8.4. DEWATERING THE NCA

8.4.1. Introduction

In the proposed project for any of the site alternatives, both the pressurized and the gravity portions of the NCA would need to be dewatered to make connections from the water treatment plant to the NCA. These connections would take several months and would take place in the fall and winter, 2009-2010. In addition to the connections, the Eastview Site alternative that would use the NCA for treated water conveyance requires extensive modification of the NCA so that it can convey pressurized water. This alternative would require that the NCA would remain un-watered for four to five years. The actual de-watering and re-watering operations would take less than 30 days, so despite the fact that the length of time the Aqueduct would remain un-watered varies between site alternatives, the actual dewatering activity is the same for all alternatives. It would take place twice a year (one dewatering and one-re-watering) for two years (2006-2007 and 2009-2010) for the Mosholu and Harlem River Site alternatives. Dewatering and re-watering would occur once for the Eastview Site with KCT alternative within 2006-2007. Dewatering would occur at the start of the pressurization alternative for the Eastview Site in 2011 and then re-watering would occur four years later after the work is done in 2015. The potential impacts of the construction at the shafts, other off-site locations, and in the NCA are discussed in Sections 8.1 through 8.3.

Under the existing conditions, the NCA is taken out of service in the fall and winter to avoid seasonal water quality problems in the source water. These shutdowns take place during the period of the year (generally mid-September through May) when demand by communities that rely on the NCA for water supply is below peak levels. During this off-peak period, alternative water sources are sufficient to meet the needs of these communities. These alternative sources would supply upstate water customers during the shutdowns required for the connection work.

The only alternative that would require longer shutdowns is if the NCA would be pressurized for the Eastview Site alternative. In this case upstate users would be supplied by alternate water supplies during the reconstruction of the NCA. These alternative sources of water supply are discussed in Section 5.16.3.1.1, Eastview, Infrastructure and Energy.

Preparing the NCA for dewatering and restoring it for use as a public drinking water supply after work has been completed, involves three basic procedures:

- Dewatering
- Reactivation
- Rewatering

These procedures have been developed by NYCDEP in concert with the New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH), and employed as part of the City's ongoing maintenance procedures. Procedures similar to those defined below have been used in most prior years to facilitate

inspections or other maintenance activity, and, where subject to regulation, have received permits and approvals.

8.4.2. Dewatering

The theoretical volume of water contained in the NCA, when running full, is currently approximately 185 million gallons. The NCA is normally taken off-line on an annual basis at the start of each off-peak period of the year (for a few weeks in late August or early September) as reduced off-peak flows might otherwise affect water quality. When normally taken off-line, the gravity flow section of the Aqueduct is allowed to drain and settle to the elevation of water in Jerome Park Reservoir (JPR) at the time. Full dewatering of the gravity flow section of the Aqueduct would drain a maximum of approximately 150 million gallons of water to the JPR. In order to dewater the NCA, valves are closed at Croton Lake Gate House (at New Croton Reservoir), and water contained in the NCA is released. The pressurized section of the Aqueduct also has been dewatered almost once a year for the past decade. Water from the pressurized section (maximum of approximately 35 million gallons) is released to the Harlem River at Shaft No. 25 in conformance with all procedures specified in the NYSDEC State Pollutant Discharge Elimination System (SPDES) permit (# NY 020 0859) issued to the NYCDEP originally in 1998, modified in 2000, and most recently renewed on April 30, 2003. The renewal extends the discharge permit for an additional 5 years, effective October 1, 2003 to October 1, 2008. The permit includes limits on discharge rate, chlorine residual concentrations, and point of discharge. Since dewatering is a required and routine maintenance activity, NYCDEP would continue to renew the permit for future maintenance and improvement actions.

For the proposed action, the North Basin of Jerome Park Reservoir would be completely drained together with the NCA. Draining Jerome Park Reservoir can take up to 30 days, depending on the water level in the reservoir prior to dewatering. The capacity of the North Basin of Jerome Park Reservoir is approximately 255 million gallons. Water from Jerome Park Reservoir would be released into the City's combined sewer system through a connection at Gate House No. 2; from there it is conveyed to the Wards Island Water Pollution Control Plant.

