

AFFIDAVIT OF GEOFFREY K. CLARK

State of New Jersey)
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County of Middlesex)

GEOFFREY K. CLARK, PG, LSRP, having been duly sworn, deposes and says:

1. I am an environmental practice manager and project manager for GHD Services, Inc. (GHD), an environmental and engineering consulting firm which has been retained to evaluate and assess the Statement of Findings (Findings) of the New York City Department of Parks and Recreation (NYC Parks), dated December 4, 2017, along with the Draft Environmental Impact Statement (DEIS) and Final Environmental Impact Statement (FEIS), and other related documents upon which the Findings were purportedly based (collectively, Documents), prepared for the proposed expansion of the American Museum of Natural History (AMNH) for the Gilder Center (Project). I submit this Affidavit in connection with the Verified Petition, in which Petitioners seek a judgment annulling, reversing and/or vacating the December 4, 2017 determination approving the Project by NYC Parks (Determination). As discussed below, the Project would potentially cause health conditions, some of which could be life-threatening, and would pose significant adverse impacts on the environment, and, therefore, should promptly be annulled, reversed and/or vacated.

Background

2. Formed in 1928, GHD is among the world's leading professional services companies. Our more than 9,000 employees operate in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, architecture, environmental and construction services to private and public sector clients. The firm maintains 200 offices situated on five continents: North America, Asia, Australia, Europe, and South America. We have completed projects in approximately 135 countries, and our annual revenue is more than \$1 billion. Despite our large size and global footprint, however, we collaborate effectively and connect the skills and knowledge of our employees to deliver value to our clients while completing projects in conformity with all state and local laws, as well as in compliance with the demands of our corporate systems. Our health and safety, quality, and environmental corporate management systems are certified by Lloyds Register Quality Assurance against international standards.

3. I am a Professional Geologist licensed in the Commonwealth of Pennsylvania and a Licensed Site Remediation Professional licensed in the State of New Jersey. I earned my Bachelor's Degree in Geology at Franklin and Marshall College and my Master's Degree in Environmental Geology from Rutgers University. Throughout my 20-year career, my experience includes preparation and review of Environmental Impact Statements (EIS) under the New York State Environmental Quality Review (SEQR) and New York City Environmental Quality Review (CEQR), preparation and review of Phase I and Phase II Environmental Site Assessments (ESA), and the investigation remediation of numerous properties contaminated with hazardous materials. Among the hazardous materials-contaminated sites I have investigated and remediated is the largest Voluntary Cleanup Program Site in New York State, Howland Hook Maine Terminal-Port Ivory Facility.
4. Within the firm GHD Services Inc., I am routinely sought out for my technical expertise in the above-listed areas. I have participated in ASTM International and New Jersey Department of Environmental Protection committees charged with writing standards and guidance documents; and I have provided comments to guidance documents and rules proposed for the New Jersey Administrative Code. My resume, which contains additional information on my professional background, is attached as Exhibit 1 hereto.
5. In reviewing the FEIS and in documenting GHD's findings, I relied on the work of a number of subject matter experts. For the Remedial Action Plan (RAP) review and input on exposure to airborne hazardous materials, I relied upon analysis provided by Mr. Craig Gebhardt. Mr. Gebhardt is a GHD Health and Safety Manager with over 30 years of experience in safety at industrial facilities, construction projects, and environmental cleanups. He has been responsible for the preparation and certification of site-specific Health and Safety Plans, standard operating procedures, employee medical surveillance programs, air monitoring programs, and industrial hygiene sampling programs throughout North America. Mr. Gebhardt's resume is attached hereto as Exhibit 1.
6. With respect to our review of noise generated during construction, and following construction, by operation of the expanded facility, I relied upon the analysis provided by Dr. Howard Quin. Dr. Quin earned his Bachelor's and Master's degrees in geophysics from Stanford University and his

Doctorate Degree in geophysics from Columbia University. His work in noise and vibration studies spans almost 30 years, during which time he has performed noise measurement and acoustic modeling impact assessments for transportation, power plant, wind turbine, highway, airport, harbor, general stationary sources, and construction projects in the Northeastern, Midwest, and Mid-Atlantic regions of the United States. His acoustic modeling experience includes use of Cadna/A, SoundPlan, and EASE. Dr. Quin's resume is attached hereto as Exhibit 1.

7. With respect to our review of transportation and traffic effects of the proposed project, I relied upon input provided by Mr. Eric Tripi. Mr. Tripi earned his Bachelor's degree in civil engineering from Michigan State University and his Master's degree in civil engineering from the University of Nebraska at Lincoln. Among his licenses and certifications are the Professional Engineer license in 10 states, Professional Traffic Operations Engineer, National Highway Institute instructor certification, and IMSA Level II Traffic Signal Certification. Mr. Tripi has over 23 years experience in transportation engineering, design, planning, safety assessments, intersection and interchange analysis/design, traffic impact studies. Mr. Tripi's resume is attached hereto as Exhibit 1.

Discussion

8. We have reviewed and analyzed the Documents mentioned above. Our analysis included reviews by experts in fields such as traffic and transportation studies, calculations, and modeling; hazardous materials assessments and the mobilization and transport of hazardous materials; occupational safety and health regulations; and, noise assessments, calculations, and modeling.
9. New York City law requires that Environmental Impact Statements be clearly written in a brief and concise manner capable of being read and understood by the general public. The intent is to allow the public to understand the potential hazards and the mitigation methods for those hazards, and to participate in a dialogue with state and local governments to ensure public participation in decisions likely to have environmental impacts on neighborhoods and communities. However, the Documents do not meet these standards. A number of technical areas are incomplete, as the FEIS indicates that mitigation of hazardous materials and economic and cultural adverse impacts will be conducted through discussions that have not yet occurred or through implementation of work plans that have not yet been prepared. The public cannot participate in environmental

analyses that are based upon discussions that have not yet occurred. The public cannot review documents that do not yet exist.

10. CEQR imposes upon New York City government agencies the obligation to review proposed projects to ascertain whether such projects may result in potential adverse impacts. Further, when an agency decides to carry out or approve an action which may have a significant effect on the environment, it is required to document that (1) consistent with social, economic and other essential considerations of state and city policy, the action to be carried out or approved is one which minimizes or avoids adverse environmental effects to the maximum extent possible, including the effects disclosed in the relevant environmental impact statement and (2) consistent with social, economic and other essential considerations of state and city policy, all practicable means will be taken in carrying out or approving the action to minimize or avoid adverse environmental effects. GHD's review of the Documents indicates that the FEIS did not identify all potential and likely adverse impacts. As such, the approval of the Documents by the City of New York Parks and Recreation (NYC Parks), the designated Lead Agency for the environmental assessment, cannot and does not adequately meet the objectives and requirements of CEQR.
11. GHD's review of the Documents indicates that the FEIS did not investigate or propose measures to mitigate the adverse impacts that likely would result from the Project, which involves demolishing three buildings of AMNH and building an expansion -- the Richard Gilder Center, in Theodore Roosevelt Park (With-Action Condition). Notable is that the FEIS Mitigation Section identifies hazards in three technical areas and refers to the hazards inappropriately as "minimal:" (1) Transportation; (2) Construction, and (3) Historical and Cultural Resources. GHD finds that additional adverse impacts will result from the With-Action Condition, and, as the FEIS did not identify these impacts, nor did NYC Parks, the adverse impacts will occur without any mitigation efforts.

