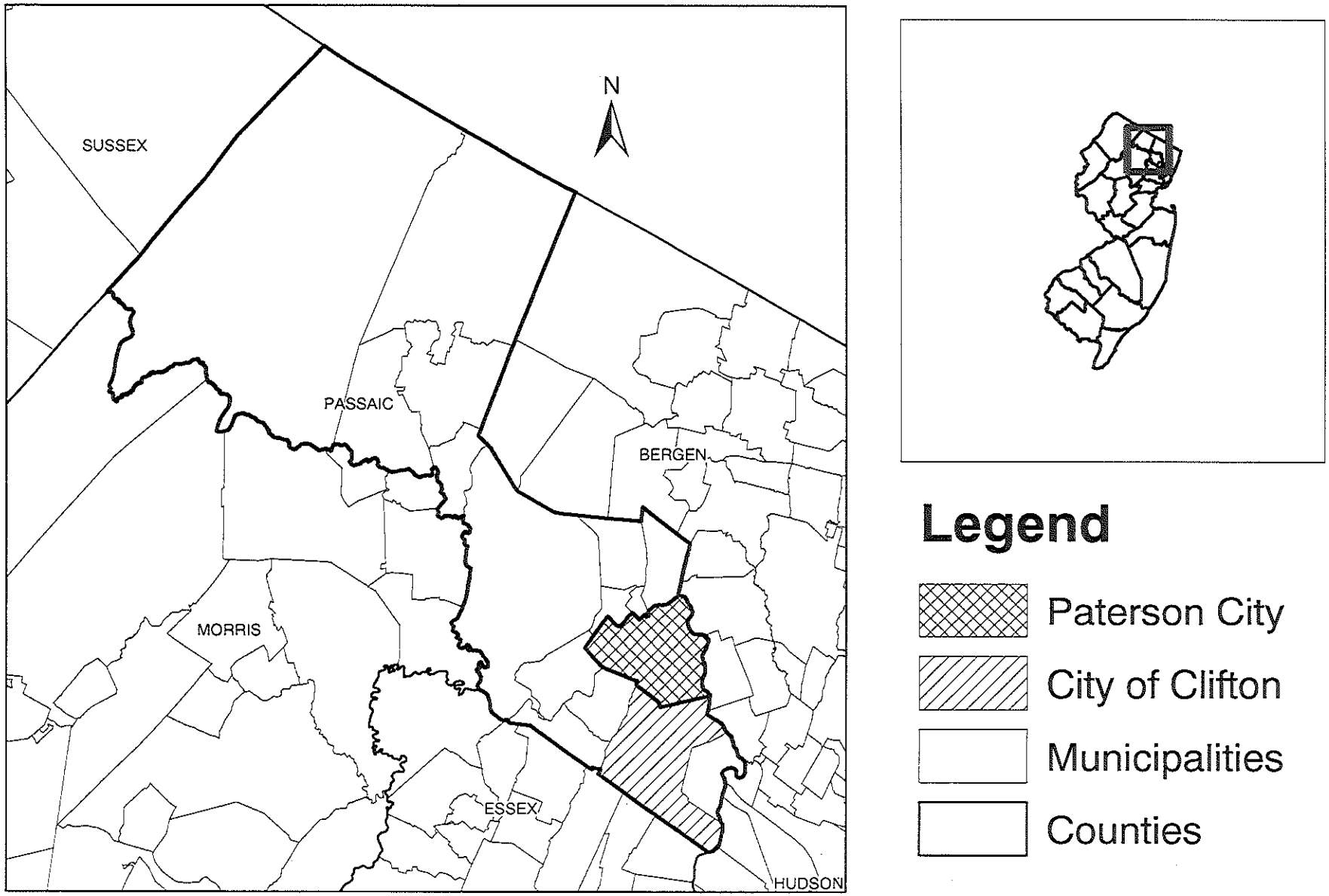
JGSCGroup. *A record of public outreach and engagement for the Levine Water Storage Improvement Project.* January 8, 2016

CH2M/HMM. *Passaic Valley Water Commission Levine Water Tanks – NJDEIFP Project #1605002-025 Environmental Review.* March 4, 2016.

