

CONTRACT BETWEEN
NEW JERSEY INSTITUTE OF TECHNOLOGY
(Name of Contractor)
AND
THE STATE OF NEW JERSEY
BY AND FOR
THE DEPARTMENT OF ENVIRONMENTAL PROTECTION

CONTRACT NUMBER: EC14-006

TABLE OF SECTIONS IN GENERAL TERMS AND CONDITIONS

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TABLE OF ATTACHMENTS ATTACHED*

- | | | | | | |
|------|--|-------------------------------------|-----|-------------------------------------|----|
| A. | Additional Provisions and Special Modifications. | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
| A-1. | Additional Federal Funded Agreement Provisions | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
| A-2. | Federal Funding Accountability and Transparency Act (FFATA) - \$25,000 or greater | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
| A-3. | U.S. Environmental Protection Agency Funded Agreements | <input type="checkbox"/> | yes | <input checked="" type="checkbox"/> | no |
| A-4. | American Recovery and Reinvestment Act (ARRA) Funded Agreements | <input type="checkbox"/> | yes | <input checked="" type="checkbox"/> | no |
| B. | Approved Project Budget | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
| B-1. | Itemization and Justification of Budget. | <input type="checkbox"/> | yes | <input checked="" type="checkbox"/> | no |
| B-2. | Approved Advance Payment. | <input type="checkbox"/> | yes | <input checked="" type="checkbox"/> | no |
| C. | Expenditure Report | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
| D. | Scope of Services | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
| D-1. | Project Requirements. | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
| D-2. | Contractor's Proposal | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
| E. | <input type="checkbox"/> Governing Body Resolution. . . <input type="checkbox"/> Corporate Resolution <input checked="" type="checkbox"/> Other Authorization. . . | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
| F. | Subcontractor Certification | <input type="checkbox"/> | yes | <input checked="" type="checkbox"/> | no |
| G. | Statement of Adequacy of Accounting System | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |
| RB. | Reference Bibliography. | <input checked="" type="checkbox"/> | yes | <input type="checkbox"/> | no |

*Wherever this contract form, including any attachments, presents alternatives, choices must be indicated as follows: An "X" within brackets or on a blank line shall indicate selection of the particular alternative.

GENERAL TERMS AND CONDITIONS

I. Contract Award Data and Signatures

Contractor's - Name: **NEW JERSEY INSTITUTE OF TECHNOLOGY** (the "Contractor")
 Address: University Heights
 Newark, NJ 07102-1982

Vendor ID #: 226000910

Financial Officer's - name: Nancy Eng
 - Title: Director, Grant and Contract Accounting (the "Chief Financial Officer")

The State of New Jersey (The "State")
Department of Environmental Protection (the "Department" or the "DEP")

Contracting agency's - name: **OFFICE OF ENGINEERING AND CONSTRUCTION** (the Contracting Agency")
 - address: Mail Code 501-01A, P.O. Box 420
 Trenton, NJ 08625

Source of Funds	AMOUNT	STATE ACCOUNT NUMBER	CFDA NUMBER/ CFDA TITLE/ Federal Agency	ACCOUNT TITLE FEDERAL GRANT AWARD NAME/NUMBER
	State General Fund	\$145,000	14-100-042-4895-130	
Federal	0.00			
Contractor	0.00			
Other (i.e. bond fund, tax fund etc.)	0.00			
	\$145,000	TOTAL APPROVED PROJECT AMOUNT		

Work Period: The "effective date" of this contract is the date the Contractor executes it or the date the State executes it, whichever date is later. The "work period" for this contract commences on 8/1/2013 or the effective date, whichever is earlier later, and runs for a period of six months thereafter.* Contract funds may be used only to satisfy obligations which arise during the work period.

Purpose and Authority: Contract to be Funded: Assessment of Economic, Ecological, and Social Capital in Congruence with Design Studies for Reducing Storm Surge and Flooding Risks to New Jersey Coastal Communities

Statutory Authority for this Contract: NJDEP General Contract Authority, N.J.S.A. 13:1D-9(q); FY 2013 Appropriations Act; N.J.S.A. 58:16A-6

In consideration of the payment of the State, the Federal, and if through the State treasury, the "other" amounts shown above (the "contract"), the Contractor agrees to provide its share of the Total Project amount and to perform the work described in Attachment D, within the work period and in the manner and upon the terms specified in this contract. The provisions of this contract set forth in this Section I through Section XXIII constitute the General Terms and Conditions portion of this contract.

*Wherever this agreement form, including any attachments, presents alternatives, choices must be indicated as follows: An "X" within brackets or on a blank line shall indicate selection of the particular alternative. "NA" or "---" (a dashed line) shall indicate that no information is to be entered on a particular blank line. No blanks may remain just prior to execution, except in the signature blocks on attachments C and F.

STATE AND CONTRACTOR APPROVAL SIGNATURES

APPROVED AS TO LEGAL FORM

For the State: *

For the Contractor **

[Signature]
(signature)

[Signature]
(signature)

Sylvia Denyer, Deputy Attorney General
(print name)

[Signature], Attorney for Contractor
(print name)

Date: _____

Date: _____

- * A confidential and privileged memorandum pre-approving this agreement as to legal form has has not been provided to the Contracting Agency by the Deputy Attorney General.
- ** Approval of this contract by an attorney for Contractor is mandatory optional.

APPROVAL OF CONTRACTING AGENCY

OFFICE OF ENGINEERING AND CONSTRUCTION
(print name of Contracting Agency; all capitals)

By: [Signature]
(signature)

Dave Rosenblatt
(print name)

Administrator
(print title)

Date: 7-10-13

EXECUTION SIGNATURES

By the signatures below, the Contractor and the State (the "parties") execute this contract and confirm that they are mutually bound by all provisions contained in its General Terms and Conditions and full authorized and empowered to enter into and bind their organization to all obligations under this agreement and in each attachment selected as "ATTACHED" in the Table of Attachments.

SIGNED

NEW JERSEY INSTITUTE OF TECHNOLOGY
(print Contractor's name; all capitals)

By: [Signature]
(signature)

DONALD H SEBASTIAN
(print name)
SR VP for R&D
(print title)

Date: 8/5/13

COUNTERSIGNED:

THE STATE OF NEW JERSEY
By: The DEP

By: [Signature]
(signature)

Rich Boornazian
(print name)
Assistant Commissioner
(print title; Commissioner or authorized delegate)

Date: 8/13/13

II. Compliance with Existing Laws and Policies

The Contractor, in order to induce the State to award this contract, agrees in the performance of this contract to comply with all applicable federal, State, and municipal laws, rules, regulations, and written policies. Failure to comply with such laws, rules, regulations or policies shall be grounds for termination of this contract. Such laws, rules, regulations, and policies include, but are not limited to, the following:

- A. The New Jersey Prevailing Wage Act, N.J.S.A. 34:11-56.25 et seq., if applicable, is by this reference incorporated as part of this contract and the Contractor agrees to comply with it. The Contractor warrants that neither it nor any subcontractor it might employ to perform work in furtherance of this contract is suspended, debarred or otherwise listed or is on record in the Office of the Commissioner or Department of Labor for failure to pay prevailing wages in accordance with the New Jersey Prevailing Wage Act. The Contractor further warrants that it and any subcontractors it might employ to perform work in furtherance of this contract shall comply with the New Jersey Prevailing Wage Act.
- B. The parties agree that, if applicable, the New Jersey Law Against Discrimination, N.J.S.A. 10:5-1 et seq., N.J.S.A. 10:5-31 et seq., N.J.S.A. 10:2-1 et seq., N.J.A.C. 13:6-1 et seq. and N.J.A.C. 17:27-1.1 et seq. are by this reference incorporated as part of this contract and are binding upon them. The Contractor agrees and guarantees to afford equal opportunity in performance of this contract in accordance with an affirmative action program approved by the State Treasurer. Further, if the cited laws and regulations apply to this contract, the Contractor agrees as follows:
 1. The Contractor shall not discriminate against any employee or applicant for employment because of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation or sex. The Contractor shall take affirmative action to ensure that such applicants are recruited and employed, that employees are treated during employment without regard to their age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation or sex. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees, and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause;
 2. The Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation or sex;
 3. The Contractor shall send to each labor union or representative of workers with which it has a collective bargaining contract or other contract or understanding, a notice, to be provided by the agency contracting officer, advising the labor union or workers' representative of the Contractor's commitments under this act and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
 4. The Contractor shall include these same provisions in any subcontract for work in furtherance of this contract.
- C. The act codified at N.J.S.A. 52:13D-12 et seq., the "New Jersey Conflicts of Interest Law", and the act codified at N.J.S.A. 40A:9-22.1 et seq., the Local Government Ethics Law, are by this reference incorporated as part of this contract. The Contractor represents and affirms that it will make its best efforts and responsible diligence in assuring that none of its employees, its subcontractors, its subcontractors' employees, is engaged in any conduct which constitutes a conflict of interest under, or a violation of, either the New Jersey Conflicts of Interest Law or the Local Government Ethics Law. The Contractor represents and affirms that itself is not engaged in any conduct which constitutes the aforementioned conflict of interest.
- D. The Contractor represents and warrants:
 1. That no person or selling agency has been employed or retained to solicit or secure this contract in violation of N.J.S.A. 52:34-15,
 2. that it has made, and knows of no payments or gratuities made in violation of N.J.S.A. 52:34-19,
 3. that it is, and will remain, in full compliance with N.J.S.A. 40A:11-1 et seq., the Local Public Contracts Law, if applicable,
 4. and that it is, and will remain, in full compliance with N.J.S.A. 14A:13-1 et seq., and N.J.S.A. 15A:13-1 et seq. (both regarding out-of-state corporations), if applicable, and
 5. that it is, and will remain, in full compliance with N.J.S.A. 2A:44-143 (regarding bonds on construction and public works contracts), if applicable.

- E. The Contractor shall report in writing to the Attorney General and the Executive Commission on Ethical Standards, the solicitation of any fee, commission, compensation, gift, gratuity or other thing of value by any State officer or employee or special State officer or employee from any other State vendor.
- F. The Contractor shall not influence, or attempt to influence or cause to be influenced, any State officer or employee or special State officer or employee in his official capacity in any manner which might tend to impair the objectivity or independence of judgment of said officer or employee.
- G. The Contractor warrants that it will obtain and maintain, during the term of this contract, all licenses, certifications, authorizations, or any documents required by the federal, state, county, or municipal governments and international authorities, wherever necessary, to perform this contract. The Contractor shall promptly notify the State of any disciplinary action or any change in the status of any license, permit, or other authorization required by law or this contract.
- H. New Jersey State Circular Letter 04-04-OMB , Single Audit Policy for Recipients of Federal Grants, State Grants and State Aid is by this reference incorporated as part of this contract.
- I. The following documents issued by the United States are by this reference incorporated as standards and procedures used by the Department and made part of this contract:
 - 1. United States Office of Management and Budget ("OMB") Circulars A-21, A-87, and A-122 (Cost Principles: Educational Institutions; State, Local, and Indian Tribal Governments ; Non-Profit Organizations, respectively),
 - 2. OMB Circulars A-102 and A-110 (Uniform Administrative Requirements for Grants in Aid and Other Agreements: State and Local Governments; Institutions of Higher Education, Hospitals and Other Non-Profit Organizations, respectively),
 - 3. OMB Circular A-133 Revised (Audits of States, Local Governments, and Non-profit Organizations),
 - 4. Common Rule regulations for federal agencies, as applicable. (e.g. 40 CFR 31 for USEPA), and
 - 5. Compliance Supplement for Single Audits of State and Local Governments (Compliance Supplement Revised).
- J. The following documents issues by the United States are by this reference incorporated as standards and procedures used by the Department and made part of this agreement:
 - 1. United States Office of Management and Budget ("OMB") Circulars and the associated regulations A-21 (2 CFR Part 220), A-87 (2 CFR Part 225), and A-122 (2 CFR Part 230), the Cost Principles for Educational Institutions; State, Local and Indian Tribal Governments; and Non-Profit Organizations, respectively,
 - 2. OMB Circulars and the associated regulations A-102 and A-110 (2 CFR Part 215), the Grants and Cooperative Agreements with State and Local Governments; and Uniform Administrative Requirements for Grants and Other Agreements with Institutions of Higher Education, Hospitals and Other Non-Profit Organizations, respectively,
 - 3. OMB Circular A-133, Revised, Audits of States, Local Governments, and Non-Profit Organizations,
 - 4. Common Rule regulations for federal agencies, as applicable (e.g. 40 CFR for U.S.E.P.A.) <http://www.whitehouse.gov/omb/grants/chart.aspx> , and
 - 5. Compliance Supplement for Single Audits of State and Local Governments (Compliance Supplement Revised).

III. Insurance

The Contractor shall maintain in force for the term of this contract liability insurance as provided herein. These coverages shall be maintained either through insurance policies from insurance companies authorized to do business in the State of New Jersey or through formal, fully funded self-insurance programs authorized by law and acceptable to the Department. The minimum required coverages are:

- A. Commercial General Liability: The minimum limit of liability shall be \$1,000,000 per occurrence as a combined single limit for bodily injury and property damage. The policy shall include coverage for contractual liability and shall name the State of New Jersey as an additional insured. The policy shall also include coverage for products liability. The coverage to be provided under these policies shall be at least as broad as that provided by the standard basic, unamended, and unendorsed occurrence coverage forms currently in use in the State of New Jersey which shall not be circumscribed by any endorsements limiting the breadth of the coverage.
- B. Business Automobile Liability Insurance which shall be written to cover any vehicle used by the insured. Limits of liability for bodily injury and property damage shall not be less than \$1,000,000 per occurrence as a combined single limit.

- C. Workers' Compensation Self Insurance in accordance with the laws of the State of New Jersey and commercially purchased Employer's Liability Insurance with a limit of not less than:

\$1,000,000 Bodily Injury, Each Occurrence
\$1,000,000 Disease Each Employee
\$1,000,000 Disease Aggregate Limit

IV. Indemnification

The Contractor shall defend, indemnify, protect, and save harmless the State, its agents, servants, and employees from and against any and all claims, losses, demands, or damages of whatever kind or nature arising out or claimed to arise out of any tortious act or omission of the Contractor, its agents, servants, employees or subcontractors in the performance of this contract. The Contractor shall, at its own expense, appear, defend and pay all reasonable charges for attorneys and all costs and other expenses arising from such suit or claim incurred in connection therewith. If judgment shall be rendered against the State for which indemnification is provided under this paragraph, the Contractor shall, at his own expense, satisfy and discharge the same. However, the Contractor shall not have to indemnify the State for the State's negligent use of research results, or for the State's use of research results unless the research was negligently conducted by the Contractor. The Contractor does not hereby agree to indemnify the State against damage to the extent it results from the State's tortious action or inaction for which it would be liable under the New Jersey Tort Claims Act.

The State shall, as soon as practicable after the claim has been made against it, give written notice thereof to the Contractor, along with full and complete particulars of the claim. If the suit is brought against the State or any of its agents, servants, and employees, the State shall expeditiously forward or have forwarded to the Contractor every demand, complaint, notice, summons, pleading or other process received by the State or its representatives.

V. Assignments and Subcontracts

The Contractor shall not subcontract any of the work or services covered by this contract nor shall any interest be assigned or transferred, except as may be provided for in this contract or with the express written approval of the Department.

- A. As a precondition of the Department's approval of a subcontractor and prior to any payments by the Department for subcontracted work, the Contractor shall secure from the subcontractor and shall submit to the Department a completed and executed copy of Attachment F, Subcontractor Certification.
- B. The Contractor shall be responsible for compliance by any subcontractor with the terms, conditions and requirements of this contract.
- C. The Contractor shall be responsible for any claims arising out of any subcontract hereunder and, as a condition of any subcontract hereunder, the subcontractor shall hold the State harmless from any claims by the subcontractor or third parties which may arise under or as a result of the subcontract.