Significant Adverse Impacts – Noise

12. The CEQR Technical Manual recommends a maximum noise level of 55 decibels for open space areas, such as Theodore Roosevelt Park. As documented in the FEIS, the current level of noise in a section of the Park, which will be significantly impacted by the construction, is 62.2 decibels and a projected 71.5 decibels of noise will be heard in this area during construction. The areas of Theodore Roosevelt Park that contain the dog park and that are used by community members for a variety of passive recreational purposes is therefore anticipated to experience up to a 9.3 decibel noise level increase during certain phases of construction. Every 10 decibel increase in noise is perceived by the average person to be twice as loud as before. Thus, the noise levels experienced by park users will nearly double during construction of the With-Action Condition, compared to noise levels under the no-action scenario.
13. Based on this fact, set forth in the FEIS, it is extremely unlikely that Theodore Roosevelt Park could be patronized and visited at all during construction of the AMNH expansion. The FEIS states, at page 15-5: “Construction may generate noise that could impair the enjoyment of Theodore Roosevelt Park...” The FEIS explains the proposed mitigation of this effect on the community would be performed by changing the construction schedule and using construction equipment designed to produce reduced noise relative to typical construction equipment. However, notwithstanding the proposed modifications to the construction methods, the noise would still be intrusive throughout much of Theodore Roosevelt Park, insofar as it would still be experienced by park visitors as *twice* as loud as without construction. Thus, the 9.3 decibel increase – a significant adverse impact as described above -- would *still* occur, despite the modified schedule and proposed construction equipment.
14. The FEIS, as part of the assessment of construction-related noise, indicates that during certain parts of the day the current noise in Theodore Roosevelt Park, at 62.2 decibels, is actually higher than the maximum noise level recommended by the CEQR Technical Manual in open spaces (55 decibels). This statement typifies one of the repeating themes of the FEIS – that there is purportedly no significant adverse impact because there are already negative conditions in the project area. But the purpose of an EIS is to evaluate the with-action conditions compared to the no-action conditions – not to excuse environmental impacts that are likely to occur under the with-

action condition, on the basis that current conditions are already undesirable. The idea that the resulting adverse impacts predicted by the With-Action Condition (the proposed AMNH expansion) are purportedly inconsequential because Theodore Roosevelt Park experiences higher-than-recommended noise levels already, is, therefore, absurd. What matters is a comparison of the With-Action Condition (*i.e.*, expansion of AMNH), and the No-Action Condition (*i.e.*, no expansion), and the latter would be experienced at levels currently tolerated by the community, where the former (*i.e.*, the With-Action Condition) would nearly double the amount of noise, creating intolerable levels that render the Theodore Roosevelt Park unusable.

15. The FEIS in Chapter 15 erroneously states that “the expected levels of noise ... would comply with all New York City Noise Control Code and New York City Department of Buildings (DOB) restrictions on construction noise.” According to chapter 22 of the CEQR Technical Manual, noise control limits are set by Local Law #113 of the City of New York, which states:

24-228 Construction, exhausts, and other devices. (a) No person shall operate or use or cause to be operated or used a construction device or combination of devices in such a way as to create an unreasonable noise. For the purposes of this section unreasonable noise shall include but not be limited to sound that exceeds the following prohibited noise levels:

1. Sound, other than impulsive sound, attributable to the source or sources, that exceeds 85 dB(A) as measured 50 or more feet from the source or sources at a point outside the property line where the source or sources are located or as measured 50 feet or more feet from the source or sources on a public right of way.
2. Impulsive sound, attributable to the source, that is 15 dB(A) or more above the ambient sound level as measured at any point within a receiving property or as measured at a distance of 15 feet or more from the source on a public right-of-way.

It is important to note that the 85 decibel limit imposed by this law is a codified requirement that is enforceable throughout the City of New York, and is different from the 55 decibel level recommended by the CEQR Technical Manual for recreational spaces such as the Park. In addition to the 85-decibel noise limit imposed by law, Chapter 28 of Title 15 of the Rules of the City of New York (Citywide Construction Noise Mitigation) lists noise requirements for specific construction equipment, including jackhammers, hoe rams, dump trucks, and concrete saws. While the FEIS predicts noise levels of up to 77.7 decibels, based on GHD's experience and the

proximity of residences and businesses to the proposed construction site, it is our opinion that any detailed modeling effort would predict noise levels above 85 decibels at residences and businesses along Columbus Avenue.

16. The FEIS, as part of the assessment of construction-related noise, indicates that the modeled noise level is not atypical for Manhattan (page 15-38). This statement typifies another repeating theme in the FEIS – that the proposed action should be undertaken because the adverse actions caused by expanding the AMNH are no worse than what would be experienced in other areas of the city. As stated above, the purpose of an EIS is to evaluate the with-action conditions compared to the no-action conditions. The idea that the construction for the With-Action Condition allegedly would not result in adverse impacts that are worse than those experienced in other areas of the City is not a reason or justification for the proposed AMNH to proceed, and is irrelevant to a CEQR analysis.
17. The FEIS also predicts that construction for the With-Action Condition would increase noise levels by significant amounts (up to 10.5 decibels, which doubles the noise level) at the businesses along the western side of Columbus Avenue. However, no noise monitoring is proposed during construction. In addition to residential buildings, 19 businesses line the western side of Columbus Avenue, including opposite the proposed construction area. These businesses are part of the Columbus Avenue Business Improvement District, and include restaurants and specialty shops. The With-Action Condition will have a significant negative impact on the businesses, and there are no mitigation methods to protect them from loss of customers due to noise (directly) and to diminished use of Theodore Roosevelt Park (indirectly, due to fewer passersby).
18. The determination of ambient noise levels under existing conditions is insufficient. The measurements in support of the FEIS were made in 20-minute intervals within time frames that would be expected to result in relatively high ambient noise levels. For example, noise measurements were made during weekday rush hour and lunch-hour traffic. While construction activities will occur during these times of day, construction and construction support will also occur when ambient noise levels are lower (for example, between 9:00 A.M. and 12:00 P.M.). Further, no consideration appears to have been given to ambient noise levels at night. Loading docks, such as that proposed to be re-located on the western side of the AMNH, are frequently used at

night. The FEIS indicates that noise from loading dock operation will be mitigated by moving it below ground. However, this does not account for noise generated from trucks accessing the loading dock or for noise that might come from the facility if loading dock doors are open.

19. The CEQR Technical Manual notes that nighttime, which is defined to be between 10:00 P.M. and 7:00 A.M., is a particularly critical time period for noise exposure. Minor increases in noise at night would likely cause considerable nuisance. The Technical Manual states that an increase of 3 decibels is a significant impact during nighttime hours. However, the FEIS does not evaluate the effect of the nighttime activities at the loading dock. As such, no significant adverse impact was identified in the FEIS for noise emanating from the loading dock area, and no mitigation measures have been proposed.

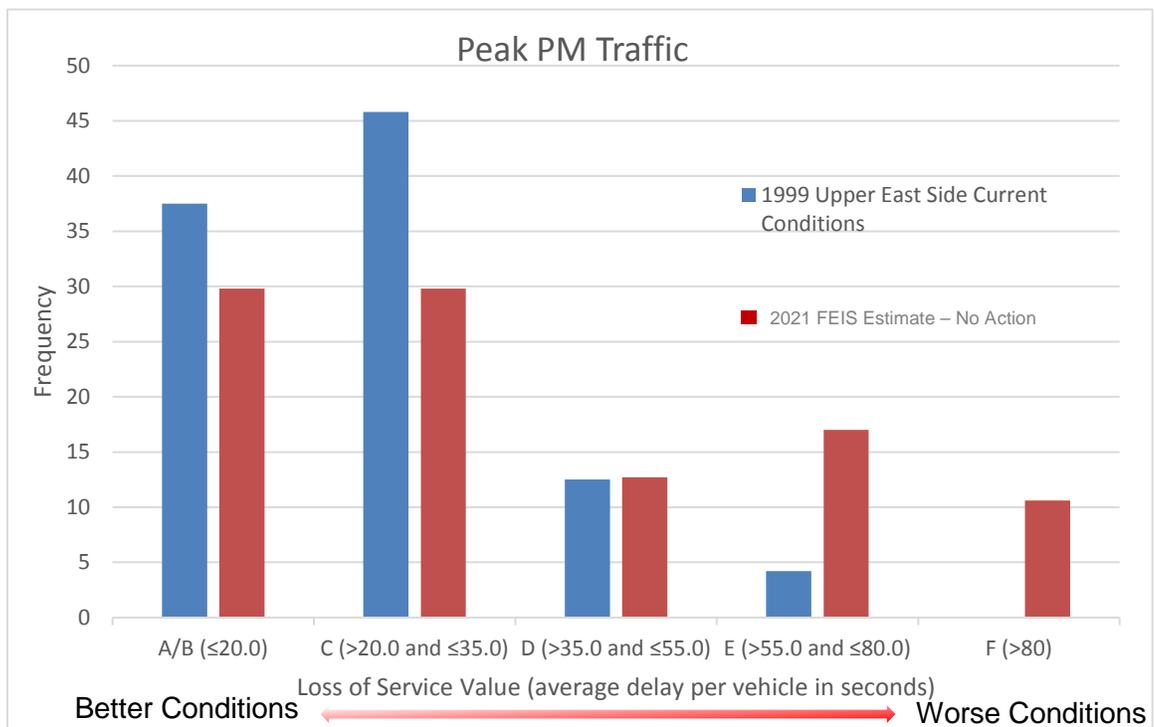
20. To mitigate noise for residential buildings in the vicinity of the construction area, the FEIS proposes installation of window air conditioners in order to reduce noise levels in the residences. However, this measure also has unintended consequences, including an additional utility cost to residents who don't want the air conditioners, as well as the inability to open the window where the air conditioner is mounted. If the air conditioner is used about 12 hours per day from April through September, applying a \$0.20 kilowatt hour cost to electricity, and assuming a demand of 1,000 to 1,400 watts for the air conditioner, the cost will be between \$440 and \$610 per year per unit. Further, the FEIS fails to address what measures could be provided for residents of those buildings who want to use their terraces.

