

**STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS
ENERGY FACILITY SITING BOARD**

**IN RE: INVENERGY THERMAL DEVELOPMENT LLC's
APPLICATION TO CONSTRUCT THE
CLEAR RIVER ENERGY CENTER IN
BURRILLVILLE, RHODE ISLAND**

DOCKET No. SB-2015-06

**PRE-FILED DIRECT TESTIMONY OF
BRANDON BLANCHARD**

(JUNE 30, 2017)

SUMMARY

Brandon Blanchard, P.E. is the Managing Engineer for Pare Corporation and testifies regarding the Clear River Energy Center's ("CREC's") on-site wastewater treatment system and the permit application that is pending with the Rhode Island Department of Environmental Management ("RIDEM"). Mr. Blanchard describes the design of the system and its conformance with RIDEM Rules and Regulations.

LIST OF EXHIBITS

BB-1 *Curriculum Vitae*

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CORPORATION**

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME, BUSINESS TITLE AND BUSINESS ADDRESS.

A. My name is Brandon Blanchard. I am a Managing Engineer at Pare Corporation (“Pare”), located at 8 Blackstone Valley Place in Lincoln, Rhode Island.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING?

A. My testimony is on behalf of the applicant, Invenergy Thermal Development LLC (“Invenergy”), in support of its application (the “Application”) for a license from the Rhode Island Energy Facility Siting Board (“EFSB” or “Board”) to construct the Clear River Energy Center project in Burrillville, Rhode Island (“Clear River” or “CREC”).

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.

A. I am a registered professional engineer in the States of Rhode Island, Massachusetts, and Connecticut and have been a RIDEM Class III Licensed Designer for Onsite Wastewater Treatment Systems (“OWTS”) since 2008. I have 14 years of professional experience as a civil and environmental engineer with a focus on water and wastewater. I received a B.S. in Civil Engineering from Lehigh University of Bethlehem, PA in 2003 and a M.S. in Environmental Engineering from Worcester Polytechnic Institute of Worcester, MA in 2010. A detailed

1 description of my educational background and professional experience is included in my CV and
2 is attached as **Exhibit BB-1**.

3 **II. ANALYSIS**

4 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?**

5
6 **A.** The purpose of my testimony is to explain CREC’s on-site wastewater treatment system
7 (“OWTS”) permit application, which was filed with the Board on March 10, 2017 and is pending
8 with the Rhode Island Department of Environmental Management (“RIDEM”). Pare is in
9 consultation with RIDEM which will likely lead to certain modifications to the pending
10 application.

11 **Q. DESCRIBE YOUR INVOLVEMENT IN THE ON-SITE WASTEWATER
12 TREATMENT APPLICATION PROCESS?**

13
14 **A.** I am the designer of record for the proposed OWTS at the site. I am a RIDEM Class III
15 Licensed Designer and am the Licensed Designer for the proposed system. I oversaw design and
16 permitting of the proposed system and had direct conversations with Invenergy as well as staff
17 with the RIDEM Office of Water Resources – Permitting Section about the design and
18 permitting of this system.

19 **Q. WHAT DID YOU REVIEW WHEN CONDUCTING YOUR ANALYSIS AND
20 WORKING ON THE ON-SITE WASTEWATER TREATMENT PERMIT
21 APPLICATION?**

22
23 **A.** I reviewed the RIDEM’s “Rules Establishing Minimum Standards Relating to Location,
24 Design, Construction and Maintenance of Onsite Wastewater Treatment Systems”, dated June
25 27, 2016 and hereinafter referred to as the OWTS Rules. These are the RIDEM’s regulations for
26 the design, permitting, and construction relating to on-site wastewater treatment systems in
27 Rhode Island. I also reviewed the RIDEM’s “Guidelines for the Design, Use, and Maintenance

1 of Pressurized Drainfields”, dated November 2013, which provide guidelines for the design and
2 construction of bottomless sand filters (“BSF”), the type of disposal field proposed at the CREC.

