EVALUATION OF CONSTRUCTION AIR QUALITY AND NOISE COMMITMENTS AND MITIGATIONS AT ATLANTIC YARDS, BROOKLYN, NY

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EXECUTIVE SUMMARY AND RECOMMENDATIONS

The construction mitigation measures prepared for the Atlantic Yards project were intended to be state of the art. They incorporated the use of equipment that was quieter than required by the noise code, use of barriers to protect nearby residents, reasonable use of extended hours, restrictions on parking, use of designated truck routes, air quality monitoring, careful scheduling of truck deliveries, and an on-site environmental monitor. FCRC committed to them in the Amended Memorandum of Environmental Commitment (MEC).

Despite FCRC’s good intentions, however, there are continual violations and difficulty with enforcement. The construction mitigation measures can be considered a failure for numerous citizens who have experienced extremely loud noise, consecutive sleepless nights due to 24/7 construction activities, clouds of fugitive dust, vibration damage, and other impacts. The problem is not just that FCRC contractors are failing to follow various mitigation measures, but that they are getting away with it. Some of this is due to politics because FCRC’s focus has been on finishing the arena by the September deadline, not on conducting construction operations in a manner that minimizes disruption to residents.

Another part of the problem is that state and city agencies have apparently been overwhelmed with the volume and frequency of complaints about construction and/or did not have adequate means of handling them. In addition, the consequences of failing to abide by the MEC are few. Individual workers may be ticketed, or a contractor may lose time and money pending replacement of equipment that does not comply with regulations, but no penalties accrue to those in higher positions of responsibility. And finally, the MEC and the projections on which it was based need to be updated and revised, particularly in light of a 25-year construction period.

Even if FCRC and ESDC claim that most of the workers and drivers are following the MEC most of the time, the sheer size of the construction effort means that even a small percentage of violations can add up to a large number incidents and citizen complaints. After enduring construction impacts for the past four years, and now facing another 21 years of construction, local citizens have become hypersensitive to every observed infraction.

The problems can be grouped into the following categories.

Mitigation protocols in the MEC are insufficient

- Too few air quality monitors are deployed to identify incidents and locations of high particulates.
- Meteorology equipment has longer averaging period than PM$_{10}$ monitors.
- PM$_{10}$ monitoring system is not state of the art.
- No provisions for monitoring PM$_{2.5}$.
- Construction parking demand underestimated and parking spaces overestimated.
- Geographic areas subject to significant noise impacts underestimated.
- OITC rating of double-glazed windows may not be sufficient for high levels of construction noise.
- Air quality monitoring and other oversight during extended hours is absent.
- Construction Mitigation Plans have not been automatically updated as local regulations have been improved.
Workers fail to follow mitigation protocols
- Trucks use non-approved routes.
- Wetting of surfaces is inconsistent.
- Coverage of storage piles is inconsistent.
- Coverage of loose material in trucks is inconsistent.
- Noisy equipment is placed at property lines without shielding.

City agencies have not enforced regulations
- Trucks idle for more than 3 minutes.
- Trucks and construction equipment use non-approved routes.
- Truck drivers and workers ignore parking regulations.

State and city agencies and developer communications and responses to complaints inadequate
- FCRC construction coordinator/community liaison role is underutilized.
- ESDC community liaison position has been vacant for over a year.
- Responses to inspect damage slow or absent.
- NYPD overwhelmed with the problem of frequent illegal parking.
- FCRC’s OEM (on-site environmental monitor) function is understaffed.
- ESDC’s on-site environmental monitor function is understaffed and visits are too predictable.
- City and State agencies approve extended construction hours without fully understanding the severe impacts on nearby residents (e.g., use of a hoe ram late at night).
- Quarterly reports and other information are not available on-line.
- MTA is not included in oversight protocols for LIRR property.

Implementation and enforcement of mitigation measures by management has been lax
- Equipment that does not meet air quality specifications permitted to remain for months pending replacements that can comply with specifications.
- Notification to ConEd regarding electrical grid should have occurred sooner.

Penalties for failure to follow MEC are largely absent
- Drivers can be dismissed under Two Strike policy.
- Contractors may not be compensated for lost time when forced to mitigate violations of MEC.
- Otherwise, MEC violations do not cause penalties for FCRC or ESDC.

Significantly more night-time construction has occurred in order to complete the arena
- Ambitious construction schedule is so vulnerable to contingencies that extended construction hours have become the norm rather than the exception.
- Confusion over which work is on the critical path leads to unnecessary extended hours.

Severity of construction impacts over 25-year period not known
- New NAAQS for 1-hour NO₂ and SO₂ established after FEIS.
• CEQR Technical Manual protocols updated in 2010 and 2012 and additional updates anticipated for future.
• Greenhouse gas (GHG) analysis, which is now required by CEQR Technical Manual, should be applied to the 25-year construction period.
• Construction worker parking during arena events needs to be reevaluated, especially given the reduction in planned parking spaces.

The recommendations can be grouped into the following categories:

Environmental oversight and community relations measures that were committed to, but are not being implemented

• Position of Independent Compliance Monitor (ICM) required by Community Benefit Agreement (CBA) should be filled. Filling this position as mandated by the CBA would provide citizen groups with leverage in requiring better implementation of the construction mitigation measures in the MEC.
• Position of ESDC community relations liaison, which has been vacant for over a year, should be filled. Filling this position would a direct line between ESDC and citizen representatives and elected officials and would alleviate the difficulties of presenting community issues at the District Cabinet meetings.
• Interagency Task Force announced by ESDC in May of 2007 should be formed and meet monthly, and include representation from local elected officials.

Additional mitigation measures to be implemented and/or considered

• More effective implementation, inspection and enforcement for completion of future construction must be addressed in an SEIS.
• A schedule for scoping and conducting the SEIS needs to be established.
• Existing and past construction problems must be addressed in detail in the SEIS and solutions developed.
• Any construction activities not directly tied to the opening of the arena (if they exist) should be limited to normal M-F daytime construction periods.
• Quarterly HDR Reports must be issued more quickly to identify problems and remedies more quickly.
• State and City agencies with enforcement responsibilities, the contractor, HDR and any other inspectors, and local elected officials should review and agree to improved enforcement practices.
• Other specific mitigation measures as noted in the sections of this report.
INTRODUCTION

Scope and Purpose of Study

The Empire State Development Corporation (ESDC) and the City of New York, in cooperation with affiliates of the Forest City Ratner Companies (FCRC), including Atlantic Yards Development Company, LLC and Brooklyn Arena, LLC (the project sponsors), and the Metropolitan Transportation Authority (MTA), approved a master plan in 2006 to develop a major transit-oriented development in the Atlantic Terminal area of Brooklyn. Construction has been underway since 2010.

Atlantic Yards Watch (AYW) was developed as a community-based initiative to protect the health and livability of neighborhoods impacted by Atlantic Yards and the Barclays Center during the construction period. Launched in September 2010, it is the product of three civic groups: the Boerum Hill Association, the Prospect Heights Neighborhood Development Council (PHNDC), and the Park Slope Civic Council. Despite the construction mitigation plans, AYW has documented numerous incidents of apparent failure to abide by the agreed-upon mitigation measures for air quality and noise impacts. It has maintained a website since 2011 that provides incident reports documenting violations of the construction mitigation measures, including photos and videos.

The purpose of this document is to describe the proposed mitigation measures for air quality and noise during the construction period, discuss shortcomings identified from community input, recommend further oversight activities, and recommend measures to be included in an expected supplemental environmental impact statement (SEIS) scope of analysis under the State Environmental Quality Review Act (SEQRA) and the City Environmental Quality Review (CEQR) environmental process. The community desires additional information to assist them with oversight and evaluation of the ongoing construction activities. In addition, the information in this document may assist the community in reviewing the draft scope of analysis for an SEIS, which ESDC is expected to prepare in 2012. In identifying construction issues, this document focuses on those that have been the subject of numerous citizen complaints, not on occasional isolated incidents or issues that have been largely rectified.

The information used in preparing this study include the quarterly Mitigation Monitoring reports prepared by Henningson, Durham & Richardson Architecture and Engineering, P.C. (HDR) for 2009 through October 2011, the 2006 FEIS, incident reports on the AYW website, the Community Air Quality Monitoring Plan (CAMP), the Community Air Quality Monitoring (CAQM) Compliance Plan, the Amended Memorandum of Environmental Commitments, Chapter 17 of the 2006 FEIS, the Community Noise Compliance Plan, and other documents shown in the References section. The HDR reports are typically available three months after the end of the quarter, and none for 2012 were available when this document was in preparation.

Interviews with individual citizens or representatives of contractor or government agencies were not included in the scope of work. However, that would be a logical next step in refining the report and developing solutions.
Atlantic Yards Development History

Proposed Action

The proposed project would occupy about 22 acres bounded by Flatbush and 4th Avenues to the west, Vanderbilt Avenue to the east, Atlantic Avenue to the north, and Dean and Pacific Streets to the south. The site was originally occupied by generally low-rise buildings of one to six stories along with vacant land and the rail yard. Figure 1 shows the project location.

Figure 1
Project Location

Source: Google Maps and Sandstone Environmental Associates, Inc.

Under the proposed action, all site structures with the exception of the rail yard would be demolished, and some street segments would be closed: 5th Avenue between Atlantic and Flatbush Avenues, Pacific Street from Flatbush to 6th Avenues, and Pacific Street from Carlton to Vanderbilt Avenues. Specific components of the approved project include:
• a state-of-the-art arena,
• affordable and market-rate housing,
• first-class office space,
• publicly accessible open space,
• local and retail community services,
• a hotel,
• a new subway entrance at the corner of Atlantic and Flatbush Avenues, and
• an improved Long Island Rail Road rail yard.

The arena would be 150 feet high, and the other buildings would range in height from 184 to 620 feet.

**Phase 1.** Two firms are responsible for construction: Hunt Construction Group as the arena general contractor, and The McKissack Group as the LIRR yard general contractor. As originally planned, construction would begin on the western end of the project site and move eastward. All existing buildings in the project footprint would be demolished. Construction during Phase I would focus on the area west of 6th Avenue on Blocks 927, 1118, 1119, and 1127. It would include the arena, new streets and sidewalks, Buildings 1 through 4, and the building on Site 5. On the eastern side, Phase I construction would include relocation of the LIRR tracks within Vanderbilt Yard, construction of the mat foundations for future buildings, demolition and replacement of the Carlton Avenue Bridge, and provision of temporary parking and staging areas.

**Phase 2.** Phase two construction would occur on the eastern end of the project site. It would include 11 buildings, open space, rail yard improvements, construction staging, and interim parking at the eastern end on Blocks 1120, 1121, 1128, and 1129.

**Project Time Line**

The project’s FEIS under the State Environmental Quality Review Act (SEQRA) and the City Environmental Quality Review (CEQR) environmental process was approved in November 2006. It includes a description of construction phasing, potential construction impacts, and planned mitigation measures. A community air monitoring plan was prepared on February 7, 2007. A noise control plan was also developed. ESDC was the lead agency.

Originally, construction was scheduled for a 10-year period. However, in 2009, ESDC and FCRC agreed to changes to the project that have the effect of allowing construction to extend up to 25 years. ESDC approved a Modified General Project Plan (MGPP) in September 2009 reflecting the changes agreed upon with FCRC. The agency also prepared an Amended Memorandum of Environmental Commitments on December 21, 2009. ESDC’s approval of the 2009 MGPP without a Supplemental Environmental Impact Statement (SEIS) was justified publicly by the agency’s claim that the project construction schedule had not been changed. The fast approval enabled FCRC to meet a critical deadline for financing the arena with tax-exempt bonds. However, citizen groups, concerned that the true effect of the 2009 MGPP would be to extend project construction from 10 to 25 years, filed suit in November 2009 seeking an SEIS to address the impacts of the schedule change. A New York State Supreme Court initially ruled in favor of ESDC and FCRC in March 2010. Contractors broke ground in March 2010, already several years later than originally planned.
Subsequent release of FCRC’s master development agreement (MDA) with ESDC showed that it did not in fact contain remedies that would guarantee a 10-year construction period, but instead allowed a 25-year build out. BrooklynSpeaks and other citizen groups successfully fought to have the case reopened. In May of 2011, the Atlantic Yards Watch website was launched. Over the past year, it has flagged citizens’ complaints about noise, air quality, and other problems associated with construction.

On July 13, 2011, the New York State Supreme Court ruled that ESDC’s approval of the 2009 MGPP without a thorough review of the potential impacts of extended construction lacked a rational basis and, as such, violated the State Environmental Quality Review Act. The Court ordered ESDC to prepare an SEIS focused on the construction period extension. ESDC filed a notice of appeal on September 12, 2011, but nevertheless approved a budget of $1.7 million for the SEIS in October 2011. Although agency representatives stated at the time that a draft scope of analysis would be released for public comment, that has not happened as of this writing, and no schedule for soliciting public comments has been announced. In April 2012, the State Supreme Court Appellate Division denied ESDC’s appeal in a unanimous decision.

The order for an SEIS has not delayed construction activities. The Barclays Arena is undergoing construction and scheduled to open in September 2012. However, the schedule for the remaining buildings appears to be in flux. At the time the MDA was executed, the first residential building was expected to break ground in the fall of 2010. However, the date has been repeatedly delayed, and has most recently been given as the end of 2012.

**Planned Construction Impact Mitigation**

Potential construction impacts identified in the 2006 EIS include closing traffic lanes and sidewalks for various periods of time, temporarily moving bus stops, temporarily relocating crosswalks, air pollutant concentrations that temporarily exceed the National Ambient Air Quality Standards, and high noise levels over a 10-year period. Therefore, the project sponsors committed to implementing state-of-the-art emissions and noise reduction programs.

**Noise.** Prior to the commencement of construction, FCRC was required to develop a construction noise mitigation plan in accordance with the New York City Noise Control Code (Chapter 2 of Title 24 of the New York City Administrative Code) (the “Noise Code”), which is subject to NYCDEP review and approval procedures. The construction noise mitigation plan must include the noise reduction measures described in the FEIS and assumed in the construction noise modeling set forth in the FEIS. During construction, FCRC shall implement the construction noise mitigation plan.

**Air Quality.** The FEIS approved in November 2006, as well as the Community Air Monitoring Plan (CAMP), and the Amended Memorandum of Environmental Commitments dated 12/21/09, identify the measures to be carried out.

FCRC must submit to ESDC for review and approval a written plan to adequately and reasonably demonstrate compliance with the foregoing construction air quality measures (the CAQM Compliance Plan) during construction. Elements of the CAQM Compliance Plan are to include:

(i) incorporation into construction contracts appropriate terms requiring the contractors to implement the air quality measures contemplated by the FEIS;

(ii) periodic meetings between FCRC’s construction manager and the relevant contractors to discuss implementation for the air quality measures;
(iii) practicable documentation requirements;
(iv) recordkeeping with respect to the equipment and vehicles used during construction; and
(v) compliance monitoring by a field engineer whose principal responsibility would be to monitor compliance.

If deemed appropriate as construction proceeds, the CAQM Compliance Plan may be revised from time to time with the written approval of FCRC and ESDC.
CONSTRUCTION VEHICLE COMPLAINTS

Complaints about construction vehicles affect both air quality and noise levels. The increased tailpipe exhaust emissions are an air quality concern while the sounds of diesel trucks idling, traveling down a residential street, or impatiently honking their horns are a noise issue.

Truck Queuing and Idling

Original FCRC commitment. Based on the FEIS dated November 2006, as well as the Amended Memorandum of Environmental Commitments (MEC) dated 12/21/09, mitigation measures addressing delivery times and truck routes would be carried out. FCRC committed to scheduling truck deliveries to minimize queuing, and “untimely deliveries shall, in general, be turned away or reassigned with different delivery times.” FCRC shall require its contractors to limit all unnecessary idling of vehicles and non-road engines, ensure that engines are shut off when not in use, and enforce idling limits in queuing trucks.

