

TECHNICAL MEMORANDUM

Summary of Potential Impacts from the Updated Proposed Work on the Riser Shafts and SMC under CRO-313

Croton Water Treatment Plant Project



**New York City
Department of Environmental Protection**

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1.0 Introduction

Since the publication of the Croton Water Treatment Plant (WTP) Final Supplemental Environmental Impact Statement (FSEIS) (City Environmental Quality Review ("CEQR") No.98DEP027), the New York City Department of Environmental Protection (NYCDEP) has updated the design and construction plans for activities proposed under Contract CRO-313 for the Shafts and Meter Chamber (SMC) in the Jerome Park Reservoir / Harris Park Annex site ("Site"). CRO-313 is the contract to construct, in part, riser shafts and a portion of the SMC footprint adjacent to the Jerome Park Reservoir ("JPR" or "Reservoir") in order to enable connections from the Croton WTP to be made to the water distribution system just east of JPR. The design and construction changes described in this Technical Memorandum have been proposed based on information and technology that were previously not available in order to minimize project-related impacts to the area surrounding the Reservoir, reduce project costs, and to meet design and regulatory requirements. Also, it is critical that the excavation work for the shafts and a portion of the SMC footprint be initiated as soon as possible to ensure that the riser shafts are completed and available to convey treated water from the Croton WTP to the City's water distribution system when the WTP commences operation by October 31, 2011 in accordance with the final federal consent decree.

This Technical Memorandum provides a summary of the analyses of potential impacts associated with the proposed work under CRO-313 related to the construction of the riser shafts and a portion of the SMC. This Technical Memorandum assesses whether these changes would alter the construction impact analyses and conclusions disclosed for the JPR area in the FSEIS. The environmental impact categories that could potentially exhibit results diverging from those presented in the FSEIS were noise, traffic, and air quality. The following is a summary of our analysis.

2.0 Summary of Potential Environmental Impacts

2.1 Noise

Both the potential mobile source noise, resulting from the proposed worker and truck trips, and noise from stationary sources - equipment that would be used during the proposed construction - were assessed.

Mobile: The proposed construction work is estimated to generate a maximum of 8 truck trips and 5 worker trips during the peak hour. The route for these trips would be along Van Cortlandt Avenue West, Sedgwick Ave and Goulden Avenue, all of which are also bus routes. As prescribed by the *CEQR Technical Manual*, the passenger car equivalent ("PCE") screen would be passed, as the PCEs of the proposed work would not double the existing PCEs of these roadways. Therefore, and consistent with the FSEIS, the proposed construction work would not result in significant increase in traffic noise levels, and a detailed traffic noise analysis was not necessary.

Stationary: Newer, more accurate details about the proposed construction that were not available for analysis in the FSEIS were identified. These details include an updated construction equipment list, the recently enacted New York City Construction Noise Rules ("CNR"), and the inclusion of a 20-foot high noise barrier. The noise levels from the proposed construction work were revised to reflect the updated equipment list and allowable noise levels from the CNR for

the various construction equipment. The noise analysis was completed for the nearest receptor S1, the Bronx High School of Science (Figure 1). All other sensitive receptors would experience lower noise levels from the proposed construction. The results of this analysis, and notes regarding methodology of the analysis, are presented in Table 1 and Table 1a, which represent activities during the peak construction for the proposed work, which is the mechanical rock excavation.

Without noise attenuation (i.e., the noise barrier), resulting increase in noise levels projected for mechanical excavation would be 15.1 dBA, which is higher than the 7.6 dBA increase presented in the FSEIS at S1. The projected noise levels, due to their short-term nature, would be considered temporary and not significant as projected in the FSEIS. In addition, the noise barrier at the construction site would reduce the noise by at least 10 dBA to account for the 20-foot high noise barrier¹. These resulting noise levels are consistent with the values projected in the FSEIS.