3 **Q. PLEASE EXPLAIN THE METHODOLOGY UTILIZED WHEN CONDUCTING**
4 **YOUR ANALYSIS AND WORKING ON THE ON-SITE WASTEWATER**
5 **TREATMENT PERMIT APPLICATION**

6
7 **A.** A design basis for the system was established based on the type of facility and the
8 number of employees. The design basis established for the facility is for use by up to 25 people
9 per day, with a design flow rate of 25 gallons per person per day based on an Industrial Plant
10 (without cafeteria) and Showers, as provided for in the OWTS Rules. The total design flow rate
11 is 625 gallons per day based on this design basis. Existing subsurface conditions, including depth
12 to seasonal high groundwater and soil characteristics, were determined through performance of a
13 soil evaluation performed by a RIDEM Class IV Licensed Soil Evaluator subcontracted to Pare
14 Corporation. System components were sized and designed using the design basis, subsurface
15 conditions, and requirements stipulated in the regulations and guidelines cited above.

16 **Q. PLEASE DESCRIBE CREC’S ON-SITE WASTEWATER TREATMENT**
17 **SYSTEM PERMIT APPLICATION?**

18
19 **A.** The application is for a New Construction OWTS, and the system is proposed to include
20 a septic tank, gravity sewer piping, a pump dosing tank, a textile filter treatment unit
21 manufactured by Orenco Systems, and a bottomless sand filter disposal area. Included with the
22 application are stamped drawings, a pump performance curve, a letter from Orenco attesting to
23 the suitability of our design, a letter from Invenenergy supporting the design basis (i.e., number of
24 employees), and test hole logs.

25 **III. CONCLUSIONS**

26 **Q. DO YOU HAVE AN OPINION TO A REASONABLE DEGREE OF CERTAINTY**
27 **REGARDING WHETHER CREC’S ONSITE WASTEWATER TREATMENT**

1 **SYSTEM PERMIT APPLICATION IS CONSISTENT WITH THE**
2 **REQUIREMENTS FOR RIDEM PERMIT APPLICATIONS?**

3
4 **A.** Yes. In my professional opinion, the OWTS Permit Application will be consistent with
5 the OWTS Rules and a formal permit is expected upon RIDEM review and approval of the final
6 design and other permit applications being prepared by others. The system will only receive
7 sanitary wastewater, as other potential wastes will be collected in separate tanks and disposed of
8 separately from the onsite wastewater treatment system. The proposed system will also
9 incorporate advanced treatment technology, which typically provides enhanced biological
10 treatment and suspended solids removal over conventional onsite wastewater treatment systems
11 when designed, constructed, and maintained in accordance with RIDEM OWTS Rules and
12 Guidelines.

13 **Q.** **DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

14 **A.** Yes.
15

EXHIBIT BB-1



**REGISTRATIONS AND
CERTIFICATIONS**

Professional Engineer:
Rhode Island,
Massachusetts, Connecticut

Onsite Wastewater
Treatment Systems,
Class III Designer,
Rhode Island

OSHA Hazardous Waste
Operations 40-Hour Health
and Safety Training

OSHA Construction Safety
10-Hour Training

OSHA Hazardous Waste
Operations 8-Hour
Supervisor's Training

**AFFILIATIONS AND
MEMBERSHIPS**

New England Water
Environment Association
(NEWEA)

NEWEA Small Communities
Committee

EDUCATION

Worcester Polytechnic
Institute, Worcester, MA -
M.S., Environmental
Engineering, 2010

Lehigh University,
Bethlehem, PA - B.S., Civil
Engineering, 2003

RELEVANT EXPERIENCE

Mr. Blanchard has 15 years of experience on a variety of civil and environmental engineering projects. He is especially proficient in water and wastewater engineering and on-site wastewater treatment and disposal. His experience also includes solid waste engineering, site remediation and hazardous waste management, development of plans and specifications, surveying, soil and groundwater sampling, hydrant flow testing, and construction administration. Construction observation experience includes utility projects, landfill caps and baseliners, site remediation, drilling and monitoring well installation and other site development work. Mr. Blanchard is proficient in AutoCAD, water, sewer and stormwater modeling software, and other technical computer programs. Relevant engineering experience includes:

On-site Wastewater Treatment and Disposal

- **Andrea Hotel OWTS Repair Design:** Project Engineer responsible for the design of an OWTS Repair for the 8,950-gpd Andrea Hotel on Misquamicut Beach in Westerly, RI. The design includes an advanced treatment system for biological treatment and a hybrid shallow narrow drainfield protected with concrete chambers rated for heavy-duty traffic loading. The design is currently being permitted with the Rhode Island Department of Environmental Management. Westerly, RI.
- **Boy Scouts of America, Narragansett Council – Yawgoog Scout Reservation ISDS Repairs:** Project Engineer for survey, design, permitting, and construction administration of repairs to multiple Individual Sewage Disposal Systems (ISDS) totaling 30,000 gpd in wastewater flow throughout the 1,800-acre Boy Scouts camp. Hopkinton, RI.
- **Boy Scouts of America, Narragansett Council – Buck Hill Camp ISDS:** Staff Engineer for survey, design, permitting, and construction administration for a new flow diffuser style ISDS for a new garage and storage facility at the Boy Scout camp site. Burrillville, RI.
- **Boy Scouts of America, Narragansett Council – Block Island Camp ISDS:** Staff Engineer for an evaluation of various conventional and alternative on-site wastewater disposal options for the Boy Scouts Block Island Camp site. New Shoreham, RI.
- **Boys Town New England - OWTS Evaluation & Design:** Project Engineer performing an evaluation of an existing on-site wastewater treatment system (OWTS) at this group-home residential facility. The existing system incorporates advanced treatment and a pressurized shallow narrow drainfield which is in hydraulic failure. The evaluation has been completed and system improvements are currently being designed. Portsmouth, RI.
- **Carpenter's Beach Meadow OWTS Repairs:** Project Engineer for a geohydrological study and design of a 35,000-gpd Onsite Wastewater Treatment System (OWTS) repair of existing failed systems at the Carpenter's Beach Meadow site. The geohydrological study included installation of groundwater monitoring wells, routine measurement of groundwater levels, slug testing of the aquifer, a groundwater mounding analysis, and summary report. The design phase includes a new sewer collection system and water distribution system, septic tanks and pump

stations totaling over 120,000 gallons in capacity, and a conventional concrete chamber leach field. South Kingstown, RI.

- **Veterans Memorial Park Patton Pool:** Senior Project Engineer performing the design, permitting, and construction oversight of a Title 5 onsite wastewater treatment system for the development of a new public swimming pool complex at Veterans Memorial Park. The system includes a pressure dosed subsurface infiltration system and has a design flow of 2,250 gpd. Hamilton, MA.
- **Notre Dame Academy:** Senior Project Engineer performing an evaluation of the suitability of an existing Title 5 system with advanced biological treatment to accept additional flow from a proposed concessions facility. Pare reviewed as-built drawings, prepared estimates of wastewater flow to the current system, and reviewed design information of file with the local Board of Health. A report summarized our findings while presenting recommendations for implementing time dosing of effluent to extend the life of the current system. Hingham, MA.
- **Flat River Condominium Association ISDS Evaluation:** Staff Engineer for a preliminary evaluation for repairs of existing ISDSs at the condominium complex located on the Flat River Reservoir. The preliminary evaluation report included an inventory of existing on-site wastewater disposal systems, identification of site constraints, and recommendations for site-wide wastewater disposal improvements. Coventry, RI.
- **Foster Middle School Upgrades:** Staff Engineer performing construction-phase services for the upgrade of the existing Individual Sewage Disposal Systems (ISDS) for the 14,740-gallon-per-day school complex. Coventry, RI.
- **Girl Scouts of Rhode Island – Camp Hoffman ISDS Evaluation:** Staff Engineer for the evaluation of an existing ISDS with a drain field in hydraulic failure at the Girl Scouts camp. The project included soil evaluation, estimation of the hydraulic conductivity of the soil under the drain field, and evaluation of the recirculating sand filter and tanks. South Kingstown, RI.
- **Girl Scouts of Rhode Island – Camp Promising Acres SSSD Upgrades:** Staff Engineer for the upgrade of an existing MADEP Title V SSSD. The project included a survey of the site, a MADEP Title V Inspection of the existing system, design and permitting of the upgrades to the SSSD and water supply to the building, and construction phase services. Swansea and Rehoboth, MA.
- **Johnson and Wales University Equestrian Facility:** Staff Engineer for the design, permitting, and construction administration of a 920-gallon-per-day Massachusetts Department of Environmental Protection (MADEP) Title V SSSD repair for a university equestrian facility. Rehoboth, MA.
- **Lawton Valley Water Treatment Facility – City of Newport:** Project Engineer performing design and permitting of a New Construction Onsite Wastewater Treatment System (OWTS) at the City of Newport's Lawton Valley Water Treatment Facility. Design of the system was complicated by poor soil conditions, high bedrock, and areas of the site containing moderate to steep slopes. Portsmouth, RI.