Comments. NYS Environmental Conservation Law (ECL) prohibits heavy duty vehicles, including diesel trucks and buses, from idling for more than five minutes at a time (Title 6 NYCRR, Subpart 217-3). It is supposed to be enforced by NYSDEC Conservation Officers. Exceptions include being stuck in traffic, powering an auxiliary function or apparatus, or operating in an ambient air temperature below 25° F for more than 2 hours. Violators may be fined from $500 to $18,000 in the case of a first violation.

In 2009, NYC passed legislation limiting truck idling to 3 minutes except for schools, where the limit is 1 minute (NYC Administrative Code, Title 24, Section 163). Exceptions include emergency vehicles and vehicles operating loading, unloading, or processing devices. The NYC Police Department, NYCDOT, Department of Sanitation, and Department of Parks and Recreation all have the power to issue summonses, appearance tickets, or notices of violation. Penalties include: 1) a fine of $50 to $500 and/or 20 days in jail for the first offense; 2) a fine of $100 to $1,000 and/or 30 days in jail for the second offense; and 3) a fine of $400 to $5,000 and/or 4 months in jail for the 3rd and subsequent offenses. NYCDOT is responsible for posting signs informing truckers of the law.

Problems. Either the scheduling plans have not been successful or the number of trucks is much greater than anticipated because extended periods of truck idling have been a source of noise complaints, and they add to air pollutant concentrations. Scheduling truck deliveries (and turning away untimely deliveries), as the MEC details, is not enforced. HDR’s quarterly reports noted idling and queuing problems in 2010 and 2011, and the OEM subsequently notified Hunt of the violations. Violations have been documented numerous times on Atlantic Yards Watch.

On August 11, 2011, a flatbed truck delivering steel idled under the windows of Newswalk's residences on Pacific Street between Carlton and 6th Avenues at 5:30 am. They are not allowed to wait in this location. The Barclays Center rules require trucks to wait on Pacific Street between Carlton and Vanderbilt, advancing only under the guidance of a flagger. The truck idled for over an hour and the driver ignored a request to move from a resident.

Another example occurred on September 22, 2011, at 6:00 am. Over 30 dump trucks arrived at the SE corner of Pacific Street and 6th Avenue instead of at the official staging area and idled for over one hour. Dump trucks also illegally idled underneath residential apartments for over 30 minutes and queued/parked illegally in a red "No Standing Only" zone in an oncoming traffic.
lane on SE Pacific Street & 6th Avenue. Flaggers should have stopped them and directed them to Pacific Street between Carlton Avenue and Vanderbilt Avenue, the official staging area.

On December 19, 2011, Barclays Arena construction trucks (photo, right) were queued and idling at Atlantic Avenue and Fort Green Place, blocking a lane of traffic on a street that already experiences high levels of traffic congestion.

Another consequence of truck queuing is trucks honking their horns. In 2011, AYW reported that trucks queued on Pacific Street between 6th and Carlton honked while waiting to enter the Arena block, especially when a flagger waved trucks forward, yet they were unable to enter. This was a frequent source of complaints at Dean Street Block Association meetings.

Although conditions have improved, problems have continued on throughout 2012. The photo at right was taken May 17, 2012. A Barclays Arena vendor blocked a fire hydrant and idled for 10 minutes across from a residential building on Pacific Avenue between Carlton and 6th Avenues. A Barclays Arena flagger apparently told the driver to move, after which the truck was parked and idled on the NW corner of Atlantic Avenue and South Portland instead of the staging area on Pacific Street between Carlton and Vanderbilt Avenues.

**Recommendations.** The following is recommended.

- The volume and hourly distribution of trucks, and their associated air/noise impacts, should be reevaluated to determine their environmental impacts over a 25-year period.
- Revise scheduling to ensure that no trucks need to queue and idle for more than three minutes.
- A more reliable means of informing individual truck drivers and dispatchers of the rules and regulations should be developed. Training sessions carried out by FCRC have apparently not been effective for a sustained period of time.
- NYCDOT should post signs about idling regulations at problem areas within the neighborhood and not just in the queue area on Pacific Street.
- The City agencies responsible for enforcement should monitor the site perimeter and issue summonses as required.
Truck Routes

**Original FCRC Commitment.** According to the EIS documents, “trucks shall be required to use NYCDOT-designated truck routes for traveling to and from the construction site, which include primarily Atlantic Avenue, Flatbush Avenue, 4th Avenue, and the Brooklyn-Queens Expressway except as required for movement between staging and construction areas.”

**Comments.** The FEIS relies largely on a primary entrance on 6th Avenue at Pacific Street for arena construction and to a lesser extent entry from Dean Street. Instead the developer put in as many as 11 entrances to the construction areas, many of them regularly used even when such use disrupts traffic. HDR has documented numerous instances of trucks using the wrong routes, especially in 2011, although HDR calculated that 98% of the trucks were using the approved routes. FCRC received multiple complaints about trucks using the wrong streets and about queuing protocols in 2011. The OEM notified Hunt and other contractors, recorded driver information per the “Two Strike” policy, and continually reminded contractors to comply. At least one driver was released from the project due to repeated violations.

**Problems:** AYW reports that trucks regularly park in travel lanes and no-standing lanes, take illegal routes rather than designated truck routes, travel the wrong way on one-way streets, and have been observed making left turns at red lights. The non-public Pacific Street between Carlton and Vanderbilt is supposed to be a holding area for trucks, but they regularly idle on public Pacific between 6th and Carlton or Atlantic Avenue.

In the photo at right, taken on May 29, 2012, a Barclays Center LIRR dump truck traveled along Carlton Avenue and drove directly into the Vanderbilt rail yard.

During late June and early July in 2011, construction trucks were sighted regularly on Dean Street between 6th and Vanderbilt Avenues. A resident of Carlton Avenue between Dean to Pacific Streets also stated that trucks have lined up there early in the morning. The trucks on Dean Streets on Bergen Street were photographed on May 16th and 17th, 2012. One driver explained it is difficult to get to his destination (southbound 4th Avenue) from the LIRR construction ramp onto Atlantic Avenue without using residential streets. He said he did not know that he is supposed to use Pacific Street westbound from Vanderbilt Avenue, rather than a residential street. In the photo, left, taken May 17, 2012, steel panels for the arena building are delivered to the construction site using Bergen Street between Carlton and 6th Avenues, which is not a designated truck route.
Street largely appeared to be associated with Laquila, a contractor working on Barclays Center. Many trucks loaded with gravel travel past Dean Playground, down Dean Street to Vanderbilt, turn left on Vanderbilt and left again into the former Pacific Street. According to a driver interrupted mid-trip at the intersection of Dean Street and Carlton Avenue on Friday, July 1, 2011, no information had been provided to Laquila drivers about the routes to take from the arena block.

During the late summer and early fall of 2011, most of the observed construction dump trucks failed to stop at the "Stop Here on Red Light" zone, thereby blocking the entrance to the LIRR temporary ramp. Some of these trucks also used Dean Street/St. Marks Avenue to travel to the SE corner of Pacific Street and 6th Avenue instead of the official truck route. No flagger from 6th Avenue and Pacific Street instructed the trucks to queue in the official staging area.

In September 2011, ESDC issued a “notice of violation” to FCRC giving them one month to fix the problems. It is not known what specific violations were cited. Atlantic Yards Watch is not aware of any fines that have been levied.

Additionally, no information was provided the public by the ESDC or FCRC outlining the route construction trucks are meant to take leaving the arena block. Barclays Center Delivery Truck Rules and Requirements posted on the ESDC website specify, "All trucks shall be required to use NYCDOT-designated truck routes for traveling to and from the construction site, which include primarily Atlantic Avenue, Flatbush Avenue, 4th Avenue and the Brooklyn-Queens Expressway except as required for movement between construction staging and construction areas." NYC truck regulations require the driver to take the route that results in the shortest trip on local streets to the designated truck route. In the case of Barclays Center-related trucks leaving the arena block on Dean Street, this would appear to mean using 6th Avenue as a conduit to either Flatbush or Atlantic Avenues. Truck routes described in construction alerts never detailed exit routes from the arena block.

**Recommendations.** The following steps are recommended.

- A more reliable means of informing individual truck drivers and dispatchers of the appropriate rules and regulations should be developed.
- Flaggers should be placed at key intersections on residential streets to prevent trucks from driving down the wrong street.
- Given the 25-year construction period, NYCDOT should put up street signs indicating official Atlantic Yards Construction routes.
Construction Worker Parking

Original FCRC Commitment. “FCRC shall provide on-site parking for construction workers at levels appropriate in light of the number of workers employed at the site during different stages of construction, to a maximum of 800 spaces. FCRC shall monitor the work force levels throughout the construction period and shall report to ESDC on a quarterly basis as to the number of on-site spaces and the utilization of such spaces. ... No more than 1100 vehicles, in the aggregate, shall be parked in any surface parking lot(s) on Block 1129 at any one time.”

Parking for most construction workers would not be free. The FEIS and MEC state that project sponsors would provide parking at fees matching nearby parking lots and garages to discourage workers from driving to the site. Approximately 150 to 200 free on-street parking spaces, identified in 2006, would help absorb parking demand by construction workers. Anyone not arriving in time to find a free space would have to go to Block 1129 and pay a parking fee.

Comments. The FEIS forecast up to 2,920 workers on-site during peak days in Phase I construction and up to 2,215 during peak days in Phase II, yet only a quarter of this workforce would be served by the on-site parking. Chapter 17 of the FEIS assumed that 55% of the workers would arrive by auto, with 1.9 workers per auto (equivalent to a parking demand for 845 spaces for 2,920 workers). These assumptions were based on a survey of 129 workers who were working on the 24-story expansion tower at the New York Marriott at the Brooklyn Bridge in 2006. This approach may have underestimated the demand for parking. Work at the Marriott in 2006 covered a single site within a block and likely involved less nighttime work. Construction jobs at Atlantic Yards, in contrast, are scattered over a 22-acre site and involve varied daytime and nighttime shifts. This would make carpooling less feasible than for the Marriott and increase the percentage of workers desiring to drive their own cars.

The FEIS does not specifically say that the creation of up to 800 spaces for workers will be triggered once the 150 to 200 on-street spaces are filled. Contrary to the FEIS and the MEC, FCRC is apparently not providing any parking for the majority of the construction workers. FCRC has provided up to 90 free parking spaces to senior construction employees, as well as approximately 20 spaces to operators of the LIRR (although parking for non-construction LIRR workers is not disclosed). They recently ceased providing 24 parking spaces to 78th Precinct employees due to what ESDC describes as a lack of space. The NYPD employees subsequently moved their parking onto Dean Playground’s sidewalk.

During 2011, HDR noted multiple incidents of illegally parked vehicles and informed the OEM, who requested that Hunt inform their employees and subcontractors to avoid illegal parking. HDR reported that NYPD began ticketing illegal parking more thoroughly at the end of the 2011 second quarter. However, the problem continued.

Problems. Construction worker parking has been a major issue for residents. The limited amount of available parking for workers has been demonstrated by a great deal of illegal construction worker parking. One video on AYW shows a construction worker tearing down a parking regulation street sign in order to create more curbside parking space. AYW has also documented construction workers putting bags over parking regulation signs that had temporary provisions for construction in order to make more parking.
In 2011, there was a cluster of illegal parking on sidewalks and in no-standing zones on Dean Street, 6th Avenue and Pacific Street. The photo at right, taken on April 23, 2011, shows illegal parking three rows wide. City employees from the 78th Precinct and the Fire Department regularly parked their personal cars on the sidewalks of 6th Avenue, Dean Street, and Bergen Street. Construction workers and Community Labor Exchange employees regularly used the sidewalk and the no standing zones along Pacific Street near 6th Avenue. There was no enforcement.

At a meeting on June 28, 2011, residents complained about construction workers and police personnel illegally parking their cars in bus stops, no-standing zones and even on sidewalks without getting ticketed. AYW noted that a recent survey conducted by community members along with Transportation Alternatives of the area near the 78th Precinct where there are “No Parking” signs to create parking for Precinct employees found 83 illegally parked cars, 12 with goggles, hard hats or other construction gear inside, and 11 with phony police placards.

The photo at left, taken on July 11, 2011, shows autos illegally blocking a fire hydrant on the north side of Pacific Avenue between Carlton Street and 6th Avenue. In this case, the driver shown exiting the car received a ticket.

Enforcement of the regulations, at least from the community’s perspective, has been inadequate. In late 2011, Arana Hankin, ESDC’s Project Director for Atlantic Yards, stated that she had spoken with NYPD’s 77th Precinct on numerous occasions about illegally parked cars on the Sixth Avenue bridge and on Pacific Street and was told that they had not issued tickets because they had not received any community complaints. She also stated that she has repeatedly asked the 78th Precinct to ticket the cars and Forest City Ratner officials to stop their construction workers from parking illegally. The official said that construction workers are fired if they park illegally three times, but community members were skeptical the rule was being enforced, since they observed that illegal parking is rampant.
Thanks to enforcement, the problem has improved since the summer of 2011 when conditions were out of control. However, problems continue. Residents have asked for residential parking permits to discourage construction workers from using all the parking spaces on residential streets. However, residential permits would require action by the state legislature and, for political reasons, the measure is not likely to pass.

The commitment to provide 1,100 arena patron parking spaces inside the project footprint has now run up against the physical constraints of Block 1129, forcing a reduction by the developer. AYW's analysis also suggests the 944 spaces detailed in 2006 would have run up against the same constraints. On April 23, 2012, FCRC filed an application with DOB for a 722-space parking lot on Block 1129. At a community meeting on May 27, 2012, however, ESDC CEO Kenneth Adams stated that the parking lot would have less than 550 spaces. Based on the foregoing there will be no on-site parking available for construction workers when the arena opens except for by piggybacking on arena patron parking spaces. FCRC will not be able to provide construction workers with parking on-site when arena events take place.

**Recommendations.** The following steps are recommended:

- Provide sufficient police presence to ticket illegally parked cars. Residents have noted that even if police ticket cars, more vehicles are seen at the same location the next day.
- Survey and update the availability of parking for construction workers, both on-site and off-site, to develop more realistic means of appropriating available spaces.
- Survey construction workers at the site to provide an updated estimate of the percentage who drive to work and the number of workers per car.
- Create genuine incentives to reduce auto trips by construction workers, including hiring local workers, establishing a changing room with lockers, providing free transit passes and having construction workers park in one lot off-site so FCRC can transport them to and from work sites via vans.
COMMUNITY NOISE COMPLAINTS

Construction Hours

Original FCRC Commitment. Construction was planned for Monday through Friday except for some evening and night work. Typically, construction would begin at 7 am with some workers arriving to prepare work areas at 6 am. Work would normally end at 3:30 pm but may be extended until 6 pm in order to complete drilling of piles, finishing a concrete pour, or completing the bolting of a steel frame erected that day. This would occur for about 40% of the weekdays, or two days per week, over the course of construction.

Some evening and night work may be required so that rail yard reconstruction work would not conflict with evening and morning rush hours. In addition, street openings at the Flatbush and Atlantic Avenues intersection may be allowed only during the late evening and night when traffic volumes are lowest.

Weekend work would be required at some times, but would have reduced hours compared to weekdays. Saturday work would be from 7 am to 5 pm. This would occur on one weekend day for approximately 50% of the weekends over the course of construction. Under exceptional circumstances, two weekend days would be required. The developer would obtain approval from the appropriate agencies for work outside of normal construction hours.