2.2 Traffic

The proposed construction work would result in a lower number of on-site workers than the reported in the FSEIS (15 workers vs. 21 workers). To determine the number of worker vehicles for the proposed construction, the same methodology was used as for the FSEIS. In summary, a vehicle occupancy ratio of 1.2 was applied and it was assumed that 34% of the total workers would utilize passenger vehicles. Additionally, it was assumed 8.6% of workers would carpool. These calculations yielded approximately 5 workers during the construction traffic peak hour for both the FSEIS and the updated design (Table 2).²

Under the updated design, there would be 8 truck trips during the construction traffic peak hour, which is an increase from the 5 truck trips projected in the FSEIS (Table 2). Construction trucks would most likely arrive to the site from the north and follow a route that was analyzed in the FSEIS. The NYCDOT approved truck route, to and from the site, would be between the Major Deegan Expressway via the Van Cortlandt Park South exit/entrance, the Van Cortlandt Avenue West/Sedgwick Avenue corridor and Goulden Avenue (Figure 1).

The total number of automobile and truck trips during the construction traffic peak hour would be comparable to those reported in the FSEIS. Similar to the FSEIS, the small numbers of total project-induced traffic would not significantly impact traffic or adversely affect any intersections. A detailed traffic analysis was not prepared because the low induced traffic volumes were beneath traffic impact thresholds (50 vehicular trips) provided in the *CEQR Technical Manual*.

¹ The estimated 20-foot high noise barrier could effectively reduce the construction noise level by 16 dBA. The analysis conservatively assumed only a 10 dBA reduction, which is typical of a 10-foot high noise barrier.

² The daily volumes reported in the FSEIS are equivalent to hourly volumes, as workers all arrive in the morning and leaving at the end of the shift.

2.3 Air Quality

As described in the FSEIS, no significant adverse impacts related to air quality were anticipated at the Site as a result of the proposed construction. The FSEIS noted that the construction at the Site would result in the emission of air pollutants, principally from equipment such as a crane, backhoe/loader, and delivery trucks. The FSEIS also concluded that project-related emissions of particulate matter (PM), both from fugitive dust and mobile sources (i.e., construction traffic), would not be significant.

Although an updated and more substantial equipment list is now envisioned for the proposed construction, the proposed work would comply with the Local Law 77 (LL77) which requires the use of ultra low sulfur diesel (ULSD) fuel and best available technology (BAT) to control particulate emissions. For comparative purposes, the results of the emission study conducted at the Croton WTP site were reviewed. This emissions study shows that with the implementation of LL77, the emissions from the diesel exhausts were reduced by over 90%. In addition, the fugitive emissions were controlled with paved roads and spraying water on affected surfaces.

Given that these same practices would be implemented for the proposed construction, and that the scale of the proposed work is significantly smaller than that at the WTP site, the conclusion presented in the FSEIS remains that a significant air quality impact is not anticipated and a detailed analysis is not warranted.

3.0 Conclusion

In conclusion, despite the updated design and construction changes associated with the proposed work assessed herein, the analyses that were completed for potential noise, traffic, and air quality impacts demonstrated that the environmental impacts would be consistent with those identified in the FSEIS; no significant environmental impacts are anticipated.

Table 1. Stationary Noise Levels Comparison (DRAFT)

| Sensitive Receptor (4) | Future Without the Project Noise Level (5) | FSEIS (1) | | Updated Proposed Construction (2) | | | |
|------------------------------|--|-----------------------------------|--|---|---|---|---|
| | | Total Peak Noise Level (Leq, dBA) | Maximum Increment during Peak (Leq, dBA) | Without Noise Attenuation | | With Noise Attenuation | |
| | | | | Total Peak Rock Excavation Noise Level (Leq, dBA) | Maximum Increment During Rock Excavation (Leq, dBA) | Total Peak Rock Excavation Noise Level (Leq, dBA) | Maximum Increment During Rock Excavation (Leq, dBA) |
| Bronx High School of Science | 63 | 70.6 | 7.6 | 78.1 | 15.1 | 68.1 | 5.1 |

(1) Data presented in the FSEIS for work in the vicinity of Jerome Park Reservoir related to construction of shafts, shaft chamber and meter chambers proposed at the time of publication (June, 2004); FSEIS did not analyze data associated with rock or soil excavation. Calculations in the FSEIS do not include potential noise reduction due to noise attenuation.