Laura D. Cushman; Ilene Grossman-Bailey, Ph.D., RPA; Jennifer B. Leynes; Richard Grubb & Associates, Inc. *Phase IA Cultural Resources Survey Levine Reservoir Water Storage Improvement Project, City of Paterson, Passaic County New Jersey.* July 6, 2010.

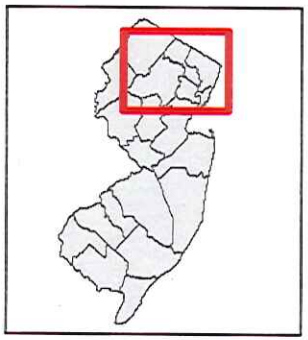
Correspondence between USEPA Region 2 and NJ State Historic Preservation Officer.

Figure 1
Project Location Map
Passaic Valley Water Commission
Water Storage Improvements Phase 1 – Levine Storage Tanks
Project No. 1605002-014



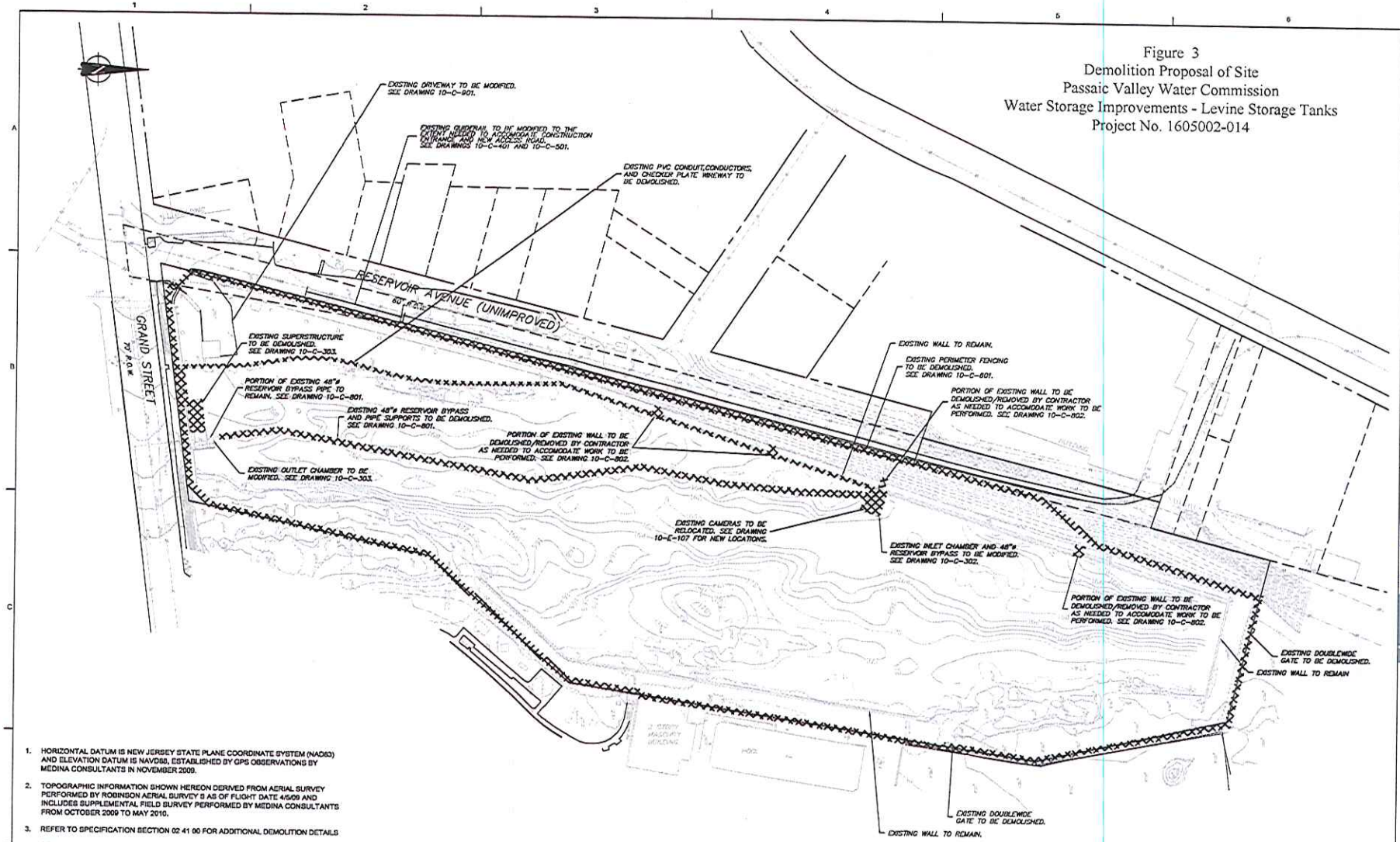
Passaic Valley Water Commission Service Area