Significant Adverse Impacts – Transportation

21. The CEQR Technical Manual recommends that crash and accident data rely on the most recent three (3) years of data. However, the FEIS relies on crash data for the study area intersections from between May 1, 2012 and April 30, 2015 – between about three and six years ago. Meanwhile, the DEIS was issued in May 2017 and the FEIS was issued in November 2017. More recent data is available -- particularly, data is available from the New York City Department of Transportation (DOT) at its Vision Zero View interactive map *through January 2018*. As such, neither the DEIS nor the FEIS relied on the most recent three years of data and the requirements of the CEQR Technical Manual have not been met.

22. The FEIS indicates that the proposed project is supposedly not expected to result in a significant adverse vehicular and pedestrian safety impact because there isn't a high accident location within the study area. But the existence of a high accident location within the study area is not the sole determinant of whether a detailed safety analysis is required under CEQR. Section 370 of the CEQR Technical Manual recommends safety analyses for a variety of other conditions, including the age of pedestrians; the presence of schools, parks, and other similar destinations; and, the presence of heavily-used bicycle routes. Each of these other conditions is present. For example, the DOT has identified a Senior Pedestrian Focus Area (SPFA) to the west of the AMNH superblock, based upon the population of senior citizens in this area of Manhattan. In addition, the community is full of destinations for children, families, the elderly, tourists and the general public, including the AMNH, Central Park, Theodore Roosevelt Park, and the O'Shea School Complex, to name a few. Finally, a bicycle lane has been established along Columbus Avenue in the vicinity of Theodore Roosevelt Park. Based on these factors, the FEIS should have included a detailed safety study. The FEIS does not include an assessment of safety impacts under current conditions and the With-Action Condition. As such, the requirements of the CEQR Technical Manual were not met.
23. Worse, the FEIS is incomplete because it does not examine potential pedestrian safety issues at the 79th Street and Broadway subway station. Ironically, the FEIS does acknowledge that the proposed re-configuration of entrances and exits to the museum would result in additional subway use, which in turn would result in additional pedestrian traffic at the 79th Street & Broadway intersection. However, the FEIS does *not* evaluate traffic conditions or safety conditions at this intersection, even though the subway station would be heavily used by AMNH visitors if the expansion were to proceed.
24. The proposed AMNH expansion project will also make already congested intersections more congested. The Level of Service (LOS) for intersections immediately adjacent to the AMNH superblock is already worse than at other areas of Manhattan. The LOS is an assessment of the delay experienced in navigating an intersection. The LOS is designated with a letter A (minimal delay) to F (significant delay). The FEIS for the proposed AMNH expansion indicates that as of 2021 there will be 12 LOS designations worse than "C" within the study area (28% of 42

intersections and times).¹ As there is a significant traffic volume and delay already within the study area, adding even incremental traffic load would make a congested area even more difficult to navigate. Additional evidence that the intersections adjacent to the AMNH superblock are overstressed can be seen by comparing current conditions in that area to the Upper East Side traffic study. The Upper East Side traffic study included dozens of intersections in the Upper East Side of Manhattan, directly across Central Park from the study area documented in the FEIS. The chart below indicates that the projected peak PM traffic in the intersections surrounding the AMNH superblock are projected to experience significantly worse levels of service than those in the Upper East Side study area. Adding pedestrian and vehicular traffic to intersections that are already overstressed is not appropriate. Further, the Upper East Side study found that the congestion caused by heavy pedestrian traffic, local deliveries, illegal parking, and bus routes resulted in conditions requiring transportation in the Upper East Side to be evaluated and altered. And the LOS at intersections adjacent to the AMNH superblock are projected to be worse by 2021 – even without the AMNH expansion project.



¹ By comparison, a recent EIS document for the Memorial Sloan Kettering expansion project in the Upper East Side of Manhattan predicted that, as of 2019, only 10 of the 58 intersections and times (approximately 17%) will have designations worse than “LOS C.”

Significant Adverse Impacts – Hazardous Materials

25. Volatile organic compounds, also known as VOCs, were detected in shallow groundwater beneath the AMNH during the Phase II Environmental Site Assessment (Phase II ESA). The VOCs included Cis-1,2-Dichloroethene and Tetrachloroethene (PCE). PCE is classified as a potential carcinogen. According to the National Institute for Occupational Safety and Health (NIOSH), exposure to Cis-1,2-Dichloroethene may result in irritation to the eyes, skin, nose, throat and respiratory system, depression of the central nervous system (i.e., drowsiness), nausea, dizziness and incoordination, headache, skin erythmia, and liver damage. As is evident, prolonged exposure to this chemical is potentially life-threatening. As a result of the With-Action Condition, these chemicals are most likely to reach construction workers, but may potentially reach passersby, residents of the Upper West Side neighborhood, and users of Theodore Roosevelt Park via migration of volatile organic vapors.
26. The presence of the VOC trichloroethene (TCE) in soil vapor adjacent to the AMNH was also identified during the Phase II ESA at concentrations above the NYS DOH indoor air standard for TCE. The Remedial Action Plan (RAP), which was incorporated into the FEIS, acknowledges the presence of TCE in soil vapor. However, the FEIS proposes a mitigation method that will not protect museum visitors and employees from potentially life-threatening exposure. The proposed mitigation method is a subsurface vapor barrier that would be installed beneath the foundation of the AMNH expansion building. Such a barrier, which would consist of 0.020-centimeter-thick plastic, frequently is torn during building construction. And, tearing the barrier renders it useless as a protective measure. Also, subsurface utility line penetrations through the building walls or foundations are not protected by the thin plastic vapor barrier.
27. TCE is a potential carcinogen. Known health effects of TCE include irritation of the eyes and skin; headache; loss of clear vision; lassitude, weakness, and exhaustion; dizziness; tremors; nausea and vomiting; dermatitis; cardiac arrhythmia; and liver damage. Should the TCE migrate from the subsurface into the AMNH building, the public could be exposed to it and be at risk at suffering these adverse and dangerous health effects. As is evident, prolonged exposure to this chemical is potentially life-threatening.

28. In contrast to the vapor barrier proposed as a mitigation method in the RAP, typical and proper practice where there is potential for vapor intrusion is to construct buildings with a passive vapor venting system. Passive vapor venting systems are constructed of rigid plastic that can withstand the pressures of concrete foundations and channel the vapors from beneath a building to a discharge point near the building roof, where the vapors are diluted in the atmosphere. The RAP did not include passive vapor barriers as a method of preventing vapor intrusion.
29. A Construction Health and Safety Plan (CHASP) was prepared to protect workers and potential receptors in the vicinity of the construction zone, and which was incorporated into the FEIS. However, certain aspects of the CHASP do not meet requirements of the federal Occupational Safety and Health Administration (OSHA). Notably, the action level for volatile organic vapor concentration in the breathing zone in the CHASP is 10 parts per million (ppm), but a number of the volatile organic vapors known to be present have OSHA Permissible Exposure Limits of 1 ppm. The action level is the concentration of vapors measured in the breathing zone using photoionization detectors (PID instruments) or equivalent. When the concentration of volatile organic vapors in the breathing zone reaches the action level, workers are required to don respirators for protection against the vapors. The proposed action level is an order of magnitude too high to be protective of workers for a number of the volatile organic compounds and volatile organic vapors known to be present in the subsurface of the study area.
30. Workers may mitigate their exposure to volatile organic vapors by donning respirators or other protective equipment. OSHA requires that such protective equipment be specified. However, the CHASP does not specify or describe the equipment to be donned.
31. The RAP also fails to propose a protective level of perimeter air monitoring for potential receptors at Theodore Roosevelt Park and in the vicinity of the Park. While the proposed perimeter air monitoring procedures include monitoring concentrations of airborne dust and volatile organic vapors, as is appropriate, the proposed procedures do not take into account the likely presence of children and dogs in the park. Children and dogs have lower body mass than adults. Just as dosage of medicine depends on body mass, a certain exposure level is more toxic to people and animals with a lower body mass than adult persons. The action levels in the CHASP and RAP are based solely on adult body mass.

