

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE:

APPLICATION OF NEW CINGULAR WIRELESS PCS, LLC DOCKET NO. 501
(AT&T) FOR A CERTIFICATE OF ENVIRONMENTAL
COMPATIBILITY AND PUBLIC NEED FOR THE
CONSTRUCTION, MAINTENANCE, AND OPERATION June 21, 2021
OF A TELECOMMUNICATIONS FACILITY AT 106
SHARON ROAD, TOWN OF SALISBURY, CONNECTICUT

NEW CINGULAR WIRELESS PCS, LLC d/b/a AT&T
PRE-HEARING SUBMISSION

AT&T (the "Applicant") respectfully submits the following pre-hearing information available at this time regarding the above-referenced Application.

I. List of Witnesses

1. Harry Carey, External Affairs, AT&T
2. Mark Roberts, Site Acquisition Consultant, QC Development
3. Thomas E. Johnson, P.E., Managing Partner, Proterra Design Group, LLC
4. David Archambault, Vice President, Virtual Site Simulations, LLC
5. Gio Del Rivero- National Practice Leader, NEPA, Nova Group, GBC
6. Chris Lucas- PWS, CWS, RPSS, Environmental Consultant and Professional Wetland & Soil Scientist, Lucas Environmental, LLC
7. Douglas Sheadal, CCM, Principal Scientist, Modeling Specialties
8. Martin Lavin, Radio Frequency Engineer, C² Systems on behalf of AT&T
9. Col. Dan Stebbins, AT&T FirstNet

Resumes are attached.

II. Exhibits to be Offered

The Applicant intends to offer the following Exhibits:

1. Application for a Certificate of Environmental Compatibility and Public Need filed on April 1, 2021.
2. Bulk File exhibits including:
 - a. Section 1: Salisbury 2012 Plan of Conservation.
 - b. Section 2: Salisbury Zoning Regulations, adopted 1959, amended effective September 30, 2019.

- c. Section 3: Lakeville Village Zoning Map, effective July 9, 2020; Town of Salisbury Zoning Map, effective July 30, 2020; Town of Salisbury Zoning Overlay Districts Map, effective July 30, 2020.
 - d. Section 4: Salisbury Inland Wetlands and Watercourses Regulations.
 - e. Section 5: Technical Report.
 - f. Section 6: Supplement to Technical Report.
3. Affidavit of Publication of the Legal Notice published in the Republican-American on March 25, 2021 and March 26, 2021.
 4. Applicant's Signed Protective Order, dated April 29, 2021.
 5. Responses to Siting Council Interrogatories, Set I, dated June 15, 2021.
 6. Supplemental Submission dated June 21, 2021.

The Applicant reserves the right to offer additional exhibits, testimony, witnesses and administratively noticed materials as may be necessary during hearing process and on redirect.

III. Remote Public Comment Session Presentation

Thomas E. Johnson, P.E. is the designated presenter for the 6:30 p.m. remote public comment session. The presentation drawings include Sheets A-1 and A-2 last revised February 3, 2021 included in Attachment 4 of the Application.

CERTIFICATE OF SERVICE

I hereby certify that on this day an original and fifteen (15) copies of the foregoing were sent via overnight mail and electronically to the Connecticut Siting Council.

June 21, 2021



Kristen Motel
Cuddy & Feder LLP
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White Plains, NY 10601
(914)-761-1300
Attorneys for the Applicants

cc: Brian Leyden, AT&T
Harry Carey, AT&T
Lucia Chiochio, Esq.

Areas of Expertise

Telecommunication Facility Design
Project Management
Site and Subdivision Design
Structural Evaluation
Construction Inspection

Years of Experience

Over 20 Years

Education

University of Massachusetts
BS Civil Engineering/ 2000
Northeastern University
MS Structural Engineering/2004

Registration

Professional Engineer/ CT / #28192
Professional Engineer/ ME / #10915
Professional Engineer/ PA / #077809
Title 5 Soil Evaluator / MA / #SE1141
OSHA Construction Safety & Health
Training #001417703
RF Site Safety Awareness Training

Professional Affiliates

American Society of Civil Engineer
New England Wireless Association

Overview

Mr. Johnson has over twenty years of professional experience in the civil and environmental engineering field, providing services in both the public and private sectors. He has worked on a wide range of development projects including: telecommunication facility design, site design, residential and commercial subdivision design, stormwater analysis, environmental permitting and land planning. His responsibilities have included design development, project permitting, public presentation, site design, and construction administration.