Figure 2
Service Area Map
Passaic Valley Water Commission
Water Storage Improvements -
Levine Storage Tanks
Project No. 1605002-014



Source: NJ Municipalities and NJ Counties data from NJ Office of Information Technology, Office of Geographic Information Systems (NJOIT - OGIS), 2017. Passaic Valley Water Commission Service Area data from Passaic Valley Water Commission, 2018.
Projection: NAD_1983_StatePlane_New_Jersey_FIPS_2900_Feet. Date: 7/20/18

Figure 3
Demolition Proposal of Site
Passaic Valley Water Commission
Water Storage Improvements - Levine Storage Tanks
Project No. 1605002-014



1. HORIZONTAL DATUM IS NEW JERSEY STATE PLANE COORDINATE SYSTEM (NAD83) AND ELEVATION DATUM IS NAVD88, ESTABLISHED BY GPS OBSERVATIONS BY MEDINA CONSULTANTS IN NOVEMBER 2009.
2. TOPOGRAPHIC INFORMATION SHOWN HEREON DERIVED FROM AERIAL SURVEY PERFORMED BY ROBINSON AERIAL SURVEY S AS OF FLIGHT DATE 4/5/09 AND INCLUDES SUPPLEMENTAL FIELD SURVEY PERFORMED BY MEDINA CONSULTANTS FROM OCTOBER 2009 TO MAY 2010.
3. REFER TO SPECIFICATION SECTION 02 41 00 FOR ADDITIONAL DEMOLITION DETAILS
4. CONTOURS WITHIN THE EXISTING RESERVOIR ARE TAKEN FROM VARIOUS PREVIOUS SURVEYS. IT IS UNKNOWN WHETHER UNDERWATER CONTOURS ARE OF BEDROCK, AND NO GUARANTEE IS MADE THAT THESE CONTOURS REPRESENT ACTUAL CURRENT CONDITIONS. CONTRACTOR SHALL BE PREPARED TO PERFORM INVESTIGATIONS AND ROCK EXCAVATION AS NEEDED TO COMPLETE THE WORK AS SHOWN ON THE DRAWINGS, AND SHALL INCLUDE ASSOCIATED COSTS IN HIS BID.
5. CONTRACTOR IS ADVISED THAT EXISTING CONDITIONS SHOWN ON THE DRAWINGS ARE TAKEN FROM VARIOUS HISTORIC DOCUMENTS AND MAY NOT ACCURATELY REPRESENT CURRENT ACTUAL CONDITIONS. CONTRACTOR SHALL PERFORM TEST PITS AND OTHER INVESTIGATIONS AS NEEDED TO LOCATE EXISTING PIPE AND BURIED STRUCTURES. CONTRACTOR SHALL BE PREPARED TO PROVIDE PIPE ADAPTERS AS NEEDED TO CONNECT TO EXISTING PIPE OF UNKNOWN MATERIALS.