VI. Availability of Funds

- A. The State of New Jersey appropriates funds on a fiscal year basis, which is a period running from July 1 through June 30. The parties hereto recognize and agree that continuation of funding under this contract is expressly dependent upon availability to the Department of funds appropriated by the State Legislature from State or federal revenue or such other funding sources as may be available. The Department shall not be liable for any breach of this contract which results from the State Legislature's failure to appropriate the necessary funds.
- B. The Department may encumber and commit to any contract only those funds which have been appropriated and are available during the State fiscal year in which the contract is executed. For any contract which will be completed during that fiscal year, the State's contract amount will be fully encumbered and committed. However, for any contract, the performance of which will span more than one State fiscal year, the Department may or may not be able to encumber and commit the full contract amount and the full funding of the contract may depend upon subsequent fiscal year appropriations by the State Legislature.
- C. The parties understand that this contract is fully or partly funded as designated in Section II of Attachment A, Additional Provisions and Special Modifications.

VII. Procurement Standards

Procurement of supplies, equipment, and other services with funds provided by this contract shall be accomplished in accord with federal OMB Circulars A-102 or A-110 and the appropriate federal common rule, whichever would be applicable under federal law, which shall be provided to the Contractor, upon request, by the Department. Procurement shall also be consistent with the New Jersey Local Public Contracts Law, N.J.S.A. 40A:11-1 et seq., and other statutory requirements, as applicable. Both the federal and applicable State requirements shall be incorporated into any subcontracts under this contract.

Adherence to the standards contained in those applicable federal and state laws and regulations does not relieve the Contractor of the contractual responsibilities arising under its procurements. The Contractor is the responsible authority, without recourse to the Department, regarding the settlement and satisfaction of all contractual and administrative issues arising out of procurements entered into in support of this contract.

VIII. Property Management Standards

Property furnished by the Department or acquired in whole or in part with federal or Department funds or whose cost was charged to a project supported by federal or Department funds shall be utilized and disposed of in a manner generally consistent with state and federal requirements (OMB Circulars A-102 or A-110 and the appropriate federal common rule, whichever would be applicable under federal law).

IX. Method of Payment

- A. Payment under this contract will be made upon submission by the Contractor of a properly executed State invoice form (available from the Department), and all invoices, bills, and other documents necessary to justify the payment. This form must also be accompanied by a certification from the Contractor that all procurements for which payment is requested have been made in accord with federal OMB Circulars A-102 or A-110 and the appropriate federal common rule, whichever would be applicable under federal law, and in accord with all applicable State laws and have been made during the work period.
1. If Attachment B-2, Approved Advance Payment, provides for a justification of an advance payment and if Section III of Attachment A, Additional Provisions and Special Modifications, so provides, an initial advance payment will be made to the Contractor upon receipt by the Department of a properly executed copy of this contract, signed by an appropriate officer of the Contractor organization, together with a properly executed invoice form.
 2. Progress payments shall be made by the Department on a periodic basis as prescribed in Section III.B of Attachment A, Additional Provisions and Special Modifications. Such payments shall be issued only upon receipt of the required financial and narrative reports described in Section XIII of the General Terms and Conditions of this contract, Financial and Performance Reporting. Payment shall be made either in fixed amounts as determined by the Department to be reasonable to maintain an appropriate level of services or in the form of reimbursement of actually reported expenditures as indicated in Section III of Attachment A, Additional Provisions and Special Modifications.
 3. If Section III of Attachment A, Additional Provisions and Special Modifications, so provides, a portion of the contract will be withheld pending receipt of the required final reports described in Section XVII of the General Terms and Conditions of this contract, Contract Closeout Procedures.
 4. The Department shall withhold payment of any costs disallowed by the Department as improperly incurred under any provision of this contract.
 5. Contractor may not use any contract funds to satisfy any obligation which arose outside the work period.
- B. If this contract includes federal funds, all invoices must be submitted by the Contractor and all payments must be made by the State no later than ninety (90) days after the end of the work period.

X. Matching and Cost Sharing Requirements

If there are any matching and/or cost sharing requirements indicated in Section IV of Attachment A, Additional Provisions and Special Modifications, then, regardless of whether federal funds are involved, the Contractor shall account to the satisfaction of the Department for these requirements in accordance with federal OMB Circulars A-102 or A-110 and the appropriate federal common rule, whichever would be applicable under federal law.

XI. Project Income

Project income must be accounted for as indicated in Section V of Attachment A, Additional Provisions and Special Modifications. "Project income" means gross income earned by the Contractor from contract-supported activities. Such earnings include, but are not limited to, income from service fees, sale of commodities, usage or rental fees, and royalties on patents and copyrights. In all cases, interest earned on advances of contract funds shall be remitted to the Department, except for interest earned on advances to instrumentalities of a state as provided by the federal Intergovernmental Cooperation Act of 1968, P. L. 90-577.

XII. Financial Management System

The Contractor's Chief Financial Officer, as designated in Section I of the General Terms and Conditions of this contract, Contract Award Data and Signatures, shall be responsible for maintaining an adequate financial management system. The Chief Financial Officer shall notify the Department when the Contractor cannot comply with the requirements established in this Section XII, Financial Management System.

- A. Contractor financial management system shall provide for:
1. accurate, current, and complete disclosure of the financial results of each project, agreement, or contract,
 2. records that adequately identify the source and application of funds for Department- supported activities, and that contain information pertaining to awards and authorizations, obligations, unobligated balances, assets, liabilities, outlays, and income,
 3. effective internal and accounting controls over all funds, property, and other assets, which controls adequately safeguard all such assets and assure that they are used solely for authorized purposes,
 4. comparison of actual outlays with budgeted amounts for all major cost categories on Attachments B, Approved Project Budget; B-1, Itemization and Justification of Budget; D, Scope of Services; and D-2, Contractor's Proposal, and correlation of financial information with performance or productivity data, including the production of unit cost information required by the Department,
 5. accounting records that are supported by source documentation,
 6. procedures to minimize the time elapsing between the advance of funds from the Department and the disbursement by the Contractor, whenever funds are advanced by the Department, and
 7. procedures for determining reasonableness, allowability, and allocability of costs generally consistent with the provisions of federal OMB Circulars A-102 or A-110 and the appropriate federal common rule, whichever would be applicable under federal law.
- B. If required by Section VI of Attachment A, Additional Provisions and Special Modifications, the Department may require the submission of Attachment G, Statement of Adequacy of Accounting System.
- C. The Department may review the adequacy of the financial management system of any applicant for financial assistance as part of a pre-award review or at any time subsequent to the award. If the Department determines that the Contractor's accounting system does not meet the standards described in paragraph B of this Section XII, Financial Management System, additional information to monitor the contract may be required by the Department upon written notice to the Contractor.

XIII. Financial and Performance Reporting

- A. Attachment B, Approved Project Budget, is the approved financial plan to carry out the purpose of this contract. The budget shall be itemized to disclose specifically the contract tasks and project activities to be funded.
- B. The Contractor shall submit interim expenditure reports, including a completed copy of Attachment C, Expenditure Report, comparing actual expenditures with the Approved Project Budget. These reports shall be submitted on a periodic basis as prescribed in Section VII of Attachment A, Additional Provisions and Special Modifications, and must be certified by the Contractor's Chief Financial Officer.
- C. The Contractor shall submit performance reports on an interim basis as prescribed by the Department in Section VII of Attachment A, Additional Provisions and Special Modifications. Performance reports shall present the following information for each contract task and shall include all available and relevant, quantitative data pertaining to production of project work units, completion of contract tasks, and actual costs for each unit or task:
1. a comparison of actual accomplishments to the objectives established in Attachments D, Scope of Services; D-1, Project Requirements; and D-2, Contractor's Proposal, for the reporting period,
 2. reasons why established goals were not met or tasks were not completed as scheduled, and
 3. other pertinent information, including a description of work performed during the reporting period, relevant literature citations, raw data generated, any modifications to the planned scope of work, and an anticipated work schedule for the next reporting period.
- D. The Contractor shall submit a final report on its overall performance of this contract, as prescribed in Section VII of Attachment A, Additional Provisions and Special Modifications, including a completed copy of Attachment C, Expenditure Report, comparing actual expenditures for the entire project with the Approved Project Budget, certified by the Chief Financial Officer, and a final performance report.
- E. Extensions of reporting due dates may be granted upon written request to the Department.
- F. If reports are not submitted as required the Department shall, at its discretion, suspend payments on this contract or any other contract entered into between the Department and the Contractor and shall take action to suspend payments to the Contractor by other State agencies.

- G. If the Contractor has a history of unsatisfactory performance or the Contractor does not submit satisfactory reports, the Department may require additional and more detailed reports from the Contractor.

XIV. Monitoring Performance

- A. The Contractor shall continually monitor its performance under this contract to assure that time schedules are being met, projected work units by time periods are being accomplished, and other performance goals are being achieved as applicable and as defined in Attachments D, Scope of Services; D-1, Project Requirements; and D-2, Contractor's Proposal.
- B. The Contractor shall inform the Department as soon as possible if any of the following types of conditions affect project objectives and performance and shall describe the action taken, or contemplated, and the Department assistance needed, if any, to respond to any such condition:
1. problems, delays, or adverse conditions which will materially affect the ability to attain project objectives, prevent the meeting of time schedules and goals, or preclude the completion of project work units or contract tasks within established time periods; and
 2. favorable developments or events which enable meeting time schedules and goals sooner than anticipated or producing more project work units or completing more contract tasks than originally projected.
- C. The Department may, at its discretion, make site visits to:
1. review project accomplishments and management control systems,
 2. audit the financial records pertaining to this contract, and
 3. provide such technical assistance as may be required.
- D. If the Contractor is not performing satisfactorily in the sole judgment of the Department, the Department may require remedial measures deemed necessary to fulfill the project requirements, including requiring the Contractor to obtain additional Department approvals before proceeding or requiring the Contractor to obtain outside technical or managerial assistance.

XV. Audit Requirements

- A. All contracts are subject to audit by the State. This contract may be audited at the discretion of the State up to five (5) years after the date of last payment under this contract or as otherwise required, by the Office of the State Comptroller. Any such audit must be made in accordance with generally accepted auditing standards, including the standards described in the federal General Accounting Office Government Auditing Standards.
- B. Where an audit conducted hereunder indicates any noncompliance by the Contractor with the material terms and conditions of this contract, the Contractor shall forthwith take corrective action as permitted or required by Section XVI of the General Terms and Conditions of this contract, Contract Amendment; Section XVIII of the General Terms and Conditions of this contract, Termination, Expiration, and Suspension; or as otherwise required by the Department. As a result of any audit hereunder, recommendations shall be made whether any costs incurred by the Contractor should be disallowed as beyond the scope or the purpose of this contract, excessive, or otherwise impermissible. The Department retains the right to recover any disallowed expenditures, and the Contractor shall return to the Department any disallowed expenditures no later than thirty (30) days after the request.
- C. In any case, this contract is, at the discretion of the State, subject to audits by the State at any time prior to closeout and subject to a follow-up compliance audit which may build upon previous audits of the contract.

XVI. Contract Amendment

If it desires to amend this contract, the Contractor must submit a written request to the Contract Officer designated in Section IX of Attachment A, Additional Provisions and Special Modifications. Any amendment, whether requested by the Contractor or the Department, must be documented by completion of the Department's amendment form (DEP-076). The completed amendment form must be formally executed by authorized representatives of both parties in the same manner as this contract, unless the amendment being documented is of the type described in paragraph A, B, or C of this Section XVI, Agreement Amendment. If the amendment is of the type described in paragraph A, B, or C below, the Contract Officer may execute the amendment form for the State by signing it in the designated place, and no formal execution by authorized representatives of the parties will be required. As a nonrestrictive example only, if the Department requests, and the Contractor consents to, any amendment to the scope of the services to be performed by the Contractor, including any increase in the amount of the approved budget, such amendment must be memorialized by a completed amendment form, formally executed by authorized representatives of both parties.

- A. The Contractor may obtain approval directly from the Contract Officer to transfer amounts of up to \$20,000 or 10% of the total contract amount, whichever is less, from one direct cost category to another or from the indirect cost category to a direct cost category, as long as this transfer does not result in any change in the project's scope, work period, objective, or deliverables. If the total contract amount is less than \$25,000, the Contract Officer may disregard the 10% limitation and approve transfers of up to \$2,500.
 - 1. "Indirect costs" are those incurred for a common or joint purpose benefiting more than one cost objective and not readily assignable to the cost objectives specifically benefited, without effort disproportionate to the results achieved. "Direct costs" are those which can be identified specifically with a particular cost objective.
 - 2. The amendment form documenting any budget revision shall clearly show and justify each change in each cost category, either on the form or on an attachment to it.
- B. The Department may reduce the contract budget and the scope of services so that they fairly reflect anticipated project expenditures and progress if:
 - 1. the Department notifies the Contractor, that the Contractor is making project expenditures or progress at a rate which, in the judgment of the Department, will result in substantial failure to expend the contract or to fulfill the purposes of this contract,
 - 2. the Department notifies the Contractor at least thirty (30) days in advance of any reduction,
 - 3. after consultation, the Contractor is unable to develop to the satisfaction of the Department a plan to rectify its low level of project expenditures or progress, and
 - 4. the Department considers the contractor's fixed costs when making any reduction.
- C. The Contract Officer may approve no-cost time extensions to the work period or the due date of the final report in increments of six months or less but not beyond the expiration date as described in Section XVIII.A.2 of the General Terms and Conditions of this contract, Termination, Expiration, and Suspension. Written justification and documentation evidencing the need to extend the work period or the due date of the final report must be submitted to the Contract Officer at least thirty (30) days in advance of the scheduled end of the work period. The Contract Officer shall decide whether to grant the extension. The amendment form documenting any no-cost time extension shall clearly show and justify the change, either on the form or on an attachment to it.
- D. The Contract Officer may approve proposed Contractor substitutions to the personnel and/or subcontractors identified and approved for this contract. The Contractor must submit a written request to the Department which includes:
 - 1. An explanation of the reasons why the original personnel/subcontractors cannot be provided;
 - 2. Vitae/credentials which demonstrates that the qualifications of the substitutions are equal to or better than the originally proposed personnel/subcontractors; and
 - 3. A declaration that the substitution will be provided at no additional cost to the State.

XVII. Closeout Procedures

The closeout of this contract shall mean the process by which the Department determines that all applicable administrative actions and all required work have been completed by the Contractor. This process shall include the steps enumerated below.

- A. The Contractor shall submit a final report as provided in Section VII of Attachment A, Additional Provisions and Special Modifications. The Department may permit extensions when requested in writing by the Contractor.
- B. The Contractor shall, together with the submission of the final report, refund to the Department any cash advanced but not committed to payment of eligible project costs in accordance with the Attachment B, Approved Project Budget.
- C. The Contractor shall refund to the Department any funds spent on costs which are disallowed by the Department. Such refund shall be made within thirty (30) days after the request.
- D. In the event a final audit has not been performed prior to the closeout of this contract, the Department retains the right to recover any appropriate amount after fully considering any recommendation on disallowed costs resulting from the final audit.
- E. The Contractor shall account for any property acquired with contract funds or received from the Department in accordance with Section VIII of the General Terms and Conditions of this contract, Property Management Standards.
- F. The Contractor shall comply with any Federal audit or closeout procedures applicable to this contract and/or identified by the Department as necessary to qualify for Federal reimbursement for any funds expended under this contract.

- G. The Department retains the right to request any additional information necessary to close out this contract and may retain any final contract payment until the closeout procedure is completed.