(2) Encompasses projected noise levels associated with the updated design of the work proposed to take place in the vicinity of Jerome Park Reservoir at the SMC as explained in the August 2008 Technical Memorandum. Includes noise generated by updated equipment list since the FSEIS, presented in Table 1a, plus the logarithmic addition of the background noise level in (5). The on-site noise barrier currently in place is anticipated to provide at least 10 dBA (Leq) of noise reduction. Noise levels without attenuation are presented for comparative purposes only.

(3) Encompasses projected noise levels associated with the updated design of the work proposed to take place in the vicinity of Jerome Park Reservoir. Includes noise generated by updated equipment list since the FSEIS, presented in Table 1b, plus the logarithmic addition of the background noise level in (5). The on-site noise barrier currently in place is anticipated to provide at least 10 dBA (Leq) of noise reduction. Noise levels without attenuation are presented for comparative purposes only.

(4) See Figure 1. Selected for analysis, as this receptor is the closest in proximity (approx. 200 feet away) relative to the proposed work. Noise levels at all other receptors would be lower.

(5) Background noise level at Bronx High School of Science. Applies to FSEIS, mechanical, and blasting rock excavation scenarios.

Table 1a. Projected Stationary Noise Data for the Updated Proposed Construction (DRAFT)

| Equipment Type (1) | Equipment Count (2) | Noise Level of Equipment at 50 feet (dBA) (3) | Horizontal Distance to Receptor (feet) (4) | Equipment Usage Factor (5) |
|------------------------------|---------------------------|--|--|----------------------------------|
| Crane | 1.0 | 85 | 200 | 0.16 |
| Backhoe | 1.0 | 80 | 200 | 0.4 |
| Front end Loader | 1.0 | 80 | 200 | 0.4 |
| Pickup Trucks | 2.0 | 55 | 200 | 0.4 |
| Rock Drills | 4.0 | 85 | 200 | 0.2 |
| Air compressor | 4.0 | 80 | 200 | 0.4 |
| Hoe Rams | 2.0 | 90 | 200 | 0.2 |
| Dump truck | 1.0 | 84 | 200 | 0.4 |
| Total Equipment Count | 16.0 | | | |

- (1) Equipment list is a reasonable estimate of what is anticipated to be used during mechanical rock excavation scenario.
- (2) Equipment count is a reasonable estimate of what is anticipated to be used during mechanical rock excavation scenario.
- (3) From New York City Noise Code
- (4) Distance from center of construction activities at the SMC to the nearest noise receptor (Bronx High School of Science)
- (5) From New York City Noise Code

Table 2. Peak Construction Hour Traffic Comparison (DRAFT)

| FSEIS (1) | | Updated Design (2) | |
|---------------------|-----------------|---------------------|-----------------|
| Worker Vehicles (3) | Truck Trips (4) | Worker Vehicles (5) | Truck Trips (6) |
| 5 | 5 | 4 | 8 |

(1) Data presented in the FSEIS for work in the vicinity of Jerome Park Reservoir related to construction of shafts, shaft chamber and meter chambers proposed at the time of publication of the FSEIS (June, 2004)