- **Ocean House Hotel Peer Review:** Staff Engineer performing a third-party review of the design of ISDS repairs and proposed stormwater management systems as part of the redevelopment of the historic Ocean House Hotel in Watch Hill, Westerly, RI.
- **North Cove Landing OWTS:** Project Engineer for the design of an OWTS incorporating innovative/advanced technology at the new residential development. The project includes design and permitting of a new 9,430 gpd OWTS, including 12 septic tanks, gravity and low-pressure sewer force main, an advanced treatment system for nitrate reduction, and a 4,200 square-foot bottomless sand filter. Permitting also included a groundwater mounding and nitrate loading analysis. North Kingstown, RI.
- **Wickford Village ISDS Repairs:** Project Engineer for the repair of an existing ISDS at the residential site. The project included design, permitting, and construction administration of the installation of 19 new septic tanks, a network of new gravity and low-pressure sewer force main, an innovative/alternative advanced treatment system for nitrate reduction, and a 13,000 square foot bottomless sand filter to treat 36,850 gpd. North Kingstown, RI.

Solid Waste Engineering

- **Rhode Island Resource Recovery Corporation (RIRRC) General Landfill Consulting:** Staff Engineer for the on-call, resident contract to provide general engineering consulting for all operating improvements and facility expansions at the Central Landfill. Johnston, RI.
- **Rhode Island Resource Recovery Corporation (RIRRC) Master Planning:** Staff Engineer for ongoing master planning for future landfill expansion and site-wide improvements at the Central Landfill facility, including design and evaluation of various landfill expansion alternatives, relocation of drainage structures, access roads, buildings, and other landfill infrastructure, permitting assistance, cost-benefit analysis and timeline estimation. Johnston, RI.
- **Rhode Island Resource Recovery Corporation (RIRRC) Phase VI Landfill Permitting:** Staff Engineer for the design and permitting of a proposed 103-acre lateral landfill expansion. Pare's responsibilities for this project include baseliner and cap grading design, preparation of permitting documents and drawings, a site-wide drainage study and erosion and sedimentation control plan, cost estimating, and permitting with multiple offices at the RIDEM. Johnston, RI.
- **Rhode Island Resource Recovery Corporation (RIRRC) Phase IV Cap Design:** Staff Engineer for the design and construction of a 32-acre permanent landfill cap. This project included preparation of design drawings and contract documents, preparation of a Cap Design Report, a drainage analysis, an evaluation of various geosynthetic drainage nets, and construction phase services. Johnston, RI.
- **Rhode Island Resource Recovery Corporation (RIRRC) Phase II & III Area 2 Cap Design:** Staff Engineer for the design and construction of a 9-acre permanent landfill cap. The project included cap design, preparation of contract documents, and construction phase services. Johnston, RI.