XVIII. Termination, Expiration, and Suspension

- A. The following definitions shall apply for the purposes of this Section XVIII, Termination, Expiration, and Suspension.
1. Termination - The "termination" of this contract means the cancellation of unsatisfied contractual obligations prior to the completion of the contract tasks by the Contractor. Work should stop unless the Contractor wants to continue at its own expense and is not otherwise required for good cause to stop by the Department.
 2. Expiration Date - The "expiration date" of this contract is the agreed upon date at which time the term of this contract automatically ends absent a formal written amendment executed by the parties. The expiration date of this contract shall be the third anniversary of the date the work period would end as initially agreed upon in Section I of the General Terms and Conditions of this contract, Contract Award Data and Signatures.
 3. Suspension - The "suspension" of this contract means a temporary cessation of State support or assistance pending corrective action by the Contractor or pending a decision to terminate the contract by the Department. Work should stop unless the Contractor wants to continue at its own expense and is not otherwise required for good cause to stop by the Department.
- B. If the Contractor fails to comply with any term, condition, requirement, or provision of this contract or fails to make sufficient progress so as to reasonably ensure completion of performance of this contract within the time frame set forth herein, the Department may upon notice to the Contractor suspend this contract and withhold further payments, prohibit the Contractor from incurring additional obligations of contract funds pending corrective action by the Contractor, or decide to terminate this contract in accordance with paragraph C of this Section XVIII, Termination, Expiration, and Suspension. The Department may, at its sole discretion, allow Contractor to incur additional costs that could not be reasonably avoided during the period of suspension provided that said costs meet the provisions of federal OMB Circulars A-102 or A-110, appropriate federal common rule or any other applicable state or federal requirements.
- C. The Department may terminate this contract, in whole or in part, upon thirty (30) days notice, whenever it determines that the Contractor has failed to comply with any term, condition, requirement, or provision of this contract or fails to make sufficient progress so as to reasonably ensure completion of performance of this contract within the time frames set forth therein. The Department shall promptly notify the Contractor, in writing, of its determination and the reasons for the termination together with the date on which the termination shall take effect. Upon termination, the Department retains the right to recover any improper expenditures from the Contractor and the Contractor shall return to the Department any improper expenditures no later than thirty (30) days after the date of termination. The Department may, at its sole discretion, allow Contractor to retain or be reimbursed for costs reasonably incurred prior to the termination that were not made in anticipation of termination and cannot be canceled provided that said costs meet the provisions of federal OMB Circulars A-102 or A-110, appropriate federal common rule or any other applicable state or federal requirements.
- D. The Department and the Contractor may terminate this contract in whole, or in part, when both parties agree that the continuation of the project would not produce beneficial results commensurate with the further expenditure of funds. The two parties shall agree upon the termination conditions including the date on which the termination shall take effect, and, in case of partial terminations, the portion to be terminated. The Contractor shall not incur new obligations for the terminated portion after the date on which the termination shall take effect, and shall cancel as many outstanding obligations as possible.
- E. The closeout procedures described in Section XVII of the General Terms and Conditions of this contract, Closeout Procedures, shall apply in all cases of termination of this contract.

XIX. Access to Records

- A. The Contractor agrees to make available to the Department, any Federal agency whose funds are expended in the course of this contract, the Office of the State Comptroller or any other State auditor, and any of their duly authorized representatives, such pertinent accounting records, books, documents, and papers as may be necessary to monitor and audit contractor's operations.
- B. Whenever reasonable and practical, the State shall give reasonable notice to the Contractor prior to any visitation, inspection, or audit, including any visitation or request for documentation in discharge of the State's responsibilities. However, the State retains the right to make unannounced visitations, inspections, and audits as deemed necessary during normal business hours.

- C. The State reserves the right to have access to records of any subcontractor and requires the Contractor to provide the State access to such records in any contract with the subcontractor.
- D. The State reserves the right to have access to all workpapers produced in connection with audits made by the Contractor or by independent certified public accountants or licensed public accountants hired by the Contractor to perform such audits.

XX. Record Retention

- A. The Contractor shall retain financial records, supporting documents, statistical records, and all other records in the contractor's financial management system or otherwise pertinent to this contract (a) for a period of five (5) years from the date of last payment under this contract or the State's record retention schedule, whichever is later, or (b) for such longer period as any applicable State or federal statute may require, with the qualifications stated below.
 - 1. If any litigation, claim, or audit is started before the end of the five-year period, the records shall be retained until all litigations, claims, or audit findings involving the records have been resolved.
 - 2. Records for nonexpendable property acquired with State funds shall be retained for five (5) years after its final disposition.
- B. The State may request transfer of certain records to its custody from the Contractor when it determines that the records possess long term retention value and will make arrangements with the Contractor to retain any records that are continuously needed for joint use.

XXI. Approvals and Authorizations

- A. Unless specifically stated otherwise, wherever this contract requires the approval or authorization of the Department, that approval or authorization must be given in writing by the Commissioner of the Department, by the authorized delegate who signed this contract, or by said delegate's successor or superior, if any.
- B. If the Contractor is a municipal or county government agency, the Contractor must submit with this contract a copy of an ordinance or resolution, duly enacted by the governing body of that municipal or county government agency or of the municipality or county and authorizing execution of this contract. If the Contractor is a corporation, the Contractor must submit with this contract a corporate resolution, duly adopted by its board of directors, board of trustees, or equivalent governing body, and authorizing execution of this contract. The Department will not make any payments until such ordinance or resolution is received.
- C. If the Contractor is a corporation or partnership, the Contractor must submit with this contract a disclosure of the names and addresses of any persons who own 10% or more of the firm's stock or interest, in accordance with N.J.S.A. 52:25-24.
- D. If the Contractor is a corporation incorporated outside of New Jersey, the Contractor must, as a condition of payment hereunder, obtain a certificate of authority to do business in New Jersey from the Department of the Treasury and file a copy of that certificate with the Contract Officer designated in Section IX of Attachment A, Additional Provisions and Special Modifications.
- E. If the Contractor is neither a government agency nor a corporation and if the Contractor has neither a residence nor a place of business in New Jersey, the Contractor hereby irrevocably appoints the Commissioner of the Department to receive process in any civil action which may arise out of or as a result of this contract. Within ten (10) days of receipt of any such process, the Commissioner shall transmit it by certified mail to the Contractor at the address shown in Section I of the General Terms and Conditions of this contract, Contract Award Data and Signatures.

XXI. Interest on Advance Payments and Disallowed Costs

- A. Advance Payments: The Contractor is required to deposit any advance payments received hereunder in an interest bearing account. Any interest up to \$100 per year may be retained by the Contractor for documented administrative expenses. If this contract is federally funded, any interest above \$100 per year must be remitted on a quarterly basis to the Department for return to the federal government. If this contract is funded by the State, interest above \$100 per year may be retained by the Contractor for purposes of this contract or shall be remitted to the Department as indicated in Section XI of Attachment A, Additional Provisions and Special Modifications.
- B. Disallowed Costs: Where the Contractor has been reimbursed by the Department for costs which are subsequently disallowed by the Department, the Contractor shall return the funds to the Department no later than thirty (30) days after the request. Where the Contractor fails timely to return the funds or appeals the disallowed costs, an interest charge as indicated in Section XI of Attachment A, Additional Provisions and Special Modifications, shall be charged on the funds beginning thirty (30) days from the date the Contractor was notified of the debt. If the Contractor is successful on appeal, the accrued interest will be canceled.

XXIII. Miscellaneous Provisions

- A. Governing Law: It is agreed and understood that this contract shall be governed and construed, and the rights and obligations of the parties hereto shall be determined, in accordance with the laws of the State of New Jersey including but not limited to the Contractual Liability Act, N.J.S.A 59:13-1 et seq.
- B. Conflict of Terms: In the event of any conflict, the order of precedence shall be (1) the terms and conditions of this Contract; (2) any State Agency application form or specific correspondence describing the Project and/or soliciting a Contractor proposal; and (3) the contractor's proposal (D-2).

NOTE: The only exception to the above is that consistency with rules and regulations promulgated pursuant to the State Program's enabling legislation shall always have precedence in any conflict with the terms and conditions of this Contract.

- C. Dispute Resolution: Consistent with the Contractual Liability Act, N.J.S.A 59:13-1 et seq., unless otherwise provided in this contract, all claims, counterclaims, disputes, and other matters in question between the State and the Contractor arising out of, or relating to, this contract or the breach of it will proceed as follows:
 - 1. The dispute shall initially be submitted by either party for resolution via administrative proceedings conducted by the Department.
 - 2. If there is no mutually agreeable resolution after administrative recourse is exhausted, the matter may then proceed to arbitration or litigation. Any litigation must be submitted to, and heard by, a court of competent jurisdiction within the State of New Jersey.
- D. Performance: The Contractor warrants that it is aware of the work required to be performed under this contract, that it has the capabilities and credentials required by the contract, and that it will faithfully perform the work and abide by the terms, conditions, and other requirements of this contract.
- E. Disclaimer of Agency Relationship: The contractor's status shall be that of an independent principal and not as an agent or employee of the State. Nothing contained in the contract shall be construed to create, either expressly or by implication, the relationship of agency between the State and the Contractor or its subcontractors.
- F. Computation of Time: When the contract refers to a period of time in terms of days, the day of the act or event from which the designated period begins to run is not to be included. The last day of the period so computed is to be included, unless it is a Saturday, Sunday, or legal holiday, in which event the period runs until the end of the next day which is neither a Saturday, Sunday, nor legal holiday. In computing a period of time of less than seven days, Saturday, Sunday, and legal holidays shall be excluded.
- G. Intellectual Property Rights: If the Contractor, in the course of its duties under this contract, develops any invention apparatus, computer program, discovery, or other intellectual property, the State will own the entire right, title and interest throughout the world to each such property right and to patents and copyrights protecting the same. The State's ownership shall be unaffected by any assignment, suspension, termination, or expiration of this contract.
- H. Captions and Headings: Captions and headings used in this contract are for convenience of reference only and shall in no way be deemed to define, limit, explain, or amplify any term or provision.
- I. Severability: In case any term or provision of this contract shall be held invalid, illegal, or unenforceable, in whole or in part, neither the validity of any remaining part nor the validity of any other term or provision shall in any way be affected by such holding.
- J. Entire Agreement: The parties understand and agree that all prior understandings and agreements between them regarding performance of the obligations described herein are merged into this written contract which supersedes all such prior understandings and agreements. Neither party enters into this contract in reliance on any statement nor representation of the other which is not reiterated herein, or incorporated herein by reference.
- K. Successor and Assigns: This contract shall be binding upon any successors or assigns of the Contractor. The State may, in its sole discretion, reject any proposed successor or assign of the Contractor.
- L. Counterparts: This contract may be executed in multiple counterparts, each of which shall constitute an original instrument and all of which taken together shall constitute one and the same instrument.
- M. Notices: All notices, certificates, and other documents (a "notice") to be given by one party to the other shall be in writing and shall be delivered to the other party. Any such notice shall be delivered to the address of the Contractor or

the Contracting Agency shown in Section I, Contract Award Data and Signatures, by overnight courier service or by regular first class, certified, or registered mail, postage prepaid. If mailed, said notice shall be deemed to have been received five (5) days after its deposit in the United States Mail; and if given otherwise, said notice shall be deemed to have been received when delivered to the party to whom it is addressed.

- N. Waiver of Breach: The waiver by either party of any breach of this contract shall not be deemed a waiver of any subsequent breach of the same or any other term or provision.

- O. Gender and Number: Use of the singular or plural includes the other and use of any gender includes all genders, as the context requires or permits.

- P. Waiver of Jury Trial: In the event of litigation, Contractor waives any right it may have to a trial by jury.

**CONTRACT
BETWEEN
NEW JERSEY INSTITUTE OF TECHNOLOGY
(Name of Contractor)
AND
THE STATE OF NEW JERSEY
BY AND FOR
THE DEPARTMENT OF ENVIRONMENTAL PROTECTION**

**CONTRACT NUMBER: Error! Reference source not found.
ADDITIONAL PROVISIONS AND SPECIAL MODIFICATIONS**

This Attachment A adds the terms, conditions, requirements, and provisions specified in Sections I through XI below, and makes the modifications specified in Section XII below, to the preceding General Terms and Conditions of the contract between New Jersey Institute of Technology and the State of New Jersey, by and for the DEP.

(print Contractor's name)

I. Insurance (See Section III of the General Terms and Conditions of this contract, Insurance.)

A. The Contractor maintains and must continue to maintain the required insurance coverages as follows:

1. commercial general liability
 insurance
 self insurance
 not required
2. automobile liability
 insurance
 self-insurance
 not required
3. worker's compensation
 insurance
 self-insurance
 not required
4. employer's liability
 insurance
 self-insurance
 not required

B. Certificates of insurance or documentation of self-insurance

- is on file with the Department.
 will be forthcoming within 30 days after the effective date of this contract.
 other (explain) _____.

NOTE: No payment can be made until the Department has received acceptable documentation of these required coverages.

II. Availability of Funds (See Section VI of the General Terms and Conditions of this contract, Availability of Funds.)

Based upon funds available to the Department in the State's fiscal year, the contract (the sum of the State, the federal, and if through the State treasury, the other amounts, shown as components of the Total Project Amount in Section I of the General Terms and Conditions of this contract, Contract Award Data and Signatures) is

- fully funded.
 partially funded in the amount of \$_____.
 not applicable.

III. Method of Payment (See Section IX of the General Terms and Conditions of this contract, Method of Payment.)

- A. Advance payment, if justified and itemized in Attachment B-2, Approved Advance Payment, is
 authorized for \$_____.
 not applicable.
- B. Progress payments
 shall be made on a _____ (e.g. mo./qtr./deliverable) basis for \$ _____ per payment.
 shall be based on actual expenditures submitted on a qtr (e.g. mo./qtr.) basis accompanied by receipts computer printouts.
 shall be made on submission of deliverables in accordance with the project specifications and requirements.
 are not applicable.
- C. Final payment of _____
(amount or description)
 shall be withheld pending receipt of all final reports.
 is not applicable.
 (other, specify) _____.

NOTE: No payment can be made unless a proper state invoice is submitted with appropriate justification, receipts, etc. and unless any required expenditure and performance reports are submitted.

IV. Matching and Cost Sharing Requirements (See Section X of the General Terms and Conditions of this contract, Matching and Cost Sharing Requirements.)

- The Contractor shall provide the matching or cost sharing amounts indicated in Section I of the General Terms and Conditions of this contract, Contract Award Data and Signatures, and described further in Attachment B, Approved Project Budget.
 Matching and cost sharing requirements do not apply.

V. Project Income (See Section XI of the General Terms and Conditions of this contract, Project Income.)

- A. Royalties, if any, received as a result of copyrights or patents produced under this contract shall be
 paid to the Department.
 retained by the Contractor.
 not applicable.
- B. Other project income, if any, as defined in Section XI of the General Terms and Conditions of this contract, Project Income, shall be
 added to funds committed to the project by the Department and used to further eligible project objectives.
 deducted from the total project costs for the purpose of determining the net costs on which the Department shall base contract payments.
 paid to the Department.
 retained by the Contractor.
 not applicable.

VI. Certification of Adequacy of Accounting System (See Section XII of the General Terms and Conditions of this contract, Financial Management System.)

- A. A statement attesting to the adequacy of the Contractor's accounting system in accordance with the standards set forth in Section XII of the General Terms and Conditions of this contract, Financial Management System,
 must be completed, on Attachment G, Statement of Adequacy of Accounting System, by the Chief Financial Officer identified in Section I of the General Terms and Conditions of this contract, Contract Award Data and Signatures.
 is not required.
- B. Financial reports shall be prepared in a manner consistent with the Contractor's normal accounting records, which are kept on
 a cash basis.
 an accrual basis.
 modified accrual basis.
 (other, specify) _____.

VII. Financial and Performance Reporting (See Section XIII of the General Terms and Conditions of this contract, Financial and Performance Reporting.)

- A. All financial reports must be certified by the Chief Financial Officer.
- B. Interim expenditure reports, including a completed copy of Attachment C, Expenditure Report, shall be submitted
 - on a quarterly (e.g. mo./qtr.) basis, no later than 30 days immediately following the end of the period.
 - (other, specify) with progress payments, but no later than the due date of the final expenditure report.
- C. Performance reports shall be submitted on a quarterly (e.g. qtr./annual) basis. These reports should be submitted no later than 30 days after the end of each reporting period.
- D. A final expenditure report, including a completed copy of Attachment C, Expenditure Report, and a final performance report shall be submitted by the Contractor no later than 90 days after the Contractor's completion of all contract tasks, the expiration date of this contract, or the termination of this contract, whichever first occurs.