Dewatering the entire NCA when full can take up to five days. The water from the NCA that is released to the Harlem River at Shaft No. 25 is not normally required to be treated prior to being released because the quality of water at that point meets the standards of the SPDES permit without further treatment. For example, target chlorine levels for NCA water at Shaft No. 25 are in a range of 0.6 milligrams per liter (mg/L) to 1.2 mg/L, well below the 2.0 mg/L maximum allowed under the SPDES permit. (Chlorine levels at the point that water from the NCA enters the City's distribution system are below 1.0 mg/L.)

When the pressurized portion of the NCA has been dewatered in the past, the Shaft No. 25 blowoff has remained open to drain by gravity any ground water that has infiltrated the brick lining of that section of the Aqueduct, if necessary. However, for the proposed action, NYCDEP may also choose to pump any infiltrate water from the pressurized section of the Aqueduct to Shaft No. 26; from there it would be discharged to the combined sewer system.

Under the SPDES permit, NYSDEC has determined that compliance with the specified permit provisions would reasonably meet water quality objectives for the Harlem River, which is classified as a Class I surface water body under Title 6, Chapter X, Article 13 of the New York State Codes, Rules and Regulations (6 NYCRR 890.6). Under 6 NYCRR 701.13, Class I surface water bodies are best used for secondary contact recreation and fishing. All discharges authorized by the permit must be consistent with the terms and conditions of the permit. The permit further specifies recording, reporting, monitoring and sampling requirements, the characteristics of samples, and monitoring and analysis procedures (generally those promulgated pursuant to federal law 40 CFR Part 136).

The permit requires that NYSDEC, USEPA, Westchester County Department of Health (WCDOH) and New York City Department of Health and Mental Hygiene (NYCDOHMH) representatives be allowed to inspect facilities, monitoring and control equipment, and records, and perform their own sampling or monitoring to assure permit compliance or as otherwise authorized by the Clean Water Act or Environmental Conservation Law.

8.4.3. Reactivation

A multi-step process would be implemented as part of the proposed action to restore the NCA for use as a public drinking water supply at the end of the construction seasons. The process includes:

- **Removing all construction debris and materials** from the NCA resulting from making all new connections to the proposed water treatment plant. All debris and materials generated from work would be removed from the tunnel, shafts and appurtenant structures and disposed of legally offsite. All temporary ventilation ducting would also be removed.
- **Disinfection**. At the end of both construction seasons, the NCA would be disinfected prior to returning it to service. As the final stage of cleanup after removing construction debris and materials, a dilute chlorine solution would be sprayed onto all surfaces of the tunnel and shafts where any work was performed and that would be contacted by water upon re-watering.

The NYCDEP Reactivation Protocol for the Croton System[1] would then be followed to ensure that no significant impairments to the City water supply infrastructure occur as a result of the reactivation and re-watering process. The protocol involves the following steps:

- Pre-reactivation
- Phase I (purge/flush and disinfect the Aqueduct from Croton Lake Gate House (CLGH) to Shaft No. 25)
- Phase II (disinfect and flush the entire Aqueduct from CLGH to Shaft No. 33)
- Phase III (place the NCA back into full service)
- Phase IV (disinfect and refill Jerome Park Reservoir and place on-line)

[1] NYCDEP. September, 2001. Final Reactivation Protocol for the Croton System.

Pre-reactivation, Phase I, Phase II and Phase IV are described below; Phase III is described under Rewatering.

Pre-Reactivation. The pressurized portion of the NCA would be re-pressurized (by filling it with water), and a pre-flushing performed by flowing 1-3 millions gallons per day (MGD) of water through the pressurized-flow portion of the Aqueduct from Shaft No. 21 to a sewer discharge at Shaft No. 33. Notification would be made to NYSDOH, NYCDOHMH and NYSDEC, and water quality tests performed on the Shaft No. 33 discharge to monitor and characterize the water quality. Standard water quality tests would be conducted at the Croton Lake Gate House to determine optimum intake level and required disinfection dose rate at Croton Lake Gate House.

Throughout the entire Aqueduct reactivation and re-watering process, water quality in the Aqueduct would be monitored and profiled at several locations and analyses performed in accordance with the analytical matrix presented in Table 8.4-1 (NCA Reactivation Sampling Matrix) at the end of Section 8.4. The table indicates the frequency of sampling for the various sampling locations and the types of monitoring to be conducted through the phases of the reactivation.