- **Rhode Island Resource Recovery Corporation (RIRRC) Phase V Landfill:** Staff Engineer performing construction phase services for the 53-acre Phase V Landfill Area 1 Baseline and design of the 25-acre Phase V Landfill Area 2 Baseline. These projects included preparation of design drawings and contract documents, various construction phase services, preparation of five Construction Certification Reports, and preparation of a Post Closure Monitoring and Maintenance Manual. Johnston, RI.
- **Rhode Island Resource Recovery Corporation (RIRRC) Cedar Swamp Brook I:** Staff Engineer for improvements to a 1,200 lineal-foot section of Cedar Swamp Brook near the Phase IV Landfill cell. The project included improvements to grading and drainage structures in and along the channel and establishment of plantings within the riparian zone of the brook. Johnston, RI.
- **Tiverton Landfill – Routine Monitoring:** Staff Engineer for routine groundwater, surface water, and gas monitoring performed quarterly at the Tiverton Municipal Landfill. This work includes statistical analysis of analytical data and reporting to the Town and the RIDEM. Tiverton, RI.
- **Tiverton Landfill – General Consulting:** Staff Engineer for Pare's on-call general engineering consulting, including design and coordination of various site-wide improvements, review and permitting of alternate cover material sources, routine landfill height surveys, permitting of operating license renewals, and oversight of monitoring well installations. Tiverton, RI.

Remedial and Environmental Engineering

- **Payne Cutlery Brownfields Area-Wide Plan:** Senior Project Engineer for environmental services for this study which focused on redevelopment opportunities for four city-owned brownfield properties and the surrounding neighborhood. Opportunities were investigated and recommendations provided for improving walkability and for incorporating Complete Streets techniques to accommodate all users including vehicles, bicycles, pedestrians, and mass transit. New Bedford, MA.
- **East Providence Wastewater Improvements:** Project Engineer for the investigation and characterization of contaminated soil and groundwater along a 2-mile section of the East Bay Bike Path. This project is being performed to evaluate the feasibility of installing a new large-diameter sewer force main between an existing pump station and the city's wastewater treatment plant. East Providence, RI.
- **Eleanor Slater Hospital Soil Remediation:** Project Engineer for the remediation of lead contaminated soil as part of a water storage tank rehabilitation project being performed for the Rhode Island Department of Mental Health, Retardation, and Hospitals. Burrillville, RI.
- **Natick High School Phase I Environmental Site Assessment:** Project Engineer responsible for a Phase I ESA of the existing Natick High School site. The ESA was performed to identify potential complications with the demolition of the existing school following construction of a new high school at the site. Natick, MA.
- **Plymouth North High School Phase I Environmental Site Assessment:** Project Engineer performing a Phase I ESA of the existing Plymouth North

High School site. The ESA identified potential complications and made recommendations relating to the demolition of the existing school following construction of a new high school at the site. Plymouth, MA.