VIII. Audit Requirements (See Section XV of the General Terms and Conditions of this contract, Audit Requirements.)

- A. Under the federal Single Audit Act or the State Circular Letter 04-04-OMB,
 - this contract is subject to a single audit and will be audited as such on Contractor's fiscal year.
 - this contract is not subject to a single audit and shall be audited as indicated in paragraphs B and C below.
- B. If this contract is not subject to a single audit under paragraph A above,
 - the contract shall otherwise be audited at the end of the work period.
 - the contract may otherwise be audited at the Department's discretion up to five years after the Contractor's last payment.
- C. If this contract is audited under paragraph B above, the audit shall be conducted by
 - State auditors.
 - Department internal auditors.
 - a CPA firm appointed by Department.
 - a CPA firm chosen by the Contractor.
 - (other, specify) At the discretion of the Department.
- D. The Department's records show the Contractor's fiscal year ends on 6/30. The Contractor shall notify the Department immediately if this date is incorrect or is changed.
- E. Copies of all audit reports must be submitted to DEP, Office of Audit, PO Box 402, Trenton, NJ, 08625-0402 and to the Contracting Agency identified in Section I of the General Terms and Conditions of this contract, Contract Award Data and Signatures, not later than nine months after the close of the Contractor's fiscal year.

IX. Contract Amendment (See Section XVI of the General Terms and Conditions of this contract, Contract Amendment.)

All budget revisions and modifications must be submitted, in writing, to (name) John H. Moyle, (title of position) Manager or the successor to that position (the "Contract Officer").

X. Authorizations and Disclosures (See Section XXI of the General Terms and Conditions of this contract, Approvals and Authorizations.)

- A. The Contractor is
 - a local government agency.
 - a New Jersey corporation.
 - an out-of-state corporation.
 - (other, specify) New Jersey Institute of Technology
- B. Appended hereto as Attachment E, Governing Body Resolution or Corporate Resolution, is
 - a governing body resolution.
 - a corporate resolution.
 - no resolution.

C. A Contractor's Stockholder Disclosure Statement is

- submitted herewith.
- not applicable.

D. A certificate of authority for Contractor to do business in New Jersey

- will be submitted.
- is not applicable.

NOTE: No payment can be made until the Department has received any documents required under this Section X, Authorizations and Disclosures.

XI. Interest (See Section XXII of the General Terms and Conditions of this contract, Interest on Advance Payments and Disallowed Costs.)

A. Interest above \$100 per year on advance payment of State funds

- may be retained by the Contractor for documented purposes under this contract.
- shall be remitted to the Department on a quarterly basis.
- will not exist because no advance payment is authorized.
- (other, explain) _____.

NOTE: On federally funded grants, any interest above \$100 per year must be remitted on a quarterly basis to the Department for return to the federal government.

B. Interest on payments of disallowed costs not returned within 30 days of request shall accrue in favor of the State at the rate specified in the "Notice of Intent to Collect" document (ADM-182).

XII. Modifications to General Terms and Conditions

The General Terms and Conditions of this contract are changed, supplemented, or deleted ("modified") as specified in this Section XII, which supersedes inconsistent terms, conditions, requirements, or provisions contained elsewhere in this contract. If all modifications do not fit on this page, the numeral "5" in the phrase "of 5" in the header of each page of this Attachment A must be changed to equal the total number of pages in this Attachment A, and each new page must be identified and successively numbered in the same manner as the first five pages.

- This Section XII does not contain modifications to the General Terms and Conditions of this contract.
- This Section XII does contain modifications to the General Terms and Conditions of this contract, and this Attachment A now comprises 5 pages.

ADDITIONAL TERMS AND CONDITIONS

Patent and Copyright Liability

The Contractor shall hold and save the State of New Jersey, its officers, agents, servants and employees, harmless from liability of any nature or kind, for or on account of the use of any copyrighted or uncopyrighted composition, patented or unpatented invention, article, or appliance furnished or used in the performance of this contract. This is in addition to and in no way limits any other indemnification provision in the contract.

Delay of Contract

The Contractor is responsible for completing the contract as required by the Scope of Services and according to any approved project work schedules. However, a project schedule may be extended for delays caused by events which could not reasonably be anticipated and which are beyond the control of the Contractor. Such causes include, but are not limited to, actions by employees or other contractors employed by the State, unanticipated work changes ordered by the State, strikes, lockouts, fire, delays caused by common carriers, unavoidable casualties, work stoppage orders and work suspension riders. The Contractor shall submit written documentation to the Project Manager in accordance with Section XVI in order to request an extension of an approved project work schedule.

Dissemination of Information

During the course of this contract and for two years following submission of an approved final report, the Contractor shall not print, publish, disclose or otherwise make known to third parties the content of any data, information, studies, computation, memoranda, graphs, reports or other material arising from this Contract without at least thirty (30) days prior written notification to the State, and without informing the State of the nature of such disclosures. The Contractor shall coordinate all such disclosures with the State and shall permit the State to preview any such disclosure prior to its release. Contractor agrees to seriously consider the comments and suggestions of the State in the final drafting of all publications.

During the above thirty day period, the State may request a delay of any disclosure for up to one (1) year, if necessary, in order to protect the public interest. If the Contractor is publishing materials that the Department has reviewed and found unsatisfactory, inadequate or unacceptable, at the request of the Department, the Contractor shall include in any publication of materials resulting from this contract a statement, conspicuously placed, that the Department finds the material inadequate or unsatisfactory, that the Department disagrees with the analyses, interpretations, or conclusions contained therein, or both.

Acknowledge/Co-Authorship

Publication by the Contractor of any work or portion of work arising from this Contract must include a written acknowledgment of the Department's assistance (e.g., financial, equipment, manpower). Also, where State employees have contributed substantive work on the project, the appropriate State employees (project manager or other significant Department participant(s)) shall be named as co-author(s) on publications arising from this Contract.

Access to Material

Unless otherwise specified in this contract, the State shall have access to all data, samples, material, evidence and documentation gathered, originated or prepared for the State by the Contractor during the performance of his contractual responsibilities for a period of three (3) years from the submission of the approved Final Report. During that time period any such data, samples, material, evidence and documentation shall be provided to the State in a reasonably timely manner upon request by the State.

Substitutions of Personnel and Subcontractors

If, during the course of the contract, the Contractor finds that he cannot provide the personnel or subcontractors identified in this contract, and desires to substitute personnel or subcontractors, the Contractor must request in writing from the Department permission to substitute personnel or subcontractors. Such request must:

1. Explain the reasons why the original persons cannot be provided;
2. Demonstrate that the qualifications of the substitution are equal to or better than the originally proposed persons; and
3. Warrant that the substitution will be provided at no additional cost to the State.

**CONTRACT
BETWEEN
NEW JERSEY INSTITUTE OF TECHNOLOGY
(Name of Contractor)
AND
THE STATE OF NEW JERSEY
BY AND FOR
THE DEPARTMENT OF ENVIRONMENTAL PROTECTION
CONTRACT NUMBER: EC14-006**

ACCOUNT DESCRIPTION	TOTAL BUDGET	FEDERAL	STATE	CONTRACTOR	OTHER
A. Personnel Costs	\$113,000	0.00	\$113,000	0.00	0.00
Salaries					
Fringe Benefits	0.00	0.00	0.00	0.00	0.00
B. Consultants and Subcontractors	0.00	0.00	0.00	0.00	0.00
C. Other Costs Specify below:					
▪ Travel	\$5,000	0.00	\$5,000	0.00	0.00
▪ Supplies	\$2,000	0.00	\$2,000	0.00	0.00
▪ Town Meetings	\$25,000	0.00	\$25,000	0.00	0.00
▪	0.00	0.00	0.00	0.00	0.00
▪	0.00	0.00	0.00	0.00	0.00
D. Audit	0.00	0.00	0.00	0.00	0.00
Subtotal Direct Costs	\$145,000	0.00	\$145,000	0.00	0.00
Less Program Income	0.00	0.00	0.00	0.00	0.00
Total Direct Costs	\$145,000	0.00	\$145,000	0.00	0.00
Indirect Costs	0.00	0.00	0.00	0.00	0.00
TOTAL PROJECT AMOUNT	\$145,000	0.00	\$145,000	0.00	0.00

TOTAL CONTRACT AMOUNT is the sum of "Federal" and "State" column totals \$145,000
 the sum of "Federal" "State" and "Other" column totals \$0.00

The sums identified in the "Total Budget" column are itemized and justified in (check one or more as appropriate)

- Attachment D, Scope of Services, on page(s) _____.
- Attachment D-2, Contractor's Proposal, on page(s) _____.
- Attachment B-1, Itemization and Justification of Budget, comprising _____.

GRANT AGREEMENT
BETWEEN

(Name of Grantee)
AND
THE STATE OF NEW JERSEY
BY AND FOR
THE DEPARTMENT OF ENVIRONMENTAL PROTECTION

GRANT IDENTIFIER:

ADDITIONAL FEDERAL FUNDED AGREEMENT PROVISIONS

I. Debarment and Suspension

The Grantee (Loan Recipient or Contractor) shall fully comply with Executive Order 12549 as implemented in federal regulation entitled *GOVERNMENTWIDE DEBARMENT AND SUSPENSION (NONPROCUREMENT)*, 2 CFR Part 180, Subpart C - *Responsibilities of Participants Regarding Transactions (Doing Business with Other Persons)* and the applicable Federal agency Common Rule regulations found in <http://www.whitehouse.gov/omb/grants/chart.aspx>. The Grantee (Loan Recipient or Contractor) is responsible for ensuring that any lower tier covered transaction as described in Subpart B of 2 CFR Part 180 and the applicable Federal agency Common Rule regulations, entitled "Covered Transactions," includes a term or condition requiring compliance with Subpart C. The Grantee (Loan Recipient or Contractor) is responsible for further requiring the inclusion of a similar term or condition in any subsequent lower tier covered transactions. The Grantee (Loan Recipient or Contractor) acknowledges that failing to disclose the information as required at 2 CFR 180.355 may result in the delay or negation of this assistance agreement, or pursuance of legal remedies, including suspension and debarment.

The Grantee (Loan Recipient or Contractor) may access the Excluded Parties List System at <http://www.sam.gov>.

II. Restrictions on Lobbying

A. The Grantee (Loan Recipient or Contractor) agrees to fully comply with Common Rule regulations for federal agencies, *NEW RESTRICTIONS ON LOBBYING* found in <http://www.whitehouse.gov/omb/grants/chart.aspx>. The Grantee (Loan Recipient or Contractor) shall include the language of this provision in award documents for all subawards exceeding \$100,000, and require that subrecipients submit certification and disclosure forms accordingly.

(1) No federal appropriated funds may be expended by the Grantee (Loan Recipient or Contractor) to pay any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any of the following covered Federal actions: the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) The Grantee (Loan Recipient or Contractor) shall file with the Department a certification, set forth in Appendix A-1-A, that the Grantee (Loan Recipient or Contractor) has not made, and will not make, any payment prohibited by paragraph (1) of this section.

(3) The Grantee (Loan Recipient or Contractor) shall file with the Department a disclosure form, set forth in Appendix A-1-B, following instructions contained in the Common Rule regulations for federal agencies, *NEW RESTRICTIONS ON LOBBYING* found in <http://www.whitehouse.gov/omb/grants/chart.aspx>, if the Grantee (Loan Recipient or Contractor) has made or has agreed to make any payment using non-federal funds which would be prohibited under paragraph (1) of this section if paid for with federal funds.

B. In accordance with the Byrd Anti-Lobbying Amendment, any recipient who makes a prohibited expenditure under the *NEW RESTRICTIONS ON LOBBYING* Common Rule regulations or fails to file the required certification or lobbying forms shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such expenditure.

III. Compliance with the Civil Rights Act of 1964

- A. The Grantee (Loan Recipient or Contractor) must comply with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title IX of the Education Amendments of 1972, the Age Discrimination Act of 1975, and a variety of program-specific statutes with non-discrimination requirements.
- B. Other civil rights laws may impose additional requirements on the Grantee (Loan Recipient or Contractor) to which the Grantee (Loan Recipient or Contractor) must comply. These laws include, but are not limited to, Title VII of the Civil Rights Act of 1964 (prohibiting race, color, national origin, religion, and sex discrimination in employment), the Americans with Disabilities Act (prohibiting disability discrimination in employment and in services provided by State and local governments, businesses, and nonprofit agencies), and the Fair Housing Act (prohibiting race, color, national origin, age, family status, and disability discrimination in housing), as well as any other applicable civil rights laws.

IV. Trafficking Victim Protection Prohibition Statement

- A. To implement requirements of Section 106 of the Trafficking Victims Protection Act of 2000, as amended, and the requirements contained in federal regulation 40 CFR Part 175, *TRAFFICKING IN PERSONS*, the Department may unilaterally terminate this award, without penalty, if a subrecipient that is a private entity fails to comply with these requirements. The Grantee (Loan Recipient or Contractor) must inform the Department immediately of any information received from any source alleging a violation of a prohibition in the Prohibition Statement below.
- B. The Grantee (Loan Recipient or Contractor) must include the requirements of the Prohibition Statement below in any subaward you make to a private entity.

Prohibition Statement - You as the recipient, your employees, subrecipients under this award, and subrecipients' employees may not engage in severe forms of trafficking in persons during the period of time that the award is in effect; procure a commercial sex act during the period of time that the award is in effect; or use forced labor in the performance of the award or subawards under the award.

V. National Environmental Policy Act (NEPA)

The Grantee (Loan Recipient or Contractor) shall not begin any implementation work under this Agreement until the required environmental review process, if applicable, is completed in compliance with the National Environmental Policy Act (NEPA), 42 United States Code 4321, et seq., its implementing regulations 40 CFR Part 1500-1508, and other applicable federal agency NEPA requirements.

VI. Eligible Workers

- A. The grantee shall ensure that all employees of the Grantee and the Grantee's contractors funded under this agreement complete the I-9 form to certify that they are eligible for lawful employment under the Immigration and Nationality Act (8 USC 1324a). The Grantee and the Grantee's contractors shall comply with the regulations regarding certification and retention of the completed forms. These requirements also apply to any contract or supplemental agreement under this agreement.
- B. The Grantee agrees to make these forms available in accordance with the access to records and record retention provisions of this agreement.

VII. Requirement for Data Universal Numbering System (DUNS) number

As a condition of this agreement, the Grantee (Loan Recipient or Contractor) must provide to the Department its Data Universal Numbering System (DUNS) number. A DUNS number means the nine-digit number established and assigned by Dun and Bradstreet, Inc. (D&B) to uniquely identify business entities. A DUNS number may be obtained from D&B by telephone (currently 866-705-5711) or the internet (<http://fedgov.dnb.com/webform>). No Grantee (Loan Recipient or Contractor) may receive a subaward unless this number is provided below:

Grantee (Loan Recipient or Contractor) DUNS Number _____

GRANT AGREEMENT
BETWEEN

(Name of Grantee)
AND
THE STATE OF NEW JERSEY
BY AND FOR
THE DEPARTMENT OF ENVIRONMENTAL PROTECTION

GRANT IDENTIFIER:

CERTIFICATION REGARDING LOBBYING

**CERTIFICATION FOR CONTRACTS, GRANTS,
LOANS, AND COOPERATIVE AGREEMENTS**

The undersigned certifies, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying" in accordance with its instructions. (Appendix A-1-B)
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31 U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Typed Name & Title of Authorized Representative

Signature of Authorized Representative

Date

DISCLOSURE OF LOBBYING ACTIVITIES
Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure.)