Phase I. Disinfection of the NCA would occur in all areas where, upon re-watering, water contacts a lined structure, including the Aqueduct and the siphons under the Harlem River and Gould's Swamp, the Branch Aqueduct (the final section of gravity flow tunnel that connects Gate House No. 1 and Jerome Park Reservoir), and shafts. The estimated combined timeline for Phases I and II under the protocol is 17 days, but the actual time needed to complete the entire reactivation would be dependent upon water quality, analytical efficiencies, operational field conditions, and NYSDOH approval turnaround. During this time, Jerome Park Reservoir would remain off-line.

In Phase I, estimated to take 10 days, the Aqueduct would be disinfected from the Croton Lake Gate House to Shaft No. 25. During this phase, NYSDEC and NYSDOH would conduct a visual inspection of the Aqueduct from within the chamber at Shaft No. 14, and upon authorization from NYSDOH, the intake at the Croton Lake Gate House would be opened to initiate Aqueduct flow and to initiate the purge, with the Aqueduct flow gradually increased to 40 MGD. After a hold of 6 hours, chlorination would be turned on at Croton Lake Gate House, with an initial dose of 30 pounds per million gallons of water and a target free chlorine residual of 1.0 parts per million at Gate House No. 5. Aqueduct flow would then be increased to 90 MGD to commence the Aqueduct flush mode. When the water monitored at Gate House No. 5 is of acceptable drinking water quality, NYSDOH would be notified and NYSDOH authorization would be sought to activate Mosholu Pump Station. The water supplied from CLGH would then be discharged via the Shaft No. 25 blowoff (discharge valves), with grab (hand) sampling performed at that location in compliance with the NYSDEC SPDES permit. Additional samples would be collected and metals and microbiological analyses performed, along with field measurements for pH, temperature, conductivity, and chlorine. Water quality monitoring of total chlorine residual at the Shaft No. 25 blowoff would continue twice a day in order to ensure that effluent concentrations are within the maximum permissible limit of 2 mg/L.

The disinfected water in the Aqueduct that would be discharged via the Shaft No. 25 blowoff into the Harlem River would be dechlorinated (neutralized) by injection of a solution of sodium bisulfite ($NaHSO_3$). Adjustments to the sodium bisulfite feed rate, and to the discharge rate of the 48-inch butterfly valves, would be made to maintain the chlorine residual at or below the 2 mg/L specified by the NYSDEC requirements in the SPDES Permit. Samples would be taken continuously at the outlet pipe to the Harlem River. For dechlorination purposes, the flow through the 48-inch blowoff pipes would be restricted to a maximum of 48 MGD to maintain a minimum of 15 seconds reaction time between the chlorinated water and the sodium bisulfite. However, the actual flow rate through the Shaft No. 25 blowoff is normally significantly lower than this in order to minimize wave creation in the Harlem River. The actual flow rate used when the NCA was reactivated following the 1996 inspection was 30 MGD. If the chlorine content exceeds the maximum allowable by the NYSDEC, the flow rate at the Shaft No. 25 blowoff would be reduced to permit a longer reaction time. At a flow rate of 48 MGD through the 48-inch diameter blowoff pipes, the average discharge velocity would be approximately 3 ft./sec. if both of the twin pipes were used, or 6 ft./sec. if only one pipe were used.

Following two consecutive days of Shaft No. 25 discharge analytical results being of satisfactory drinking water quality, authorization would be sought from NYSDOH to commence Phase II.

Phase II. From days 11 through 16 of the process, Jerome Park Reservoir would remain off-line while the entire Aqueduct from the Croton Lake Gate House to Shaft No. 33 would be disinfected and flushed. Upon stabilization of total and free chlorine residual at Shaft No. 25, the Shaft No. 33 sewer discharge and Shaft No. 33 valve to Central Park Reservoir would be opened and the Shaft No. 25 blowoff adjusted to direct a portion of the flow into the southern portion of the Aqueduct (between Shaft No. 25 and Shaft No. 33). Monitoring would continue at Shaft No. 25 and Shaft No. 33 for physical chemistry, chlorine residual and organics, metals and microbiological parameters.