32. Proposed perimeter air monitoring procedures are also not protective due to the monitoring location. The RAP indicates that perimeter air monitoring will be conducted at an upwind location and a downwind location. There is no mention of how these locations would be selected, but in particular the downwind location is critical for protecting the public during subsurface construction activities. During the course of the day, the wind direction may change. Also, the wind tends to be turbulent in urban settings, such that there is no single, consistent downwind location. Typical perimeter air monitoring plans therefore propose the use of weather stations to measure and record the wind speed and direction. Also, the locations of perimeter air monitoring stations are typically re-assessed and may be re-located based on the weather station measurements. The RAP does not include provision of a weather station.
33. GHD notes that the likely presence of children and dogs in and around Theodore Roosevelt Park, where the construction area would be located, makes the perimeter air monitoring even more critical. This area is within 100 feet of businesses and pedestrians on the west side of Columbus Avenue, near residences with young families in the Upper West Side neighborhood, and across the street from the Children's Museum of Manhattan. The RAP is not sufficiently protective of potential receptors.
34. The RAP and FEIS acknowledge the likely presence of asbestos-containing materials, lead-based paint and lead-containing materials, and building materials that may contain polychlorinated biphenyls (PCBs). Asbestos-containing materials are potentially life-threatening, even with one-time exposure. Prolonged exposure to lead and PCBs may be life-threatening and may have other health effects with shorter duration exposure. However, building surveys that indicate the location of these materials are not documented in the FEIS or the RAP. Instead, the FEIS indicates that the surveys and mitigation methods to protect workers and potential receptors will be in accordance with current industry standards, best practices, and local, state, and federal laws and regulations, but that statement is essentially meaningless because there is no way for the public to discern *how* workers and other potential receptors would be protected. The FEIS would be more compliant with CEQR and would demonstrate more concern for the residents, business owners and operators, business patrons, and visitors to Theodore Roosevelt Park if efforts to

identify the presence and extents of these materials were documented, along with mitigation methods for preventing these materials from reaching the public.

35. The known hazardous materials at the project site pose significant threats to health and safety. However, the FEIS appears to be deficient in that the worst-case concentrations of metals and organic compounds in soil may not have been identified in the Phase II ESA. Specifically, soil borings and groundwater sampling points SB-1/GW-1 and SB-2/GW-2 are located 75 to 100 feet from the area being investigated.² Samples were collected near the top of an underground storage tank (UST), which would only be sufficient to detect relatively shallow releases from the UST. If there were a hole on the bottom of the UST, the samples would not identify a potential chemical exposure. As such, there is the potential for additional public and construction worker exposure to hazardous materials, beyond what is documented in the FEIS.

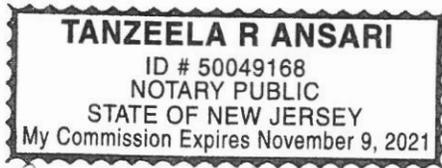
Loss of Community Activities

36. Already documented above is the evidence confirming that the noise generated during construction would lead to the loss of use of Theodore Roosevelt Park by neighborhood residents and visitors. Also documented is the evidence establishing that the businesses situated along at least the west side of Columbus Avenue in the area would be negatively affected by the construction noise. The community resource known as the weekly Farmers' Market, which utilizes the eastern side of Columbus Avenue, would also be negatively impacted by the construction noise, if the entire community event were not re-located. The FEIS acknowledges that the Farmers' Market would need to be re-located, based on forthcoming discussions with the organizers. As the discussions have not yet resulted in an agreement, as of the time the FEIS was prepared, it is unclear how neighborhood residents can assess the impact of the with-action condition on their community. In fact, that an agreement has not been reached, coupled with other statements in the FEIS regarding the effects of construction, amount to a tacit admission that noise and other environmental impacts from the construction cannot be eliminated.

² The locations SB-1/GW-1 and SB-2/GW-2 are sampling locations; soil sampling locations include the prefix "SB" and groundwater sampling locations are designated by the prefix "GW."

Conclusion

37. Based on the foregoing analysis, I am reasonably certain that the analysis/assessment contained in the FEIS, upon which NYC Parks relied in reaching their Determination, is incomplete and inadequate in several respects, and thus violates CEQR. The Project would pose significant adverse environmental impacts, and in many instances, health hazards that could be life-threatening, adverse environmental impacts. And the proposed mitigation methods for such impacts are inadequate or otherwise violate CEQR. As a result, the Determination should promptly be annulled, reversed and/or vacated.



Tanzeela A - 3/15/18
Sworn to before me this 15
day of March, 2018

Geoffrey Clark
Geoffrey Clark

TANZEELA ANSARI
Notary Public

Exhibit 1

Subject Matter Experts' Resumes



Geoff Clark, PG, LSRP Project Manager

Qualified: M.S., Environmental Geology (concentrations in Chemistry, Hydrogeology), 2002; B.A., Geology (Concentration in Mathematics), 1995

Connected: Licensed Site Remediation Professional: NJ; Professional Geologist: PA; Licensed Site Remediation Professional Association; NJDEP EPHC Technical Committee.

Professional Summary: Mr. Clark has over 20 years of experience primarily in environmental investigation and remediation at Sites throughout the mid-Atlantic region, specializing in New Jersey and New York. His additional experience includes completion of EA and EIS under NEPA, SEQR, and CEQR; DPCC/DCR and SPCC Spill Prevention Plans; due diligence investigations and environmental baseline assessments; and, water supply projects. Wherever possible, Mr. Clark has employed site conceptual models and innovative technologies to streamline the path to Site regulatory closure and permit approval.

Environmental Impact Statements

Project Manager

Hazardous Materials Section, NYCT Port Expansion | NY Container Terminal | Staten Island, NY

Project Manager for the preparation of the Hazardous Materials section of the EIS for NYCT's Berth 4 Project in accordance with the City Environmental Quality Review (CEQR) Manual dated October 2001. Currently, approximately 69 acres (55 percent) of the P&G Port Ivory facility has been redeveloped and is used for container storage, warehousing, and truck chassis storage. Proposed improvements included increasing the size of the Howland Hook Marine Terminal from 187 acres to 300+ acres and increasing the berth length along the Arthur Kill from 3,000 feet to approximately 4,350 feet. At the onset of the project, potential data gaps were identified (i.e., outstanding Phase I Environmental Site Assessment for certain parcels) and the additional data gathering efforts were integrated into the scope of work, minimizing the overall cost and time for the completion of this project.

Project Manager

Confidential Development | Confidential Client
Bergen County, NJ

Assisted in the preparation of an Environmental Impact Statement (EIS) under NEPA in support of a proposed multi use facility. Authored numerous sections of the EIS, including existing and with-action demographics, existing solid waste facilities, existing and with-action environmental/hazardous material conditions, and existing and with-action utility infrastructure.

Project Manager

NYC Public Library Consolidation | Confidential Client | New York City, NY

On behalf of a confidential attorney who represented a group opposed to public library consolidation, reviewed an Environmental Assessment that was prepared under CEQR on behalf of the New York City Public Library. The EA

assessed the closure of two branch libraries, the re location of collections between branch libraries, and the sale of the closed library branches for use in commercial or residential purposes. The review assessed hazardous substances, traffic conditions, and community impacts under existing and proposed conditions. Based partially upon the EA review, the library consolidation plan was blocked.

Project Manager

NYC Parking Deck Demolition | Confidential Client | New York City, NY

On behalf of a confidential attorney who represented a group opposed to demolition of parking garages in Manhattan's Upper West Side, reviewed documents that assessed with change scenario for parking, geotechnical suitability for high rise construction, and hazardous materials aspects of an EA under CEQR. Identified potential shadow, economic, and hazardous materials issues that were not identified in the documents reviewed.

DPCC Plan Preparation and Renewal

Project Manager

Various Sites | Various Municipalities, NJ

Assisted in the successful renewal of DPCC/DCR Plans for water treatment facilities, chemical plants, and petroleum product and lubricant plants. DPCC/DCR Plans frequently included innovative techniques, such as use of temporary containment or even just visual inspection without containment for filling areas for small heating oil tanks and scheduling deliveries around precipitation events so that containment areas did not need to be enlarged.