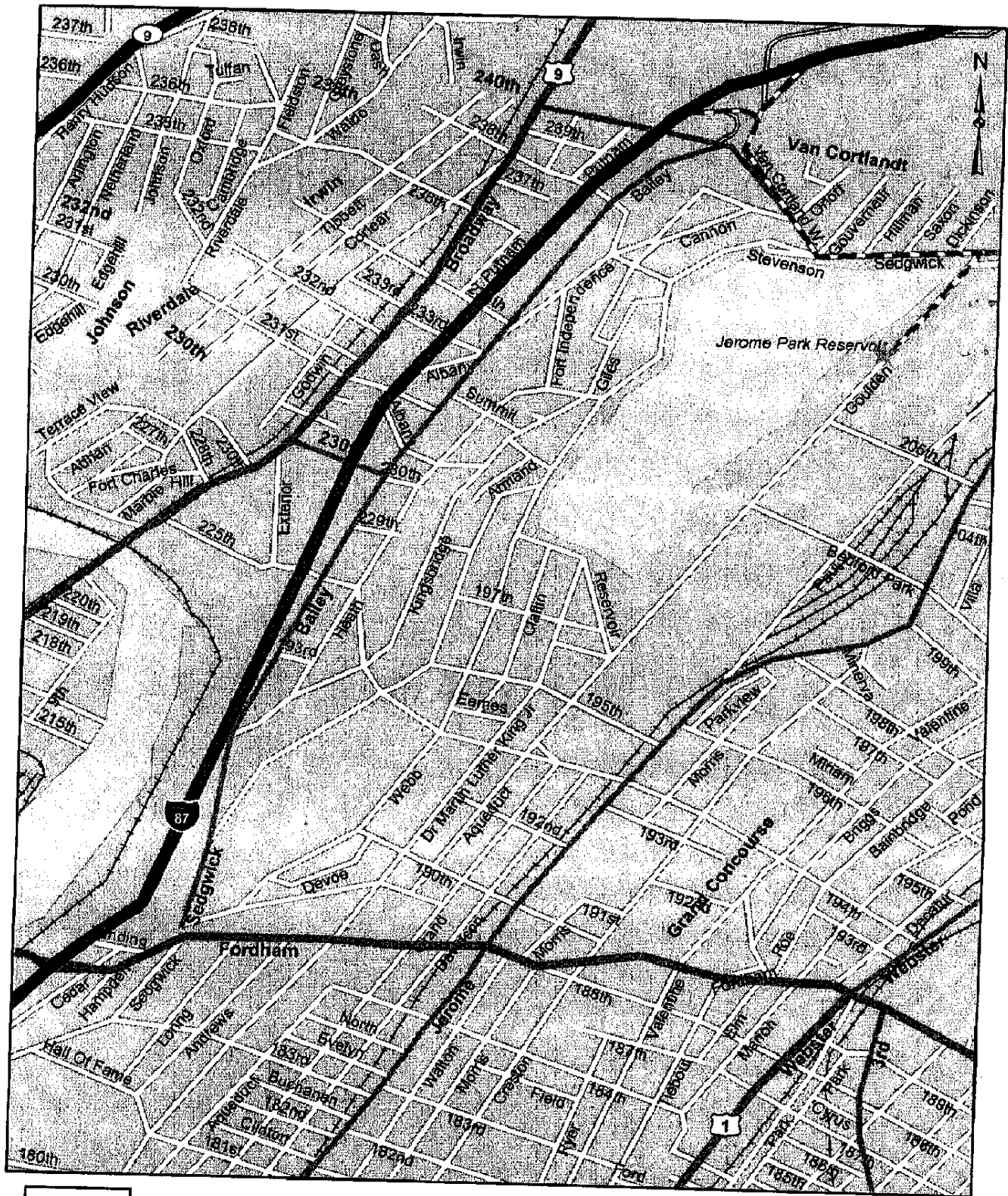
(2) Encompasses projected traffic associated with the updated design of the work proposed to take place in the vicinity of Jerome Park Reservoir at the SMC as described in the August 2008 Technical Memorandum.

(3) Of the 21 workers estimated, it was assumed a percent of the 21 workers would arrive by private vehicle, and a percentage of those workers would carpool.





(4) Total number of delivery trucks per day projected at the time of FSEIS publication. All material was assumed to be removed via the tunnels at the Moshulu site.

(5) 15 workers total are anticipated for the proposed work in the vicinity of the Jerome Park Reservoir. Used the same methodology as in (3) based on the updated design of work at the SMC in the vicinity of Jerome Park Reservoir as presented in the August 2008 Technical Memorandum. The hourly basis is comparative to the daily basis presented in the FSEIS, as the worker vehicles are arrive and depart within the peak work hours for both analyses.

(6) The total number of truck trips increased due to the greater amount of material that will be removed under the updated design at the SMC. Unlike the FSEIS, truck trips were conservatively analyzed as arriving and departing within the hour.



LEGEND

-  Croton Final SEIS Route
-  Expressway
-  Local Truck Routes
-  Water

**Jerome Park Reservoir
Proposed Truck Route Map**

Figure 2