Project Specific Experience

New England Telecommunication Facilities Design

Managed the engineering design of over 1000 telecommunication facilities for many of the major national carriers and tower development companies throughout New England. The range of services provided for telecommunications sites begin with leasing and design, and continue throughout the construction process with construction coordination, inspections and closeouts.

Through the leasing and design process, Mr. Johnson has worked with the carriers and tower development companies to prepare leasing documents and plans to present to property owners and town officials. The development of zoning and construction drawings needed for filing is managed with an eye towards site-specific requirements and experience in code compliance.

In Connecticut, Mr. Johnson has worked within the code and with the requirements set forth by the Siting Council, (CSC). An example of this work was recently completed for a project in Windsor CT. The development of the monopole for that site required CSC plan submittal, review & response to site-specific interrogatories, and to appear before the council as a witness during the hearing.

Plan preparation for telecommunication facilities requires extensive collaboration with the multiple parties including: land surveyors required to generate existing conditions and topographical surveys; geotechnical engineers to evaluate existing soils and proposed foundation subbase; coordination with the structural engineer or tower manufacturer on placement and design parameters; and, working with the local utility company for the placement of utility easements and power and telco routing.

Oversight continues during construction with an array of construction coordination services including: the review of shop drawings as required for any steel fabrication; soil resistance testing and equipment grounding design; and, preparation of as-built plans or ALTA surveys as required. This also includes various on-site inspections during the construction process as outlined in the code. Subsequent field inspection reports are compiled along with supporting documentation needed to produce a final statement of special inspections and to close out any permits for the site.

David Archambault

EXPERIENCE:

96-present Summary of Qualifications

Over the course of 25 years in telecommunications, I have been responsible for the zoning and permitting of hundreds of new communication facilities throughout the east coast. I have managed the creation of hundreds of photo simulation, viewshed and other visual data analyses packages for many clients, as well as testifying before numerous state, city and municipal hearings. I can fully understand and the intricate needs of the client, the requirements of governing bodies, and the demands of local communities. This unique perspective has served me well in my current role in VSS, where we continue to advance the development of quality visual data analysis tools for the telecom and other industries.

My previous experience includes all phases of site acquisition from initial selection to building permit, with service to many carriers, tower companies and municipalities. I have proven aptitude for overall organization, zoning & permitting, negotiations and construction oversight along with the ability to bring together attorneys, A&E firms, construction companies, environmental firms, property owners and clients. Exceptional skills in leasing, zoning and permitting multiple sites throughout New England, where creative thinking is needed to bring projects to an on-time close. My consistent attention to detail and organizational skills are a powerful asset to any company and its clients.

10-13-present Virtual Site Simulations, LLC. (VSS, LLC)
A visual consulting company for the wireless industry Owner/Vice President

Provided direction for development of proprietary software to create, three-dimensional modeling, GIS mapping, photo simulations and balloon float tests for the telecommunications industry to meet regulatory requirements for cellular tower site acquisition. Management of field technicians to collect and process data to complete balloon tests, site simulations and visual impact studies for 100's of telecommunication sites. Locations throughout New England and along the east coast from Florida to Canada, and as far West as the Great Lakes. Maintain and develop client contacts and new business.

2/13-1-17 Smartlink LLC
A consulting company for the wireless industry Senior site acquisitions specialist

Responsible for site leasing, zoning, permitting, organization and oversight of lease negotiations and processes. Organization and oversight of attorneys, A&E firms, environmental firms, property owners and others for the leasing, zoning/permitting process of up to 50+ new build sites, and up to 85 modification sites at a time.

1/08-2/13 NETWORK BUILDING AND CONSULTING (NB&C)
A consulting company for the wireless industry

Responsible for site leasing, zoning and permitting, including organization and oversight of lease negotiations and processes. Organization and oversight of attorneys, A&E firms, environmental firms, property owners and others for the leasing, zoning/permitting process of up to 150 sites at a time.

1/07-1/08 Tower Resource Management (TRM)

A consulting company for the wireless industry

Responsible for site leasing, zoning and permitting, including organization and oversight of lease negotiations and processes. Organization of and oversight of attorneys, A&E firms, environmental firms, property owners and others for the zoning/permitting process of up to 30 sites at a time

4/04/-1/07

Realtor/Randall Realtors GMAC

Sales

Have been in the top 10% for sales of residential homes during the 3 years.