Environmental Remediation

Project Manager

Port Ivory Remediation | Port Authority of NY & NJ | Staten Island, NY

Project Manager for the largest Voluntary Cleanup Program site in New York. The project involved the investigation of soil, surface water, sediment, groundwater, soil vapor, and indoor air to complete a Remedial Investigation. Conducted an Interim Remedial Measure to remove mobile LNAPL.



Successfully negotiated with the NYSDEC to remove only mobile LNAPL and leave immobile LNAPL in place with administrative controls. Prepared a Remedial Action Work Plan (RAWP) that underwent a public review/comment process and was approved by the NYSDEC. The remedial actions will include the construction of engineering controls (asphalt or concrete pavement or one foot of clean cover), excavation of soil in discrete "hot spots", removal of mobile LNAPL, establishment of a Deed Restriction, and sub-slab venting systems to mitigate potential vapor intrusion issues. Prepared the Deed Restriction, Site Management Plan, and Final Engineering report in support of the Certificate of Completion. Successfully petitioned the NYSDEC to drop the required annual groundwater and surface water sampling at a closed landfill at the site. Assisted in the design of a floating debris barrier. Assisted in the construction of a stabilized shoreline along the Arthur Kill.

Project Manager and LSRP
Former FMC Site | FMC Corp. | Carteret, NJ

Project Manager for the completion of a remedial investigation and remedial action at a former pesticides manufacturing facility. Utilized statistical evaluation of soil sampling data to determine what sampling results were and which were not attributable to historic fill. Assisted with the development of the Site Conceptual Model to demonstrate successful delineation of soil and groundwater. Installed impervious cover and, to address volatile organic compounds in soil at concentrations above their respective impact to groundwater standards, a horizontal vent line. Completed a vapour intrusion investigation.

Project Manager
Former Tube Manufacturing Facility | Gibson Tubes | Bridgewater, NJ

Project Manager for the investigation of groundwater impacted by chlorinated VOCs in overburden, weathered bedrock, and fractured bedrock water bearing zones. Rather than attempting vertical and horizontal delineation by repeatedly stepping out from existing wells, a process that is usually inefficient and costly in a fractured bedrock aquifer, proposed a Remedial Investigation that used geophysical techniques to identify important fracture zones and the Water FLUTE™ liner/discrete zone sampler to characterize groundwater quality along the hydraulically-important fractures. The Remedial Investigation Work Plan was approved by the NJDEP with minor revisions and has been implemented. A thorough three-dimensional model with hydraulic head and contaminant distribution indicated the presence of a diving plume. A source area remedial investigation was proposed, with enhanced biological (anaerobic dehalogenation) remediation as the remedy. Completed a Vapor Intrusion Investigation at adjacent residences and industrial/commercial buildings. No vapor intrusion issues have been identified.

Project Manager
Harley-Davidson Facility Remediation | Harley-Davidson Motor Company | York, PA
Field Supervisor and Data Manager for a complex RCRA site. Responsible for implementation and oversight of field activities. An extensive remedial investigation was conducted that involved groundwater sampling, soil sampling, air sampling, soil gas sampling, concrete chip sampling, wipe sampling, and surface water and sediment sampling. The investigation also included a quantitative dye tracer test program. As Data Manager, created and maintained an ArcView Geographic Information System (GIS) summarizing sampling results. The GIS was used to assist in identifying fracture traces and in preparation of a supplemental remedial investigation work plan.

Project Manager
Former Levey Ink Site | Glenn Springs Holdings, Inc. | South Brunswick, NJ

Project manager for the remedial investigation and remedial action selection at this former ink and dye manufacturing facility. At the start of GHD's work, the extent of soil, groundwater, and sediment impacts was not known. Completed delineation, including a cost-effective three-dimensional plume map via geophysical and packer testing at four bedrock borehole locations. Assisted with obtaining access agreement to install off-Site wells. Demonstrated that the vertical extent of groundwater in fractured bedrock was limited to the shallow bedrock. Oversaw the ecological and human health risk assessments. Obtained a two-year extension for the RI Report due date, and completed the RI on time.

LSRP
Getty Portfolio | Phillips 66 Company | Various Municipalities in NJ

Licensed Site Remediation Professional (LSRP) for 20 former gasoline service station Sites throughout New Jersey. Completed the remedial investigations and remedial actions at a number of these sites. Used soil gas database information to demonstrate that the NJDEP gasoline exclusion for benzene in soil gas should be extended to ethylbenzene. Identified source areas to allow for soil excavation and rapid attenuation of groundwater impacts and successfully negotiated with current property owners regarding responsibilities for cleaning up remaining impacts. Closed a number of the sites in the portfolio through issuance of unrestricted use Response Action Outcomes (RAO)s for specific AOCs.

Project Manager
Stepan - Fieldsboro | Stepan Company | Fieldsboro, NJ

Installed a high vacuum dual phase extraction system in an area with VOC impacts to soil and groundwater. System operation lowered groundwater elevation by nearly 20 feet from static conditions. Significant vapor mass removed from



subsurface. After 6 months of operations, the system was shut down for 3 weeks. Groundwater found to be acidic, so neutralization system installed. Neutralization successfully raised pumped groundwater pH from under 3 to over 6.7. Groundwater sampling showed mass reductions of up to 97 percent with no rebound. In conceptual design stage for SVE and chemical oxidation technologies for different AOCs.

Project Manager
Stepan - Maywood | Stepan Company |
Maywood, NJ

Completed the overpacking and re-location of drums containing low-level radioactive soil into an on-Site sea box. Assisted in the development of a Pre-Design Investigation Work Plan, which includes options for compliance averaging soil sampling results and which was approved by the EPA. Assisted in the development of a Statement of Work for off-Site groundwater investigation in the bedrock. The Statement of Work was approved, and is being implemented. Assist plant with waste characterization as necessary.

Senior Hydrogeologist
Former Central Gas Works | Public Service
Electric & Gas | Edison, NJ

Site Safety Officer and Field Supervisor during the implementation of a Modified Site Investigation. Responsible for the quality of fieldwork performed by staff and subcontractors as well as for maintaining the budget and project schedule. The investigation included excavation of test pits, removal of underground storage tanks (USTs), drilling of soil borings and bedrock core holes, and installation of monitoring wells. During the investigation, the presence or absence of product was determined via hydrophobic dye shake tests using Sudan IV. Subsequent to the investigation, completed a hazard assessment of ferric ferrous cyanide present on the land surface, and completed a Health and Safety Plan (HASP) for construction activities.

Senior Hydrogeologist
Newton 1 MGP Site | Jersey Central P&L |
Newton, NJ

As Senior Staff Hydrogeologist, assisted in the management and implementation of a Phase II Remedial Investigation at this former manufactured gas plant (MGP). Responsible for the implementation of field activities by staff and subcontractors, as well as planning technical aspects of the project. This complex and multi-mobilization investigation focused on DNAPL contamination of fractured carbonate bedrock. Tools used in the investigation included installation of soil borings and core holes, packer testing, and oriented coring. Based on data gathered during previous mobilizations, located horizontal delineation wells (i.e., location and depth within the bedrock aquifer) and designed a drilling procedure for installation of a vertical

delineation well in the DNAPL source area. Completed a Phase II Site Investigation Report. Explored the potential for obtaining a Technical Impracticability Waiver for remediation of the DNAPL in fractured bedrock.

Work history

January 2013 – present	GHD Services, Inc., Edison, NJ
2001 – 2013	Bureau Veritas North America, Inc., Edison, NJ
2004 – 2011	Hatch Mott MacDonald, Inc., Millburn, NJ
1997 – 2004	Langan Engineering and Environmental Services, Inc., Elmwood Park, NJ



Craig Gebhardt

Project Safety Support

Qualified: Bachelor of Science in Physical Education, State University of New York College at Cortland, 1974

Professional Summary: Mr. Gebhardt a Senior Health and Safety Manager with over 30 years of relevant experience in industrial and environmental consulting/engineering environments. Mr. Gebhardt, located in Niagara Falls, New York, has over 25 years of experience in the development, implementation, and oversight of Health and Safety Plans for environmental investigation and remediation projects across the United States. He also has been responsible for the development and implementation of safety training programs, health and safety standard operating procedures, medical surveillance programs, air monitoring and industrial hygiene sampling programs for both hazardous waste sites and general industry. Mr. Gebhardt possesses a broad base of safety knowledge and the ability to deliver training on a wide variety of safety topics. He has conducted numerous site safety and health audits at commercial, industrial, and hazardous waste operations in addition to developing and managing GHD's Commercial Motor Vehicle Program.