Following two consecutive days of Shaft No. 33 water analytical results being of satisfactory drinking water quality, authorization would be sought from NYSDOH to initiate Re-watering (Phase III). Disinfection of Jerome Park Reservoir is conducted after the re-watering process.

Re-watering (Phase III). Once the disinfection process is complete, the Phase III re-watering of the NCA would begin upon receipt of written authorization from NYSDOH to allow the NCA water supply to enter the distribution system. The Shaft No. 25 blowoff, Shaft No. 33 sewer discharge, and Shaft No. 33 valve to Central Park Reservoir would be closed, and water flow would be phased into the distribution system, with the flow rate adjusted at the Croton Lake Gate House to meet distribution system demand. The Dunwoodie fluoridation facility and corrosion control treatment (phosphate) at Gate House No. 5 would be activated, and normal operating protocols for the NCA would resume. These re-watering procedures would follow immediately, as early as day 17, following the combined 16-day Phases I and II process. However, expanded monitoring of organic compounds would be initiated and continued for the following two weeks at Shaft No. 26 and Shaft No. 33, where daily samples would be collected and data submitted for review by NYSDOH to determine whether the normal compliance monitoring schedule can be resumed. Upon receipt of authorization from NYSDOH, the normal monitoring schedule for NCA would be initiated during days 17-31 of the reactivation process.

Phase IV. Prior to commencing Phase IV, Jerome Park Reservoir would be cleaned and inspected by NYSDOH. At this point the re-watering preparations would be declared complete and normal operations would ensue. Then, gates at Jerome Park Reservoir would be opened to divert Aqueduct flow into the basins. The influent flow would be treated with a 50 mg/L applied chlorine dose rate, and the basins filled to elevation 112.5 feet (10 percent of reservoir volume). After holding at that basin elevation for 12 hours, the filling of the basins would resume to the target elevation of 130 feet, using an applied chlorine dose rate of 5 mg/L. Free chlorine residual within the basins would be monitored and chlorination adjusted to maintain a minimum free chlorine residual of 2 mg/L. Bacteriological samples would be collected, and upon determination of acceptable bacteriological results and written authorization from NYSODH, the basins would be placed on-line.

8.4.4. Potential Environmental Impacts of Dewatering

Subsequent to the dewatering, reactivation and re-watering activities described here, the NCA would be restored to its normal operating condition and would operate under the operating plans for the site alternatives. For the Eastview Site alternative with the KCT as the treated water conveyance, Jerome Park Reservoir would be maintained for emergency use and could receive emergency overflows of Croton raw water in case of an unanticipated shutdown of the raw water pumps. If the NCA is utilized to convey treated water from the Eastview Site Jerome Park Reservoir would be off-line and would be maintained for emergency use only. For the Mosholu and Harlem River Site Alternatives Jerome Park Reservoir would continue to function as it does under existing conditions as a raw water supply.

Dewatering would occur before, and re-watering would occur after each planned period of construction activity in the NCA. Despite the fact that the length of time the Aqueduct would remain un-watered varies between site alternatives because of different planned construction activities, the actual dewatering and re-watering activity is the same for all alternatives. It would take place twice a year (one dewatering and one-re-watering) for two years (2006-2007 and 2009-2010) for the Mosholu and Harlem River Site alternatives. Dewatering and re-watering would occur once for the Eastview with KCT alternative within 2006-2007. Dewatering would occur at the start of the pressurization alternative for the Eastview Site in 2011 and then re-watering would occur four years later after the work is done in 2015.

Existing NYCDEP personnel would perform the processes in compliance with NYCDEP operations procedures and programs. No new staff would be hired to conduct this work. There is no construction work required outside the NCA for this work, and all work would take place within existing infrastructure buildings. Parking is available for the fewer than ten workers required at locations where work is required. The environmental analyses summarized below describe only the dewatering, reactivation and re-watering activities that would occur prior to and following the work activities planned for the NCA as part of the Croton Project. As the dewatering, reactivation and re-watering processes are existing NYCDEP operation and maintenance requirements, no potential modifications or significant adverse impacts are anticipated as a result of the implementation of these procedures.