Approved by OMB
0348-0046

1. Type of Federal Action: <input type="checkbox"/> a. contract <input type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance		2. Status of Federal Action: <input type="checkbox"/> a. bid/offer/application <input type="checkbox"/> b. initial award <input type="checkbox"/> c. cooperative agreement		3. Report Type: <input type="checkbox"/> a. Initial filing <input type="checkbox"/> b. material change For Material Change Only: year _____ quarter _____ date of last report _____	
4. Name and Address of Reporting Entity: <input type="checkbox"/> Prime <input type="checkbox"/> Subawardee Tier _____, if known: Congressional District, if known: 4c			5. If Reporting Entity in No. 4 is a Subawardee, Enter Name and Address of Prime Congressional District, if known:		
6. Federal Department/Agency			7. Federal Program Name/Description: CFDA Number, if applicable: _____		
8. Federal Action Number, if known:			9. Award Amount, if known: \$		
10. a. Name and Address of Lobbying Registrant (if individual, last name, first name, MI):			b. Individuals Performing Services (including address if different from no. 10a) (last name, first name, MI):		
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each failure.			Signature: _____ Print Name: _____ Title: _____ Telephone No.: _____ Date: _____		
Federal Use Only:				Authorized for Local Reproduction Standard Form LLL (rev. 7-97)	

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.
2. Identify the status of the covered Federal action.
3. Identify the appropriate classification of this report. If this is a followup report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.
4. Enter the full name, address, city, State and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
5. If the organization filing the report in item 4 checks "Subawardee," then enter the full name, address, city, State and zip code of the prime Federal recipient. Include Congressional District, if known.
6. Enter the name of the federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.
8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitations for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Included prefixes, e.g., "RFP-DE-90-001."
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.
10. (a) Enter the full name, address, city, State and zip code of the lobbying registrant under the Lobbying Disclosure Act of 1995 engaged by the reporting entity identified in item 4 to influence the covered Federal action.

(b) Enter the full names of the individual(s) performing services, and include full address if different from 10(a).
Enter Last Name, First Name, and Middle Initial (MI).
11. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

According to the Paperwork Reduction Act, as amended, no persons are required to respond to a collection of information unless it displays a valid OMB control Number. The valid OMB control number for this information collection is OMB No. 0348-0046. Public reporting burden for this collection of information is estimated to average 10 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, DC 20503

**GRANT AGREEMENT
BETWEEN**

(Name of Grantee)
AND
THE STATE OF NEW JERSEY
BY AND FOR
THE DEPARTMENT OF ENVIRONMENTAL PROTECTION

GRANT IDENTIFIER:

**ADDITIONAL FEDERAL FUNDED AGREEMENT PROVISIONS
FEDERAL FUNDING ACCOUNTABILITY AND TRANSPARENCY ACT (FFATA)
FEDERAL FUNDED AGREEMENTS OF \$25,000 OR GREATER**

I. Federal Funding Accountability and Transparency Act (FFATA)

- A. The Grantee (Loan Recipient or Contractor) agrees to obtain a Data Universal Numbering System (DUNS) number that will represent a universal identifier for all federal funding assistance. DUNS numbers can be obtained from Dun and Bradstreet <http://fedgov.dnb.com/webform/>.
- B. The Grantee (Loan Recipient or Contractor) agrees to register with the Central Contractor Registration (CCR)/System for Award Management (SAM) and to maintain current registration at all times during which this agreement is active or under consideration by the Department. Register at <http://www.sam.gov/>.
- C. The Grantee (Loan Recipient or Contractor) agrees to submit a signed FFATA Request Form set forth in Appendix A-2 as a condition of this Agreement including Total Compensation of Subrecipient Executives if applicable as set forth below:

Reporting of Total Compensation of Subrecipient Executives.

1. **Applicability and what to report.** You shall report the names and total compensation of each of your five most highly compensated executives for your preceding completed fiscal year, if --

i. in the preceding fiscal year, you received--

(A) 80 percent or more of your annual gross revenues from Federal procurement contracts (and subcontracts) and Federal financial assistance subject to the Transparency Act, as defined at 2 CFR 170.320 (and subawards) (Check One Yes No); and,

(B) \$25,000,000 or more in annual gross revenues from Federal procurement contracts (and subcontracts), and Federal financial assistance subject to the Transparency Act (and subawards) (Check One Yes No); and

ii. The public does not have access to information about the compensation of the executives through periodic reports filed under section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m(a), 78o(d)) or section 6104 of the Internal Revenue Code of 1986. (To determine if the public has access to the compensation information, see the U.S. Security and Exchange Commission total compensation filings at <http://www.sec.gov/answers/execomp.htm>.) (Check One Yes, if the public does not have access No)

2. If the answer to all three questions in paragraph 1. of this section is "Yes", then enter the full name and total compensation for the five highest paid individuals below:

<u>Executive Name</u>	<u>Executive Compensation</u>
1.	\$
2.	\$
3.	\$
4.	\$
5.	\$

- i. If Reporting of Executive Compensation is required above, check "Yes" on the form in Appendix A-2, otherwise check "No".

3. Definitions. For purposes of this award term:

- i. Executive means officers, managing partners, or any other employees in management positions.
- ii. Total compensation means the cash and noncash dollar value earned by the executive during the recipient's or subrecipient's preceding fiscal year and includes the following (for more information see 17 CFR 229.402(c)(2)):
- a) *Salary and bonus.*
 - b) *Awards of stock, stock options, and stock appreciation rights.* Use the dollar amount recognized for financial statement reporting purposes with respect to the fiscal year in accordance with the Statement of Financial Accounting Standards No. 123 (Revised 2004) (FAS 123R), Shared Based Payments.
 - c) *Earnings for services under non-equity incentive plans.* This does not include group life, health, hospitalization or medical reimbursement plans that do not discriminate in favor of executives, and are available generally to all salaried employees.
 - d) *Change in pension value.* This is the change in present value of defined benefit and actuarial pension plans.
 - e) *Above-market earnings on deferred compensation which is not tax-qualified.*
 - f) Other compensation, if the aggregate value of all such other compensation (e.g. severance, termination payments, value of life insurance paid on behalf of the employee, perquisites or property) for the executive exceeds \$10,000.

Federal Funding Accountability and Transparency Act (FFATA) Request Form

New Jersey Department of Environmental Protection (NJDEP)

The NJDEP is required under the Federal Funding Accountability and Transparency Act (FFATA) to collect subrecipient information for transactions of \$25,000 or greater.

Legal Name of Entity Receiving Subaward				
DUNS Number		Parent Entity DUNS Number (if applicable)		
Federal Agency (see pg. 2)	CFDA No. (see pg. 2)	Program Source (to be completed by NJDEP)		
Subaward Amount	Transaction Type (Grant/ Loan/Contract)	REQUIRED - Current and valid registration in Central Contractor Registration/System for Award Management (SAM) (www.sam.gov)? <input type="checkbox"/> Yes		
Project Title (if applicable)		REQUIRED - Agree to maintain current and valid CCR registration at all times during which a federal subaward is active or under consideration by the NJ Dept. of Environmental Protection? <input type="checkbox"/> Yes		
Location of Entity Receiving Award				
City	State	Zip+4	County	Congressional District
Principal Place of Performance				
City	State	Zip+4	County	Congressional District
Reporting of Total Compensation of Subrecipient Executives Required <input type="checkbox"/> Yes <input type="checkbox"/> No				
NAME OF AUTHORIZED REPRESENTATIVE			TITLE	
SIGNATURE OF AUTHORIZED REPRESENTATIVE			DATE	

**By signing this document, the Authorized Representative attests to the information.
The NJDEP will not endorse the subaward until this form is completed and included in the agreement**

**CONTRACT
BETWEEN
NEW JERSEY INSTITUTE OF TECHNOLOGY
(Name of Contractor)
AND
THE STATE OF NEW JERSEY
BY AND FOR
THE DEPARTMENT OF ENVIRONMENTAL PROTECTION
CONTRACT NUMBER: EC14-006**

ACCOUNT DESCRIPTION	TOTAL BUDGET	FEDERAL	STATE	CONTRACTOR	OTHER
A. Personnel Costs	\$113,000	0.00	\$113,000	0.00	0.00
Salaries					
Fringe Benefits	0.00	0.00	0.00	0.00	0.00
B. Consultants and Subcontractors	0.00	0.00	0.00	0.00	0.00
C. Other Costs Specify below:					
▪ Travel	\$5,000	0.00	\$5,000	0.00	0.00
▪ Supplies	\$2,000	0.00	\$2,000	0.00	0.00
▪ Town Meetings	\$25,000	0.00	\$25,000	0.00	0.00
▪	0.00	0.00	0.00	0.00	0.00
▪	0.00	0.00	0.00	0.00	0.00
D. Audit	0.00	0.00	0.00	0.00	0.00
Subtotal Direct Costs	\$145,000	0.00	\$145,000	0.00	0.00
Less Program Income	0.00	0.00	0.00	0.00	0.00
Total Direct Costs	\$145,000	0.00	\$145,000	0.00	0.00
Indirect Costs	0.00	0.00	0.00	0.00	0.00
TOTAL PROJECT AMOUNT	\$145,000	0.00	\$145,000	0.00	0.00

TOTAL CONTRACT AMOUNT is the sum of "Federal" and "State" column totals \$145,000
 the sum of "Federal" "State" and "Other" column totals \$0.00

The sums identified in the "Total Budget" column are itemized and justified in (check one or more as appropriate)

- Attachment D, Scope of Services, on page(s) _____.
- Attachment D-2, Contractor's Proposal, on page(s) _____.
- Attachment B-1, Itemization and Justification of Budget, comprising _____

**CONTRACT
BETWEEN
NEW JERSEY INSTITUTE OF TECHNOLOGY
(Name of Contractor)
AND
THE STATE OF NEW JERSEY
BY AND FOR
THE DEPARTMENT OF ENVIRONMENTAL PROTECTION**

CONTRACT NUMBER: EC14-006

ITEMIZATION AND JUSTIFICATION OF BUDGET

If neither Attachment D, Scope of Services, nor Attachment D-2, Contractor's Proposal, provides an itemization, explanation, and justification for the Approved Project Budget, they must be provided on this Attachment B-1, comprising _____ pages, including this page.

**CONTRACT
BETWEEN
NEW JERSEY INSTITUTE OF TECHNOLOGY
(Name of Contractor)
AND
THE STATE OF NEW JERSEY
BY AND FOR
THE DEPARTMENT OF ENVIRONMENTAL PROTECTION**

CONTRACT NUMBER: EC14-006

APPROVED ADVANCE PAYMENT

If Attachment A provides for an advance payment, an itemization, explanation, and justification must be provided on this Attachment B-2, comprising _____ pages, including this page.

Item Description	<u>Budget for Advance Payment</u>	Item Cost
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
TOTAL ADVANCE PAYMENT		0.00

% of Approved Project Budget _____

% of Total Contract Amount - Contract is Sum of Federal and State _____
 Contract is Sum of Federal, State, and Other _____

Justification for Advance Payment

Explain the necessity for the advance payment, how it will be spent, and why this payment must be made before Contractor's performance of its obligations under this agreement can commence.

**CONTRACT
BETWEEN
NEW JERSEY INSTITUTE OF TECHNOLOGY
(Name of Contractor)
AND
THE STATE OF NEW JERSEY
BY AND FOR
THE DEPARTMENT OF ENVIRONMENTAL PROTECTION
CONTRACT NUMBER: EC14-006**

EXPENDITURE REPORT: For the period beginning _____ and ending _____

ACCOUNT DESCRIPTION	APPROVED PROJECT BUDGET	PREVIOUSLY REPORTED CUMULATIVE EXPENDITURES	ACTUAL EXPENDITURES AS OF _____ (date)	CUMULATIVE EXPENDITURES	UNEXPENDED BALANCE
A. Personnel Costs	\$113,000				
Salaries					
Fringe Benefits	0.00				
B. Consultants and Subcontractors	0.00				
C. Other Costs Specify below:					
▪ Travel	\$5,000				
▪ Supplies	\$2,000				
▪ Town Meetings	\$25,000				
▪	0.00				
▪	0.00				
D. Audit	0.00				
Subtotal Direct Costs	\$145,000				
Less Program Income	0.00				
Total Direct Costs	\$145,000				
Indirect Costs	0.00				
TOTAL PROJECT AMOUNT	\$145,000				

CERTIFICATION BY CHIEF FINANCIAL OFFICER

I certify that the above expenditures for the period are accurate as stated, that all procurements for which payment is required have been made in accordance with the standards contained in this contract, and that each obligation for which an expenditure is listed arose during the work period.

Date: _____ Signature: _____
(Signature)

Name: Nancy Eng
(print name)

Title: Director, Grant and Contract Accounting

**CONTRACT
BETWEEN
NEW JERSEY INSTITUTE OF TECHNOLOGY
(Name of Contractor)
AND
THE STATE OF NEW JERSEY
BY AND FOR
THE DEPARTMENT OF ENVIRONMENTAL PROTECTION**

CONTRACT NUMBER: EC14-006

SCOPE OF SERVICES

The Scope of Services for this contract comprises Attachment D-2, Contractor's Proposal; any project requirements delineated in Attachment D-1, Project Requirements; and any modifications, amendments, and additions to the Contractor's proposal discussed in this Attachment D. In case of conflict among the provisions of Attachments D, D-1, and D-2, the order of priority shall be: (1) Attachment D-1, (2) Attachment D, (3) Attachment D-2. This Attachment D comprises _____ pages, including this page.

**CONTRACT
BETWEEN
NEW JERSEY INSTITUTE OF TECHNOLOGY
(Name of Contractor)
AND
THE STATE OF NEW JERSEY
BY AND FOR
THE DEPARTMENT OF ENVIRONMENTAL PROTECTION**

CONTRACT NUMBER: EC14-006

PROJECT REQUIREMENTS

The Contractor shall comply with the requirements set forth below, as well as any rules and regulations promulgated pursuant to the program's enabling legislation, if any, N.J.S.A._____. See N.J.A.C._____. Listed below are specific requirements, including special conditions, of the program and the project covered by this contract. This Attachment D-1 comprises 1 pages, including this page.

The Contractor shall submit a written report detailing the results of the work conducted under this contract to the Department a written report detailing the results of the investigation within six months from the effective date of this contract. If, within the duration of the project, any short-term flood reduction alternatives are identified that can be considered for immediate implementation are identified, the contractor should provide the Department with an interim report on these findings.

The Contractor shall complete all tasks identified in the Contractor's Proposal, attached hereto as Attachment D-2, to the satisfaction and subject to the approval of the Department.

The Project Implementation Schedule set forth in the Contractor's Proposal shall be adjusted to begin on the effective date of this contract.

**CONTRACT
BETWEEN
NEW JERSEY INSTITUTE OF TECHNOLOGY
(Name of Contractor)
AND
THE STATE OF NEW JERSEY
BY AND FOR
THE DEPARTMENT OF ENVIRONMENTAL PROTECTION**

CONTRACT NUMBER: EC14-006

CONTRACTOR'S PROPOSAL

Contractor's project proposal, comprising 20 pages, including this page, is incorporated into this contract as this Attachment D-2. Except as modified, amended, or supplemented by Attachment D, this Attachment D-2, Contractor's Proposal, describes the assignment tasks and project work units which the Contractor shall perform and deliver pursuant to this contract.

**Assessment of Economic, Ecological, and Social Capital in Congruence with Design Studies
for Reducing Storm Surge and Flooding Risks to New Jersey Coastal Communities**

**Project Duration: July 1st, 2013-December 31st, 2013
Total Project Cost: \$145,000**

**Center for Natural Resource Development and Protection (NRDP)
New Jersey Institute of Technology, Newark, NJ**

**Michael P. Weinstein (Co-PI)
Michel C. Boufadel (Co-PI)**

Submitted to:

**David Rosenblatt
Administrator
Office of Engineering and Construction
New Jersey Department of Environmental Protection
501 E. State Street
Trenton, NJ 08625-0419**

20 June 2013

SUMMARY

Coastal areas of the United States contribute nearly \$4.5 trillion, or almost 50% of the US Gross National Product (GNP) to the Nation's economy (US Commission on Ocean Policy 2004). Climate change is challenging the vitality and resilience of that economy, and along with threats to the Nation's natural resource base, has impacted the quality of life and health of virtually all US citizens. Nowhere is this more evident than in our home state where New Jersey's extensive shore zone contributes more than \$50 billion annually to the State's income.

Super-storm Sandy destroyed more than 72,000 homes and businesses in New Jersey, killed 34 New Jerseyans and caused more the \$62 billion in damage and other losses, the vast majority of it in New York and our home state. It was the second-costliest storm in U.S. history after 2005's Hurricane Katrina. Because the effects of climate change manifested in sea level rise, and the increased severity, duration and magnitude of storms will likely continue in the decades ahead, there has been in a nationwide call for action to mitigate these impacts that are affecting livelihoods, infrastructure, ecosystems, food production, energy supply, national security, and the cultural heritage of populations and communities. Certain coastal communities and ecological systems are particularly vulnerable, but we now know enough about climate risks to take actions that ensure a safer, more resilient and prosperous future.