Safety Management

- Author of a comprehensive safety and health policy manual for a previous employer.
- Developed over 100 written health and safety plans for Environmental Protection Agency (EPA) -listed hazardous waste sites across the United States.
- Prepared and conducted air monitoring and industrial hygiene sampling programs at hazardous waste sites across the United States including treatment, storage, and disposal facilities.
- Prepared written reports of air monitoring and industrial hygiene sampling events.
- Conducted site safety and health audits at manufacturing, construction, and EPA-listed hazardous waste sites.
- Developed and implemented a comprehensive 40-hour hazardous waste training program to comply with OSHA's Hazardous Waste Standard for a previous employer.
- Developed written Standard Operating Procedures for hazardous waste operations, including decontamination procedures.
- Developed written Standard Operating Procedures for construction and activities including excavation and trenching activities, hot work procedures, control of hazardous energy, and confined space entry procedures.
- Developed a comprehensive written health and safety program required by OSHA's Hazardous Waste Standard for one of our clients who is a major chemical manufacturer in North America.
- Directed operations at landfills, hazardous waste sites, and manufacturing facilities.
- Prepared written programs required by OSHA for respiratory protection and hazard communication.
- Completed annual written environmental regulatory reports for the Superfund Amendments and Reauthorization Act (SARA) Title III and the New York State Department of Environmental Conservation (NYSDEC) annual hazardous waste report.
- Developed safety procedures for a client who conducted biosparging activities at a hazardous waste site on Long Island, New York.
- Conducted the required Periodic (annual) Review of Energy Control Procedures at many client sites.
- Lead several contractors' compliance efforts with their safety programs in order to be allowed to work at one of our client's semi-conductor plant site in East Fishkill, New York.
- Conducted several initial exposure assessment monitoring programs for clients to assist them in complying with OSHA's Lead Standard.
- Developed various safety posters that were used as part of an ongoing safety program.
- Developed and conducted an 8-hour refresher HAZWOPER course for a client.
- Organized and managed all aspects of a company medical monitoring program, which included overseeing a network of occupational clinics across North America.
- Developed safety-training presentations for a North American Automobile Manufacturer.
- Developed, implemented and managed comprehensive written Transportation Safety Programs to comply with both the U.S. Federal Motor Carrier Safety Regulations and the Canadian Commercial Motor Vehicle Regulations. This includes delivering driver training courses, establishing driver qualification files, conducting driver road tests, setting up a vehicle inspection and maintenance program, establishing a driver's medical surveillance and drug



and alcohol testing programs and reviewing driver hours of service records.

- Manage Commercial Motor Vehicle Operations in compliance with the Federal Motor Carrier Safety Regulations for 20 years with four separate firms.
- Developed a Transportation Safety Plan for one of our clients, which they implemented on a large soil removal and disposal program.
- Coordinated Resource Conservation and Recovery Act (RCRA) facility environmental compliance issues.
- Review and updated RCRA contingency plans, closure costs, post closure costs, and air emission permits.
- Interfaced with the EPA and various State regulatory agencies on environmental issues.
- Implemented corrective actions and prepared written responses to RCRA inspections.
- Supervised Safety Professionals in the Northeast, Southeast and Mid-West areas in the United States.

Work history

April 1991 – present	GHD (formerly Conestoga-Rovers & Associates), Niagara Falls, NY
1984 – 1991	Browning-Ferris Industries, CECOS International, Inc. Kenmore, NY
1983 – 1984	Burnwell Gas, Alden, NY
1983 – 1984	Liquid Carbonic Corporation, Buffalo, NY

Other related areas of interest

Recognized (Certifications/Trainings)

- Successfully completed the Occupational Safety and Health Administration (OSHA) 40-Hour Hazardous Waste Operations and Emergency Response Training Program
- Successfully completed the additional 8 hours of training required by OSHA for managers and supervisors of hazardous waste sites
- Certificate of Educational Achievement for NFPA 70E Electrical Safety in the Workplace
- Certificate of Training for TapRoot Advanced Investigation Team Leader Course
- Certificate of Completion for a course in the Federal Motor Carrier Safety Regulations 49 CFR Parts 382-397
- Numerous short courses in hazardous waste regulations
- Certificate of Achievement from the New York State Department of Environmental Conservation for Sanitary Landfill Operations
- Certificate of Completion for Petrotite Hydrostatic Line Testing

Presentations

- Managing Contractor/Subcontractor Safety Through a Behavioral-Based Safety Approach – Dallas, TX November 12, 2014



Howard R. Quin, PhD., INCE

Sound and Vibration Scientist

Qualified: PhD. Geophysics, Columbia University, 1990; M.S. Geophysics, Stanford University, 1982; B.S. Geophysics, Stanford University, 1982

Connected: Institute of Noise Control Engineers – Full Member

Professional Summary: Dr. Quin is a sound and vibration consultant with nearly 30 years of professional experience in noise and vibration studies. He has performed noise measurement and acoustic modeling impact assessments for transit, power plant, wind turbine, highway, airport, harbor, construction and stationary source facilities in the Northeast, Mid-Atlantic and Midwest regions using Cadna/A, SoundPlan, and TNM. He has performed vibration studies for rail, construction, and industrial sources. He is also experienced in interior acoustics as well, including modeling with EASE and examination of acoustical materials and HVAC sources, and has done research in underwater acoustics.

Project Experience- Interior Acoustics and Vibration

Novartis Laboratory | Cambridge, MA

Performed acoustic measurements and modeling for a laboratory at Cambridge, MA. Octave band measurements were made of gas chromatography equipment and other laboratory devices at several locations. Detailed acoustic modeling was done using the EASE interior acoustics model. Various sound treatments were examined, and an appropriate coverage of the walls and doors was recommended to reduce sound to about half the previous levels.

Grand Central Station | New York, NY

Dr. Quin performed a sound and vibration level impact analysis for the East Side Access project at Grand Central Station. Ambient background sound level measurements were collected inside and outside the station.

Project-specific noise and vibration impacts of the proposed ventilation system, fans, and generator equipment were computed and used to determine appropriate noise and vibration mitigation equipment and procedures. A detailed analysis of ductwork and breakout noise was also undertaken, to determine if the ventilation facilities were appropriate.

DC Bar Association Rebuild | Washington, DC

A complete HVAC sound analysis was performed for multiple rooms in a four story office building in Washington, DC. HVAC and diffuser noise was estimated for conference rooms and studios using spreadsheet models. Extensive work was done with the client to choose appropriate diffusers and VAV box locations to ensure that the project met NC 15 and NC 25 criteria.

NIH Animal Facility | Cary, NC

1/3 Octave band vibration data were collected at a proposed NIH animal facility in Cary, NC. for a number of nearby industrial sources. Data were collected using uniaxial low frequency accelerometers. Vibration levels were analyzed and summed to obtain peak particle

velocity at the facility. Measured levels were found to be within acceptable limits for a facility of this type.

Multiple Churches | North Carolina

Dr. Quin performed HVAC analyses for a number of churches in various locations in N.C. Spreadsheet models were made of HVAC and diffuser sound, with room constants obtained from EASE modeling. Breakout was modeled at various locations, and duct lining was modeled and recommended at various locations. The churches were successfully designed to meet the NC 25 criteria.

Project Experience- Wind Turbine Acoustics

Wind Colebrook Monitoring | Colebrook CT

Dr. Quin performed a year-long sound compliance monitoring program in Colebrook, CT for two existing 2.85 MW wind turbines. Data was collected in one week periods at one hour intervals at three locations for winter conditions, and at two locations for seasonal (winter spring summer fall) monitoring. Data was correlated with wind turbine data and on-site observations to show what sound actually came from the turbines. The results have been sent to, and approved by the Connecticut siting council.

Varian Associates | Gloucester, MA

MA. Dr. Quin performed a community sound assessment for two proposed wind turbines in Gloucester, Massachusetts. Ambient background sound level measurements were collected around the proposed wind turbine site in residential areas. Manufacturer's data for wind turbines were used to calculate future sound levels using the WindPro noise model. Dr. Quin assisted the client in presenting the results at a public meeting. The project was eventually built in 2012.