The dewatering, reactivation and re-watering activities are necessary to gain access to the Aqueduct in order to perform construction of new connections from the NCA to the proposed water treatment plant necessary for raw or treated water conveyance, depending on the site alternative. For the Eastview Site with Kensico-City Tunnel (KCT) alternative, the Mosholu Site, or the Harlem River Site this activity would take place for a month in 2009 and a month in 2010. For the Eastview Site with NCA alternative the dewatering would take place for a month in 2010 and the re-watering would occur for a month in 2015. The environmental analyses summarized below describe only the dewatering, reactivation and re-watering activities that would occur prior to and following necessary work in the NCA.

8.4.4.1. Land Use, Zoning, and Public Policy

As described above, the dewatering, reactivation and rewatering procedures are standard and have been implemented by NYCDEP during prior work. The NCA is an existing facility and use of NYCDEP's dewatering permit would not require modification to land use, zoning or public policy, as the work is completely within water supply infrastructure Therefore, no potential significant adverse impacts to land use, zoning, or public policy would occur as a result of the dewatering and reactivation process.

8.4.4.2. Neighborhood Character

The NCA is an existing facility and the implementation of standard NYCDEP operating procedures would not result in modifications to neighborhood character. No significant impacts from traffic or noise that could impact neighborhood character would occur.

8.4.4.3. Open Space

The dewatering, reactivation and rewatering of the NCA would have no effect on community open space. The work is completely within the water supply infrastructure and would not displace or alter an open space resource, nor would it increase local demand on open space. No impacts to open space resources would occur.

8.4.4.4. Socioeconomic Resources

Short-term increases in water supply costs for towns that utilize Croton water may occur during the period of the shutdowns as a result of the towns' need to shift to back up supplies and alternate connections. These shutdowns would occur in 2009-2010 for all the site alternatives except the Eastview Site alternative that would utilize the NCA for the conveyance of treated water. This alternative would require a shutdown between 2010 and 2015. The Town of New Castle, Village of Ossining, Village of Briarcliff Manor, Village of Sleepy Hollow, Village of Tarrytown, Village of Irvington, and United Water New Rochelle (which serves the City of New Rochelle and Villages of Pelham Manor, Pelham, Bronxville, Tuckahoe, Ardsley, Dobbs Ferry and Hastings) are served by the NCA as a source of drinking water. During the shutdowns, the towns would either need to utilize their connections to the Catskill or Delaware Aqueducts or they would utilize their connections to neighboring towns' supplies. A full description of the alternative supplies available to upstate users is provided in Section 5.16.3.1.1.

8.4.4.5. Community Facilities

The dewatering, reactivation and rewatering work is completely within the water supply infrastructure and would not displace or alter any community facility, nor would it result in an increased demand on community facilities. No potential significant impacts to community facilities are anticipated.

8.4.4.6. Archeological Resources

No ground disturbance is proposed during the dewatering, reactivation, and re-watering procedure. No impacts to archeological resources are anticipated as part of this activity.

8.4.4.7. Historic Resources

The Aqueduct, shafts and structures are eligible for listing on the National Register of Historic Places. Due to the eligible listing of the NCA and associated structures, NYCDEP would coordinate its plans for Aqueduct dewatering, reactivation and re-watering activities with the New York State Office of Parks, Recreation, and Historic Preservation (NYSOPRHP). No modifications to the NCA would be required for the dewatering, reactivation and re-watering activities, therefore significant impacts to historic resources would not occur from the proposed action. Although the dewatering, reactivation, and re-watering are not anticipated to result in adverse impacts to historic resources, potential significant adverse impacts from the actual pressurization of the NCA for the Eastview Site alternative with the NCA as the preferred means of treated water conveyance would occur and are discussed in Section 8.1.1.

8.4.4.8. Natural Resources

The dewatering and reactivation of the NCA would result in a short-term discharge to the Harlem River. The theoretical full volume of water in the entire NCA is approximately 185 million gallons; however only the volume of water contained in the pressurized Aqueduct, a

maximum of approximately 35 million gallons, would be released to the Harlem River during the dewatering process. The water contained in the gravity flow section of the Aqueduct, a theoretical maximum of 150 million gallons, would be released to Jerome Park Reservoir, and thereafter released to the City combined sewer system via Gate House No. 2, during the dewatering process. The release of water to the Harlem River at Shaft No. 25 would be undertaken in conformance with all procedures specified in the NYSDEC SPDES permit (# NY 020 0859). The North Basin of Jerome Park Reservoir would also be dewatered as part of this action.