Specific mitigation measures include:

- Schedule work that would generate high noise levels during weekday daytime hours to extent feasible, rather than during weekday nighttime or weekend hours, unless required as a result of safety or other agency requirements.
- To the extent feasible, schedule equipment and material deliveries during weekday daytime hours, rather than during weekday nighttime or weekend hours.
- Schedule and perform the most noisy work during weekday daytime hours and not during weekday nighttime or weekend hours.
- Generally schedule equipment and material deliveries during weekday daytime hours and not during weekday nighttime or weekend hours.

Comments. The 10-year construction schedule discussed in Chapter 17 of the FEIS implies that construction may last into the early evening up to three days per week approximately every other week. The frequency of evening and night work was not specified, leading the reader to believe that it would not occur frequently or for extended periods of time. Chapter 17 did not identify periods when consecutive days of late night work would occur for weeks or months at a time. HDR’s quarterly reports from 2009 through June 2011 did not address construction hours except to state that “all material and equipment deliveries appeared to be conducted during allowable workday hours.”

Problems. Atlantic Yards Watch has documented numerous nighttime noise complaints from local citizens, and the affected residential areas are dispersed throughout the perimeter of the 22-acre project site. Complaints about permitted late night work on the project date back to the extended infrastructure work that took place on Dean Street and Flatbush Avenue in 2008 and caused substantial discomfort to many living in the vicinity. The earliest after-hours work inside the footprint dates to the spring of 2007, only a short time after work on the project began. Work during extended hours is spread out wider geographically and occurs more frequently than anticipated. Noisy work is often scheduled during extended hours. In one case, Atlantic Yards
Watch was told by NYC DOT representatives that work to install traffic mitigation measures at Pacific Street and Fourth Avenue late at night could have been completed during normal work hours.

Late-night work has also included construction-related garbage pickup four or five nights per week and noisy truck deliveries of (e.g.) steel in the middle of the night. The photo at right was taken on July 26, 2011 by a resident on Carlton Avenue between Dean and Pacific Streets. Action Environmental emptied a construction site dumpster with loud beeping, engines running, dumpsters clanking etc., 4 or 5 nights a week between 3:30 and 5:00 am. The resident called 311 on three occasions and received confirmation numbers, but is not aware of any follow-up by the City. The nightly noise and lack of sleep affected a 6-month old child in the residence.

Construction work on a 24-hour basis has been frequent during the past year. From late July to October 2011, AYW received numerous incident reports regarding nighttime noise levels at Atlantic and 4th Avenues. From one incident report on September 9, 2011:

"There is on-going night-time construction of roads in and around the Flatbush / Atlantic intersection. … The crews start work at 9:30 pm and finish at 5:30 am. The noise is unbearable for those of us that live near the intersection. Extremely loud jackhammering and pounding of steel road plates all night. Children (and adults) in the units facing Atlantic up and down the block and around the intersection are not sleeping at all. … There are no sound mufflers on the jackhammers or any other precautions being used by the contractor. … This is tantamount to sleep deprivation torture. If the DOT / DEP commission or someone in charge would come observe for one night and hear what is going on, they would be shocked."

The work during extended construction hours is spread out wider geographically and occurs more frequently than anticipated. Activities that generate high noise levels have been scheduled during extended hours.

Currently, rail yard construction is underway 24/7, which is a clear violation of the original commitment. FCRC has not indicated when the extended hours will end, but once put into place, they are rarely reversed.

**Recommendations.** The following steps are recommended.

- Schedule noisy truck deliveries and construction-related garbage pick-up for daytime hours.
- Provide required noise shielding to reduce noise levels for nearby residents.
- Monitor nighttime noise levels in the vicinity of residences to document noise levels during extended hours.
- Reevaluate the construction schedule so that nighttime work can be avoided.
- Provide better oversight and foresight regarding the types of equipment and work permitted late at night.
- Maintain a log of work during extended hours, including the time, type of work, etc., in the quarterly reports.
- ESDC’s on-site environmental monitor (HDR) and FCRC’s OEM should visit the site during extended and late-night hours one or more times per week using an unpredictable schedule.
- Replace loud back-up beepers with lights or more environmentally friendly devices that emit noise several decibels above background levels.
- Reevaluate noise impacts for a 25-year construction period in the required SEIS.
- Incorporate modifications to the dumpsters that will mitigate noise levels during trash collection such as rubber wheels.
- Identify the specific roadways for which DOT requires work to take place at night, who at DOT approves nighttime work, and what criteria are used to approve it. Pacific Street and 4th Avenue was approved for work day and night, but FCRC conducted the work at night.

The following steps may not be feasible while the arena construction is in process, but should be reaffirmed in the SEIS for the remainder of the 25-year construction period.

- Limit the number of consecutive days when extended construction hours, particularly 24-hour construction work, is permissible.
- Require that construction periods with extended hours, particularly activities carried out 24/7, be followed by at least 7 days of normal construction hours.
- Reduce the incidence of extended hours, particularly the scheduling of construction for 24 hours per day.
Equipment Use

Original FCRC commitment. Mitigation measures proposed by FCRC include:

- Follow Subchapter 5 of the NYC Noise Control Code and use a wide range of equipment, including construction trucks, that produces lower noise levels than typical construction equipment.
- Use construction equipment that meets the noise emission levels specified in Table 17c of the FEIS, “Construction Equipment Noise Emission levels,” where such levels are more stringent than those imposed by the Noise Code.
- Require all contractors and subcontractors to properly maintain their equipment and have quality mufflers installed.
- As early as practicable in the construction period and wherever feasible, use electrical-powered equipment such as electric scissor lifts and electric articulating boom lifts, rather than diesel-powered equipment for construction activities.

Comments. The use of an electrical grid was delayed because Con Ed was unable to provide it within the timeframe requested by FCRC. Hunt Construction Group, the general contractor for the arena, contacted Con Ed during the second quarter of 2010 and was told that the utility could not provide the power until after the peak electrical demand season had ended. Thus, the contractor was forced to continue using diesel-powered equipment until the second quarter of 2011. (See additional discussion under Diesel Emissions Reduction.)

Title 15, Chapter 28 of the RCNY lists the mitigation methods to be used for various types of equipment, if NYCDEP receives noise complaints about the impact or vibratory equipment at a site, the responsible party is required to implement more stringent measures.

Problems. Noisy equipment has been a major complaint from residents. The use of the Noise Control Code and the use of quieter equipment, where available, has not been followed consistently. This is partly due to inadequate oversight. The rail yard CNMP for Blocks 1120 and 1121, for example, was signed on April 11, 2011 and it covers construction work from January 2011 through December 2012. The box for jack hammers was checked off, but not the box beneath it for “quieter makes and models as defined in 102 (a)(2)(B)(1).” In an informal conversation in 2011, AYW discovered that FCRC’s OEM had not known that the 2007 Noise Code requires better performing jackhammers than the ones being used originally until numerous citizen complaints had been logged.

The Construction Noise Mitigation Plan for each construction site is a printed form to be filled out and it consists primarily of items to be checked off. The rail yard CNMP noted above checked off hoe rams and also checked off “quieter makes and models as defined in 102(a)(3)(B)(i)” and “Noise Shroud as defined in 102(a)(3)(B)(iii).” However, the “quieter” make and model is not specified in the list of equipment, and the installation of a noise shroud seems questionable given the complaints of noise and vibration on March 20, 2011.

The Construction Noise Mitigation Plans for the arena cites incorrect distances from construction work to sensitive receptors. The plan states construction work is 200 feet from sensitive receptors, although AYW measured a distance of 45 feet from the arena construction site’s Dean Street barrier to the closest residence across the street.
**Recommendations.** Due to the size of the project and the need for nighttime work, the noise mitigation plan should go beyond the mandates of the New York City Noise Code and consider measures taken by other major construction projects such as the Boston Central Artery and Tunnel Project Construction Noise Control Specification 721.56. The specifications are too numerous to list in this report. Among other requirements, this specification:

- Bans the use of impact devices (jack hammers, hoe rams, pavement breakers) at night,
- Authorizes the site engineer to stop a contractor’s work, without compensation for lost time, if noise conditions are unacceptable,
- Requires an updated noise control plan to be submitted every 6 months, and
- Requires noise measurements to be submitted on a weekly basis.

The following administrative actions are recommended for the Atlantic Yards OEM:

- The OEM representatives should review the Noise Code and update all plans to meet or exceed current regulations.
- The contractor should specify the make and model of any “quieter” equipment checked off on the CNMP.
- The OEM should review the CNMP and verify that the equipment and barriers meet the regulations and noise mitigation commitments and that all of the §102 construction equipment is listed.
- Future construction work should plan for the long lead time needed for Con Ed to provide an electrical grid.
- Provide better justification documenting the need for extended hours.

Numerous means of controlling equipment noise at construction sites are available. In addition to making sure that equipment is properly maintained and muffled, they include:

- Require contractors to use newer, quieter equipment, such as generators that have soundproofing and generate only 75 dBA at a distance of one meter and 65 dBA at a distance of 7 meters. The Boston Central Artery Specification 721.56 states that no generators larger than 25 KVA can be used.
- Determine whether larger jackhammers can be replaced with mid-size ones, which can reduce noise levels by 10 dBA.
- Use neoprene “No Racket” jackets on jackhammers to reduce noise by up to 10 decibels. Such jackets have been developed and used in New York City.
- Design truck patterns for pick-up and delivery that minimize the need to back up.
- Reduce the annoyance of back-up alarms by using manually adjustable alarms, self-adjusting alarms, blinking lights, or an observer.
- Implement more stringent methods of shielding equipment following noise complaints, as mandated in Title 15 of the Rules of the City of New York, Chapter 28.
Placement and Shielding of Equipment

Original FCRC Commitment.

- The Amended Memorandum of Environmental Commitments requires FCRC to situate noisier equipment, such as generators, cranes, tractor trailers, concrete pumps, concrete trucks and dump trucks at locations that are removed from sensitive receptor locations and are shielded from sensitive receptor locations wherever feasible. For example, during the early construction phases of the Project, delivery trucks and dump trucks are to be located approximately 20 feet below grade to take advantage of the shielding benefits of grade differences.

- Once building foundations are completed, delivery trucks are to be located adjacent to noisy streets (i.e., Atlantic Avenue, Flatbush Avenue and 6th Avenue) rather than at quieter streets, such as Dean Street and Pacific Street, where there are residences.

- Where practicable, noise curtains and equipment enclosures shall be utilized to provide shielding from significant noise-generating equipment to sensitive receptor locations.

- A minimum 8-foot high barrier (constructed of ¾" thick plywood), with a 16-foot high barrier (of ¾" thick plywood) adjacent to sensitive locations, including locations along Pacific Street, Dean Street, and Flatbush Avenue opposite residences and the Brooklyn Bear’s Pacific Street Community Garden, and, where practicable, truck deliveries shall take place behind these barriers. Noisy delivery trucks, such as concrete trucks, are to be operated behind the barriers.

- Utilize noise curtains and equipment enclosures to shield sensitive receptor locations.

Comments. HDR’s quarterly reports for 2010 and 2011 have indicated when and where 8-foot high and 16-foot high fences have been installed and where they are planned for installation during the next quarter. Very little information is available about the use of noise curtains and equipment enclosures.

In reporting on noise and vibration in the quarterly reports for 2010, HDR stated that “noise equipment...appeared adequately shielded from sensitive receptors whenever practicable and did not appear to be above the noise threshold set forth in the …Noise Control Code or Table 17c-3 of the FEIS.” This is a subjective statement regarding the adequacy of noise shielding and the overall noise levels. The reader has no way of knowing if the statement is accurate or if a resident would agree with the HDR representative.

Problems. The noise barriers, where deployed, are not sufficient to protect bedrooms on the second floor and higher. In addition, the attenuation provided by barriers composed of ¾ “ plywood over a chain-link fence may not be sufficient to ensure an interior L_{10} noise level of 45 dBA or less at affected residences. New York City’s Vendor Guidance Document for Smaller Construction Jobs states that 1” plywood has an STC rating of 30. The STC rating of ¾” plywood, based on various internet sources, ranges from 22 to 28. In areas subject to construction noise levels with an L_{10} of 75 or more, the plywood walls, by themselves, would be inadequate and would need to be coupled with additional noise reduction measures.
Placement and shielding of noisy equipment has not followed the MEC on numerous occasions. Residents using their own instruments have measured decibel readings as high as 94-100 decibels indoors. No City agencies or representatives of FCRC are known to have conducted noise monitoring of residential exteriors or interiors during noisy construction activities.

The MEC states noisy equipment like generators will not be located along perimeter fencing and that noise barriers would be used when feasible. Generators placed in two locations near the perimeter of the project across from residences violated the MEC until they were moved. In 2011, the contractor working on the Carlton Avenue Bridge placed three generators (with one operating at a time) at street level behind a chain link fence directly across the street from the residents on Carlton Avenue and Pacific Street (see photo, right). They remained in place until the issue was raised on Atlantic Yards Watch. A resident made a decibel reading of 98 decibels in the vicinity of one generator.

The second location was on Dean Street between Carlton and Vanderbilt. That generator was in place for approximately a year. No perimeter fencing with ¾ inch plywood was installed to buffer the noise at either location.

**Recommendations.** The following steps are recommended.

- Do not rely on noise barriers composed of ¾" plywood as the sole means of mitigating noise from trucks and equipment at affected residences.
- Minimize leaks and openings in equipment enclosures by covering joints with 1/8" thick duct tape.
- Use the FHWA’s RCNM model, CADNA, on-site noise monitoring, or other means of determining noise levels at affected residences in order to implement an appropriate set of mitigation measures that may include noise curtains and equipment enclosures.
- Statements about the equipment noise or adequacy of the noise mitigation measures should be based on monitored data that includes a full set of noise parameters, as well as the time of day, for a period of at least 20 minutes.
- FCRC should monitor daytime and nighttime noise levels at residential buildings during noisy nighttime work.
- The OEM should ensure noise attenuation meets or exceeds what is designated in the NYC Noise Code.
Residential Window Treatments

Original FCRC commitment. The following commitments were made by FCRC.

- Provide additional acoustic measures for the windows of the Brooklyn Public Library on the Pacific Street side to increase the approximately 20 dBA of window/wall attenuation to at least 5 dBA.

- Provide storm windows for the second floor of the Temple of Restoration for the façade facing Dean Street if current windows do not have either double-glazed windows or storm windows.

- Provide double-glazed windows and alternate means of ventilation (e.g., air conditioners) at residential locations where significant noise impacts are projected to occur during some portion of the construction periods if residents do not already have such means of reducing noise and choose to accept these mitigation measures. These measures would be available at no cost for purchase and installation to owners of residences. These measures are targeted primarily at the upper floors of some residential buildings on the north side of Atlantic Avenue and potentially on streets north of Atlantic Avenue. In general, residential buildings north of Atlantic Avenue were found to have double-glazed windows with sleeves for alternate ventilation.

- Noise mitigation measures shall be implemented – where such measures have been accepted by building owners and their tenants – in a timely manner so as to avoid the significant adverse noise impacts identified in the FEIS where practicable.

Comments. FCRC distributed vouchers for free air conditioning units to qualified residents in 2009. The vouchers could be redeemed at P.C. Richard & Son. FCRC used Paladin Construction to install double-paned windows. Some windows were installed in 2009. Of the nine installations that remained in 2010, two (527 Dean Street and 552 Carlton Avenue) were installed during the first quarter of 2010, six accepted cash in lieu of new windows, and one was found to be a commercial property which therefore did not qualify for the windows. During the second quarter of 2010, FCRC paid the Temple of Restoration/Swedish Baptist Church a lump sum payment in lieu of window replacement.

No information on the OITC ratings of the windows was provided. One resident stated that he received Skyline 1500 windows. Skyline has a website, but no information on the attenuation ratings of the 1500 series of windows were found on the site.