- **Phase I & II Environmental Site Assessments – 362 Plains Road:** Project Engineer performing a Phase I ESA and limited Phase II ESA for the University of Rhode Island. The limited Phase II ESA included sampling and analysis of soil at the bottom of an on-site cesspool that was suspected to have been subjected to non-sanitary waste disposal in addition to sanitary waste. The site was a residential property that URI acquired following the results of this ESA. South Kingstown, RI.
- **Portsmouth Town Dump Remediation Evaluation:** Staff Engineer performing an evaluation for the Town of Portsmouth with regards to remediation of the former Town Dump for beneficial reuse of the Site for recreational activities. Portsmouth, RI.
- **Niantic Sportsmen’s Club:** Project Engineer responsible for routine surface water and stormwater sampling and analysis in response to lead impacts to on-site wetlands. The project also includes hydrologic modeling, design of grading modifications, and design of other Best Management Practices (BMPs) to minimize the impact to on-site wetlands and an off-site brook. East Lyme, CT.
- **Walgreens Phase I Environmental Site Assessments:** Project Engineer performing Phase I ESAs for two Walgreens stores. Attleboro, MA & Woonsocket, RI.
- **Westerly Tank Investigations and Evaluations:** Staff Engineer for analysis of soils contaminated with lead and PAHs associated with a water storage tank. Site remediation aspect included soil sampling and analysis, development of remedial action strategies, RIDEM permitting, public notification, and attendance at meetings with impacted parties. Westerly, RI
- **Woonsocket Water Supply System Upgrades and Site Remediation:** Staff Engineer for analysis of lead contaminated soils at four water storage tank sites in conjunction with the design and construction of replacement tanks. Site remediation aspect included sampling and analysis of soil, development of remedial action strategies, RIDEM permitting, public notification, and construction administration to bring each site into compliance with the RIDEM Remediation Regulations. Woonsocket, RI.
- **Wyatt Detention Center:** Staff Engineer for the sampling and analysis of approximately 10,000 cubic yards of urban fill material associated with the design and construction of a building expansion and new parking facilities for the existing prison facility. This work also included coordinating and obtaining approval for beneficial reuse and disposal of this material at multiple facilities in Massachusetts and Rhode Island. Central Falls, RI.

Water/Wastewater Engineering

- **Narragansett Bay Commission Phase III CSO Program:** Managing Engineer serving as Deputy Program Manager for Pare’s teaming role with Stantec on the Phase III CSO Program for the Narragansett Bay Commission. Major responsibilities currently include development of plans and standards for the formulation of a Program Management Plan,

overseeing conceptual planning and design of green stormwater infrastructure (GSI) systems, overseeing geotechnical desktop studies and field investigations, preparation of an Environmental Assessment, regulatory and stakeholder outreach, and evaluation of improvements to the Branch Douglas Interceptor sewer in North Providence and Providence. The Phase III CSO Program is planned to address CSO events in NBC's Bucklin Point Service Area in Pawtucket and Central Falls.

- **UWRI Tower Hill & Sherman Tanks:** Senior Project Engineer for the design and permitting of two new 1-million-gallon composite elevated storage tanks to replace existing steel standpipes. The projects included an evaluation to determine permitting requirements, preferred tank style, and project costs. Pare conducted hydraulic modeling to design each tank and prepared design drawings and specifications, assisted the owner with acquiring local and State permits and approvals, assisted the owner with soliciting and evaluating bids, and performed construction observation and management services. The Tower Hill Tank has already been constructed and the Sherman Tank is currently under design. South Kingstown, RI.
- **East Providence Water Distribution System Improvements:** Senior Project Engineer for study and design of a new Kent Heights water storage tank, as well as transmission main improvements including installation of a new 20-inch and 16-inch transmission main and isolation of the existing 30-inch and 42-inch transmission main, and installation of a new chlorine injection system to improve water quality in the City's water system. East Providence, RI.
- **East Matunuck Water Main Loop:** Project Manager for the design and construction of a new water main to replace an existing water main located in an area prone to coastal erosion. The project includes evaluation of alternative alignments, hydraulic modeling and cost estimation to compare possible alignments, design of the preferred alignment, and permitting with the Rhode Island Department of Transportation and Coastal Resources Management Council. South Kingstown, RI.
- **Woonsocket Water Supply System Management Plan Update 5-Year Update:** Project Manager for the update of the Water Supply System Management Plan, including the emergency management component and source water assessment update. Woonsocket, RI.
- **Quonset Development Corporation – Water Supply System Management Plan Update 5-Year Update:** Project Manager for the update of the Water Supply System Management Plan for the water system serving the Quonset Business Park. North Kingstown, RI.
- **Newport Water Department Water Supply System Management Plan 5-Year Update:** Senior Project Engineer for the update of the Water Supply System Management Plan for the Newport Department of Utilities – Water Division. Newport, RI.
- **Jamestown Water Department Water Supply System Management Plan 5-Year Update:** Senior Project Engineer for the update of the Water Supply System Management Plan for the Town of Jamestown water system. Jamestown, RI.