Smuggler's Hill Wind Project | Derby Line, VT

Dr. Quin performed a sound monitoring assessment for two wind turbines in Vermont for Encore Development. Ambient sound level data were collected and analyzed to obtain turbine noise levels in the area of the turbines



during summer and winter months. Modeling was done using the Cadna/A noise model. Testimony was also prepared and filed with the Public Service Board. Impacts were also predicted for Canadian residents.

Prattburgh Wind Farm | Prattsburgh, NY

Dr. Quin performed a community sound modeling assessment for a wind farm with 17 turbine locations in Prattsburgh N.Y. for Ecogen. Modeling was done using the Cadna/A sound model and detailed terrain and acoustical data. Results showed that the turbines would comply with local regulations at all relevant locations. They were sent to the Town of Prattsburgh for examination.

Cohocton Wind Farm | Cohocton, NY

Dr. Quin performed a community sound monitoring assessment for a wind farm with nearly 30 turbine locations, in Cohocton N.Y. Ambient sound level data were collected and analyzed to obtain turbine noise levels in the area of the turbines. Results showed a significant discrepancy between measured and modeled sound levels. They were sent to the Town of Cohocton.

Two Locations for AWD, Maine

Dr. Quin performed a sound monitoring assessment for two wind turbine site locations in Maine for Associated Wind Developers with four and two wind turbines. Ambient sound level data were collected and analyzed to obtain turbine noise levels in the area of the turbines. Modeling was done using the Cadna/A noise model for both locations. At one location, sound impacts were likely to be substantial, and the project was halted; at the other, site investigations are still continuing.

Project Experience – Traditional Energy

Rochester Generating Unit | Greece, NY

Dr. Quin performed a noise modeling study for the existing Rochester power station to assess the potential noise from a new replacement station. Short-term measurements were taken around the site of the existing plant, including along the property line and in nearby neighborhoods. A modeling study of the proposed new unit incorporating complex terrain and building shielding was undertaken using the Cadna/A noise modeling program. A detailed mitigation analysis was undertaken, and a mitigation package involving quieter equipment was developed to reduce noise to acceptable levels.

Braintree Electric Plant | Braintree, MA

Dr. Quin performed a noise modeling study for the Braintree power station to assess the potential noise from a new gas-fired generating unit. Short-term measurements were taken around the site of the existing plant, including along the property line and in nearby neighborhoods. A modeling study of the proposed new plant was undertaken using the Cadna/A noise modeling program as data from the client became available. A

detailed mitigation analysis was undertaken, involving many different equipment options, and a mitigation package was developed.

Basell Cogeneration Unit | Calcasieu, LA

Dr. Quin performed a noise modeling study for the existing Calcasieu Basell plant power station to assess the potential noise from a new cogeneration unit. Short-term measurements were taken in nearby neighborhoods around the site of the existing plant. A modeling study of the proposed new unit incorporating building shielding was undertaken using the Cadna/A noise modeling program. A detailed mitigation analysis was undertaken, and a mitigation package involving multiple noise barriers and curtains was developed to reduce noise to acceptable levels.

Project Experience – Industrial Building Permitting

Costco Warehouse | Brookfield, CT

Dr. Quin performed a monitoring and modeling study for a proposed Costco warehouse in Brookfield, CT. Background noise measurements were made in the area around the store day and night for short periods at several locations. An extensive study of truck idling and rooftop equipment noise was made using the Cadna/A noise model to determine likely impacts at the surrounding areas. Several building and truck route configurations were examined, and designs were completed that effectively reduced noise at sensitive receptors.

Verizon Switch Cabinet Installation | Santa Clarita, CA

Dr. Quin performed a detailed Cadna modeling assessment of the proposed installation. A detailed Cadna model was constructed from existing terrain and mapping, and from a site visit. The model was used to determine if the cabinets would be in compliance with noise regulations in Santa Clarita. After an extensive barrier and enclosure investigation, an appropriate mitigation package was approved. Dr. Quin attended a public meeting, after which the project was approved.

Stop and Shop Stores | various locations in Massachusetts

Dr. Quin performed several monitoring and modeling studies for Stop and Shop stores at various locations in New England. Background noise measurements were made in the areas surrounding the stores and noise modeling was done using the Cadna/A noise model. Usually there were no noise impacts; however mitigation of rooftop equipment involving relocation and building parapets was sometimes required to reduce the sound levels to acceptable levels.

Trader Joes Warehouse | Clifton Park, PA

Dr. Quin performed a monitoring and modeling study for a proposed Trader Joes warehouse in Clifton Park, PA.



Background noise measurements were made in the area around the store for a week at two locations, and for short periods at additional locations. An extensive study of truck noise was made using both the Cadna/A and TNM noise models to determine likely impacts at the surrounding areas from truck movement and idling. More than a dozen potential building and truck route configurations were examined. A final design was determined, and the result successfully presented at a siting board meeting.

Speedway Store Equipment Retrofit |
South Amherst, MA

Dr. Quin performed a complete analysis of sound from refrigeration equipment at a Speedway store in South Amherst, MA. Background measurements in the community were made with equipment on and off; the equipment was currently found to be out of compliance with MA DEP requirements. Cadna/A modeling was performed for existing and new equipment with a noise barrier for the area using data collected on site. The new configuration was found to comply with appropriate regulations.

Other related areas of interest

Recognized (Certifications/Trainings)

- Clean Energy and Sustainability Certificate, Umass. Requirements completed, 2014.

Work history

2017 – present	GHD, Sudbury, MA
2013 – 2016 present	Stewart Acoustical Consultants and EBI Consulting
2012 – 2013	MA DEP
2009 – 2012	Howard Quin Consulting, LLC, Sudbury, MA
2007 – 2009	Tech Environmental, Waltham, MA
2005 – 2007	Epsilon Associates, Maynard, MA
2000 – 2005	KM Chng Environmental, Burlington, MA
1998 – 2000	Geosoftware Incorporated, Burlington, MA
1994 – 1996	1994-1996 Vibrattech Engineers, Hazleton, PA



Eric J. Tripi

Regional Transportation Leader

Qualified: Master of Science, Civil Engineering, University of Nebraska-Lincoln, 1994, Bachelor of Science, Civil Engineering, Michigan State University, 1992

Connected: Licensed Professional Engineer in Florida, Georgia, Michigan, Ohio, Indiana, Kentucky, Mississippi, North Carolina, Pennsylvania, and South Carolina; Professional Traffic Operations Engineer (PTOE); IMSA Level II Traffic Signal Certified.

Member of Institute of Transportation Engineers (ITE); National Highway Institute (NHI) Certified Instructor (#0424); Adjunct Professor, The Citadel

Professional Summary: Mr. Tripi has a diverse background in transportation engineering, planning, design, safety, ITS and traffic operations. He has 23 years of professional engineering experience which includes operation studies, traffic signals (design, timing, warrants, and optimization), intersection and interchange analysis/design, freeway analyses, traffic impact studies, traffic safety, and traffic estimation. He has extensive experience in managing and conducting major signal optimization projects, corridor studies, safety studies, and training. Mr. Tripi is a certified National Highway Institute (NHI) instructor and has served as an adjunct professor at The Citadel in Charleston, SC.

Transportation Planning, Engineering and Operations

Certified NHI Instructor

National Highway Institute (NHI) Course Instruction - NHI #133121, 133122, 133123, 133124, and 133125, Traffic Signal Series | Nationwide | 2010-On-going

Certified instructor responsible for conducting the NHI Traffic Signal Series training across the Country. Courses include "Traffic Signal Design and Operation," "Traffic Signal Timing Concepts," and "Successful Traffic Signal Management: A Basic Service Approach." Classes consist primarily of State Department of Transportation personnel and local agencies.

Project Manager and Lead Traffic Engineer Statewide Traffic Signal Design On-Call Services | Michigan Department of Transportation (MDOT) | Michigan | 2014-2017

Responsible for providing on-call engineering services to MDOT for new signal designs or modernization of existing signals throughout Michigan.