The New Jersey Department of Environmental Protection (NJDEP) has recently engaged New Jersey Universities to propose technologies to minimize flooding due to storm surge and other flooding events in three areas, Hudson River (Hoboken/Jersey City), Hackensack River (Moonachie/Little Ferry) and Barnegat Bay. To our knowledge, the study plans requested rely mainly on hydrodynamics and engineering to design flood control structures and systems. We suggest that policy and decision makers would benefit from advances in the field that emerged in the last ten years and from Federal mandates that emerged following hurricane Sandy. In particular, we suggest that economic, ecological, and social assessments should accompany these studies to maximize their benefits and minimize any adverse side effects. These assessments should be done in concert with and ultimately integrated into the engineering studies.

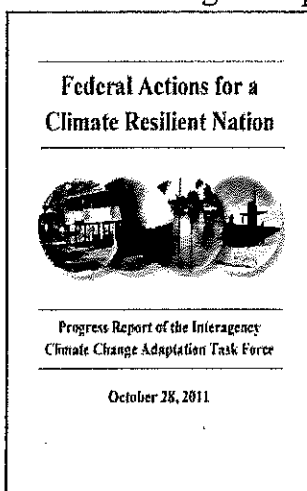
Our proposed tasks include preparing *ecosystem inventories*, maximizing the use of *green infrastructure* to mitigate flooding, and *guiding engineering design principles* by adopting a systems approach to minimize risk while also addressing "cumulative" impacts. The project deliverable is a *final report* summarizing findings for the various tasks (see below) while simultaneously minimizing potential impacts to natural capital and ecosystem functions.

NRDP Center staff has a conducted extensive coupled human-ecosystem assessments for coastal areas, and communicating the findings to local, State, and Federal agencies. Examples include the Oregon Bay Inlet study in North Carolina (Weinstein 1988), a NEPA (National Environmental Policy Act) report for projects sponsored by NOAA on Alaskan shorelines, and a NEBA (Net Environmental Benefit Analysis) for evaluating end points for engineering/technological interventions. Staff also have a strong engineering (civil, environmental, and coastal) experience that allows them to communicate effectively with other New Jersey academic units conducting design in the three geographic areas: (Barnegat Bay), (Hudson River, Hoboken-Jersey City), and (Hackensack, Moonachie-Little Ferry).

INTRODUCTION AND BACKGROUND

Climate change appears to be linked to sea level rise and the increasing frequency, intensity, duration and extent of coastal and inland storms, and periods of drought. The direct effects of severe storms have been particularly devastating, to wit the extensive impacts of super-storms Irene and Sandy on people, property and natural resources. As a result, public awareness and concern have been greatly heightened and much attention is being directed toward creating a more *Climate Resilient Nation* (2010) to prepare communities and citizens for the effects of climate change. The effort will be enormous and far-reaching; the capability gaps in the form of lessons-learned from Hurricane Sandy and preceding events are extensive, and among others, include the need for infrastructure hardening, modeling and assessment tools, water control, electric power, other lifeline infrastructure (e.g., sewage and water treatment plants), and communications. Both short- and long-term actions and strategies are needed. Categorically, the discussion has centered on at least four strategic areas: 1) adaptation - adjustment or preparation of natural or human systems to a new or changing environment which moderates harm or exploits beneficial opportunities; 2) mitigation - intervention to reduce the vulnerability of human systems to extreme climatic events; 3) resilience - capability to anticipate, prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to social well-being, the economy, and the environment; and 4) better science and technology to meet the challenges. Of course, sustainable practices will be center stage, and strategic planning to address climate change should be conducted in a sustainability science framework.

The Center for Natural Resources Development and Protection (NRDP) at the New Jersey Institute of Technology (NJIT) has recently engaged the New Jersey Department of Environmental Protection (NJDEP) in discussions to assist the Department in developing post-Hurricane Sandy actions that address resilience and mitigation efforts statewide. The Department's desire is to use the resources and expertise housed at New Jersey's public universities to develop practical research and decision outcomes that help inform policy. A central goal of the discussion was to identify specific projects for collaborative purposes including estimating long term socio-economic and ecological impacts from mega-scale natural events. Although the projects would be focused, the overarching goal would be to produce outcomes with broad applicability to these topics, both in New Jersey and the region.



Recognizing that climate change portends serious challenges to the prosperity of the United States and the health and safety of its citizens, as well as posing serious threats to the US coastal economy, the Nation has embarked on several related pathways toward building a more "climate resilient" nation. Three of these, relevant to New Jersey in the aftermath of Hurricane Sandy and other storm events, are summarized below. Although the emphasis of each differs slightly, there are sufficient underlying principles to allow them to be integrated into a balanced approach that protects people and property while preserving New Jersey's vast natural resources that contribute to a \$50+ billion coastal economy.

Federal Actions for a Climate Resilient Nation

A Progress Report was issued by the Interagency Climate Change Adaptation Task Force on 28 October 2011 to develop strategies for safeguarding the nation's oceans, fish, wildlife, and plants:

Protect Wetlands:

- a. Protect wetlands from sea level rise;
- b. Use coastal wetlands, shellfish beds, etc as "green" infrastructure storm buffers, etc; and
- c. Use inland wetlands act as 'retention' basins.

Protect those Habitats that Contribute to the Success of the Nation's Fisheries:

- a. Distribution and productivity of fish, invertebrate, and plant species are shifting in response to warming ocean waters; and,
- b. Evaluate impacts of warming temperatures and freshwater flow.

Executive Order 13547 was issued from the President's office on July 2010 to establish a ***National Policy for Stewardship of the Ocean and Coasts***, as well as the formulation of the *National Ocean Council (NOC)* to advance policy in a *Strategic Action Plan for Resiliency and Adaptation to Climate Change and Ocean Acidification* by:

- Using the best-available science for climate change vulnerability assessments with Ecosystem-Based management strategies;
- Recognizing that climate change exacerbates existing stresses and negatively impacts communities that rely on natural resources for their livelihood and economic prosperity; and,
- Recognizing that some of these impacts will be irreversible, such as species extinctions and loss of coastal habitats as sea levels rise.

As part of this effort, the Federal government is developing a *National Fish, Wildlife, and Plants Climate Adaptation Strategy*. Congress (2010) called for this strategy to be co-Led by U.S. Fish and Wildlife Service (USFWS), NOAA, CEQ, and ***State Wildlife Agencies***.

Public Law 113-2, Disaster Relief Appropriations for Hurricane Sandy

Many of the relevant portions of the Act are focused on disaster recovery, rebuilding of infrastructure and residential areas, and addressing food security, homeland security, and economic issues, but here we focus on the mandate to the Department of the Army, specifically the Corp of Engineers, Civil Division who are tasked with conducting a "comprehensive study to address the flood risks of vulnerable coastal populations in areas impacted by Hurricane Sandy with the boundaries of the North Atlantic Division of the USACOE", that of course includes coastal areas of New Jersey. The ACOE is expected to deliver an Interim Report focused on 1) projects for reducing flooding and storm risks due to storm surge that have been constructed or are under construction by 1 March 2013; and 2) or projects that were previously authorized but "unconstructed [and] any other projects under study for reducing flooding and storm damage risks to people, property, infrastructure and *ecosystems* [emphasis added] that are consistent with

the comprehensive study by 1 May 2013". A Final Report will be due no later than 24 months after enactment of PL 113-2. It was also noted that the studies should be conducted "in coordination with other Federal agencies and *State* [emphasis added], and local officials as appropriate".

National Research Council (NRC) Committee to Assist the U.S. Army Corps of Engineers in Reducing Coastal Flooding Risks

The NRC's Water Science and Technology Board and the Ocean Studies Board are beginning a new study to assist the ACOE in undertaking its daunting task to address flood risks to vulnerable coastal populations in areas impacted by Hurricane Sandy. The overarching goal is to use the best talent available in the National community of scientists to address the following questions:

1. What coastal risk-reduction strategies have been used along the U.S. eastern and Gulf coasts to reduce impacts of coastal flooding associated with storm surges, and what design standards or levels of protection have been used? To what extent have these many strategies and levels of protection proven effective in terms of economic return, protection of life safety, and *minimizing environmental effects* [emphasis added]?
2. What are the regional and national implications of expanding the extent and levels of coastal storm surge protection? Examples might include operations and maintenance costs, sediment availability, and regional-scale sediment dynamics.
3. How might risk-related principles contribute to the development of design standards for coastal risk-reduction projects? How might risk-related principles increase the ability of coastal regions and communities to prepare for coastal storms and surge, and adjust to changing coastal dynamics, such as prospects of sea level rise?
4. What general principles might be used to guide future investments in U.S. coastal risk reduction?

INTEGRATING THE PROTECTION OF PEOPLE WITH THE PROTECTION OF NATURAL RESOURCES, RESOLUTION OF THE DUAL MANDATE

Where multiple desirable but competing objectives exist, it is not possible to maximize each...[and] in any system with multiple competing objectives, it will not be possible to meet every one.

US Commission on Ocean Policy 2004

Here is the crux of the matter. New Jersey is rich in natural resources some of which can be effectively used as "green infrastructure" to local communities. Wetlands come immediately to mind, serving as effective storm buffers while serving as a critical source of recruits to adult population of fish and shellfish that contribute to a \$3 billion commercial and recreational New Jersey fishery. In other instances, however, the preservation of natural capital may come into conflict with proposed actions to construct new infrastructure -- shoreline armoring, seawalls and/or levees or massive gates that can prevent storm surge from reaching flood prone areas.

And as the US Commission on Ocean Policy noted nearly 10 years ago, we may not be able to have it all, and must take extreme care in choosing alternatives that balance ecology and economy to the extent practical. We have addressed issues of this type in our published research, and have extracted a relevant section from a recent paper (Weinstein et al. 2007):

We believe the solution to resolving the emerging conflicts that will arise on the path to long-term [New Jersey] sustainability will, in part, require the continued development and refinement of a number of concepts.

The Dual Mandate and the Resolution of Conflict

Whereas complexity, interdependence, high levels of uncertainty, unpredictability, and dynamism characterize natural systems – traits that prevent competitive dominance by any one species – human-dominated systems require predictability and stability to ensure uninterrupted provision of resources for human use. The paradox of the dual mandate arises from the need to reconcile society’s desire to preserve, restore, and rehabilitate natural ecosystems while at the same time ensuring the provision of reliable, predictable, and stable supplies of goods and services at a time of escalating demand (Roe and van Eeten 2001)...

The Emergence of Sustainability Science

By focusing on the science–policy interface, sustainability science addresses the fundamental character of interactions between nature and society, and society’s capacity to guide those interactions along sustainable trajectories (Kates et al. 2001). The underlying principles suggest that a sustainable biosphere is not only necessary but economically feasible, socially just, and ecologically sound. It targets the need to break down artificial and outdated disciplinary gaps between the natural and social sciences through the creation of transdisciplinary knowledge and its practical application to decision making.

Conflict mitigation, consensus building, trade-offs, sacrifice, and compromise will become the norm for sustainable coastal management, because growing demands on coastal resources can no longer be met by access to unexploited resources. An integrated systems approach is required, taking into account conflicting goals and interlinkages among environmental issues (Ayensu et al. 2003; Naveh 2005), as well as the geographic scales of both the issues and political jurisdictions. Integrated coastal zone management (ICZM) addresses these issues by considering the broader “problem-shed” (the area that encompasses all of the affected stakeholders), and is designed to manage competing uses. Its success depends on the ability to create new paradigms that will resolve the growing tensions among the involved communities. The US Commission on Ocean Policy (2004) called for just such a balance between ecological, environmental, and social influences through an ecosystem-based approach.

Acknowledging the magnitude of these problems, however, does not mean that we are unable to assert any control over our future. Human-dominated ecosystems have natural baselines that have permanently shifted, and resolving the paradox of the dual mandate should be redirected towards goals that rehabilitate ecological functions with the inevitable need for human service reliability (Roe et al. 2005)... Critical to any new approach is the realization that management goals should include elements of both ecology management and commerce management, proportional to human dominance in the landscape (Weinstein and Reed 2005). Our fate rests in societal action involving all stakeholders, consensus building, and accepting the compromises and sacrifices that will ensure environmental and social justice for all.

TWO EXAMPLES OF THE LIKELY ISSUES

Oregon Inlet Study

Dr. Weinstein and his colleagues were approached by the Coastal Ecology Group of the US Army Corp of Engineers, Waterways Experiment Station in 1985 to address long-standing questions regarding the environmental effects of coastal engineering projects, in this case, the construction of jetties at coastal inlets, and their effects on the recruitment of early life stages of commercially and recreationally important fish and shellfish to estuarine nursery areas¹. At the time, these questions surfaced in connection with the proposed jetty construction at Oregon Inlet, North Carolina. The parallel between Barnegat Bay and Pamlico-Albermarle Sound is inescapable both are shallow coastal lagoons with tidal exchange limited to a few narrow inlets, and both are highly productive estuaries that support large biomasses of valuable species and their preferred habitats (e.g., tidal salt marshes and seagrass meadows).

Preliminary physical modeling studies at Oregon Inlet, although not definitive, had indicated that changes in circulation patterns induced by jetty construction at the inlet might delay or impeded passage of off *passive* buoyant or semibuoyant “particles” into the estuary. Because of concerns over the costs to mount the necessary field effort to collect fully quantitative data, the study team recommended the following, first step, approach to evaluating the effects of inlet modification on larval transport:

- 1) Develop a hydrodynamic model with input from an initial field program to collect data on physical processes, the distribution of larvae in the water column, and the source of larvae up to several kilometers from shore.
- 2) Provide verification of the physical model by determining the fate of a parcel of water with dye studies;
- 3) Simulate the spatial distribution of larval “patches” in the model with and without jetties

¹ “Nursery” areas are where the offspring of many coastal species recruited to estuaries spend their first year of life before maturing to adulthood.

By initially treating young fish and shellfish as “passive” particle a first order estimate of the effects of jetty construction was believed achievable. Details of this study were published as American Fisheries Society Symposium 3 (Weinstein 1988) and are available upon request.

The conceptual approach described above (Weinstein, 1988) can be adopted in concert with the approach proposed for Barnegat Bay by Stevens University and Stockton College (Dr. Alan Blumberg, personal communication).

Infrastructure that Minimize Environmental Impact

The main goal of structures (Green or otherwise) is to mitigate flooding. However, one could also achieve a high level of environmental performance by understanding the overall movement of water. Most flooding approaches rely on “bathtubbing”, and thus do not track the movement of water (due to exorbitant cost). However, using simple hydraulic arguments we could delineate pathways for the movement of potential contaminants and sediments, and subsequently minimize the risk on communities. For example, if a levee is overtopped in a region where a high contaminant area (superfund site, wastewater treatment plant) is located near a residential area, it would be best to route the water away from the residential area to the high contaminant area and not the inverse. In addition, as most of the sediment deposition occurs after the flood stage is reached, it would be best to design structures that maximize the flushing of water during the ebbing stage; this could be done through an active system (such as opening a floodgate), or preferably, through a passive system, such as one-way siphons.

The example above builds on our project: “Impact of Hurricane Sandy on the New Jersey shorelines: Recovery and resilience” funded by the National Science Foundation (<http://nrdep.njit.edu>).

STUDY TASKS

In the framework outlined here, the *Center for Natural Resource Development and Protection (CNRDP)* at the New Jersey Institute of Technology (NJIT) proposes a two-phased approach to meet NJDEP’s mandates under PL 113-2. The *CNRDP* will serve as a focal point for environmental stakeholder involvement to summarize the issues, and identify relevant information and potential data gaps. Two “*Town-Meetings*” are proposed (see below); the first will occur before a natural resources inventory is prepared to help identify available data, existing reports, and other relevant information, and to identify likely areas of stakeholder concern. The second meeting will be used to present the findings of an environmental constraints analysis and accompanying risk evaluation:

Phase I

Phase I will consist of preparation of a comprehensive inventory of natural resources for the flood mitigation areas under study by NJDEP: Barnegat Bay, Lower Hudson River -- Hoboken-Jersey City, and the Hackensack, Moonachie-Little Ferry area. As noted above, prior to initiating the inventory, the NRDP Center will convene a town-meeting to solicit stakeholder input.