The water that is released to the Harlem River at Shaft No. 25 pursuant to the dewatering procedure would be of drinking water quality, within all limits of the SPDES permit, and would not be treated prior to being released. From previous experience, it is anticipated that the water from the pressurized section of the Aqueduct that would be released to the river during dewatering would be discharged at a maximum rate of 48 MGD, well below the 60 million gallons per day rate allowed by the SPDES permit. At a flow rate of 48 MGD through the 48-inch diameter blowoff pipes, the velocity of water released at the discharge would be approximately 3 ft./sec. if both of the twin pipes were used, or 6 ft./sec. if only one pipe were used. In issuing a SPDES permit, the NYSDEC makes a determination "on the basis of submitted application, plans, or other available information, that compliance with the specified permit provisions will reasonably protect classified water use and assure compliance with applicable water quality standards."

Following each construction season, the NCA would be disinfected prior to being re-watered following the protocol described earlier in Section 8.4.3. During Phase I of the reactivation, water from the gravity flow section of the Aqueduct would be treated with chlorine as part of the disinfection process, and then dosed with sodium bisulfite (dechlorinated), prior to discharge to the Harlem River in order to maintain an acceptable chlorine residual (less than 2 mg/L) in accordance with the SPDES permit. Sodium bisulfite is commonly used for dechlorination to attain chlorine residual levels that would not impact water quality, consistent with the SPDES permit. In issuing a SPDES permit, the NYSDEC made a determination "on the basis of submitted application, plans, or other available information, that compliance with the specified permit provisions will reasonably protect classified water use and assure compliance with applicable water quality standards." SPDES permit #NY 020 0859 allows a maximum of 60 MGD from the Shaft No. 25 blowoff to the Harlem River. This permit would be renewed and any future requirements of NYCDEC would be implemented to protect natural resources. No other natural resource would be affected by these procedures.

8.4.4.9. Hazardous Materials

The dewatering, reactivation and re-watering process would be confined to within the Aqueduct structure. Chemicals utilized during the reactivation process would be contained, stored, and transported by the contractor in compliance with all applicable federal, state, and local regulations. A Health and Safety Plan (HASP) would be implemented by the contractor to protect worker safety and public health, and a plan would be implemented to establish procedures to be followed in the event of a spill. Chlorine and sodium bisulfite would be transported by proprietary bulk tankers directly from the chemical suppliers in accordance with

standard OSHA regulations for the handling of chemicals. Therefore, no significant adverse hazardous materials impacts would occur as a result of the proposed project.

8.4.4.10. Coastal Zone Management (Waterfront Revitalization)

Although some portions of the 110-year-old NCA are within the coastal zone as defined by Coastal Zone Management Plans accepted for New York State, the NCA is below grade, and not in conflict with coastal zone policies. The dewatering, reactivation and rewatering procedures for the tunnel work would be completely within the water supply infrastructure, with no detectable evidence of this work at the surface. The procedures would result in a short-term discharge to the Harlem River at the commencement and end of each of the construction seasons as described above. The NYSDEC has reviewed and approved the NYCDEP monitoring and testing procedures for assuring that the water released to the Harlem River at the approved location meets federal and state standards through the issuance of the above referenced SPDES permit. NYCDEP would meet the requirements of this permit. Significant conflicts with coastal zone policies related to water quality are not anticipated to occur as a result of the proposed action.

8.4.4.11. Infrastructure

NYCDEP has shut down the Croton system seasonally during most years in the recent past. The proposed action is consistent with NYCDEP practice for interrupting service of the Aqueduct.

NYCDEP has been in communication with the towns that connect to the NCA. The Town of New Castle, Village of Ossining, Village of Briarcliff Manor, Village of Sleepy Hollow, Village of Tarrytown, Village of Irvington, and United Water New Rochelle (which serves the City of New Rochelle and Villages of Pelham Manor, Pelham, Bronxville, Tuckahoe, Ardsley, Dobbs Ferry and Hastings) are served by the NCA as a source of drinking water. The only users who could possibly be affected by the shutdowns are the Village of Briarcliff Manor and United Water New Rochelle (UWNR).