Problems. After following up with the residents who submitted incident reports, AYW has observed the following:

- Some affected residents requesting double-glazed windows live outside the zone identified in the 2006 FEIS where significant noise impacts were anticipated. Sensitive receptor locations in the 2006 analysis (locations like residences or open space where human activity may be affected by project generated noise) do not account for more recent conversions from commercial to residential in the vicinity of the project site.

- Some residents complained they did not receive notice of the noise attenuation measures offered by FCRC.
• The specific noise attenuation measures offered as mitigation (double paned windows and air conditioners) are already in place, and residents report they are still kept up at night.

• Many residents have complained that they have double-glazed windows and still experience high interior noise levels. This is because a typical double-glazed window in a residential unit is not intended to mitigate extremely loud noise levels for some future date. Double-glazed windows are sold with a variety of OITC ratings, and the ones already in place or installed may not be sufficient to mitigate noise levels with $L_{10}$ levels of 75 dBA or more.

• In order to maintain a closed window condition during periods of warm weather, residents also must have alternate means of ventilation. The fact that residential buildings had sleeves for alternate ventilation does not mean that residents could afford to install air conditioners in the sleeves.

Some residents on streets other than those designated have requested double-glazed windows. Other residents state that they were never informed of the potential for new windows and air conditioners. At least one resident complained that the replacement windows were not sufficient to mitigate 24-hour construction noise.

**Recommendations.** The following are recommended.

• Hold community meetings to inform residents of the mitigation measures for the duration of the construction period.
• Monitor construction noise levels in affected neighborhoods to determine the OITC rating for their windows.
• Carry out analyses to determine whether some side and rear windows, as well as front windows, should be replaced.
• Expand the geographic area of residents that are entitled to mitigation measures.
• Survey window manufacturers to determine if noise attenuating temporary inserts can be installed on affected windows rather than replacing windows.
• Reevaluate and expand the geographic area where significant impacts may occur.
• Hold a community meeting to inform residents of attenuation measures offered as mitigation.
• Base the OITC rating of the windows to be installed on projected construction noise levels or monitored noise levels during noisy construction periods.
Vibration

**Original FCRC commitment.** FCRC shall implement a monitoring program to ensure that vibration levels at the Swedish Baptist Church and the town houses along Dean Street immediately adjacent to the Project’s Building 15 site are kept below 0.50 inches/second.

**Comments.** The first quarter report for 2010 notes that vibration monitors were located in the Historic District at 516, 524, 522, 528, and 534 Carlton Avenue. No vibration monitoring was done in 2010 because no demolition or drilling occurred within 90 feet of the residences.

**Problems.** Complaints have occurred at locations not identified in the original FCRC commitment.

Vibration complaints have been associated with jackhammer operations. At 9:09 am on August 6, 2011, a resident complained of vibrations caused within apartments at Newswalk (on Dean Street) due to jack hammer demolition of a concrete retaining wall in the rail yard. This occurred on a Saturday morning when no inspectors were available.

Another complaint of vibration was logged into the AYW website on March 20, 2012 by a resident on Vanderbilt between Dean and Pacific (adjacent to Block 1129 and near Block 1121). The resident was awakened by incessant jackhammering that sounded like it was right outside the window. This was followed by a crash that sounded like a bomb explosion. It shook the building and knocked down artwork from the walls. The resident’s building is inside the Prospect Heights Historic District on Vanderbilt Avenue in an area which FCRC’s Historic District Construction Protection Plan does not address because the district was designated in 2009, three years following the drafting of the plan. AYW subsequently reported that ESDC received other complaints and told FCRC to stop nighttime use of the hoe ram, which was causing the loud bang. The work being done is apparently not on the “critical path”, so the contractors can do the work during the day.

A resident on the 500 block of Carlton Avenue across from Block 1129, where construction on the parking facility is ongoing, took the photo, right, on May 29, 2012. The resident stated, “vibrations are so strong that the ceiling in my home fell down,” and that, “the dump trucks on Carlton Ave are adding to the vibration problem!” A 311 complaint about emerging cracks in the ceiling on May 22nd had been filed two weeks earlier. She again called 311 and an operator stated 311 would not take the call. Then she went to the Atlantic Yards Ombudsman’s office and was told an engineer would inspect the damage.

At 5:30 pm that day, an FCRC representative arrived and took pictures. A vibration monitor is present in the resident’s basement, but FCRC’s engineer eventually determined that water damage was the “primary” cause and that no exceedances of acceptable vibration thresholds occurred. However, FCRC agreed to repair the ceiling.
When NYC DOB’s inspector came, he could not determine a cause. In response to an inquiry by PHNDC, NYC DOB wrote that while FCRC is required to have monitors in the area, “they are not required to send the logs to us. A call was made to FCRC’s general contractor, who confirmed the monitors were working. The monitors send an alert when an elevated vibration is recorded. If construction activity is determined to be the cause of the elevated reading, the information is passed up the chain of communication that includes HDR and the NYC Department of Buildings (NYCDOB). If there is a problem they notify the contractor to improve construction practices. ESDC confirmed with PHNDC that FCRC retains the vibration results.

**Recommendations.** The following steps are recommended.

- Provide documentation of the vibration monitoring to NYC DOB and in HDR’s quarterly report.
- Provide documentation of the vibration monitoring to residents near construction locations at the site if they request it, including host property owners.
- Extend the vibration study to include other sites adjacent to jackhammer and hoe ram operations.
- Provide prompt responses to residents’ complaints of damage and document the damage. Correlate the time of the damage with the construction activities at that time. Make documentation available to HDR.
- Identify construction activities that may cause severe vibrations in nearby residences and implement mitigation measures proactively to prevent damage.
- Ban nighttime activities that may cause vibration as vibration is more disruptive when residents and their families are trying to sleep.
- Develop more effective mitigation methods to substantially reduce vibration from hoe rams, jackhammering, and other activities that may cause vibration to off-site structures.
- Update Construction Protection Plans to take in new information and incorporate state of the art mitigation methods.
COMMUNITY AIR QUALITY COMPLAINTS

Fugitive Dust Emissions

Original FCRC Commitment. Control of fugitive dust is spelled out in the MEC (2009) and the Construction Air Quality Measures Compliance Plan (CAQM) (April 2010). The requirements are also included in a Project Manual that is referenced in all contracts with contractors and subcontractors. As spelled out in these documents, FCRC shall require its contractors to implement the following dust suppression measures:

- Limiting on-site speed to five miles per hour. Signage of the 5-mile per hour limit shall be posted at all site entrances and along routes within the sites.

- Using sleeves and wetting during demolition activities, and wetting equipment. All demolition activities, including but not limited to building, roadway, and pavement demolition, shall utilize dust suppression. All drop transfer operations shall be via closed sleeves and into sealed bins. Sleeves shall have no openings other than the loading chute. During all breaking up of material such as concrete, an employee shall be assigned to wet the surface while the activity is taking place.

- Watering unpaved surfaces, including haul roads and excavation faces. All unpaved haul roads and excavation surfaces shall be continuously watered by watering trucks or constant misting, so that surfaces remain damp at all times when in use during construction. Gravel cover shall be applied to unpaved surfaces which are regularly traveled.

- Covering or water-misting of stockpiled materials. All stockpiled dry materials (e.g., sand, aggregate) shall be water-misted; sprayed with non-hazardous, biodegradable suppressing agent; covered; or otherwise enclosed.

- Loading of any dry material which may release dust from trucks shall be accompanied by manual water spraying of the material.

- Covering all trucks carrying loose material such as debris, excavate or fill, and verifying that covers on all such trucks have been properly sealed. Outgoing trucks shall be inspected at the gate, and not allowed to exit if covers are not properly sealed.

- Washing the wheels of all trucks as they exit from the site. A washing station shall be constructed at each truck exit, whereby truck wheels shall be washed, and the water shall be contained and recycled to avoid tracking mud out of the site.

The CAQM also includes a provision for FCRC and Turner Construction Company to conduct training sessions for construction personnel and contractors summarizing the requirements. Personnel attending the training sessions must be in a managerial position, and they shall be responsible for compliance by the contractor/subcontractor. Furthermore, FCRC will hold annual refreshers and will hold new training sessions if the compliance measures change.

Comments. According to the CAQM, the means of ascertaining compliance with the dust suppression measures is through daily spot inspections by the FCRC OEM and Site Superintendents. The primary means of controlling fugitive dust are watering/misting of
surfaces, use of closed sleeves for drop transfer operations, and covering loose materials in
trucks and storage piles.

Problems. During the fourth quarter of 2010, HDR observed inadequate dust suppression
measures and notified FCRC, who instructed Hunt to increase the wetting frequency. HDR’s
first quarter report for 2011 notes that four buildings on Block 1129 were demolished, and HDR
did not observe the use of drop transfer operations with closed sleeves and bins. HDR also
reported a lack of adequate tire washing on-site.

HDR’s second quarter report for 2011 reported problems with fugitive dust on Block 1129 and
the adjacent Pacific Street queuing area due to inadequate watering, gravel cover, and wheel
washing. Several off-site events were observed by HDR and reported to the OEM in April and
March of 2011. Hunt subsequently installed gravel on the off-area drive and began watering
their portion of the lot. They also ordered a spray-on dust suppressant to use.

Fine particulates such as PM$_{10}$ and PM$_{2.5}$ could migrate off-site in concentrations that exceed
the NAAQS, yet not be visible. Dust from construction activities migrates off-site and has been a
major source of complaints since 2007. According to AYW, mitigation measures have been
absent, insufficient, and/or ineffective. Complaints have included:

- vehicles that exceed the 5 mph speed limit (especially on Pacific Street),
- malfunctioning equipment for extended periods of time,
- lack of watering of unpaved surfaces,
- failure to cover or mist stockpiled materials,
- insufficient or absent dust suppression during demolition and construction,
- failure to cover, mist, or otherwise contain stockpiled soil,
- absent or inadequate spraying during loading of dry materials,
- uneven wheel washing, and
- wheel washing stations absent at some exits.

In April 2011, several incidents with a Casagrande Drill Rig occurred. Videos show it spewing
dust on April 6$^{th}$ (shown left), April 14$^{th}$, and April 18$^{th}$. No air quality
monitoring devices were present to document the event. The
construction worker standing to the left is doing nothing to control
the dust. When finally informed, McKissack installed a cyclone
attachment and in-line water spray system to mitigate the problem.

On June 23, 2011, a Delmag RH28 drill rig at Atlantic and
Vanderbilt Avenues spewed “egg-sized chunks of packed dirt and
small stones” into Vanderbilt Avenue, injuring pedestrians and damaging cars. This apparently
happened twice, once in the morning once in the afternoon. During the second event, the
windshield of a passing car was broken. It occurred because soil debris was expelled from the rig while flushing the drill bit casing with compressed air. To mitigate the problem, McKissack issued a stop work order and implemented the use of a large boxed shroud and intermittent closure of a sidewalk during drilling operations. In addition, two flagmen were posted to close the sidewalk when the drill purges the line of debris.

A photo (right) taken behind 718 Atlantic Avenue on July 12, 2011, shows a failure to use dust suppression. Several subsequent photos were taken, and no dust suppression measures were observed.

Dust from arena construction was especially bothersome in 2012. On March 26th, a resident at the corner of Atlantic and 6th Avenues reported, “I got quite a bit of dust blown into my eye and it caused eye irritation for several days.” On April 11th, another resident complained of the “now daily relentless barrage of billowing dust clouds into a residential neighborhood” from Barclays Arena-LIRR rail yard work.

Failure to use dust suppression when unloading materials is evident in the photo at right, taken on June 1, 2012 at the Barclays Arena site at Carlton Avenue and Pacific Street. It is one of nearly two dozen photos of that incident. The observer noted that dust drifted into the residential neighborhood, as indicated by the fallout on a nearby parked car (below, right). The observer called 311 and was told to contact the contractor.

OEM’s quarterly reports state that many observed dust plumes do not migrate off-site. However, residents have frequently observed off-site dust in public areas due to construction activities. On March 26, 2012, for example, pedestrians at the corner of 6th and Atlantic Avenues were forced to walk through clouds of dust blown from the Barclays construction site (below, left).
On March 20, 2012, a video uploaded to YouTube documented trucks stirring up "drifting dense massive dust" in the staging area on Block 1129 for nine hours. No dust suppression measures were observed during that period. In addition, the filer reports that the closest air monitors were on Vanderbilt Avenue at Pacific Street and the Sixth Avenue Bridge between Pacific Street and Atlantic Avenue. If confirmed, these locations would not be positioned to capture the excessive dust generated by the trucks. The dust clouds on the video appear to head westward toward Carlton Avenue and Dean Street. A snapshot of the trucks and dust clouds is shown above.

Some improvements have occurred following AYW's coverage of a large uncovered backfill pile and additional documentation of dust coming off the staging area surfaces. This may also be due to the webcam placed by AYW which faces the Hunt section of the staging area (now closed to begin construction of the surface parking lot). When it functioned as staging, a specific worker was tasked with misting when deemed necessary. The worker used a fire hose attached to a City fire hydrant.

Recently (mid-June 2012), residents observed a water truck watering some well-traveled truck paths. However, piles continue to be uncovered and unmisted in active work areas as well as in areas that have been dormant for several weeks. Ponsillico, the railyard contractor, appears to water less frequently than Hunt did. Ponsillico also regularly schedules excavation, grading, and transfer of storage piles at night when no air monitors are present. For example, AYW noticed that a large pile of backfill was created almost entirely during a period of extended work hours. It was moved to another location at night, and trucks were loaded with dirt late at night adjacent to the periphery fence of the site, directly across the street from residences, without any watering or air monitors in place.

Recommendations. The following are recommended.

- Implement and maintain dust suppression methods as required.
- Deploy air monitors at more locations to capture fugitive dust events.
- Review the means of dust suppression on haul roads and at loading/unloading areas to ensure sufficient availability of water and sufficient means of distributing the water.
  - Acquire more permits, if necessary, to use water hydrants and install meters and backflow preventers as a source of water for dust suppression.
  - Install portable water cannons around the perimeter of work areas or on mobile flatbed trucks.
  - Install portable misters.
  - Use water trucks of 2,500 to 5,000 gallons to periodically spray interior roadway surfaces.
  - Use biodegradable, environmentally friendly chemicals on roadway surfaces to reduce generation of fugitive dust.
• Identify who, among the multiple workers and equipment operators at a site, are responsible for watering surfaces.
• Identify who is responsible for providing the water for wetting.
• Identify who is responsible for placing gravel on unpaved roads and how often.
• Have FCRC’s on-site environmental monitor verify that wheel washing stations are present and in working order at all exits.
• Use windbreaks. A windbreak is a silt fence or similar barrier. It can control air currents at intervals equal to ten times the barrier height.
• Use barriers between the soil and the wheels of construction vehicles:
  o Woven geotextiles can be placed on the driving surface to effectively reduce dust throw and particle migration on road surfaces.
  o Stone can also be used for construction roads for effective dust control.
  o Biodegradable mulches are available.
  o Rolled erosion control blankets can also be used.
Monitoring of Fugitive Dust Emissions

Original FCRC commitment. FCRC would implement a Community Air Monitoring Plan (CAMP) based on the guidelines of the NYS Department of Health (NYSDOH), which are found in “Generic Community Air Plan” (Appendix 1A to NYSDEC’s DER-10, Technical Guidance for Site Investigation and Remediation). The generic CAMP requires VOC and PM$_{10}$ monitors both upwind and downwind of an area during ground intrusive activities and demolition of contaminated or potentially contaminated structures. In addition, fugitive dust migration should be visually assessed during all work activities.