12/04-1/07

Global II

A lease and property management company for the wireless industry

Owner

Responsible for property “leasing” (including organization, negotiations and oversight of attorneys, A&E firms, environmental firms, property owners and zoning/permitting of multiple sites) property management, property acquisitions and overseeing all aspects of Company operations including day-to-day accounting, personnel management, billing & collections, construction oversight and client relations.

9/01-12/04

Global TeleCommunications, LLC

A tower company for the wireless industry

Owner

Responsible for property “leasing” (including organization, negotiations and oversight of attorneys, A&E firms, environmental firms, property owners and zoning/permitting of multiple sites) property management, property acquisitions and overseeing all aspects of Company operations including day-to-day accounting, personnel management, billing & collections, construction oversight and client relations.

12/99-9/01

PINNACLE SITE DEVELOPMENT, INC., GLASTONBURY, CT

A consulting company for the wireless industry

Project Director

Responsible for sales, leasing, managing and overseeing all aspects of project operations including personnel management, billing & collections, construction oversight, client relations, site acquisition and zoning on a T-Mobile project. A hands-on manager who ensures project goals are met and provides regular reporting on project status.

11/98-11/99

NETWORK BUILDING AND CONSULTING (NB&C)

A consulting company for the wireless industry

-Site Acquisition Specialist: Responsible for identifying, zoning and leasing suitable sites for both ground build communication towers and rooftop antennas for up to 30 sites at a time.

-Project Manager: Overseeing all aspects of a satellite office including meeting with and keeping good relations with the client. Responsibilities also included payroll, human resources, billing, tracking zoning hearings, formulating strategies and speaking at zoning hearings, lease negotiations, and overseeing all site acquisition for up to 90 sites in both Massachusetts and Connecticut.

7/96-11/98

NORTHERN LAND SERVICES, EAST PROVIDENCE, RI

A consulting company for the wireless industry

Responsible for implementing and negotiating master lease agreements with over 30 mayors and town officials in the New Jersey area. Responsible for identifying, zoning, and leasing. Successfully wrote, negotiated, and closed ground and building leases. Presentations of zoning and various requests to town councils at numerous public hearings. Project manager for site acquisition contract in Canada. Involved in many aspects of pipeline right-of-way. Duties performed in Rhode Island, Massachusetts, New York, New

May 6, 2020

Jersey, Maine and both Vancouver and Toronto, Canada.

10/92-6/96 **CAPTAIN**

Ran marine tow company as captain, ran Sportfish and party boats. Captain's license obtained February 1992. Licensed to operate vessels up to 100 tons within 200 miles of the United States.

12/89-10/92 **ARCH'S PLACE, RESTAURANT AND NIGHTCLUB, FLORIDA**

Owner

Operational management of facility.

EDUCATION:

University of Rhode Island, Kingston, RI
Marine Technology, South Kingstown, RI
Narragansett High School

QUALIFICATIONS / PERSONAL:

- Willingness to accept and meet challenges
- Ability to learn and adapt quickly
- Ability to see big picture
- Reliable/Professional
- Good verbal and organizational skills
- U.S. Coast Guard License #789854 100 Ton Master of Near Coastal Steam or Motor Vessels, Marine Commercial Towing Endorsement and Marine Radio Operator Permit
- Adult CPR, Standard First Aid, CPR/First Aid Instructor Training

REFERENCES:

Upon request

GIO DEL RIVERO

NATIONAL PRACTICE LEADER, NEPA

PROFESSIONAL EDUCATION

Bachelor of Science, Earth and Environmental Science, University of Illinois, Chicago, IL, June 2008

CERTIFICATIONS/QUALIFICATIONS

- ◆ ASTM Phase I Environmental Site Assessments for Commercial Real Estate, 2008
- ◆ Basic Wetland Delineation Training, 2008
- ◆ Environmental Compliance & Historic Preservation Review Workshop by FCC, various years
- ◆ Phase I & Phase II Environmental Site Assessment (ESA) Telecom Experience, 4 years
- ◆ National Environmental Policy Act (NEPA) Experience, 13+ years

SELECTED EXPERIENCE

Mr. Del Rivero has 13+ years of professional experience in environmental assessment and consulting, specializing in environmental investigations, site assessments, and National Environmental Policy Act (NEPA) reviews for the telecommunications industry. He has experience with conducting Phase I and Phase II Environmental Site Assessments (ESA) in accordance with ASTM standards and preparing Phase I compliance reports on various properties types.