The Village of Briarcliff Manor relies primarily on the NCA to meet its water supply needs, though it has several secondary and emergency connections to other sources that can assist in meeting demand. During the peak demand period, however, of June through early September, demand in those other communities is great enough that Briarcliff Manor is unable to draw meaningful amounts of water from its backup connections. When the NCA is scheduled to be out of service for more than several hours during such a peak demand period, NYCDEP can place a temporary impoundment in the Aqueduct at Shaft No. 9, just downstream of Briarcliff Manor's connection (to prevent flow further down the NCA) in order to provide the village with water.

UWNR has connections to both the NCA and the Catskill Aqueduct. When the NCA is out of service, UWNR relies on its Catskill connection for water supply. In the event that the Catskill Aqueduct is also out of service at the same time as the NCA, water would be back-fed up the

Catskill Aqueduct from Hillview Reservoir. Therefore, UWNR would not be adversely affected by the shutdowns.

The dewatering, reactivation and re-watering would not increase demands on local infrastructure, as they are not associated with a substantial increase in water intensive uses or demand. Therefore, no significant adverse impacts are anticipated as a result of the proposed activities

8.4.4.12. Energy

The energy demand of the dewatering, rewatering and reactivation projects is negligible and would not result in a significant adverse impact to regional energy suppliers.

8.4.4.13. Traffic and Parking

No significant increase in the number of vehicle trips is anticipated as part of dewatering, reactivation and rewatering of the Aqueduct. Contractor employee and NYCDEP engineer and supervisor vehicle trips would be anticipated during the disinfection spraying of the tunnel surface following removal of construction materials and debris and would represent the reasonable worst-case trip generation. During this period, these are conservatively estimated to be a maximum of 25 daily vehicle trips at any one time. The trips would be distributed spatially along the NCA and temporally as disinfection is scheduled to occur once when the NCA pressurization is complete in 2015. Accordingly, a detailed analysis of potential traffic impacts for this activity is not warranted and no potential significant adverse impacts are anticipated.

8.4.4.13.1. Transit and Pedestrians

The work is completely within the water supply infrastructure and would not directly affect transit or pedestrian infrastructure. There would be negligible additional demand on transit or pedestrian facilities (if any) associated with these activities. No potential significant adverse impacts to area transit facilities or pedestrian movement would occur as a result of the dewatering, reactivation and rewatering of the Aqueduct.

8.4.4.14. Air Quality

8.4.4.14.1. Mobile Source Analysis

As described above, no significant increase in vehicle trips is anticipated as a result of the dewatering, reactivation and rewatering activities. Therefore, a detailed analysis of the potential effects from mobile sources on air quality is not warranted and no potential significant adverse impacts are anticipated.

8.4.4.14.2. Stationary Source Analysis

Procedures for handling and applying disinfection materials are prescribed by NYCDEP. During the disinfection spraying following removal of construction materials and debris, disinfection procedures would be conducted in accordance with a Health and Safety Plan

(HASP) in order to protect worker safety. No potential significant impacts are anticipated as a result of these activities.

8.4.4.15. Noise

The dewatering, reactivation and rewatering of the Aqueduct would be undertaken completely within the water supply infrastructure and would not be perceptible at the surface at noise-sensitive receptors that encroach on the tunnel alignment. No potential significant adverse noise impacts are anticipated.

8.4.4.16. Public Health

The dewatering, reactivation and re-watering of the NCA would be completed in coordination with NYSDOH. A principal concern would be disinfection of the NCA prior to its being brought back into service. NYCDEP is committed to providing safe and clean drinking water to NYC residents and upstate communities that rely on the NYC water supply system. NYCDEP would implement all required procedures to continue to ensure the safety of the water in the system. The procedures to be applied are standard and have been successfully implemented by NYCDEP in the past, when the NCA needed to be taken out of service. This activity has been permitted by NYSDEC, and does not represent a departure from standard NYCDEP policy.

As described in subsection 8.4.5.6, Infrastructure, above, and Section 5.16.3.1.1, Eastview Site, Infrastructure and Energy, local communities would have access to other sources of drinking water during the off-peak periods when the NCA would be taken out of service under the proposed action. Work would be monitored, and water quality testing performed to ensure the potability of the Croton water as part of the reactivation of the Aqueduct. The entire Croton Project is intended to improve and safeguard the public water supply. Significant adverse impacts to the public health are not anticipated to occur as a result of the proposed action.