Task I. Host a *Town-Meeting* at a central location to solicit information essential to completing the comprehensive inventory of natural resources. Although the effort will be directed at identifying data and other relevant information that will be useful for completing the inventory, the CNRDP will also identify likely areas of *Stakeholder Tensions and Conflicts*, but the effort will not be directed at *resolving* public concerns, rather to simply to record them.

Task II. Use available data in NJDEP archives, input from stakeholders, and other data sources to prepare a comprehensive *Ecosystem Inventory* for natural resources (habitats and biota) in each of the three areas being considered for flood mitigation; Barnegat Bay, Hudson River, Hoboken-Jersey City, and Hackensack, Moonachie-Little Ferry. Resources will be summarized broadly for each ecosystem as a whole, and more specifically in the context of ecosystem “boundaries” defined by the proposed flood mitigation alternatives and their likely area of influence.

Phase II

Phase II will commence after NJDEP has received engineering and other relevant science input from its university-base to identify “best practices” for mitigation/resilience designs, and will consist of a multifaceted *Environmental Constraints Analysis (ECA)* that includes a comprehensive *Risk Assessment*; *Green Infrastructure* evaluation, and *Cost-Benefit Ratios* analysis. The NRDP Center recommends that a preliminary analysis be conducted by its team to identify early issues with the proposed designs; e.g., if proposed new infrastructure would seriously interfere with valuable natural resources such as shellfish beds, sea grass meadows, or other “critical habitats”. The early involvement would allow modest changes to be incorporated into revised designs to obviate these effects before the full ECA is initiated.

Task III. Conduct an *ECA* for each project alternative but including potential “cumulative” impacts of all elements of proposed construction in the area including the ‘footprint’ of each alternative and the secondary effects of the project(s), e.g., on hydrodynamics, sediment dynamics, mobilization of potential contaminants, and migratory pathways and spawning areas of dominant taxa. Where appropriate “critical habitats” will be identified and catalogued;

Task IV. Use current *Risk Assessment* methodologies to determine the *likelihood* and *magnitude* of environmental effects based on natural resource vulnerabilities within each study area, the Hudson and Hackensack Rivers and Barnegat Bay. The assessment will also identify the *consequences of not taking appropriate management action to avoid the effects in terms of ecological, social, cultural, and economic impacts* as well as institutional policy and governance repercussions. The key output of risk assessment is the decision to either take or not take action based on the evaluation of existing control and mitigation strategies and the level of risk that the competent authority and stakeholders consider acceptable. Risk assessment is subdivided into risk identification, risk analysis, and risk evaluation. All of these categories will be addressed.

- Task V. Evaluate the selection of “**Green Infrastructure**” as *a priori* desirable technologies in the overall plan for each ecosystem affected;
- Task VI. Evaluate the **Cost-Benefit Ratios** of the various proposed project alternatives for each of the three targeted areas; and the likely areas of *Stakeholder Tensions and Conflict*. The effort will be focused on identifying best practices to promote Coastal Resilient Communities while *balancing risks* to vulnerable population and ecosystem health;
- Task VII. Host a **Town-Meeting** at a central location to present findings from Phase II.
- Task VIII. Prepare a **Draft and Final Report** summarizing findings for the various Tasks and prepare a synthesis that integrates the natural environment as part of the solution to the problem(s) while simultaneously minimizing potential impacts on natural capital and ecosystem functions.

Earlier, the NRDP Center engaged NJDEP staff in interactive discussions to assess impacts of Hurricane Sandy on natural resources and human health. A “prospectus” that identified study areas of mutual interest to the NJDEP and NRDP Center’s scientists was delivered to Commissioner Martin in April, and is available upon request.

BUDGET AND BUDGET JUSTIFICATION

Project Budget, Flood Mitigation Assessment New Jersey Department of Environmental Protection	
Task	Cost
Dr. Michael Weinstein	40,000
Dr. Michel Boufadel	10,000
Environmental Economics (Dr. Pankaj Lal and staff).	25,000
Postdoctoral Engineer, Dr. Firas Saleh	30,000
GIS Specialist	8000
Travel	5000
Supplies	2000
Town Meetings (2)	25,000
Total Project Cost	\$145,000

Budget Justification

Dr. Weinstein will be responsible for all technical aspects of the project, including the day-to-day operation (\$40K). He will lead the project, and receive input from Dr. Boufadel on all engineering matters. Dr. Boufadel, as Director of the Center, has also an administrative responsibility to ensure resources are allocated to achieve the stated goals. Dr. Boufadel’s salary request is \$10K. Dr. Pankaj Lal, environmental economist, will lead valuation assessments, and he will be assisted by the NRDP Center staff (\$25K). Dr. Firas Saleh, a postdoctoral engineer, will conduct hydraulic engineering studies (\$30K). A GIS specialist will be recruited on a part-

time basis to assist in the inventories using State and other databases (\$8K). The personnel of the project will travel within New Jersey to periodically meet with academic and State partners. The frequency is expected to be bi-weekly for Drs. Weinstein and Boufadel (\$5K). Supplies for the project will consist of computer software, as needed, and publication costs (\$2K). Two townhall meetings will be organized. This includes planning and logistics, costs, development of a web-page for public access, preparation of power points, information placards, hand-outs, announcements (electronic and mailings), and providing light refreshments at each meeting (\$25K). All salaries include fringe benefits, and all costs include overhead.

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B.A., Biology, Hofstra University, 1966
M.S., Zoology, Rutgers University, 1969
Ph.D., Marine and Environmental Science, Florida State University, 1975

Appointments:

2013 Senior Scientist, Center for Natural Resource Development and Protection, NJIT
2009-2013 Director, PSEG Institute for Sustainability Studies, Montclair State University
2008 President Emeritus, New Jersey Marine Sciences Consortium
1996-2008 President/CEO New Jersey Marine Sciences Consortium, Director, *New Jersey Sea Grant College Program*
2004-present Visiting Professor, Tianjin University of Science and Technology, Tianjin, Peoples Republic of China
1996-2008 Visiting Scholar, Institute of Marine and Coastal Sciences, Rutgers University
1977-1996 Environmental Consulting:
TEVA Environmental Associates, Inc., President & Principal Owner
Breedlove, Dennis & Associates, Inc., Vice President, ECO Operations
Ebasco Environmental Inc., Manager – Environmental Sciences Division
Lawler, Matusky & Skelly Engineers, Director -Environmental Sciences
1979- 1984 Assistant Professor of Biology, Virginia Commonwealth University
Associate Research Faculty, Virginia Institute of Marine Sciences
1975- 1976 Senior Scientist, Marco Marine Ecology Station
1970-1975 Research Assistant, Florida State University

Relevant Publications (10 of 126):

- Weinstein, M.P.**, S.Y. Litvin, and J.M. Krebs. 2013. Restoration ecology: ecological fidelity, restoration metrics, and a systems perspective. *Ecol. Engineer.* (in press)
- Weinstein, M.P.**, S.Y. Litvin, and M.G. Frisk. 2012. Reversing two centuries of wetland degradation: can science better inform policy & practice? In: Weinstein, M.P. and R.E. Turner (eds) *Sustainability Science: The Emerging Paradigm and the Urban Environment*. Springer, New York
- Feng, H, Yuan, D., Tao, J., **Weinstein, M.P.** and Hou, S. 2012. Modeling transport of sediments and associated chemicals in riverine, estuarine and coastal environment. *J. Hydrogeol. Hydrol. Engin.*
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Synergistic Activities:

- Member, Scientific Advisory Board (SAB), NJ Department of Environmental Protection; Chair, Ecological Processes Subcommittee
- Science Advisor, State Oceanic Administration – Tianjin Municipal Government, Tianjin Binhai New Area (Bohai Base), People's Republic of China, 2007-present.
- Audit Panel Expert, Singapore-Delft Water Alliance (SDWA), Coastal Restoration Science, Republic of Singapore, 2010.
- US-Japan Cooperative Program in Natural Resources (UJNR)/Coastal Environmental Science & Technology Panel (CEST), *Functional Restoration/Recovery of Coastal Ecosystems*, Yokosuka, Kanagawa Prefecture, Japan, 17-19 July 2002.
- The National Academies, National Research Council, *Steering Committee/Session Chair, Environmental Windows for Dredging Projects*. National Academy of Science, Washington, DC.
- National Working Group, Development of a *National Strategy for Coastal Habitat Restoration*, Estuarine Habitat Restoration Act, implementation phase.

Awards and Distinctions (Selected):

- Educator of the Year, Research & Development Council of New Jersey 2008
- Governor's Environmental Excellence Award, 2006
- Spirit Award, Habitat Initiative, Coastal America 2005
- Silver Gull Award, Coast Day NJ, Monmouth Ocean Development Council, 2005
- Governor's Tourism Award, Coast Day NJ, 2004
- Environmental Quality Award, A Partnership for Learning, USEPA, Region II, 2000
- Nomination, Best Paper Award, 2000, Transactions of the American Fisheries Society

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M.S.	Environmental Engineering, University of Cincinnati, Cincinnati, Ohio.	1992
B.S.	Civil Engineering, <i>Hydraulics Option</i> , Jesuit University at Beirut, Lebanon.	1988

Dr. Boufadel is a Professional Hydrologist as accredited by the American Institute of Hydrology (USA). His core expertise is environmental assessment and remediation of large-scale systems, and hydraulic studies at various scales. Examples of projects that he led include an evaluation of the factors causing the the persistence of the Exxon Valdez oil spill in Alaskan beaches, and the evaluation of ecological conditions in coastal areas in the Gulf of Mexico following the Deepwater Horizon. He is the author of more than 80 refereed articles in publications such as *NATURE geosciences*, *Water Resources Research*, and *Environmental Science and Technology*. He has obtained funding exceeding \$5.0M since 2007, including a recent NSF funding to evaluate the recovery and resilience of the New Jersey shorelines following Hurricane Sandy.

TEN RELEVANT PUBLICATIONS

- Evaluation of Ecosystem Services in the Gulf of Mexico, a report by the committee of the NRC, National Academies, Michel Boufadel was a committee member.
- Boufadel, M.C.** and B. A. Wrenn, National Environmental Policy Act (NEPA) document for “Impact of Remediation Technologies for the Exxon Valdez Oil Spill on the Shorelines of Prince William Sound, Alaska”, National Oceanic and Atmospheric Administration, 2011.
- Geng, X. (Graduate Student), **M. C. Boufadel**, and B. A. Wrenn, Mathematical modeling of the biodegradation of residual hydrocarbon in a variably-saturated sand column, *Biodegradation*, March 2013.
- Bobo, A. (Graduate Student), H. Li, and **M. C. Boufadel**, Groundwater flow in a tidally influenced gravel beach in Prince William Sound, Alaska, *Journal of Hydrologic Engineering, ASCE*, 17(4), 478-494, 2012.
- Li, H. (Postdoctoral Fellow), **M. C. Boufadel**, Long-term persistence of oil from the Exxon Valdez spill in two-layer beaches, *NATURE geosciences*, 3, 96-99, 2010.
- Boufadel, M. C.**, Y. Sharifi, B. Van Aken, B. A. Wrenn, and K. Lee, Nutrient and oxygen concentrations within the sediments of an Alaskan beach polluted with the *Exxon Valdez* oil spill, *Environmental Science and Technology*, 44 (19), p 7418-7424, 2010.
- Abdollahi-Nasab (Graduate Student), A., **M. C. Boufadel**, Li, H., and J. W. Weaver, Saltwater flushing by freshwater in a laboratory beach, *Journal of Hydrology*, 386,1-12, 2010.
- Li, H.(Postdoctoral fellow), **M. C. Boufadel**, and J. W. Weaver, Tide-induced seawater-groundwater circulation in shallow beach aquifers, *J. of Hydrology*, 211-224, 2008.
- Boufadel, M.C.**, H. Li, H., M.T. Suidan, and A.D. Venosa. “Tracer studies in a laboratory beach subjected to waves”. *J. Environmental Engineering, ASCE*, 133 (7), 722-732, 2007.
- Boufadel, M.C.**, M.T. Suidan, and A.D. Venosa. “Tracer studies in a laboratory beach simulating tidal influences”. *J. Environmental Engineering, ASCE*, 132(6):616-623, 2006.

RELEVANT NATIONAL SERVICE

Editor of Special Issue on Coastal Management in the *Journal of Environmental Engineering, American Society of Civil Engineers*, 2013.

Chair, Groundwater Quality Committee, American Society of Civil Engineers, 2013-2015.

Panelist, National Science Foundation, Coastal Sustainability Panel, March 2013.

Panelist, National Research Council of the National Academies. Committee on "Evaluating ecosystem services in the Gulf of Mexico", 2011-present.

Member, Science Advisory Board for the EPA on hydrofracking, 01/2011-10/2011.

Panelist, National Science Foundation, Water Sustainability and Climate (Earth Science Division), 2010.

Member, Operation Science Advisory Team for the Deep Well Horizon oil on the shorelines (OSAT2).

A committee of the Unified Command (for dealing with the Gulf Spill) in charge of providing recommendations to the Unified Command regarding the cleanup activities, 11/2010-03/2011.

Associate Editor, 01/2009-present

Journal of Water Quality Exposure, and Health, Elsevier.

Associate Editor, 01/2012-present

Journal of Environmental Engineering, ASCE

Recent Sessions Chaired

1) "Groundwater Quality Management and Contaminant Detection" in the ASCE Environmental and Water Resources Institute, Cincinnati, Ohio, 2013. Co-Chair with Sushil Kanel.

2) "Coastal Aquifers and Brackish Water Resources" in the ASCE Environmental and Water Resources Institute, Albuquerque New Mexico, 2011.

3) "Saltwater Intrusion and Coastal Management, I, II, and III", in the ASCE EWRI in Providence Rhode Island, 2010.

OTHER

Professional Engineer in New Jersey and Pennsylvania.

PANKAJ LAL, Ph.D.

Professional Preparation

University of Florida, Gainesville, FL	Resource Conservation Ph.D.	2011
Indian Institute of Forest Management, India	Forestry Management M.B.A.	2004
Delhi School of Economics, Delhi, India	Geography M.A.	2001
Delhi University, Delhi, India	Economics B.A.(H)	1999

Appointments

Montclair State University , Montclair, NJ.		2011--
<i>Assistant Professor</i> , Earth and Environmental Sciences		
Virginia Tech , Blacksburg, VA.		2009-2011
<i>Visiting Scholar, Forest Resources and Environmental Conservation</i>		
University of Florida , Gainesville, FL.		2007-2011
<i>Alumni Fellow, Forest Resources and Conservation</i>		
Pricewaterhouse Coopers Pvt. Ltd. (PWC) , Delhi, India		2006-2007
<i>Consultant</i> , Government Restructuring and Infrastructure		
Winrock International India , Delhi, India.		2004-2006
<i>Program Officer</i> , Natural Resource Management		

Ongoing projects:

Assessing socioeconomic impacts of biofuel development on rural communities in the Southern United States, \$349,963, USDA NIFA, 2012-2015 (Role: PI), Other partners: Texas A&M University, Virginia Tech, and Tuskegee University.

US-India Consortium for Sustainable Advanced Biofuels System , \$6.25 million, US Department of Energy, 2012-2017, (Role: Co-PI), Other partners:University of Florida, University of Missouri, Virginia Tech, Texas A&M University, Show Me Energy, and Green Technologies

Synergistic activities:

Collaborated as PI, Co-PI or Research Associate with U.S. Forest Service, Environmental Protection Agency, Southern Growth Policies Board, Ford Foundation, United Nation Development Program, International Union for Nature Conservation, Department for International Development, European Commission, Institute for Environment and Development UK, Institute for Global Environmental Strategies Japan, International Development Research Centre Canada, Society for Promoting Ecosystem Management India, and Agrosol Energy LLC *Senior Advisor Stratessence*, an advisory company for idea & early stage startups in India.