In addition to ESAs, Mr. Del Rivero is an expert in conducting NEPA reviews for telecommunications properties ensuring compliance with Federal Communications Commission (FCC) requirements under NEPA and includes an analysis of historic properties, wetlands, endangered species habitats, floodplains, and other areas of environmental concern to limit potential impact of cellular installations on these sensitive areas. He had been trained on basic wetland delineations using the U.S. Army Corps of Engineers Wetland Delineation Manual Technical Report Y-87-1. He has been able to assist in identifying features of potential wetlands as defined by the U.S. Army Corps of Engineers and provide guidance on whether a wetland delineation is warranted for proposed telecommunications projects.

Under FCC requirements and NEPA protocols, Mr. Del Rivero has coordinated and managed thousands of Endangered Species Act - Section 7 consultations for proposed telecommunications undertakings. He focuses his efforts on mitigating any adverse effects these undertakings may have on endangered/threatened species or their critical habitat. He serves as a liaison between the U.S. Fish and Wildlife Service, state wildlife agencies, the FCC biologist, and the telecommunications companies.

PHASE I and PHASE II ESA

Mr. Del Rivero has completed hundreds of Phase I and Phase II ESAs which included site inspections, research, and completing final reports for primarily the telecommunications industry throughout the nation on various property types such as commercial buildings, industrial properties, electrical transmission lines, existing telecommunication towers, and raw land locations.

NEPA

Mr. Del Rivero has completed and senior reviewed thousands of NEPA assessments for the FCC including site investigations, research, completion of project submittals to various State Historic Preservation Offices for Section 106 review and completing final reports for the telecommunications industry throughout the nation. He has also completed NEPA assessments for other federal agencies such as U.S. Department of Housing and Urban Development (HUD), U.S. Forest Service (USFS), Bureau of Indian Affairs (BIA), and National Aeronautics and Space Administration (NASA). In addition, he has completed environmental reviews for state programs such as the California Environmental Quality Act (CEQA) and New York State Environmental Quality Review Act (SEQR).



Christopher M. Lucas, PWS, CWS, RPSS

Environmental Consultant | Professional Wetland & Soil Scientist
Land Development & Permitting

Biography

Christopher Lucas has an extensive background in ecology and wildlife biology as well as marine biology, ornithology and Geographic Information Systems (GIS). His responsibilities include preparation and coordination of the environmental science aspects of a variety of project types including railroad and roadways, residential and commercial development, and telecommunications facilities. Chris is skilled in wetland delineations, wildlife habitat evaluations and analysis, and preparation of documents associated with environmental permit applications.

Chris's expertise lies in document preparation and coordination for environmental permitting. He has prepared documentation for federal and state permits under the jurisdiction of the U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, Department of Environmental Protection, Department of Conservation and Recreation, Massachusetts Environmental Policy Act, Natural Heritage and Endangered Species Program, and Massachusetts Wetlands Protection Regulations. Additionally, Chris has conducted extensive local environmental permitting within New England.

Professional Experience

Commercial Site Developments – MA

Conducted wetland delineations, wildlife habitat evaluations, and rare species surveys under local, state, and federal guidelines for the construction of various commercial developments. Work included consulting and coordination with local, state and federal agencies to obtain all applicable permits required for development. Tasks also integrated wildlife and habitat evaluations for rare species to minimize and mitigate construction impacts.

Residential Site Developments – MA

Prepared and coordinated MEPA, NPDES, USACE, MassDEP, DCR, and local wetland permitting for various residential subdivisions throughout Massachusetts. Site development issues included endangered species work, wetland fill of Outstanding Resource Waters, work within Watershed Protection Areas, impacts to historic properties, and balancing the needs and concerns of local, state, and federal agencies.