PM$_{10}$ monitoring should use real-time equipment capable of integrating PM$_{10}$ over 15 minutes for comparison to the PM$_{10}$ action level. If the downwind PM$_{10}$ level is 100 ug/m$^3$ greater than the background (upwind perimeter) for the 15-minute period, or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed, and continuous monitoring at the downwind monitor must be conducted until PM$_{10}$ levels are reestablished below the CAMP action levels. Work may continue with dust suppression techniques provided that no visible dust is migrating from the work area.

If downwind PM$_{10}$ concentrations are greater than 150 ug/m$^3$ above the upwind level after implementation of dust suppression, work must stop and a reevaluation of activities initiated. Work can resume provided that dust suppression and other controls reduce downwind PM$_{10}$ to within 150 ug/m$^3$ of the upwind level and prevent visible dust migration. Background readings and any readings that trigger response actions should be recorded in the project logbook. All readings must be recorded and available for NYSDEC, NYSDOH, and County Health personnel to review.

Based on the CAMP prepared by Roux Associates in 2007, air monitoring stations would be about four to five feet above the land surface (see AYW photos below). The equipment must be equipped with an audible alarm to indicate exceedance of the action level. For this project, the alarm on the downwind particulate monitor was set to go off when it reaches 90 ug/m$^3$ above the upwind (background) monitor.
According to the CAMP, a Davis Corporation wireless instrument would be used for collecting wind speed, wind direction, temperature, and barometric pressure at least three times per day, and it would be used to position the PM_{10} monitors.

**Comments.** The CAMP was prepared on February 6, 2007. At that time, the most recent version of the NYSDEC’s DER-10 was dated 2002. The current version of this document was released on May 3, 2010.

According to the CAMP, the project site would be excavated to an average depth of approximately 30 feet below the land surface, which would require the removal of about one million cubic yards of soil. Excavated material would be stockpiled in various areas of the site, if necessary, pending waste characterization sampling.

In December 2009, HDR developed a General Best Monitoring Practices document that addressed problems evident during the fourth quarter of 2009 such as lack of adequate monitors, inadequate positioning of monitors, and incomplete visual observations in the logbook. The document was issued in March 2010 and a final version was anticipated for the second quarter of 2010. FCRC also issued a revised Community Air Quality Monitoring (CAQM) Compliance Plan during March 2010. The CAQM requires FCRC to hire an OEM at the commencement of intensive construction activities.

During the first and second quarters of 2010, five monitors were available, although only three were deployed at the same time because up to two were typically out for recertification. The number and placement of the monitors varied according to the activity and wind direction. In late May of 2010, HDR found PM monitors at locations that were not within the influence of site activities for an unreasonable length of time. This issue was discussed with FCRC’s mitigation engineers and the monitors were relocated. Two additional monitors were ordered at the conclusion of the 2010 third quarter due to the expansion of the work area sites.

**Problems.**

- The monitors are generally discontinued during conditions of precipitation or frozen ground. They also are not as effective during periods of high humidity or temperatures below 32°F. Although windborne fugitive dust from storage piles would not be as great under these conditions, PM_{10} could still be emitted from diesel combustion and from excavation work such as drilling.

- AYW has observed that the air monitors are deployed from approximately 7 am to 4 pm on weekdays, not during extended hours at night or on weekends.

- Placement of the monitors may not be effective if wind direction changes frequently or if the observer cannot ascertain which monitor was the “downwind” monitor. Some monitored data actually shows lower PM10 readings for the “downwind” monitor than for the “upwind” monitor.

- Use of two or three monitors may not be sufficient to capture high readings at a work site if the work area is large or if dust problems develop at multiple site locations. During the first quarter of 2011, HDR noted an incident on February 3rd where an additional PM monitor should have been deployed downwind in the vicinity of the Carlton Avenue Bridge.
15-minute averaging periods for the data are not reliable or useful unless observers know for certain that a particular monitor was upwind or downwind. Under some weather conditions, the wind can be highly variable. The 15-minute PM\textsubscript{10} averages may reflect a wind direction that occurred only 50\% of the time.

Unless observers are available to verify the conditions that affect readings, a monitor may show peak readings because (e.g.) a truck passes by and not because of upwind excavation.

Meteorological data that is averaged three times per day, as recommended in the CAMP, is not sufficient to correlate with air quality data averaged at 15-minute intervals.

Only PM\textsubscript{10} is monitored. PM\textsubscript{2.5}, which has a lower permissible concentration under the NAAQS, is not included. PM\textsubscript{2.5} from diesel exhaust has been associated with increased incidence of asthma in children.

An audible alarm on the monitors may go unnoticed if no one is nearby to hear it.

**Recommendations.** The following are recommended.

- Deploy monitors during extended hours work.
- Use more than three to five monitors where the work area is large or where activities are ongoing at multiple locations.
- Use a state-of-the-art monitoring system with built-in data loggers that send information wirelessly to a computer program that can evaluate the locations and wind data and identify which monitors are “upwind” or “downwind”.
- Install at least one permanent PM\textsubscript{2.5} monitor to ascertain 24-hour and annual concentrations of PM\textsubscript{2.5} in the vicinity of the work sites.
- Set the audible alarm to also ring the cell phone of an employee who will respond to the monitor.
**Diesel Emissions Reduction**

**Original FCRC commitment.** FCRC shall implement a diesel emissions reduction program, which shall include minimizing the use of diesel engines and maximizing the use of electric engines in lieu of diesel. In particular, FCRC shall:

- Ensure sufficient grid power is available to each site as early as practicable and commission permanent grid power service for Buildings 2 and 3 prior to the peak period of construction. This would minimize the use of diesel engines, by using electric engines operating on a power grid. Such equipment may include welders, rebar benders, scissor lifts, and hydraulic articulating boom lifts.

- Ensure the distribution of power throughout the Project at all locations where electric engines are to be used in order to avoid the use of portable or stationary generators where practicable.

- Use only electric engines where practicable (e.g., welders, compressors, electric saws, forklifts, etc.).

- Ensure that all contractors plug into the grid where available and do not use portable generators (diesel or gasoline, small or large).

- Ensure that generators will not be used for tasks where grid power is available, and that diesel engines will not be used for tasks that can be performed with electric engines.

- To the extent practicable, FCRC shall require that all stationary engines be located at least 50 feet from locations such as sidewalks, residential or school windows, and building air intakes.

**Comments.** During the second quarter of 2010, FCRC’s OEM identified five pieces of Hunt’s equipment that did not meet the DPR requirements. Hunt subsequently had the equipment retrofitted with diesel particulate filters and brought into compliance. Additional noncompliance issues at the rail yard site were documented by HDR in 2011. In some cases, the OEM allowed the equipment to remain on-site for over three months while waiting for a DEP-compliant substitute to arrive.

**Problems:** Hunt, the arena general contractor, did not contact Con Edison until the second quarter of 2010, and the utility could not address the request for an electric grid until after the peak summer season. The temporary service required to reduce the need for generators was also dependent on Con Ed completing the installation of temporary feeds to the meter/service stations. Con Ed did not make the power grid available prior to or during the peak construction period. It finally became available in 2011. Meanwhile, contractors used generators to power electric equipment. Some contractors completed their work before the electric grid was ready.

The use of the temporary power grid from ConEd was considered impractical in some cases. In a memo to the OEM in April 2010, Hunt Construction Group stated that using temporary Con Ed service for the steel welders at the Barclays Arena was impractical because long lengths of cable would have to run “all across the project and constantly moved around”, which would create unsafe working conditions. Therefore Banker Steel would use diesel-powered generators, but would use generators that were less than 50 HP or which had DPFs installed.
However, ConEd temporary service was used at the Barclays site to power site trailers, Hunt’s project management office, and sidewalk bridge lighting.

Similarly, a memo from the McKissack Group, in April 2011, noted the following impracticalities for the LIRR rail yard site:

- There is no practical use for a temporary power system as the type of work to be done is not fixed and is not conducive to electric machinery. The yard work uses large construction equipment that is mobile and diesel powered and has no equivalent electrically powered equivalents.
- The required air compressors are very large and need to be moved around every few days. Providing electrically powered compressors would therefore require a very large service and distribution throughout a long and narrow site, which is not practical.
- Small tools can be powered from the car shop or small local generators of 5 kw or less.
- The large size of the site coupled with the small demand for electricity makes an electric distribution system impractical because it would be prohibitively expensive and underutilized.

Recommendations: The following steps are recommended:

- Contact Con Edison at project start-up to determine the lead time for supplying an electric grid throughout the project area.
- FCRC should not start construction phases that could benefit from an electric grid until the grid has actually been implemented.
- Modeling of impacts over a 25-year construction period should show the difference between the concentrations resulting from all-diesel equipment and reductions in diesel equipment due to an electric grid.
Ultra-Low Sulfur Fuel

**Original FCRC commitment.** FCRC shall require the use of ultra-low sulfur (i.e., fuel having less than 15 parts per million (15 ppm) sulfur content) for all equipment having diesel engines.

**Comments:** No citizens have registered complaints regarding ULSD. The first quarter report for 2010 stated that HDR “continues to request USLD fuel receipts periodically” to confirm that this requirement is being met.

**Problems:** The construction analysis does not include the 1-hour SO$_2$ standard established in 2010.

**Recommendations.** The following is recommended.

- Analysis of future construction impacts for the original 10-year period and the revised 25-year period should be carried out for the 1-hour SO$_2$ standard that was established in June, 2010.
- Analysis of construction impacts should include the actual truck traffic and deployment of equipment that has occurred since construction start-up to determine whether residents have been or would be subjected to significant adverse impacts.
Tailpipe Emissions Reduction

**Original FCRC commitment.** FCRC shall employ best available tailpipe emissions reduction technologies for reducing DPM emissions for non-road diesel engines with a power rating of 50 hp or more. Diesel particle filters (DPFs) able to reduce DPM emissions by at least 85% would be used except where DPFs cannot be used for safety reasons or where the diesel engine would not function properly. In these cases, diesel oxidation catalyst (DOC) or other tailpipe reduction technology able to reduce DPM by at least 25% would be required.

**Comments:** Diesel particulates are a particular concern in NYC where studies have found a direct association between diesel exhaust and asthma in children. HDR found that some diesel equipment did not have DPFs and required it to be sent out for installation of DPFs. HDR did not request DPF documentation where the amount of equipment was limited and previously confirmed to be compliant.

**Problems.** Despite HDR’s diligence, residents have complained about diesel exhaust fumes from on-site equipment. As recently as April 9, 2012, a resident uploaded three videos to YouTube showing exhaust fumes from a piece of diesel equipment moving back and forth on a rail track at the Vanderbilt rail yard. The resident described the fumes as noxious and indicated that they were carried off-site and into the neighborhood.

**Recommendations:**

- To avoid problems in policing equipment with DPFs, FCRC should require contractors to use equipment that complies with EPA Tier IV emissions.
- Modeling of pollutant concentrations for a 25-year construction period should show the difference between older diesel equipment that has been retrofitted with DPFs or DOCs and new diesel equipment with Tier IV emissions.
- Increase the number of people responsible for policing equipment on-site.
ENVIRONMENTAL OVERSIGHT AND COMMUNITY RELATIONS

The means of ensuring compliance with the construction mitigation measures and responding to complaints from the community are varied and some of them have not been implemented.

Construction Worker Training

Original FCRC commitment. As stated in the subsection on Fugitive Dust Emissions, Turner Construction was required to conduct training sessions for managerial personnel employed by construction contractors and subcontractors. Annual refresher sessions were also required.

Comments. Training construction workers in mitigation measures is the first line of defense against violations of the MEC. The PowerPoint presentation used by Turner stressed the mitigation measures, importance of compliance, being a good neighbor, etc. The managers were supposed to impart this information and enthusiasm for doing the right thing to their employees.

Problems. Despite the emphasis on training, the actions of individual construction workers are a prime source of citizen complaints. Illegal parking, illegal idling, driving down the wrong streets, standing by while equipment spews dirt into the street or stirs up clouds of dust, failure to cover loose materials, and placing noisy equipment at property lines near residences without shielding are just a few of the numerous types of complaints documented by angry residents over the past two years. Perhaps managers did not get the word to all of the employees. Perhaps the mix of employees changed during the course of the construction period and new ones did not get the message. Perhaps the construction workers are used to high levels of noise and dust and don’t understand the reasons for all the fuss. Perhaps the workers don’t want to be bothered with wetting soils or feel they don’t have time for it. Perhaps employees have been doing their job the same way for a long time and “nobody tells me what to do!” Regardless of the reasons, the training concept fell short.

Enforcement procedures include the Two Strike rule, which allows FCRC to remove a driver from the project if he parks illegally or uses the wrong route (e.g.) more than twice. However, many of the workers seem to “get away with it” and the low probability of being caught creates little incentive to follow the protocols. Although FCRC can suspend contractors without compensation until a problem has been remedied, this appears to have been applied primarily to emergency situations (e.g., the Casagrande drill), where contractors generally respond quickly. It does not appear to be applied to situations where workers fail to suppress dust during loading operations.

Recommendations. FCRC and Turner Construction need to look into the reasons why employees have violated the conditions of the MEC despite the training sessions that have been held. In what situations did employees refuse to follow the protocols and why? In what situations were employees genuinely unaware of the protocols? In what situations were employees following the lead of their supervisors? To what extent do workers feel they can probably get away with violating the rules? How can these issues be remedied? What incentives would encourage workers to follow the protocols?
FCRC On-Site Environmental Monitor

Original FCRC commitment. An On-Site Environmental Monitor (OEM) was to be established to ensure compliance with the environmental commitments during construction. According to the CAQM, the person will be a full-time FCRC employee who is a qualified field engineer who will be on site or in the site construction office at all times during the work day. According to the job description in the final version prepared by Turner Construction and dated 9/07/10, the OEM’s responsibilities include the following activities with regard to air quality and noise:

- meet daily with contractors’ site supervisors to understand planned work activities that may generate noise, fugitive dust, other air pollutants, and vibration,
- discuss weather conditions with site managers to determine potential for generating off-site impacts,
- identify off-site activities and impacts that may be misattributed to the project and report them to the property authorities,
- record deficiencies in daily reports, and correct by providing notice to responsible party, and monitor progress of responsible party’s corrective action through resolution of non-compliance,
- compile DEP noise plans to be kept on the site,
- monitor truck travel routes, queuing, and idling, and confirm proper construction worker parking,
- review noise plans in relation to equipment sound levels shown in Table 17c-3 of the FEIS
- enforce use of electrically powered equipment wherever feasible,
- monitor positioning of noisier equipment and deliveries in relation to sensitive receptor locations,
- require noise shielding or barriers where practicable,
- ensure site perimeter fence is 16’ high where adjacent to sensitive locations,
- monitor the time of work to ensure noisiest activities are performed during weekday work hours where practicable,
- compile vibration monitoring device data where required, and
- confirm compliance with the CAQM and CAMP.

The CAQM includes daily forms to be filled out by the OEM, including a Daily Summary, a 3-page Daily Inspection Form, an Incident Report Matrix, an Equipment Compliance Log, a Refueling Log, and Early Electrification Forms.

Comments. The OEM is the next line of defense in maintaining the MEC because the OEM is supposed to be on-site every day meeting with contractors and observing the site conditions. According to the CAQM, FCRC was to hire an OEM at the commencement of intensive construction activities, which was apparently considered to be 2010. During the second quarter of 2010, HDR expressed concerns with lack of oversight by FCRC on the job site. Chuck Baldwin of Turner Construction was hired to handle the position until mid-July and HDR noted an improvement in on-site compliance.