- **BCWA Master Plan & Water Supply System Management Plan 5-Year Update:** Senior Project Engineer for development of a Master Plan and update of the Water Supply System Management Plan for the Bristol County Water Authority. Warren, RI.
 - **Clean Water Infrastructure Plans** – Project Engineer responsible for preparing Clean Water Infrastructure Plans for several water suppliers in Rhode Island including East Smithfield Water District, Smithfield Water Supply Board, Town of Jamestown, and Quonset Development Corporation. Rhode Island.
 - **Demand Management Strategies** – Project Engineer responsible for preparing Demand Management Strategies to fulfill new Rhode Island Water Resources Board requirements for public water suppliers to document system leakage and efficient water use. This work was performed for the East Smithfield Water District, Smithfield Water Supply Board, United Water Rhode Island, East Providence Water Department, and the Town of Jamestown. Throughout Rhode Island.
 - **Rhode Island Resource Recovery Corporation – Central Avenue Sewer Extension:** Project Engineer for the design of a sewer extension to serve a projected increase in sanitary sewer flow from the RIRRC Central Landfill. The project included the design of a gravity sewer line in Central Avenue and Old Pocasset Road as well as a pressurized line along Shun Pike. The project included survey, a detailed subsurface exploration program, utility research development of plans and profiles for the proposed sewer alignment, and preparation of details and specifications. Johnston, RI.
 - **Rhode Island Resource Recovery Corporation – Central Avenue Pump Station:** Project Engineer for the design of a new water booster pump station and water main extension in Central Avenue. A subsurface exploration program, survey, and preliminary design of the new water main and pump station were performed. Johnston, RI.
 - **Rhode Island Resource Recovery Corporation – Water Meter and Backflow Preventer:** Project Engineer for the design of a new meter and backflow preventer proposed inside a heated above-ground enclosure at the RIRRC Central Landfill. Johnston, RI.
 - **Friendship Street Sewer Improvements:** Senior Project Engineer for the design of a 1,350 linear-foot section of new sanitary sewer main in Friendship Street for the City of Newport Department of Utilities. The project is the result of a previous CCTV inspection of the existing brick sewer which showed that the pipe was in severely poor condition. Challenges specific to this project include special traffic management requirements necessary to maintain vehicle access to Newport Hospital and incomplete information relative to the existing utilities along the sewer alignment. Bidding is anticipated for the summer of 2015 with construction to begin in September 2015. Newport, RI.
 - **Newport Sanitary Sewer Evaluation** – Multiple Streets: Senior Project Engineer for an evaluation of approximately 2.5 miles of existing sanitary sewer for the Newport Department of Utilities. Pare reviewed past CCTV inspections and the results of sewer modeling performed in multiple areas and prioritized which sections of sewer warranted repair. Pare prepared a report summarizing the findings of the evaluation along with preliminary
-

construction cost estimates. The evaluation will form the basis for the future design and ultimate construction of sewer improvements within Newport, RI.