DEMOLITION PLAN
1" = 50'
0 50 100 150
1"=50'

NOT FOR CONSTRUCTION

NO.	DATE	REVISION	BY	APVD
0	05/04	ISSUED FOR BID	ER	CTW

Hatch Mott MacDonald
PASSAIC VALLEY WATER COMMISSION
CLIFTON, NEW JERSEY
LEVINE WATER TANKS
ch2m:
CIVIL
REMOVAL, SALVAGE AND DISPOSAL PLAN

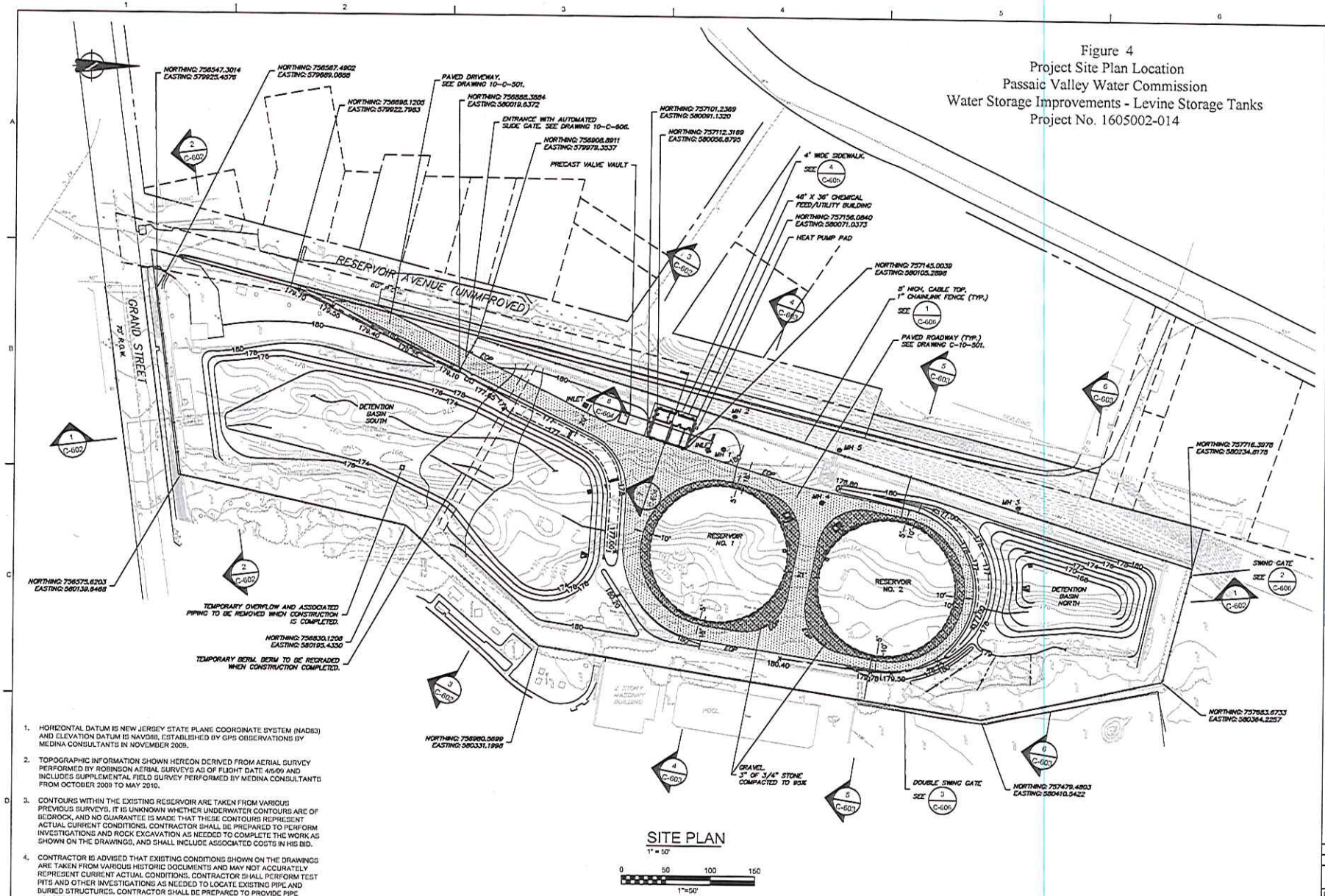
50'
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	FEBRUARY 2016
PROJ	477186
DWG	10-C-301
SHEET	24 of 104