The current OEM is Adam Schwartz, a Vice President at FCRC with an MCE in Construction Engineering and Management. Mr. Schwartz has addressed environmental issues at the Cabinet meetings and has indicated that he has an OEM team to respond to issues. In addition, Mr. Schwartz is responsible for on-site air quality monitoring. Based on the quarterly HDR
reports for 2011, the OEM conducts weekly meetings with the on-site OEM team, HDR, and project OEM liaisons.

**Problems.** AYW has documented numerous violations of the MEC and CAQM during the past year, suggesting that the OEM has too many responsibilities to handle. The size of the team available to Adam Schwartz is apparently not sufficient to cover the entire construction area on a daily basis or during extended hours work.

**Recommendations.**

- Increase the number of people who assist the OEM so that the size of the team is commensurate with the scope and schedule of the work.
- Alternatively, divide the OEM’s duties among several full-time people.
ESDC On-Site Mitigation Monitor

**Agency responsibilities.** ESDC is responsible for both sponsoring the development and overseeing the construction. In 2007, ESDC implemented actions designed to increase oversight and improve the flow of information on the project. This included designating a person or consultant team to represent ESDC in monitoring construction activities, coordinating with construction team and City and State agencies, keeping ESDC apprised of substantive issues, and holding regular meetings with local elected officials.

**Comments.** Although ESDC has protocols for oversight, it has few resources assigned to oversight. Therefore, ESDC hired HDR in the role of Owners Representative – Mitigation Monitor. HDR and/or its subconsultants have been performing this role on behalf of ESDC since May 2007 and represent the next level of oversight for the MEC. HDR is required to provide a historical record of activities from project commencement to completion. This is to be accomplished through quarterly reports that identify: 1) ongoing activities and their status, 2) items that need to be started in the future, 3) areas of concern, and 4) items that have been completed. Much of the information acquired by HDR is from reports by the OEM or other consultants (e.g., Roux Associates) working on-site. Based on the quarterly reports, HDR representatives visit the site on a weekly basis for four to six hours from early morning to early afternoon to gather information for their quarterly reports. HDR apparently visits the site on the same day of the week each month. Currently, HDR visits the site on Thursdays.

HDR’s reports appear to be comprehensive. According to the reports, HDR has documented violations of the MEC and brought them to the attention of the OEM for resolution. Some of the incidents reported on the AYW website appear in the HDR reports along with additional detail.

**Problems.** Based on the first and second quarterly reports for 2010, two HDR representatives conducted weekly site visits and one inspected the traffic flow. Given the size of the Atlantic Yards project, the weekly meetings were not sufficient to identify all of the issues that developed, especially with regards to fugitive dust. This may have prevented knowledge of MEC violations as well as action to mitigate them, particularly in cases where the OEM was also unaware of incidents.

AYW was able to obtain copies of the reports through FOIL. The quarterly reports are not completed until at least three months after each quarter. This makes correlating incidents on the AYW website with information in the reports difficult to accomplish in a timely manner.

**Recommendations.**

- HDR’s weekly reports should be posted on-line on the ESDC website in a timely way.
- HDR should complete the quarterly reports and make them available within 30 days of the end of the quarter.
- ESDC should make the reports available to community groups without the need to request them through FOIL.
- The timing of HDR’s site visits should be less predictable, and they should visit the site on different days of the week and at different times of the day.
- HDR’s staffing for site visits should be commensurate with the scope and schedule of the work.
- HDR should regularly ensure Construction Mitigation Plans are updated to meet updated regulations.
Metropolitan Transit Authority (MTA) Construction Oversight

Agency responsibilities. The MTA is responsible for construction, construction contractors, and vendors on its own construction projects. In 1983, the state legislature created the Office of the Inspector General (OIG) specifically within the MTA, but reporting only to the Governor and Legislature, and independent of MTA management and its Board. Public Authorities Law (PAL) §1279 authorizes and directs the MTA Inspector General to independently review the operations of the MTA and its constituent agencies. This includes the power to investigate complaints, interview people, recommend remedial action, interact with law enforcement officials, subpoena witnesses, monitor implementation of recommendations, and to do “all things necessary to carry out the functions, powers, and duties of the office.”

The OIG maintains a website with information on the OIG complaint unit phone number, the address of the OIG, and a means of emailing a message to the OIG. Citizens can register a complaint or allegation against the MTA, one of its constituent agencies, or any individual or entity that does or is trying to do business with the MTA. The types of complaints that citizens are encouraged to report include construction fraud, purchasing irregularities, theft, vendor wrongdoing, workers’ compensation fraud, time and attendance abuse, poor performance, and waste of money. The OIG website does not list construction complaints among its responsibilities, and the responsibility for responding to construction complaints other than (e.g.) fraud is not immediately clear.

The MTA’s Capital Construction office apparently has responsibility for environmental oversight for MTA projects. For example, it issued the Construction Environmental Protection Program for the Fulton Street Transit Center (March 2005). It also has websites for the Second Avenue Subway Station, 7 Line Extension, Fulton Street Transit Center, East Side Access, and South Street Ferry projects where anyone can access and download a variety of documents including quarterly reports, air quality monitoring studies, construction updates, etc.

Comments. Because the Metropolitan Transit Authority (MTA) is a State-wide public authority, it can and does supersede local regulations and agencies. Several blocks containing construction inside the Atlantic Yards footprint are owned by Long Island Rail Road (LIRR), which is a subsidiary of the MTA. As a result, New York City regulations do not apply on LIRR property and City agencies are not authorized to oversee construction work. This apparently includes the Department of Buildings, Department of Environmental Protection, and the Mayor’s Office (311 complaints).

Problems. Because City agencies have no authority on MTA property, 311 calls made about construction located there often remain unresolved. MTA apparently oversees the construction work on the LIRR property without any procedure for community members to reach it.

Unlike the Second Avenue Subway (e.g.), Atlantic Yards is an ESDC project, not an MTA project. Therefore, the MTA has not (to our knowledge) prepared a Construction Environmental Protection Program or a website for it. Thus, an important component of construction oversight is missing.

Recommendations: The following recommendations are suggestions for improving oversight of construction on LIRR property. Not all of them need to be implemented as adopting some would exclude others.
• As a state agency, ESDC should involve the MTA in construction oversight of the LIRR property;
• The OIG should be the office that accepts 311 calls from NYC and/or the OIG should accept construction complaints directly from citizens;
• The MTA Capital Construction Office should provide a liaison to the community to deal with construction issues;
• The MTA should set up a website for Atlantic Yards and make relevant documents available for download; and
• The MTA should prepare a Construction Environmental Protection Program for the work being done on the LIRR.
FCRC Construction Coordinator/Community Liaison

**Original FCRC commitment.** Per the MEC, page 21, Section 8, FCRC is required to have an on-site construction coordinator to function as a liaison between FCRC and the community with respect to construction related issues. The coordinator shall be available to consider specific concerns raised by the community with respect to the construction issues and seek to resolve such issues.

**Comments.** The construction coordinator/liaison provides a link between citizens who have a complaint and the OEM or other person at FCRC who can respond to the issues. It is an important position in terms of maintaining positive community relations and community trust. It appears to be the only means by which residents can directly contact the developer with a complaint rather than go through various City agencies or elected officials. Brigitte LaBonte is currently the construction coordinator.

**Problems.** The duties of the construction coordinator are vague. The frequency of on-site visits, the means of being “available” to the community, the requirements to document complaints, and the authority to resolve community issues are not specified.

FCRC has been inconsistent in providing a construction coordinator. When construction significantly lessened from the fall of 2008 through 2009 no community liaison was present although a modest amount of construction continued along with construction related impacts. For much of 2010 and 2011, the community liaison was on site one or two days a week. FCRC defended its actions by stating that the role of on-site construction coordinator was a “capacity” that it has. When informed the liaison was only on site one or two days a week at a community meeting on June 28, 2011, Rachel Shatz, ESDC’s VP for Planning and Environmental Review, stated FCRC was in violation of the MEC. FCRC then promised to have a person on-site every day.

ESDC the next day stated the MEC does not include a description of the amount of time that must be spent on-site per week. On July 9, 2011, FCRC posted a phone number and email address for the Community Liaison’s office but no office hours. As of June 2012, the on-site construction coordinator is still not on-site on a regular basis and no office hours have been posted.

FCRC has erred in not supporting and developing the role of construction coordinator/community liaison more vigorously because it is an important component of the oversight process. Residents who observe violations of the MEC can bring them to the attention of the liaison, who can then contact the OEM. This would seem to be a benefit to the developer. If the construction coordinator/liaison is not available to address residents’ concerns, then they will feel frustrated and ignored. Therefore, the construction coordinator/community liaison becomes an important means of maintaining contact with local residents.

**Recommendations.** If this position were handled well, it could reduce the number of complaints that would be registered with City agencies. Recommendations for an amended MEC are as follows:

- The liaison should maintain on-site office hours during at least three days per week and at least one evening per week and be available more frequently if specific incidents warrant it.
- FCRC should specify the authority of the construction coordinator to resolve construction issues.
- FCRC should specify the lines of communication among the construction coordinator, the OEM, and HDR and the means by which issues will be resolved.
- The liaison should hold meetings with community groups on a monthly basis to resolve construction-related concerns.
- The liaison should publish a quarterly report or newsletter discussing issues and the steps taken to resolve them.
- The liaison should provide community members who visit her office with a copy of the complaint they file.
ESDC Community Relations Manager

Original commitment. In May, 2007 ESDC announced it would hire a full-time liaison between ESDC, elected officials, community representatives and the general public. The ombudsperson would ensure that residents remain in the loop, and that community concerns receive proper attention.

Comments. The collapse of the Ward Bakery during asbestos remediation in April 2007 is considered by some to be the reason for the announcement of the oversight measures in May 2007 that included the ombudsperson. It was to be intermediary between the community and the ESDC. Forrest Taylor’s appointment to the full-time position was announced seven months later on November 27, 2007. Community leaders liked him and considered him to be sincerely interested in resolving their problems. However, the position had no authority and no resources to effect changes. Mr. Taylor left the position in June 2011 after three and a half years, Writing on the AYW website, Peter Krashes stated:

Taylor’s potential often seemed constrained by his situation because his position had little authority or decision-making capacity within the ESDC. Despite his availability, he was often frustrated by his inability to resolve problems in a way that was satisfactory to the community. In October 2009, Assemblyman Hakeem Jeffries stated “... the ombudsman system ... is nonfunctional because the higher-ups at ESDC aren’t interested in empowering the ombudsman in a manner that would benefit the community.”

Problems. The post has been vacant since Mr. Taylor’s departure over a year ago. ESDC released a job posting to fill the position, but the title is now “Manager – Community & Government Relations.” The posting states “The basic function of this position is to foster and manage communications and relationships with local elected officials and community groups/leaders within the Brooklyn community relating to the Atlantic Yards Project; and assist in mitigating the effects of construction by coordinating all relevant parties.” ESDC appears to have changed the position from one of public advocate to one of public relations.

The concept of coordinating all relevant parties to assist in mitigating the effects of construction, as well as the means by which the assistance can be carried out, is vague. Will this person have the ability to halt construction? Tell FCRC to reduce nighttime work? Contact NYCDOB to question the necessity of nighttime work permits? Review vibration records to support the validity of residents’ claims? Ensure that community concerns are included on the agenda for the District Service Cabinet meetings? Given the apparent experience of Mr. Taylor, the answer to these questions is likely to be “no”.

The original ombudsman position has the potential to be an important component in ensuring that the MEC was fully implemented. It would give community representatives and elected officials a direct line of communication to ESDC that could guarantee acknowledgement and possible resolution of their complaints if they deemed FCRC unresponsive.

Recommendations.

- An Ombudsman should be hired to address community concerns and facilitate accountability of other ESDC Atlantic Yards-related staff.
- ESDC should specify the authority of the ombudsman to resolve construction issues.
- ESDC should specify the lines of communication among the ombudsman, the construction coordinator, the OEM, and HDR and the means by which issues will be resolved.
Calls to 311

Agency Responsibilities. The Mayor’s Office of Operations provides access to City government services through its call center: 311 online and 311 app. After callers identify the address of the incident, they receive a report number for the complaint. Complaints are then routed to the appropriate agency such as NYCDEP or NYCDOT.

Comments. A report prepared by graduate students at the Pratt Institute reviewed 311 calls about Atlantic Yards for 2007 to 2010. The report found that the highest number of complaints occurred in 2008, which is when most of the demolition occurred. However, the subsequent reduction of complaints was also caused by the rerouting of complaints. Residents attempting to contact 311 about problems associated with the railyard were told their complaints would need to be filed with the MTA, which had no mechanism for documenting and recording the complaints. Therefore, complaints considered to be under the jurisdiction of the MTA were not logged. Otherwise, the complaint was sent to a relevant City agency. Although the data is compiled by the City, it is not circulated to stakeholders. Students also noted that the system does not utilize key words to group numerous complaints about the same location. Multiple complaints about Atlantic Yards, for example, could be sent to multiple City agencies, which may not realize that a single project was the basis for all of the complaints.

In December 2011, the Mayor’s Office assigned a resource, Lolita Jackson, to coordinate responses from City agencies and work with ESDC. Most recently, the community was told that callers with complaints about Atlantic Yards should identify the incident location as 620 Atlantic Avenue.

Problems.

- Based on the incident addresses, OER cannot distinguish complaints relevant to Atlantic Yards from those in the general vicinity of the project.
- Barclays Center and Atlantic Yards are names known throughout the community. Residents who do not regularly read the AYW or ESDC websites may not know about the code address of 620 Atlantic Avenue.
- The use of 620 Atlantic Avenue is confusing to residents and the 311 operators when the incident in question is actually several blocks away.
- Because city agencies do not oversee MTA property, city agencies have no address to respond to for complaints about work in the Vanderbilt railyard.

Recommendations. Since residents may be subjected to significant adverse air quality and noise impacts over a 25-year construction period, the development of a more accurate and efficient means of handling complaints is imperative. Some suggestions are as follows:

- The 311 system should allow callers to use Atlantic Yards or Barclays Center as an alias when using 620 Atlantic Avenue.
- Alternatively, callers should be able to use Atlantic Yards as an alias with the actual incident address so that construction complaints can be identified and forwarded to appropriate people.
- 311 should provide a monthly report on Atlantic Yards complaints to local elected officials and Community Boards 2, 6 and 8 that breaks down incidents by category, type of resolution and time to resolution.
- ESDC should mail or otherwise distribute flyers informing residents of the protocol for calling 311 with complaints about Atlantic Yards construction.
CBA Independent Compliance Monitor

**Original FCRC commitment.** On June 27, 2005, FCRC signed a Community Benefits Agreement (CBA) with eight community groups: All-Faith Council of Brooklyn (ACPB), Association of Community Organizations for Reform Now (ACORN), Brooklyn United for Innovative Local Development (BUILD), Down Brooklyn Neighborhood Alliance (DBNA), Downtown Brooklyn Educational Consortium (DBEC), First Atlantic Terminal Housing Committee (FATHC), New York State Association of Minority Contractors (NYSAMC), and Public Housing Communities (PHC). For the purposes of the CBA, these groups are referred to as the Coalition.

Under Section VIII, Environmental Assurances, FATHC was to work with the developers to establish a Committee on Environmental Assurance to address short- and long-term environmental issues that may affect the surrounding community as a result of development of the arena and project. The committee would establish a working group, and a representative of the project developer would be available to attend the working group’s meetings.

Under Section VIII.C, the developers shall also consult with FATHC to determine appropriate mitigation measures to address, among other issues, a staging plan for construction that minimizes the effects of idling trucks, a pedestrian and vehicular traffic plan, and encouragement of all contractors to use low sulfur diesel in trucks operating at the project.