Project Manager and Lead Traffic Engineer Traffic Signal Design and Modernization Projects - Superior Region | Michigan Department of Transportation (MDOT) | Ishpeming and Crystal Falls, Michigan | 2015-2017

Completed new signal designs and modernizations throughout the MDOT Superior Region encompassing the Ishpeming and Crystal Falls TSCs. Design included detection systems, signal interconnection, and ADA compliant sidewalk, ramps and pedestrian signals

Project Manager and Lead Traffic Engineer Statewide Traffic Operational and Geometric Study On-Call Services | Michigan Department of Transportation (MDOT) | Michigan | 2014-2017

Responsible for providing as-needed statewide traffic operational and geometric study services. Studies include traffic signal optimization, recommendations for individual traffic signals or corridors, capacity analyses and geometric recommendations for access management and improvements to intersections, interchanges, and freeways.

Project Manager and Lead Traffic Engineer Michigan Department of Transportation (MDOT) Signal Optimization Project | MDOT | City of Lansing and Ingham County, MI | 2016-2017

Responsible for providing updated corridor signal progression plans with optimized traffic signal operations for a total of 69 signal-controlled intersections located along various corridors in the City of Lansing and Ingham County, Michigan in MDOT's University Region. Each signal controller was analyzed for alarm patterns and existing problems were mitigated before the optimization process was started.

Project Manager and Lead Traffic Engineer Traffic Impact Studies - Speedway Gas Stations | Weihe Engineers | Various Locations | 2014-On-going

Responsible for conducting traffic impact studies for several Speedway gas stations across Michigan, Indiana, and Illinois. Existing conditions are analyzed, trip generation and distribution analyses conducted, and capacity analyses completed for existing, background, and future build-out conditions. Road improvement and



mitigation measures are recommended to adequately accommodate the site traffic.

Lead Traffic Engineer
Purdue University/City of West Lafayette
Campus Street System Civil Engineering and
Traffic Analysis | Purdue University |
W. Lafayette, IN | 2016

Purdue University in conjunction with the City of West Lafayette made drastic changes to the campus roadway system. Responsible for leading the traffic analyses for planned conversions of one-way streets to two-way streets, Road Diet planning and analysis, and implementing pedestrian- and bicycle-friendly improvements. Traffic volumes were projected and reassigned for future years 2019 and 2039.

Project Manager and Lead Traffic Engineer
Traffic Impact Study Reviews | IXOYE | Town
of Bargersville, IN | 2016-2017

Responsible for reviewing traffic impact studies that were submitted for new developments proposed in the Town of Bargersville. The Town did not have any firm guidelines or requirements for performing traffic impact studies therefore also helped the Town develop new such guidelines.

Lead Traffic Engineer
KY 338 and I-71/I-75 Interchange
Reconstruction | Kentucky Transportation
Cabinet | Boone County, KY | 2014-2017

As lead traffic engineer, responsible for leading the traffic analysis which involved projecting and assigning future traffic volumes resulting from new developments in the study area and then performing capacity analyses to determine if the proposed double crossover diamond interchange (DCDI, single point urban interchange (SPUI), and roundabout could accommodate the projected traffic as designed. The traffic software VISSIM was used to perform the capacity and queuing analyses.

Project Manager and Lead Traffic Engineer
National Nuclear Security Administration
(NNSA) Albuquerque Complex Traffic Study,
Kirtland Air Force Base | NNSA | Albuquerque,
NM | 2016

The purpose of the traffic study was to determine if the Kirtland Air Force Base Eubank Gate and the intersection of G Avenue/20th Street, as currently configured, could accommodate the additional traffic resulting from the relocation of the NACP operation to a new site located by the gate. Extensive data was collected, including traffic counts, queueing analyses, and delay studies. Base traffic was reassigned and capacity analyses were conducted. Base security requirements were considered in all study alternatives developed.

Lead ITS Traffic Engineer
I-65 Southport Design-Build Project | Indiana
Department of Transportation (INDOT) |
Johnson and Marion Counties, IN | 2014-2015

The project scope included full reconstruction of the existing three-lane section of I-65 and adding auxiliary lanes between the interchanges at Main Street and Southport Road in Johnson and Marion counties. All ITS devices impacted by the construction were required to be replaced and/or relocated. Weigh-in-Motion (WIM) detectors, Automatic Traffic Recorders (ATR), CCTVs, Microwave detection, and DMS devices were all affected. Responsible for replacing and relocating ITS devices, providing power and fiber communication, designing a new WIM station, and producing ITS design plans.

Project Manager and Lead Traffic Engineer
Nestle Waters Bottling Plant Traffic Impact
Study | Nestle Waters NA | McBee, SC | 2014

Responsible for collecting traffic data, generating trips for the site, performing capacity analyses at critical intersections, and determining necessary road improvements. Sight distance analyses were conducted to assure that large tanker trucks could enter and exit the site safely.

Project Manager and Lead Traffic Engineer
Savannah ATMS Feasibility Study | Chatham
County-Savannah Metropolitan Planning
Commission | Savannah, GA | 2013-2014

Responsible for studying the signal systems of the tri-county Coastal region in and around Savannah, Georgia to determine the feasibility of implementing a new Traffic Management Center (TMC). The TMC would serve the region and employ/integrate ITS technologies for use in managing arterials and freeways.

Project Manager and Lead Traffic Engineer
South Carolina Statewide Traffic Signal
Inventory | South Carolina Department of
Transportation (SCDOT) | Statewide |
2011-2012

Responsible for inventorying more than 2,100 traffic signals across South Carolina. Type of Information collected consisted of cabinet hardware elements, signal heads, poles, type of detection, pedestrian equipment, etc. The data compiled was entered into a database that is to be maintained by the SCDOT. The inventory was intended to help the SCDOT prioritize traffic signals across the state for maintenance and upgrades.

Project Manager and Lead Traffic Engineer
Marshland Roundabout Traffic Analysis | Town
of Hilton Head, SC | Town of Hilton Head, SC |
2012

Completed a traffic analysis of a proposed roundabout at the intersection of Marshland and Matthews Drive to determine if the roundabout could function with one circulating lane. At issue was primarily a lane drop



approaching the roundabout from the south on Matthews Drive and whether the roundabout could accommodate this traffic in the single circulating lane. The traffic engineering software Sidra and Synchro/SimTraffic were used to analyze the roundabout operation and the adjacent intersections that were feeding the roundabout from each direction.

Other related areas of interest

Recognized Activities

- ITE Trip Generation Expert Review Panel Member for the new ITE "Trip Generation Manual, 10th Ed., 2017
- ITE Expert Review Panel Member for the Update of the ITE "Trip Generation Handbook," 2nd Ed to 3rd Ed., 2013
- ITE Technical Advisory Committee Member for the Update of the ITE "Manual of Transportation Studies," 1st Ed to 2nd Ed., 2010
- National Highway Institute (NHI) Certified Instructor (#4024), 2010
- President of the South Carolina Section of ITE, 2007

Awards

- National Highway Institute (NHI) Instructor of Excellence, 2010
- Iteris Employee of the Month – September 2011:

Papers Presented and Published in Conference Proceedings

- *"Impact Fees Based on ITE Trip Generation - Cautions"* Purdue Road School Technical Conference and Expo, West Lafayette, IN March 2016
- *"Trip Generation Updates: Pass-by and Diverted Trips"* ITE Technical Conference, San Diego, CA March 2013

Presentations

- *"Trip Generation Handbook Overview"* Transportation Bonanza, Michigan Association of Planning, Lansing, MI December 2015
- *"Trip Generation Updates: Pass-by and Diverted Trips"* ITE Technical Conference, San Diego, CA March 2013
- *"Pass-by and Diverted Trips"* ITE Annual Meeting and Exhibit, Seattle, WA August 2014
- *"ITE Trip Generation and Beyond: Cost Allocation Approaches for Transportation Impact Fees"* Growth and Infrastructure Consortium Annual Meeting, San Diego, CA October 2011

- *"Independent Impact Fee Studies, Two Case Studies"* ITE Southern District Annual Meeting, Portsmouth, VA April 2010
Michigan Section of ITE December Meeting, Farmington Hills, MI December 2010
- *"Basic Transportation Concepts and Trends"* National Impact Fee Roundtable Annual Meeting, Orlando, FL October 2008

Work history

2017 – present	GHD, Inc., Farmington Hills, MI
2014 - 2017	Parsons, Southfield, MI
2007 – 2014	Iteris, Inc., Mt. Pleasant, SC
2004 - 2007	Wilbur Smith Associates, N. Charleston, SC
2003 – 2004	Trico Engineering, N. Charleston, SC
1994 - 2003	Barton-Aschman Associates/Parsons, Evanston, IL and Detroit, MI