100% SUBMITTAL - FOR PERMITTING

FILENAME: 10-C-301.dwg PLOT DATE: $PLOTDATE PLOT TIME: $PLOTTIME

Figure 4
Project Site Plan Location
Passaic Valley Water Commission
Water Storage Improvements - Levine Storage Tanks
Project No. 1605002-014



SITE PLAN
1" = 50'

0 50 100 150
1"=50'

1. HORIZONTAL DATUM IS NEW JERSEY STATE PLANE COORDINATE SYSTEM (NAD83) AND ELEVATION DATUM IS NAVD88, ESTABLISHED BY GPS OBSERVATIONS BY MEDINA CONSULTANTS IN NOVEMBER 2009.
2. TOPOGRAPHIC INFORMATION SHOWN HEREON DERIVED FROM AERIAL SURVEY PERFORMED BY ROBINSON AERIAL SURVEYS AS OF FLIGHT DATE 4/5/09 AND INCLUDES SUPPLEMENTAL FIELD SURVEY PERFORMED BY MEDINA CONSULTANTS FROM OCTOBER 2009 TO MAY 2010.
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NOT FOR CONSTRUCTION

NO.	DATE	REVISION	DR	CHK	APVD	BY	APVD
0	05/04	ISSUED FOR PERMIT	IER	JP	JP	CTW	CTW

Hatch Mott MacDonald

PASSAIC VALLEY WATER COMMISSION
CLIFTON, NEW JERSEY
LEVINE WATER TANKS

CH2M

CIVIL
SITE PLAN

50'
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	FEBRUARY 2016
PROJ	477186
DWG	10-C-001
SHEET	34 of 104

100% SUBMITTAL - FOR PERMITTING

THE DOCUMENT AND THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF SERVICE, IS THE PROPERTY OF CH2M HILL AND IS NOT TO BE USED IN WHOLE OR IN PART FOR ANY PROJECT OTHER THAN THE SPECIFIC PROJECT FOR WHICH IT WAS PREPARED.

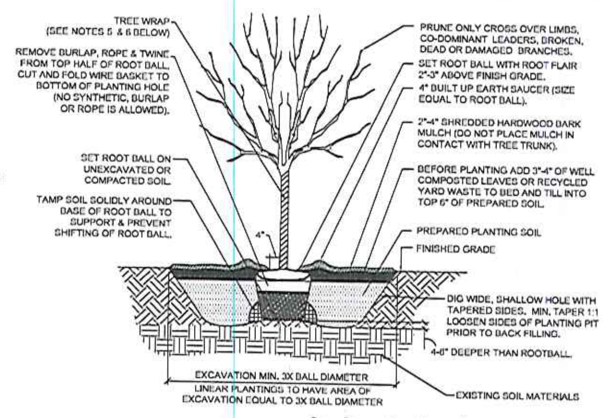
FILENAME: 10-C-001.dwg PLOT DATE: $PLOTDATE PLOT TIME: $PLOTTIME