The CBA requires the board to establish an executive committee, and the executive committee is supposed to hire an independent compliance monitor (ICM) whose job is to ensure the contractual obligations in the CBA are met. The monitor’s job covers a range of issues from the delivery of benefits and jobs to meeting environmental commitments. The ICM is responsible for oversight of the project developer’s, arena developer’s and coalition members’ obligations under the agreement, investigation of complaints brought against the developers, and review of the developers reports.

FCRC is obligated to pay the ICM’s salary. At the commencement of the agreement, FCRC was supposed to place the equivalent of a year’s salary into an escrow account and to replenish the account as necessary.

**Comments.** Section VIII.C states that all potential environmental mitigation measures, their costs and the party deemed responsible for their compliance, is determined by the State. Therefore, FCRC states in the document that it is in compliance with the CBA by following the state mandated process. Section VIII.D (Failure to Comply), however, states that, “If, during the annual review, the ICM determines that the Developers have not adequately fulfilled their obligation under Section VIII of this Agreement, FATHC may seek enforcement pursuant to Section XIII hereof.”

Section XIII is Enforcement. This section states that the developers will be found in default of the agreement if they fail to perform any term or provision of the agreement after notice and sixty-day right to cure. If a review of the ICM report by the Executive Committee finds breach of the CBA, the Coalition can pursue remedies that include binding arbitration or judicial remedies.

**Problems.** The monitor was supposed to be hired within 6 months of the signing of the agreement in 2005. Later, FCRC stated the monitor would be hired six months after the groundbreaking of the arena. As of November 2011, the developer has stated the monitor will be hired for the residential phase of the project. This contradicts the CBA because the executive
committee of the CBA is responsible for hiring the ICM, and the ICM’s salary was supposed to be placed into the bank seven years ago. The CBA gives the community legal remedies to enforce the MEC. However, in the absence of an ICM, or a desire on the part of the Coalition to hold FCRC to its promises, it appears that little can be done.

Recommendations. Assuming that FCRC has placed the funds in an escrow account, the Coalition has the authority to hire an ICM and should do so.
REFERENCES


NYC Department of Transportation, OCMC Traffic Stipulations Amendment #5, Atlantic Yards Reconstruction of the Carlton Avenue Bridge over the LIRR, Brooklyn, NY. August 10, 2010.

Pratt Institute, Urban Environmental systems Management, Sustainable Communities Graduate Students, Atlantic Yards Construction Watch Report. Fall 2010.


APPENDIX A
PREPARES AND REVIEWERS

This report was prepared by Nancy Neuman, Ph.D., of Sandstone Environmental Associates, Inc. Other people who reviewed and the report and provided critical comments include Brook Crossan, Ph.D., P.E., of Mack Associates, Inc., Martin Minnicino of Potomac Hudson Environmental, Inc., and Robert LoPinto, P.E., of Shapiro Engineering, P.C. Resumes are on the following pages.
Nancy C. Neuman, Principal Environmental Analyst

<table>
<thead>
<tr>
<th>Years of Experience</th>
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<tr>
<td>35</td>
<td>Ph.D., Geography, Rutgers University, 1986</td>
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<tr>
<td></td>
<td>M.C.R.P. (Master of City and Regional Planning) Rutgers University, 1976</td>
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<td>B.S., Urban Affairs, Boston University, 1973</td>
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Employment

Sandstone Environmental Associates, Inc., 1993-Present
Metcalf & Eddy of New York, Inc., 1990-1993

Professional Registrations/Certifications

Certificate: Environmental Due Diligence: Principles and Practice, Commonground University, 2009
Certificate, Building Acoustics, Brue & Kjaer, 2009
Certificate, Advanced Seminar in CADNA, Datakustics, 2008
Certificate, Community Noise Enforcement, Rutgers University Noise Technical Center, 2000
Certificate, Improving Indoor Air Quality in Non-Industrial Buildings, Environmental Occupational & Health Safety Institute, 1995
Qualified Environmental Professional, 1993
Certificate, Air Quality Dispersion Modeling, Trinity Consultants, 1986
Certificate, Traffic Noise Analysis, Vanderbilt University, School of Engineering, 1985

Professional Summary

Dr. Neuman has over 30 years of experience in environmental studies and has served as an expert witness for both air quality and noise analyses. Dr. Neuman's air quality experience for mobile and stationary sources of air pollutants includes roadways, parking facilities, airports, construction activities, and industrial sources. examined the relationship between TSP and traffic volume at five sites in New Jersey.

She has monitored noise levels and modeled noise impacts for motor vehicles, railroads, subways, aircraft, playgrounds, concerts, HVAC, industrial sources, power plants, and construction activities. She has been a guest lecturer on community noise assessment at New York University for the Summer Institute in Environmental Impact Assessment and the Science and Environmental Reporting Program.

Dr. Neuman is currently president of Sandstone Environmental Associates, Inc. In previous positions, she was a project manager for Metcalf & Eddy of New York, Project Director for Environmental Studies at Urbitran Associates, Department Head for Air Quality and Noise Analysis at Louis Berger & Associates, and Research Associate at Economics Research Associates. Dr. Neuman has carried out or directed hundreds of environmental studies in the NYC metropolitan area. The following selected projects are representative of numerous relevant air quality and noise studies.
Relevant Experience

Newburgh Marketplace EIS
Review of Air Quality and Noise Analyses, Newburgh, NY
Client: Save Open Spaces
Period: July 2006 – November 2007
Evaluated air quality and noise analyses in DEIS for proposed 850,000-sq. ft. shopping center to identify shortcomings in scope of work and methods of analysis. Reviewed available DEIS chapters and appendices as well as federal, state, and local legislation and guidelines. Prepared air quality and noise reports that were submitted during the DEIS comment period that identified inconsistencies, lack of information and methodological shortcomings. Indicated which issues were of primary concern and which were minor. Concluded that information in the DEIS was not sufficient for the Planning Board to make a determination regarding impacts. The developer subsequently prepared additional modeling and analyses for the FEIS. Reference: John Parker, Parker & Associates, Elmford, NY 914-347-2290

Crotona Park East Rezoning EIS
Air, Noise and Hazmat Analyses, Bronx, NY
Client: Industco Holdings, LLC,
Period: January 2009 – October 2011
Project manager for air quality, noise, and hazardous materials analyses for proposed rezoning of 11 blocks. Directed monitoring, modeling, and analysis of noise levels, including elevated rail lines and TNM modeling of traffic noise. Monitored electric hoist to determine reference noise levels. Directed modeling and analysis of CO and PM10/2.5 from traffic, including elevated Cross Bronx Expressway. Directed AERMOD modeling of pollutants from boilers for heating and hot water at approximately 50 buildings as well as review of potential impacts from industrial emissions of air toxics. Carried out hazardous materials evaluation of 70 properties. Prepared detailed construction analyses for air quality and noise impacts to nearby residential areas. This included four construction phases over an eight-year period. Identified criteria for determining excessive short-term construction impacts. Recommended E designations for relevant properties. Reference: Gerald Wall, Stantec Consulting, New York, NY 212-366-5600

Ridge Hill Development EIS
Air/Noise Analyses, Yonkers, NY
Client: Forest City Ratner Companies
Period: May 2004 – January 2005

Ridge Hill Construction Analysis
Air/Noise Analyses, Yonkers, NY
Client: Forest City Ratner Companies,
Period: May 2007 – August 2007
Analyzed potential construction air quality and noise impacts to existing tenants at the Ridge Hill Development site. Reviewed applicable legislation to determine impact criteria. Directed calculations of cumulative noise impacts at exterior office building due to rock cutting at multiple locations during multi-year construction period. Recommended mitigation measures to ensure suitable interior noise levels for on-site office workers during construction period. Reference: Theron Russell, Forest City Ratner Companies, Brooklyn, NY, 718-923-8656

All City Recycling Fill Material Transfer Station EAS
Air Quality Analysis, Bronx, NY
Client: All City Recycling, LLC
Project manager for air quality analyses of proposed fill material transfer station processing 900 tpd. Prepared air quality protocol for review by NYCDEP. Identified pollutant emission factors for trucks and diesel equipment exhaust (generator, wheel loaders, screener, crusher, forklift) using MOBILE6.2 and NonRoad models. Identified fugitive dust emission factors from vehicular movement, tipping, truck loading/unloading, and materials processing. Designated source types as point, line, volume, or area sources. Prepared emission factors of CO, VOC, NOx, SO2, PM10, and PM2.5 in grams per second for each source for use in AERMOD model. Modeled pollutant concentrations using AERMOD and 5 years of meteorological data. Recommended site plan changes and other mitigation measures to ensure compliance with applicable air quality standards and guidelines. Calculated total annual emissions of pollutants. Prepared air quality report and documentation for review by NYCDOS and NYCDEP. Reference: John Strauss, CSSI, New York, NY 212-741-3432

American Recycling Management Fill Material Recycling Station EAS
Air Quality Analysis, Jamaica, NY
Client: American Recycling Management, LLC
Period: June 2007 – October 2008
Project manager for air quality analyses for permit modification to change throughput to 150 tpd of construction and demolition (C&D) waste and 850 tpd of putrescible solid waste (PSW) in an enclosed facility. Prepared air quality protocol for review by NYCDEP. Identified pollutant emission factors for trucks and diesel equipment exhaust (excavator, wheel loaders, front end loaders) using MOBILE6.2 and NonRoad model. Identified fugitive dust emission factors from vehicular movement, tipping, truck loading and unloading, and materials processing. Prepared emission factors of CO, VOC, NOx, SO2, PM10, and PM2.5 in grams per second for each source for use in AERMOD model. Modeled pollutant concentrations for various exhaust fan capacities using AERMOD and 5 years of meteorological data and compared results with applicable air quality standards and guidelines. Recommended exhaust fan size. Calculated total annual emissions of pollutants. Prepared air quality report and documentation for review by NYCDOS and NYCDEP. Reference: Richard Galli, Galli Engineering, Melville, NY 631-271-9292

AJ Recycling C&D Processing and Transfer Station EAS
Air Quality Analysis, Bronx, NY
Client: AJ Recycling, LLC  
Period: July 2009 – October 2010

Project manager for air quality analyses of permit modification for a construction and demolition (C&D) waste processing and transfer station to increase its daily throughput to 1400 cy. Prepared air quality protocol for review by NYCDEP. Identified pollutant emission factors for trucks and diesel equipment exhaust (wheel loader, excavators, track loader screener) using MOBILE6.2 and NonRoad models. Identified fugitive dust emission factors from vehicular movement, tipping, truck loading/unloading, and materials processing. Designated source types as point, line, volume, or area sources. Prepared emission factors of CO, VOC, NOx, SO2, PM10, and PM2.5 in grams per second for each source for use in AERMOD model. Modeled pollutant concentrations using AERMOD and 5 years of meteorological data. Compared results with applicable air quality standards and guidelines. Calculated total annual emissions of pollutants. Prepared air quality report and documentation for review by NYCDOS and NYCDEP. Reference: Richard Galli, Galli Engineering, Melville, NY 631-271-9292

Castle Hill Fill Material Transfer Station EAS  
Air Quality Analysis, Bronx, NY  
Client: Castle Hill Recycling, LLC  
Period: January 2009 – November 2011

Project manager for air quality analyses of proposed fill material transfer station processing 800 tpd. Prepared air quality protocol for review by NYCDEP. Identified pollutant emission factors for trucks and diesel equipment exhaust (excavator, wheel loader, screener) using MOBILE6.2 and NonRoad models. Identified fugitive dust emission factors from vehicular movement, tipping, truck loading/unloading, and materials processing. Designated source types as point, line, volume, or area sources. Prepared emission factors of CO, VOC, NOx, SO2, PM10, and PM2.5 in grams per second for each source for use in AERMOD model. Modeled pollutant concentrations using AERMOD and 5 years of meteorological data. Recommended mitigation measures to ensure compliance with applicable air quality standards and guidelines. Calculated total annual emissions of pollutants. Prepared air quality report and documentation for review by NYCDOS and NYCDEP. Reference: John Strauss, CSSI, New York, NY 212-741-3432

Courtlandt Community Supportive Housing Development EAS  
Noise Analysis, Bronx, NY  
Client: Phipps Houses  
Period: July 2009 – October 2010

Directed noise monitoring of peak AM, Midday, and PM periods for proposed residential building adjacent to Melrose Station on the Metro North rail line. Identified attenuation to be provided by windows and manufacturers that could provide suitable windows. Presented results in terms of US HUD and NYCDEP criteria for residential uses. Recommended site plan changes to comply with HUD noise requirements for passive recreation spaces. Coordinated with NYC Department of Housing Preservation and Development. Reference: Karen Hu, Phipps Houses, New York, NY 212-243-9090
Publications:


"Introduction to Environmental Planning"; comprehensive course taught by Nancy Neuman at Rutgers University's Department of Urban Planning; New Brunswick, NJ, Spring 1990.


A. Brook Crossan, Ph.D., P.E.
Principal Acoustic Engineer

EDUCATION

Rutgers University, Ph.D., Geophysical Fluid Dynamics, 1974
Rutgers University, M.S., Mechanical Engineering, 1971
University of Pennsylvania, B.S., Mechanical Engineering, 1969

REGISTRATIONS and CERTIFICATIONS

Professional Engineer - New Jersey, Pennsylvania, New York
Professional Planner - New Jersey
Community Noise Enforcement – Rutgers University/NJDEP

EMPLOYMENT HISTORY

2009 – present  MACK Associates LLC

PROFESSIONAL EXPERIENCE

Dr. Crossan has more than 39 years experience in conducting noise studies, environmental impact statements, environmental assessments, and environmental management projects in over 30 states. His environmental experience includes noise monitoring, modeling, and mitigation design, as well as management of comprehensive Environmental Impact Statements. Dr. Crossan has evaluated the noise aspects of planning reports, and engineering plans and specifications for a wide range of residential, commercial, industrial, governmental and transportation-related structures and activities. This has included both construction and operation noise.

The transportation impact assessment has included: truck loading docks, interstate and state highways (for Georgia, Maryland, Pennsylvania, New Jersey, New York, Connecticut, Massachusetts, Maine, and Idaho), both construction and highway noise; county and local roads; electric, diesel, and natural gas buses and bus maintenance facilities; subways, passenger and freight rail; and waterborne including tugs, barges, ferries and berthing facilities; and expansion at general aviation and international airports.

Dr. Crossan also has wide experience in the monitoring, modeling and mitigation design of construction and industrial noise. He has both prepared (more than 400) and critically reviewed (more than 50) many noise studies and EISs. These noise reviews have been performed for: municipal planning boards; citizen groups; environmental groups; and federal agencies.

Dr. Crossan is currently reviewing the Tappan Zee Bridge Replacement DEIS for the Village of Tarrytown (Westchester County side) and the Salisbury Commons Coop (Rockland County side). Meetings and recommendations regarding enhanced mitigation measures are critical to the process.

EXPERT TESTIMONY

• Provided expert environmental/noise testimony to planning boards and/or boards of adjustment in more than 120 different municipalities in NJ and NY
• Provided expert noise testimony to State Superior Court in Bergen and Ocean Counties NJ and Connecticut, and Administrative Law Judges in New York State.

HIGHWAY NOISE

• Performed noise monitoring and modeling for: I-195, I-295, I-78, US 206 and Route 18 in New Jersey; Whitestone Expressway, Grove Street Extension, Bronx River Parkway, and Taconic Parkway in New York; Davis Street Extension, Pennsylvania; I-93 in Massachusetts; and Route 2 Edmonton, Alberta - as well as hundreds local roads. Designed noise barriers where appropriate.