Transportation, Railways and Roads – MA

Chris has worked on several roadway and pipeline projects of various lengths (ranging from two miles to over 25 miles) that included wetland delineation and permitting under local, state, and federal regulations. Conducted wetland delineation and wildlife surveys under state and federal guidelines for the reconstruction of the existing railway from Boston to New Bedford/Fall River for an improved commuter rail service (work performed while working at another firm). Work included over 25 miles of wetland delineation involving classification of vernal pools. Tasks also integrated wildlife and habitat evaluations for eighteen rare species with telemetry tracking and monitoring of such species. Duties also involved creation of a database to store and analyze all information collected.

Telecommunications – New England

Tasks related to environmental assessments to complete NEPA requirements, visual resource evaluations, wetland inspections, and zoning support. Coordination with federal, state and local agencies to assess wetland, waterway, stream, floodplain, threatened and endangered species, fishery, and wildlife habitat issues. Correspondence with State Historic Preservation Officers throughout New England as required for the evaluation of the potential visual impacts to any historical or archaeological sites. Tasks also included coordination with Tribal Historic Preservation Officers to weigh impacts in federally regulated territory. Work also involved wetland investigations and delineations for permitting under local, state, and federal regulation.



Education

Cornell University
Bachelor of Science, Biology
(Double Concentration in
Marine Biology & Ecology)

Stanford University
Master of Science, Biology

UMASS – Amherst
Master of Science, Soil Science

Certifications

Professional Wetland Scientist #1884
Society of Wetland Scientists

Certified Wetland Scientist (NH) #274
Joint Board of Licensure and
Certification – State of NH

Registered Professional Soil Scientist
Society of Soil Scientists of Southern
New England

Geographic Information Systems
(GIS) Certificate - San Francisco State
University

Professional Affiliations

Society of Wetland Scientists

Massachusetts Association of
Conservation Commissions

Association of Massachusetts Wetland
Scientists

Society of Soil Scientists of Southern
New England

PROFESSIONAL SUMMARY

Mr. Sheadel is a certified consulting meteorologist with more than 25 years of experience in atmospheric analysis, licensing, noise modeling and project management. He has developed strategies that led to the successful permitting of projects ranging from community improvement to gigaWatt power generation facilities, including public water pumping stations, municipal treatment facilities and airport capital development projects. He has managed the licensing of industrial diesel engines and turbine gas compressor stations. Mr. Sheadel has performed noise modeling of industrial and power generating facilities as well as traffic related analyses. His experience includes a wide range of modeling approaches. He has provided expert testimony before the Massachusetts, Connecticut and Rhode Island Energy Facility Siting Boards. He has provided testimony at a state or regional level in New York, Maine, New Hampshire, Illinois, Indiana, Michigan and California. He has provided hearing support at numerous local review hearings.

Mr. Sheadel's expertise includes specialty assessments of noise impacts and control. He was the principal noise scientist for many licensing, transportation and power generation projects. He supports development projects with expert testimony related to ambient noise surveys, noise modeling, impact assessment and permit compliance evaluations.

PROFESSIONAL EXPERIENCE

Municipal and State Projects

- ◆ *Massachusetts Highway Department / Town of Marlborough, Massachusetts.* Provided the ambient measurements, and modeled the operational and construction noise sources for the Interstate 495 interchange project. Modeled levels were compared to FHWA standards in the existing and future cases. Noise abatement measures were conceptually defined and addressed in the permitting documents.
- ◆ *Massachusetts Port Authority, Boston, Massachusetts.* Conducted construction noise modeling for the expansion of the airport jet fuel storage facility. This support included estimates of airside and landside truck emissions, a review of aircraft fleet inventory for operational emissions, estimates of combined emissions from the various existing storage facilities as well as predicted emissions from a large proposed facility. The results of the studies were presented in MEPA and DEP filings as well as in a public meeting conducted for the neighborhood community groups.
- ◆ *Maine Department of Transportation.* Prepared the Bath-Woolwich Capacity Study estimates of vehicular noise levels at community locations. For this analysis, modeling was conducted to compare the existing conditions with the project build and no build cases to evaluate the effect of the project on the community. The results were evaluated for compliance with State and Federal noise standards. Further evaluation was made to determine the potential value of highway noise barriers.

Industrial Projects

- ◆ *West Roxbury Crushed Stone, West Roxbury, Massachusetts.* Measured the ambient, existing operational sound levels that were used for a baseline for comparison to moving the crushing operation deeper into the quarry. Proposed sources not represented by the existing operation required them to be quantified at other quarries where they were being used. Modeled levels were compared

to state and City of Boston standards for facility noise emissions. Criteria were developed and applied at community residences.