Editorial team of a quarterly newsletter Inform which carried news and research articles on participatory forestry & content designer of website on participatory forestry issues

<http://www.rupfor.org>

Five Publications Most Closely Related to Proposed Project

Ranjan, A., P. Lal and A. Susaeta. Delhi Metro Rail Travel Behavior Analysis: Impact of Individual and Trip Behavior. In: Dutt, A. K., Noble,A.G., Costa,F.G., Thakur, S.K. and H. S. Sharma. (eds). *Spatial Diversity and Dynamics in Resources and Urban Development* (Regional Resources - Volume I), Netherlands: Springer (in press)

Lal, P., J. Alavalapati, and E. Mercer. 2011. Socio-Economic Impacts of Climate Change on Rural United States. *Journal of Mitigation and Adaptation Strategies for Global Change* 16(7): 819-844.

Lal, P., J. Alavalapati, M. Marinescu, J. R. Matta, P. Dwivedi, and A. Susaeta. 2011. Developing sustainability indicators for woody biomass harvesting in the United States. *Journal of Sustainable Forestry* 30(8): 736-755.

Susaeta, A., P. Lal, J. Alavalapati and E. Mercer. 2011. Public preferences towards environmental externalities: a choice experiment study of woody biomass based electricity in the Southern United States. *Energy Economics* 33(6): 1111-1118.

Lal, P., K. Singh, and K. Prasad. 2006. Failure of community institutions: Shapin river basin in Jharkhand. *Economic and Political Weekly* XLI (7): 598-600, February 18-24 2006.

Five other publications

Susaeta, A., P. Lal, J. Alavalapati, and D. R. Carter. 2013. Modeling the impacts of bioenergy markets on the forest industry in the Southern United States. *International Journal of Sustainable Energy*, DOI: 10.1080/14786451.2013.774003

Susaeta, A., P. Lal, J. Alavalapati, E. Mercer, and D. R. Carter. 2012. Economics of Intercropping. Loblolly Pine and Switchgrass for Bioenergy Markets in the Southeastern United States. *Agroforestry Systems* 86(2), pp. 287-298.

Susaeta, A., P. Lal, D. R. Carter, and J. Alavalapati. 2012. Modeling nonindustrial private forest landowner behavior in face of woody bioenergy markets. *Biomass and Bioenergy* 46, pp. 419-428.

Susaeta, A., J. Alavalapati, P. Lal, J. R. Matta, and E. Mercer. 2010. Assessing Public Preferences for Forest Biomass Based Energy in the Southern United States. *Environmental Management* 45(4): 697-710.

Bose, S., P. Lal, and S. Saigal. 2005. Information as power: making best use of India's Right to Information law. *Participatory Learning and Action*. 53(December): 16-21.

Collaborators and Other Affiliations

Janaki Alavalapati, Virginia Tech; Robert C. Abt, North Carolina State University; Onil Banerjee, CSIRO Australia; Douglas Carter, University of Florida; Puneet Dwivedi, Yale University; Robert Fletcher Jr., University of Florida; Alan W. Hodges, University of Florida; Ming Huan, National Chaiyi University, Taiwan; Ilan Kaufer, Florida Power and Light; Sidhanand Kukrety, University of Minnesota; Alfonso Flores Lagunes, University of Florida; Sherry Larkin, University of Florida; Angela Lindener, University of Florida; Marian Marinescu, FP Innovations Canada; Jagannadha Rao Matta, UN Food and Agriculture Organization Rome; Evan Mercer, United States Forest Service; Mohammad Rahmani, University of Florida; Aditi Ranjan, Magadh University, India; K. Ramesh Reddy, University of Florida; Frederick Rossi, CIMMYT, Dhaka; Thomas J. Stevens, University of Florida; Andres Susaeta, University of Florida; David Wear, United States Forest Service.

Thesis supervision: PhD Committee Chair: Bernabas T. Wolde ; Gin Dean Sanchez ; Robert Oleksy; Melissa Koberle; Pricila Iranah; PhD Committee Member: Sushant Singh, Natalie Sherwood, Virinder Sidhu, Alejandra Bozzolasco, Anthony Ndiege

FIRAS SALEH, Ph.D.
Post Doctoral Research Associate
Center for Natural Resources Development and Protection

New Jersey Institute of Technology

Newark, NJ 07102

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(973) 596-6079

Ph.D. Geosciences and Natural Resources, University Pierre et Marie Curie - Paris VI, France. 2010

Dissertation: "Contribution of 1D local hydraulic modeling to improve simulations of river stages and stream-aquifer interactions at regional scale". University Pierre et Marie Curie - Paris-VI, 2010.

M.S. Water Resources Engineering, University of Baghdad, Iraq. 2005

Thesis: "A Hydrodynamic model to simulate the Tigris river flow in Iraq", University of Baghdad, College of Engineering, 2005.

B.S. Water Resources Engineering, University of Baghdad, Iraq. 2002

Dr. Saleh's research has focused on complex hydrological interactions that occur across different spatio-temporal scales. Examples of projects he is currently working on include the Exxon Valdez oil spill in Alaskan beaches, the recovery and resilience of the New Jersey shorelines following Hurricane Sandy. He has also worked on the NASA/CNES AirSWOT mission.

He has been awarded numerous scientific and professional awards, among which the United States Department of Commerce Gold Medal Award, the highest honorary award granted by the U.S. Secretary of Commerce.

APPOINTMENTS

2013-	Post Doctoral Research Associate, Center for Natural Resources Development and Protection, NJIT.
2011-2012	Post Doctoral Research Associate, National Center for Scientific Research, France.
2010-2011	Post Doctoral Research Associate, Paris Institute of Technology- Mines ParisTech, France.
2007-2010	Research & Development Engineer, University Pierre et Marie Curie - Paris-VI, France.
2005-2006	Director, Iraq Commercial Section, US Embassy Amman, Jordan.
2004-2005	Commercial Specialist, US Embassy Baghdad, Iraq.
2003-2004	Coordinator, US Coalition Provisional Authority (CPA), Baghdad, Iraq.

PUBLICATIONS

Refereed Journals

- Saleh, F., A. Ducharne, N. Flipo, L. Oudin, E. Ledoux,** Impact of river bed morphology on discharge and water levels simulated by a 1D Saint-Venant hydraulic model at regional scale, *Journal of Hydrology*, 476, p 169-177, 2013.
- Saleh, F., N. Flipo, F. Habets, A. Ducharne, L. Oudin, P. Viennot, E. Ledoux,** Modeling the impact of in-stream water level fluctuations on stream-aquifer interactions at the regional scale, *Journal of Hydrology*, 400 (3-4), p. 490-500, 2011.

Conference Proceedings

- Saleh, F., N. Flipo, S. Biancamaria, F. Habets, E. Rodríguez, N. Mognard,** The Contribution of the Future SWOT Mission to Improve Simulations of River Stages and Stream-Aquifer Interactions at Regional Scale, *20 years of Progress in Radar Altimetry symposium*, 24-29 September, 2012 , Venice-Lido, Italy.
- Saleh, F., N. Flipo, F. Habets, A. Ducharne, L. Oudin, M., Poulin, P. Viennot, E. Ledoux,** Contribution of 1D river flow modeling to the quantification of stream-aquifer interactions in a regional hydrological model: Oise basin case study, *XVIII International Conference on Computational Methods in Water Resources (CMWR 2010)*, Barcelona June 21-24, 2010.

SELECTED PRESENTATIONS AND WORKSHOPS

- NASA Surface Water and Ocean Topography Mission (SWOT) River Discharge Algorithms Workshop**, Chapel Hill, North Carolina, USA, June 18-20th, 2012.
- Saleh, Firas; Flipo, Nicolas; Biancamaria, Sylvain; Habets, Florence; Rodríguez, Ernesto; Mognard, Nelly;** The Contribution of the Future SWOT Mission to Improve Simulations of River Stages and Stream-Aquifer Interactions at Regional Scale, *20 years of Progress in Radar Altimetry symposium, 24-29 September, 2012 , Venice-Lido, Italy.*
- Saleh, F., Flipo, N., de Fouquet, C.,** In-river Rating Curves Interpolation for a Better Assessment of Stream-Aquifer Exchanges in a Regional Distributed hydro(geo)logical model, *XIX International Conference on Computational Methods in Water Resources (CMWR), University of Illinois at Urbana-Champaign in Urbana, Illinois, USA, 2012..*
- Saleh, F., Flipo, N., de Fouquet, C.,** Impact of river stage prediction methods on stream-aquifer exchanges in a hydro(geo)logical model at the regional scale, *European Geophysical Union General Assembly, Vienna, Austria, 2012.*
- Saleh, F., Flipo, N., de Fouquet, C., Ducharne, A., Oudin, L., Habets, F., Ledoux, E.,** Influence of river rating curves interpolation methods on in-stream water level assessment and stream-aquifer exchanges in a regional distributed hydro(geo)logical model, *American Geophysical Union, Fall Meeting, San Francisco, USA, 2011 (poster).*
- Saleh, F., Flipo, N., Ducharne, A., Habets, F., Oudin, L., Ledoux, E.,** Bridging the gap between local scale hydraulic modeling and regional scale hydrological modeling, *European Geophysical Union General Assembly, Vienna, Austria, 2011.*

**CONTRACT
BETWEEN
NEW JERSEY INSTITUTE OF TECHNOLOGY
(Name of Contractor)
AND
THE STATE OF NEW JERSEY
BY AND FOR
THE DEPARTMENT OF ENVIRONMENTAL PROTECTION**

CONTRACT NUMBER:

GOVERNING BODY RESOLUTION

INSERT CURRENT BOARD RESOLUTION

**CONTRACT
BETWEEN
NEW JERSEY INSTITUTE OF TECHNOLOGY
(Name of Contractor)
AND
THE STATE OF NEW JERSEY
BY AND FOR
THE DEPARTMENT OF ENVIRONMENTAL PROTECTION**

CONTRACT NUMBER:

SUBCONTRACTOR CERTIFICATION

As a condition of the State's consent to the subcontract entered into between _____ (the "subcontractor") and **NEW JERSEY INSTITUTE OF TECHNOLOGY** (the "Contractor") (such subcontract, the "subcontract") for work in furtherance of the contract with the State of New Jersey (the "State") captioned above (the "contract") and in consideration of any payment or benefit the subcontractor may receive for its performance of the subcontract, the subcontractor agrees that the following terms, provisions, and conditions ("terms") shall be additional terms of the subcontract, shall inure to the benefit of the State, and shall not be modified in any way without the written agreement of the State:

1. With respect to all services and goods the subcontractor provides pursuant to the subcontract or in furtherance of the contract, the subcontractor shall comply with, and shall be bound by, all terms of the contract (excepting only (a) those terms, if any, requiring the provision of goods or services not required by the subcontract, (b) the following Sections of the General Terms and Conditions of the contract: IV, IX, X, XI, XIII, XV, XVI, XVII, and XXII, and (c) Attachments B, B-1, B-2, C, and G) as though it were the Contractor and as though all such terms were explicit terms of the subcontract for the benefit of the State as third party beneficiary. The subcontractor acknowledges that the Contractor has given it a complete copy of the contract and that it is familiar with all of the contract's terms
2. The subcontractor acknowledges and accepts that it is an independent principal working for the Contractor and has no relationship with the State in connection with the contract as its agent, servant, employee, contractor, or otherwise.
3. The subcontractor shall make no claim or demand against the State, its officers, its agents, its servants, or its employees (the "State or its agents") (a) which arises out of or in connection with, or which is based on, (i) the subcontract or the contract, (ii) any services or goods the subcontractor provides pursuant to the subcontract or in furtherance of the contract, or (iii) the relationship between the subcontractor and the Contractor in connection with the subcontract or (b) which would not exist if the subcontract did not exist.
4. The subcontractor shall defend, indemnify, protect, and save harmless the State, its officers, its agents, its servants, and its employees from and against any damage, claim, demand, liability, judgment, loss, expense, or cost (collectively, "damage") arising, or claimed to arise, from, in connection with, or as a result of, the subcontractor's performance, attempted performance, or failure to perform in connection with the subcontract (collectively, "performance"), regardless of whether such performance was undertaken by the subcontractor, its officers, its directors, its agents, its servants, its employees, its subcontractors, or any other person at its request, subject to its direction, or on its behalf. As nonrestrictive examples only, this indemnification shall apply, but shall not be limited, to (a) any settlement by the State of any claim or judgment against the State or its agents, provided the subcontractor had the opportunity to participate in the settlement negotiation, and (b) all attorneys' fees, litigation costs, and other expenses of any nature, incurred by the State in connection with any damage. The subcontractor (a) shall immediately notify the State of any damage for which it or the State might be liable and (b) shall, at its sole expense, (i) appear, defend, and pay all charges for attorneys, all costs, and all other expenses incurred in connection with any damage and (ii) promptly satisfy and discharge any judgment rendered against the State or its agents, or any settlement entered into by the State, for any damage. The subcontractor shall not assert any defense which would be available to the State but not to the subcontractor, whether arising pursuant to the New Jersey Tort Claims Act or otherwise, without having first obtained the written approval of the New Jersey Division of Law. This agreement to indemnify shall continue in full force and effect after the termination or expiration of the subcontract and the contract. The subcontractor does not hereby agree to indemnify the State against damage to the extent it results from the state's tortious action or inaction for which it would be liable under the New Jersey Tort Claims Act. As soon as practicable after it receives a claim for damage made against it, the State shall notify the subcontractor in writing and shall have a copy of such claim forwarded to the subcontractor.

(print name of subcontractor)

by:

(signature)

(print name)

(print title)

ATTEST:

(signature of another officer of subcontractor,
if corp. or org.; otherwise, person as witness)

(number and street)

(print name and title)

(municipality, state, and zip code)

(telephone number)

CERTIFICATION*

I, _____, _____, of
(print name) (print title)

_____ certify that the individual who executed this

_____ (print subcontractor's name)

Subcontractor Certification on behalf of the subcontractor was duly authorized to do so.

ATTEST:

(signature of subcontractor's secretary or equivalent)

(signature of another officer of subcontractor,
if corp. or org.; otherwise, person as witness)

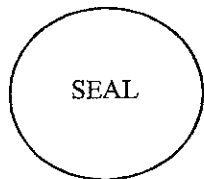
(print name)

(print name)

(print title)

(print title)

Date: _____



***This certification must be completed if the subcontractor is an organization, rather than a sole proprietorship.**

REFERENCE BIBLIOGRAPHY

This bibliography is provided for reference purposes only. It lists documents incorporated by reference into this contract and other documents which might be helpful to the Contractor.

A. New Jersey Department of the Treasury

- State Circular Letter 04-04-OMB: Single Audit Policy for Recipients of Federal Grants, State Grants and State Aid
- State Grant Compliance Supplement

B. United States General Accounting Office

- Government Auditing Standards (Yellow Book)

C. United States Office of Management and Budget

- Circular A-21: Cost Principles for Educational Institutions
- Circular A-87: Cost Principles for State, Local, and Indian Tribal Governments
- Circular A-102: Grants and Cooperative Agreements with State and Local Governments
- Uniform Administrative Requirements for Grants and Cooperative Agreements with State and Local Governments (Common Rule), (March 11, 1988) <http://www.whitehouse.gov/omb/grants/chart.aspx>
- Circular A-110: Uniform Administrative Requirements for Grants and Other Agreements with Institutions of Higher Education, Hospitals and Other Nonprofit Organizations
- Circular A-122: Cost Principles for Nonprofit Organizations
- Circular A-133 Revised: Audits of States, Local Governments, and Non-profit Organizations
- Compliance Supplement for Single Audits of State and Local Governments-Uniform Requirements for Grants to State and Local Governments (Compliance Supplement, Revised)
- A-21 (2 CFR Part 220), A-87 (2 CFR Part 225), A-110 (2 CFR Part 215), and A-122 (2 CFR Part 230)

D. American Institute of Certified Public Accountants ("AICPA")

- State and Local Governments – Audit and Accounting Guide
- Not-for-Profit Organizations — AICPA Audit and Accounting Guide
- Auditing Recipients of Federal Awards: Practical Guidance for Applying OMB Circular A-133
- Government Auditing Standards and Circular A-133 Audits – AICPA Audit and Accounting Guide