• Managed and conducted noise monitoring and assessment for more than 150 traffic noise studies for developments that generated automobile and truck traffic during construction and operation, including the following states and counties:
  • New York State – New York City (all 5 boroughs), Westchester, Nassau, Putnam, Orange, Rockland, Sullivan, and Ulster Counties;
  • New Jersey – Bergen, Hudson, Essex, Morris, Union, Middlesex, Monmouth, Mercer, Ocean, Atlantic, Camden and Gloucester Counties:
  • Pennsylvania – Bucks County;
  • Connecticut – City of New Haven;
  • Georgia – Fulton and Dekalb Counties;
  • Tennessee – Hamilton County and City of Chattanooga;
  • California – Fresno County;
  • West Virginia – Greenbrier County; and
  • Illinois – Christian, Montgomery and Sangamon Counties.

• Prepared a noise analysis with respect to the New York Grand Prix proposed to be held on a circuit in lower Manhattan around the World Trade Center site.

INDUSTRIAL & COMMERCIAL NOISE

• Performed monitoring of noise levels and assessment of night-time compliance with noise regulations for:
  • salvage yards (Wappinger, NY);
  • asphalt batching plant (Edison, NJ);
  • emergency generators (multiple sites in NJ and NY);
  • plastics extrusion plants (Piscataway, NJ and Brewster, NY);
  • concrete batching plants (North Castle, NY and Edison, NJ);
  • home improvement center loading docks (Old Bridge, NJ);
  • gasoline service stations (Cranford and Aberdeen, NJ);
  • 8 plex movie theater (East Brunswick, NJ);
  • bar/restaurants (North Plainfield, Morristown and Cranford, NJ and Yonkers, NY);
  • truck terminals (East Brunswick, Washington and Hamilton Townships, NJ);
  • truck loading docks (Cranbury, East Brunswick, Hightstown, Monroe, Union and Washington Township, NJ);
  • transfer station (Closter, NJ);
  • recycling facilities (North Bergen & Jersey City, NJ);
  • coal fired power plants (Rainelle, WV and Taylorville, IL);
  • gasoline & diesel service stations (Aberdeen and Mahwah, NJ);
  • hospital (Bronxville, NY); and
  • mixed use city center (White Plains, NY).
Proposed and designed/specified mitigation measures as necessary and appropriate including: increased setbacks, berms, operational changes, acoustic barriers, acoustic louvers on equipment.

HUD NOISE COMPLIANCE

- Performed 24 hour noise monitoring and compared housing sites to HUD site acceptability standards at multiple sites.
  - New Jersey - Jersey City (2) and Atlantic City
  - New York - Manhattan (2), Bronx and Staten Island (2)

RAIL NOISE

- Performed monitoring of noise levels and assessment of impacts to residential developments adjacent to numerous CONRAIL, AMTRAK and New Jersey Transit lines in New Jersey (5 sites), and METRONORTH and AMTRAK in New York State (dozens of sites) and elevated subway lines in New York City (5 sites), as well as rail lines in IL and Edmonton, Canada.

NEPA Environmental Documentation – Transportation Facilities

Dr. Crossan has managed and prepared major elements of NEPA EISs and EAs for a wide variety of transportation projects including: highways, tunnels, bridges, rail lines, airports and water borne commerce. The individual projects are summarized below by state. The functional areas for which Dr. Crossan was responsible are indicated in parentheses.

**Connecticut**
Charter Oak Bridge EIS, Hartford (Air, Noise, WQ, Wetlands)

**Idaho**
Boise River Crossing Study, Boise, ID (Air and Noise)

**Maine**
Rail Transport Study of Coal, Searsport to Portland (Air, Noise, Water Quality)

**Massachusetts**
I-93 (Central Artery) EIS, Charlestown to Boston (Air, Noise, Water Quality)
Connecticut River Bridge EA, Holyoke (Fisheries, Water Quality, Noise)

**New Jersey**
I-195, I-295, NJ 29 EIS (Trenton Complex), Bordentown and Trenton (Air, Noise, Wetlands)
Alternatives Analysis of Truck Lanes for the GSP from I-80 to I-287 in New York (Air Quality and Noise)
US 206 Widening EIS, Princeton to Somerville Circle (Water Quality, Wetlands, Terrestrial, Noise)
Pocohantas Parkway Feasibility Study, Morristown, NJ (Water Quality, Aquatic/Terrestrial Resources, Wetlands, Noise)
Route 18 EA, New Brunswick (Air Monitoring and Modeling, Noise Monitoring and Modeling)

**New York State**
Whitestone Expressway Noise Mitigation, Queens (Noise)
Grove Street Extension EIS, White Plains (Air, Noise, Water Quality, Wetlands)

**Pennsylvania**
Davis Street Extension EA, Scranton (Air, Noise, Water Quality, Wetlands)
State Equivalent NEPA Reviews – New York State

- Wappinger, NY, As Noise Consultant to the Town of Wappinger Planning Board Dr. Crossan is reviewing the construction noise impacts of construction of the new eastern portal in Wappinger for a new aqueduct crossing under the Hudson River for the water supply of the City of New York. This is the DEIS for the Water for the Future Program: Delaware Aqueduct Rondout-West Branch Tunnel Repair. There are significant adverse noise impacts for this 7 to 8 year construction project that must be further mitigated.

- Marketplace Mall, Rochester, NY. Project Manager and Principal Engineer. Conducted detailed environmental (including noise and air quality), traffic and socioeconomic review of proposed major regional shopping mall. Provided expert testimony at SEQRA administrative law hearings held by the NYS Department of Environmental Conservation.

- Kirk Lake, Carmel, NY. As special consultant to the Planning Board reviewed the SEQRA EIS and wetlands delineation for a 200 acre residential development adjacent to Kirk Lake. Major potential impact areas included: surface and groundwater quality; noise from an adjacent general aviation airport; traffic and related impacts; and terrestrial and aquatic ecology. Provided expert testimony before the Planning Board.

State Equivalent NEPA Reviews – Connecticut

- Shopping Center DEIS in New Haven CT. Review of the air quality analysis and noise analysis of potential impacts of the Galleria at Long Wharf Project in New Haven, CT as documented in the FONSI and appendices. Dr. Crossan testified on these matters in State superior court and the project was ultimately withdrawn.
Robert A. LoPinto, PE, President  
Shapiro Engineering, P.C.  
181 South Franklin Avenue, Suite 305  
Valley Stream, NY 11581  
Office Phone: (516) 791-2300  
Office Fax: (516) 791-0782  
e-mail: shapiroengineers@att.net

EDUCATION
ME, Environmental Engineering  
Manhattan College  
The Bronx, NY  
9/73

BS, Chemical Engineering  
Polytechnic Institute of Brooklyn  
Brooklyn, NY  
6/67

Graduate  
US Army Command & General Staff College  
9/78

LICENSE
Professional Engineer, New York State # 53312, 1976

EMPLOYMENT
Shapiro Engineering, P.C., Valley Stream, NY  
9/88 to Present

President, Laboratory Director
• Field Inspection and on site Audits of Industrial Facilities.
• Develop & Design Control Systems for Wastewater, Hazardous Waste, Air Pollution and Solid Waste.
• Prepare Permit Applications, including State and Title V Air Permits & Solid Waste Permits.
• Field Measurements of Noise. Design Noise Mitigation Systems.
• Engineering / Technical Report Preparation, including Solid Waste Facility Compliance, Community Right-to-Know Compliance, Wastewater/Stormwater Compliance and Air Permit Compliance.
• Manage Laboratory Operations, including Quality Control and Report Preparation.
• NYS DEC Independent Environmental Monitor, Calvert- Vaux Park, Brooklyn, NY.

U.S. Army, Corps of Engineers  
6/67 to 9/88

Retired as Lieutenant Colonel
• Over 21 Years active Service. Branch: Corps of Engineers.
• Division Engineer Supply Officer, 25th Inf. Div., Viet Nam.
• Sanitary Engineer, North Atlantic Div., Corps of Engrs., NE Water Supply Study.
• Resident Engineer, NY District, Corps of Engrs.
• Professor of Military Science, Hofstra University.
• Inspector General, USA Armament, Munitions & Chemical Command.
AFFILIATIONS

National Society of Professional Engineers
- Past President, Queens County Chapter
- Past Chairperson, NY State Society’s Engineer/Manager Task Force
- MATHCOUNTS Competition Coordinator

NY Citywide Recycling Advisory Board  1990 - 2011
- Steering Committee Member
- Technical Working Group Member

Queens Solid Waste Advisory Board  1990 - 2011
- Chairperson

Community Board #7, Queens  1990-2011
- Environmental Committee Chairperson
- Sanitation Committee Chairperson
- Vice-Chair of Board, Executive Committee

Ft. Totten Environmental Restoration Advisory Board  1995 - 2005
- Document Review Sub-Committee Member
- CoChair of Board

Queens County, Flushing Bay Task Force  2005 - 2011
- Member

USCG (Ft. Totten) Environmental Restoration Advisory Board  2002 - Present
- Chairperson

NYC DOS North Shore Marine Transfer Station Community Advisory Group
- Chairperson  2007 - 2011

NY City Environmental Control Board
- Appointed to ECB as a civilian member
  Dec 97 - April 98

NY State Northeast Queens Nature and Historical Preserve Commission
- Commissioner, 2005-2009

NY City Dept. Of Environmental Protection Stakeholder’s Committees
- Various Stakeholder Committees, including Air Resources, Stormwater and Wastewater
Martin J. Minnicino
Senior Environmental Specialist, Potomac Hudson Environmental, Inc.

EDUCATION

Rutgers University, M.A., Meteorology, 1978
Rutgers University, B.S., Meteorology with Physics Minor, 1977

REGISTRATION

Certified Environmental Auditor & Site Assessor - NJ Board of Real Estate Appraisers
USEPA Visible Emissions Evaluation Certification
Certified Radon Measurement Specialist - NJDEP
USEPA Radon Measurement Proficiency Program Individual Registration
OSHA Hazardous Materials Training Certificate

EMPLOYMENT HISTORY

1994 - present
Potomac-Hudson Environmental, Inc.

1984 - 1994
Dresdner Robin & Associates

1982 - 1984
Louis Berger & Associates

1980 - 1982
Edwards & Kelcey

1978 - 1980
NJDOT

PROFESSIONAL SOCIETIES

Acoustical Society of America
Air & Waste Management Association
New York Academy of Sciences, Atmospheric Section
American Meteorological Society
American Association of Radon Scientists and Technologists

TRAINING/COURSEWORK

Environmental Auditing & Site Assessments, NJ Board of Real Estate Appraisers
Visible Emissions Evaluation Certification Course, USEPA
OSHA 40-hour Health, Safety and Environmental Training Program (29 CFR1910.120)
and annual refresher courses, Emilcott Associates, Inc.
Indoor Air Quality Measurement Seminar, Enseco-East
Radon Measurement Specialist Course and annual refresher courses, NJDEP
Radon Mitigation Specialist Course, NJDEP

PROFESSIONAL EXPERIENCE

Martin J. Minnicino has 32 years of experience in project management, monitoring, modeling, and assessment services to public and private clients for environmental assessment studies, impact statements, technical reports, regulatory compliance, and expert testimony. Areas of expertise include air quality, hazardous materials, noise, water quality, recycling, transportation, and environmental audits. Mr. Minnicino serves PHE as Supervisor of Field Logistics for all monitoring operations including surface and ground water quality, soil and sediment, noise, and air quality. A selection of representative relevant projects is shown on the following pages.
**MARTIN J. MINNICINO**
Senior Environmental Specialist, Potomac Hudson Environmental, Inc.

- **Air Quality** - Responsible for the development, field set-up, and conduct of air monitoring operations for the collection of priority pollutants, toxic air pollutants, and meteorological parameters for the following representative projects:

  - **Pilot Service Station, Mahwah, NJ (Client: Private).** Air quality monitoring to determine diesel- and gasoline-related emissions from two large-scale motor vehicle service stations on State Highway 17. For diesel, NIOSH Method 5040 for elemental carbon particulates was employed and collected on 37 mm glass fiber filters with low-volume samplers. For gasoline, Low-Level USEPA Method TO-40 was employed and collected with certified SUMA canisters. Simultaneous meteorological and traffic data was collected to correlate dispersion.

  - **Newport EIS, Jersey City, New Jersey.** Prepared EIS for 250 acre mixed-used development. Supervised and conducted pre-and post-construction noise monitoring and modeling and air quality monitoring program for PM$_{10}$, PAH and lead, minor traffic analysis, and construction vehicle generation estimates. Determination of worst traffic year. Client: Jersey City Redevelopment agency.

  - **Twill Printing Indoor Air Quality Study, Union, New Jersey.** Conducted a site survey and evaluation of indoor air quality as a response to occupant and Regional Health Commission concerns. The survey and evaluation centered around emission sources and communication routes from the printing operation to an adjacent office building caused by imbalances in HVAC design and exterior venting.

  - **Oktagon Odor Complaint Investigation, New York, New York.** Developed and implemented an indoor air quality sampling program and evaluation in response to complaints of odors to a midtown Manhattan residential building from an adjacent parking garage. Multiple-location passive eight-hour sampling of several vehicle-related air pollutants were conducted at both the residences and garage. Mitigation strategies were designed to rectify the problem.

  - **Newport EIS, Jersey City, New Jersey.** Prepared an EIS for 250-acre mixed-used development, including 9000 residential units, one million square feet of commercial space and four million square feet of office, 2 1/2 miles of new roadway and associated parking decks. Supervised and conducted pre-and post-construction noise monitoring and modeling and air quality monitoring program for PM$_{10}$, PAH and lead, and construction vehicle generation estimates. Client: Jersey City Redevelopment agency.

  - **Route 32 Bridge over Wallkill River, Ulster County, NY (Client: NYSDOT)**

  - **Gowanus Expressway, Brooklyn, NY (Client: NYSDOT)**

  - **Route 116 Over Croton Reservoir, NY (Client: NYSDOT)**

  - **Newport Toxic Air Quality Study, NJ (Client: JCRA)**

  - **Saint Michaels Archeological Toxic Air Quality Study, NJ (Client: Hunter Research)**
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- Cropsey Avenue Bridge, Brooklyn, NY (Client: NYCDOT)

- **Noise** - Areas of expertise include mobile and stationary noise impacts, mobile source noise monitoring and modeling, and mitigation including noise barrier design. Mr. Minnicino has evaluated the noise impacts associated with numerous sources, including vehicular, rail and elevated rail, marine activities, and aircraft sources, as well as stationary sources of noise, and vibration analysis. A summary description of the projects for which Mr. Minnicino has acted as primary investigator for noise impacts is provided below:

  - Hutchinson River Parkway EIS, Westchester County, New York. Responsible for air quality and noise studies for the environmental impact assessment and statement preparation of a 7.5 mile stretch of roadway improvement. Represented air and noise disciplines at the HRP public hearings, minor traffic analysis (mitigation-modifying signal timings, turning lanes, restriping, and traffic diversion). Determination of worst traffic year. Client: New York State Department of Transportation.

  - NJDOT Level of Action Assessments (LOAA). Estimated noise impacts based for transportation projects located in northern New Jersey.

  - Verrazano Bridge EA, Brooklyn, NY For SEQRA and NEPA EA, developed and conducted a comprehensive air quality modeling, and noise monitoring and modeling assessment study for a proposed new bus ramp and modification to the Verrazano bridge and Gowanus expressway for NYSDOT. Project included multiple noise source assessments for critical historic sites (Ft. Hamilton) and 4(f) parklands.

  - DEIS for Stewart International Airport Properties, Newburgh, New York. Conducted air quality and noise monitoring and modeling study components for NYSDOT for commercial and light industrial development of 2,200 acres of Stewart International Airport properties. Vehicular air quality was modeled. Noise analysis consisted of both vehicular noise monitoring, modeling, and aircraft noise modeling.


**PUBLICATIONS**


MARTIN J. MINNICINO
Senior Environmental Specialist, Potomac Hudson Environmental, Inc.