- ◆ *National Fuel Gas Corporation, Pittsburgh, Pennsylvania.* Project Noise specialist for developing permitting documents for the expansion of the Laurel Fields storage project in western Pennsylvania. In this role, Mr. Sheadel conducted site surveys at four proposed sites and several of the existing gas compressor stations in the area. He was responsible for technical support of the Feasibility Study and several versions of the State and Federal Permitting Studies.
- ◆ *New England Deaconess Hospital, Boston, Massachusetts.* Prepared the ambient, operational, and construction noise analyses for a major hospital expansion project which included a heat plant. Modeled levels were compared to state and City of Boston standards for facility noise emissions. Criteria were developed and applied at on-site residences, community residences, and adjacent commercial facilities.

Commercial Permitting Projects

- ◆ *Cellular Communication Installations.* Conducted noise analyses for hundreds of existing and proposed installations for telecommunications facilities. Clients supported include Verizon Wireless, AT&T Wireless, Cingular, Sprint, T-Mobile, Metro PCS, Crown Atlantic, Varsity Wireless, Industrial Tower, Blue Sky Towers and American Tower. This support often requires thorough analyses in a very cost-conscious market. Successfully resolved noise concerns of community leaders and neighbors at public meetings.
- ◆ *Fuel Cell Commercial Generation.* Supported project engineers in developing sound mitigation allowing the equipment to fit into reasonably quiet neighborhoods, a principle goal of distributed generation. Measures were identified that not only met the performance standards but the aesthetic requirements of this important new technology. Project locations ranged from California to Connecticut.
- ◆ *Wind Power Projects.* Provided modeling services in permitting wind turbine facilities at several locations in coastal New England. Such projects are very sensitive to premature publicity so are generally conducted in support of confidential clients. A commercial noise model, CadnaA by Datakustics, was used to predict the sound from turbines and support equipment. Additional hearing support includes presentation of audiovisual packages to introduce the character and quality of the sound expected in the context of background sources.
- ◆ *One Federal Street, Boston.* Provided modeling services in permitting an upgrade of the facility's standby diesel capacity from 335 kW to more than 2,000 kW. The upgrade included the installation of a new 1500 kW engine and an 800 kW engine in an urban financial district skyscraper. A specialty computer program was developed to address the specific propagation characteristics of this installation.

Power Generation Projects

- ◆ *Indeck Energy Services, Chicago, Illinois.* Conducted site evaluations, ambient surveys, noise modeling, solid model rendering, and image processing for more than twenty projects in 5 northeast states, Texas and California. The modeling was used to conduct sound and visual aesthetics studies of the facilities at community locations. Identifying sound “hotspots” and providing mitigation recommendations are a frequent part of these studies. The modeling and graphical studies were used in state and local licensing documents as well as support for public presentations.
- ◆ *Fore River Station.* Project Noise Technician and Modeler for a 700 mW power generating facility proposed in Weymouth, MA. In this role, provided noise measurements, modeling and expert witness support for the Feasibility Study, Air Quality Modeling Protocol, and Environmental Impact Report, Energy Facility Siting Board review and Air Plans Approval Application. Provided follow-on support the design of facility noise treatments to prepare for the compliance demonstration. Provided detailed analytical measurements for various sources to quantify the source emission during fluctuating plant load conditions including startup and shutdown. Conducted overall plant compliance surveys and subsequent required demonstrations at Weymouth receptors.
- ◆ *Town of Blackstone/American National Power Blackstone Energy.* Provided technical noise monitoring for the construction of a 580 mW power generation facility in Blackstone, MA. Monitored the construction process in the context of noise generation that could affect the neighboring community. Provided routine sampling of construction noise for comparison to the Blackstone criteria. Continued to support noise compliance efforts through start-up, compliance testing and into commercial operation.

EDUCATION

B.S., Biology, University of Washington, 1979

AFIT, Meteorology, The University of Utah, (Air Force Institute of Technology, Bachelor's certification), 1980

Noise Control for Buildings, Manufacturing Plants, Equipment and Products, course provided by Bolt Beranek and Newman, Inc., 1991

PROFESSIONAL AFFILIATIONS

Certified Consulting Meteorologist, American Meteorological Society
Air & Waste Management Association