- **East Providence Wastewater Improvements:** Project Engineer for the design of upgrades to the existing gravity sewer collection system at several locations as part of major upgrades to the wastewater collection and treatment system in the Riverside section of the City of East Providence, RI.
- **Lakeside Commerce Center Water Supply Evaluation:** Staff Engineer for an evaluation performed for the Rhode Island Resource Recovery Corporation to estimate the available fire flow water supply at the Lakeside Commerce Center. The evaluation included pressure monitoring, hydrant flow testing, hydraulic modeling in WaterCAD, and preparation of a report of our findings. Johnston, RI.
- **Northbridge Sewer Evaluations:** Staff Engineer performing two sewer evaluations which included the creation of a computerized sewer model in SewerCAD of over half the Town's existing gravity sewer collection system and evaluating the capacity of the sewer to accommodate additional developments in Town. Components of the evaluation also included metering sewer flows in system manholes, sizing proposed pump stations inside the new developments, and reporting our findings to the developers and the Town of Northbridge. Northbridge, MA.
- **Misquamicut Conceptual Sewer Expansion Plan:** Project Engineer for a study evaluating the feasibility of an approximately \$23 million expansion of the wastewater collection and treatment system in Westerly, Rhode Island to include the Misquamicut section of the Town. Westerly, RI.
- **Inskip Motors Site Redevelopment:** Staff Engineer for permitting and design of improvements to existing water and wastewater services for the redevelopment of two Inskip facilities. Tasks included preparation of water and wastewater demand calculations, hydraulic modeling using WaterCAD, and permitting with the Kent County Water Authority. Warwick and West Warwick, RI.
- **Main Street Water Main Replacement:** Staff Engineer for the design and construction of approximately one mile of new 12" ductile iron water main to replace an existing water main in Main Street. Upton, MA.
- **Peach Blossom Lane Sewer Extension:** Staff Engineer for the design of a sewer extension in a residential area. Project included preparation of design drawings and calculations, coordination and oversight of borings, and construction phase services. Smithfield, RI.
- **Rhode Island College Infrastructure Study:** Project Engineer for an evaluation of the existing infrastructure across the entire campus at Rhode Island College. Project including locating and assessing the condition of water, sewer, drainage, gas, and other campus-wide utilities. The project also included a summary report identifying recommendation for infrastructure upgrades and the associated costs. Providence, RI.
- **Providence Water Supply Board – Garden Hills & Dean Estates Pump Station:** Staff Engineer for the design and construction of improvements to two pump stations. A feasibility study performed by Pare determined that installation of approximately 600 feet of new water main along a bridge

crossing a four-lane expressway could eliminate the need for both pump stations in this service area. Therefore, new pumps and upgrades to electrical, mechanical, and structural components are required at only one of the stations. Cranston, RI.

- **Boy Scouts of America, Narragansett Council – Yawgoog Scout Reservation Water Supply System Upgrades:** Project Engineer for improvements to the water treatment plant and distribution system serving the 1,800-acre Yawgoog Scout Reservation. Hopkinton, RI.
- **Cumberland Hydraulic Model Development:** Staff Engineer performing several hydrant fire flow and “C” value tests and continuous pressure monitoring to assist in development and calibration of a computerized hydraulic model for the Cumberland Water Department. Cumberland, RI.
- **Mishnock Water Treatment Plant Site Design:** Staff Engineer for the design of the civil site drawings for a 3 mgd water treatment plant for the Kent County Water Authority. Design and permitting of an onsite wastewater treatment system (OWTS) consisting of a new holding tank was also performed. Coventry, RI.
- **Concordia Mill Water Service Replacement:** Project Engineer for the design of a replacement water service line to the Concordia Mill building that had been damaged from flooding on the Pawtuxet River. Coventry, RI.

Site Development & Construction Services

- **Navigant Credit Union Headquarters:** Staff Engineer for the development of a roughly 6-acre largely undeveloped parcel into a corporate headquarters and branch bank. The project included site design, development of construction documents, permitting with State and Local regulatory agencies, and construction phase services. Smithfield, RI.
- **Narragansett Bay Commission CSO Area OF-027 Construction:** Project Engineer for construction of the Narragansett Bay Commission’s Phase II Combined Sewer Overflow Control Facilities Program for outfall area OF-027. Once complete the project will separate several miles of combined sewer through installation of approximately 3 miles of concrete drain pipe, 100 drainage manholes, and over 120 new catch basins. Other features of the project include construction of two special manhole structures where connections to existing brick pipe are being made, inspection, cleaning and lining of several hundred feet of existing brick sewer, relocation of several existing water mains and gas piping to accommodate the proposed improvements, and roadway and sidewalk restoration. Providence, RI.