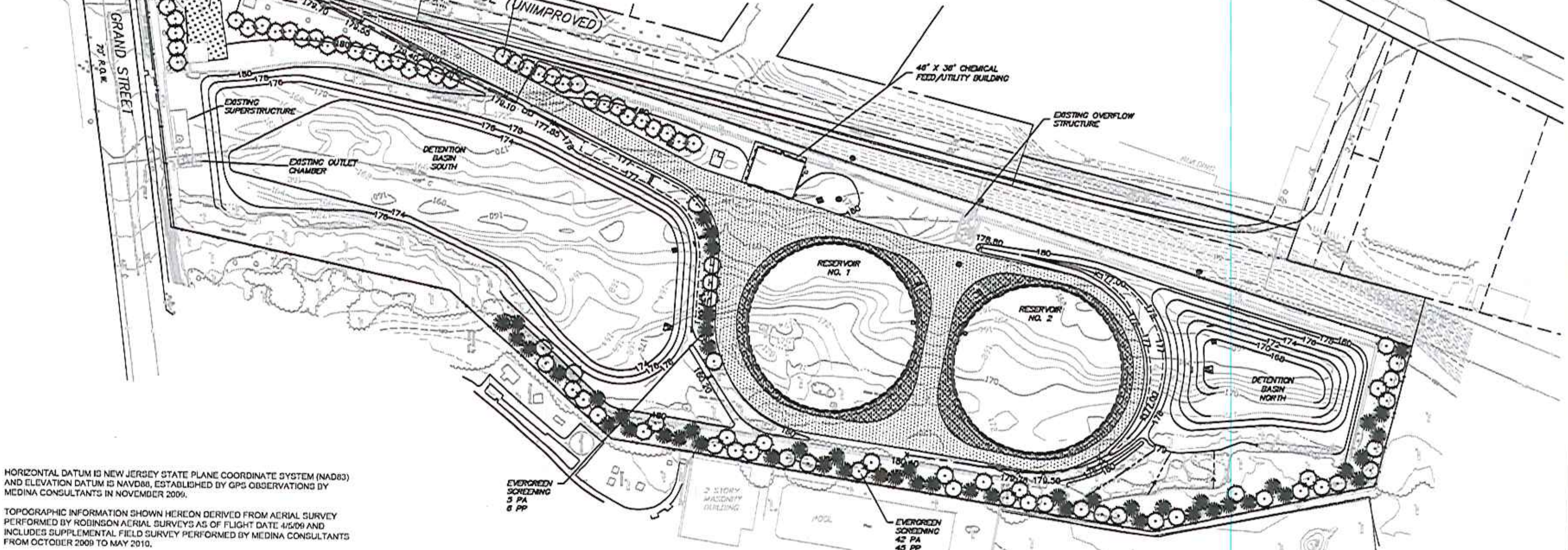
PLANT SCHEDULE

SYM.	QUANTITY	KEY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
TREES						
	85	PA	PICEA ABIES	NORWAY SPRUCE	7 – 8'	B&B
	51	PP	PICEA PUNGENS 'GLAUCA'	COLORADO BLUE SPRUCE	7 – 8'	B&B

TREE PLANTING NOTES:

1. FOR CONTAINER GROWN TREES, USE FINGERS OR SMALL HAND TOOL TO PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL;THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER.
2. INCORPORATE COMMERCIALLY PREPARED MYCORRHIZAE SPORES IN THE SOIL IMMEDIATELY AROUND THE ROOTBALL AT RATES SPECIFIED BY THE MANUFACTURER.
3. THOROUGHLY SOAK THE TREE ROOTBALL AND ADJACENT PREPARED SOIL SEVERAL TIMES DURING THE FIRST MONTH AFTER PLANTING AS PER MAINTENANCE SPECIFICATIONS.
4. THE PLANTING PROCESS IS SIMILAR FOR DECIDUOUS AND EVERGREEN TREES.
5. TREES WHOSE ORIENTATION IS NOT CHANGED FROM THE NURSERY ARE NOT TO BE WRAPPED EXCEPT TREES WITH VERY THIN BARK, SUCH AS RED MAPLE OR AS DIRECTED BY PROJECT PROFESSIONAL. WRAPPING OF TREES, IS TO BE APPROVED BY THE PROJECT PROFESSIONAL.
6. TREE WRAP TO BE FABRIC TYPE APPLIED FROM TRUNK FLAIR TO FIRST BRANCH. WRAP PAPER FROM BOTTOM UP WITH SUFFICIENT OVERLAP TO COVER ALL BARK. USE BIO/PHOTO-DEGRADABLE PLASTIC OR MASKING TAPE. TREE WRAP TO BE REMOVED WHEN DIRECTED BY PROJECT PROFESSIONAL, BUT NO LATER THAN 12 MONTHS AFTER PLANTING.
7. NORTH SIDE OF TREE TO BE IDENTIFIED ON TREE TRUNK WITH SEMI-PERMANANT MARKING POINT PRIOR TO DIGGING. NORTH ORIENTATION OF TREE TO BE MAINTAINED. ANY TREE WITHOUT NORTH ORIENTATION MARK WILL BE REJECTED BY PROJECT PROFESSIONAL.
8. ROOT FLAIR/ COLLAR IS TO BE EXPOSED AT TIME OF PLANTING. CONTRACTOR TO REMOVE EXCESS SOIL FROM TOP OF ROOTBALL TO EXPOSE ROOT FLAIR/ COLLAR. ROOT FLAIR/ COLLAR TO BE VISIBLE AFTER PLANTING.
9. WHEN PLANTING HOLE 1/2 FULL OF PLANTING SOIL THOROUGHLY SOAK PLANTING HOLE WITH WATER UNTIL SOIL IS TOTALLY SATURATED AND WILL NOT ABSORB ADDITIONAL WATER. THEN FILL WITH SOIL TO FINISH GRADE, ESTABLISH EARTH SAUCER, AND AGAIN THOROUGHLY SOAK.





1. HORIZONTAL DATUM IS NEW JERSEY STATE PLANE COORDINATE SYSTEM (NAD83) AND ELEVATION DATUM IS NAVD88, ESTABLISHED BY GPS OBSERVATIONS BY MEDINA CONSULTANTS IN NOVEMBER 2009.
2. TOPOGRAPHIC INFORMATION SHOWN HEREON DERIVED FROM AERIAL SURVEY PERFORMED BY ROBINSON AERIAL SURVEYS AS OF FLIGHT DATE 4/5/09 AND INCLUDES SUPPLEMENTAL FIELD SURVEY PERFORMED BY MEDINA CONSULTANTS FROM OCTOBER 2009 TO MAY 2010.
3. CONTOURS WITHIN THE EXISTING RESERVOIR ARE TAKEN FROM VARIOUS PREVIOUS SURVEYS. IT IS UNKNOWN WHETHER UNDERWATER CONTOURS ARE OF BEDROCK, AND NO GUARANTEE IS MADE THAT THESE CONTOURS REPRESENT ACTUAL CURRENT CONDITIONS. CONTRACTOR SHALL BE PREPARED TO PERFORM INVESTIGATIONS AND ROCK EXCAVATION AS NEEDED TO COMPLETE THE WORK AS SHOWN ON THE DRAWINGS, AND SHALL INCLUDE ASSOCIATED COSTS IN HIS BID.
4. CONTRACTOR IS ADVISED THAT EXISTING CONDITIONS SHOWN ON THE DRAWINGS ARE TAKEN FROM VARIOUS HISTORIC DOCUMENTS AND MAY NOT ACCURATELY REPRESENT CURRENT ACTUAL CONDITIONS. CONTRACTOR SHALL PERFORM TEST PITS AND OTHER INVESTIGATIONS AS NEEDED TO LOCATE EXISTING PIPE AND BURIED STRUCTURES. CONTRACTOR SHALL BE PREPARED TO PROVIDE PIPE ADAPTERS AS NEEDED TO CONNECT TO EXISTING PIPE OF UNKNOWN MATERIALS.

PLANTING PLAN
1" = 50'
0 50 100 150
1"=50'

Figure 5
Site Location Map w/Restoration Details
Passaic Valley Water Commission
Water Storage Improvements - Levine Storage Tanks
Project No. 1605002-014

NOT FOR CONSTRUCTION

NO.	DATE	REVISION	DR	CHK	P.J.P	APVD	BY	APVD
1	7/20/2018	PLANTING REVISIONS						
DSGN			RSH	RSH				CTW

Hatch Mott MacDonald

PASSAIC VALLEY WATER COMMISSION
CLIFTON, NEW JERSEY
LEVINE WATER TANKS

ch2m:

CIVIL
PLANTING PLAN

100% SUBMITTAL - FOR PERMITTING

50'
VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.

DATE	FEBRUARY 2016
PROJ	477186
DWG	10-C-901
SHEET	54 of 104

FILENAME: 10-C-901.dwg PLOT DATE: $PLOTDATE PLOT TIME: $PLOTTIME