



The State of New Hampshire  
**Department of Environmental Services**

Robert R. Scott, Commissioner

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October 23, 2025

FEB 11 2026

Her Excellency, Governor Kelly A. Ayotte  
 and the Honorable Council  
 State House  
 Concord, New Hampshire 03301

**REQUESTED ACTIONS**

1. Authorize the Department of Environmental Services (NHDES) to enter into a **SOLE SOURCE** agreement with Research Triangle Institute, doing business as RTI International (RTI), (VC# 171105-B001), Research Triangle Park, NC, in the amount of \$263,563 for four years of hosting and support for watershed modeling, forecasting and providing public access to watershed data, effective upon Governor and Council approval through October 31, 2029. 5% Dam Maintenance Funds, 95% General Funds.

Funding is available in the accounts as follows, with the authority to adjust encumbrances in each of the State Fiscal years through the Budget Office if needed and justified, and funding for Fiscal Years 2028-2030 are contingent upon the availability and continued appropriation of funds.

Department of Environmental Services, Water Division	FY 2026	FY 2027	FY 2028	FY 2029	FY 2030	TOTAL
03-44-442010-38170000-038-500177 Dam Maintenance, Technology - Software	\$13,266	\$0	\$0	\$0	\$0	\$13,266
03-44-442010-29540000-038-500177 Dam Operations, Technology - Software	\$18,000	\$63,626	\$65,852	\$68,156	\$34,663	\$250,297
Fiscal Year Totals	\$31,266	\$63,626	\$65,852	\$68,156	\$34,663	\$263,563

2. Authorize the Department of Environmental Services (NHDES) to enter into a **SOLE SOURCE** agreement with Research Triangle Institute, doing business as RTI International (RTI), (VC# 171105-B001), Research Triangle Park, NC, in the amount of \$222,184 for the purpose of developing new basin models, improving existing basin models, and implementing interface improvements to the Amanzi® Forecast System, effective upon Governor and Council approval through October 31, 2029. 100% Capital (General) Funds.

Funding is available in the account as follows:

	<u>FY 2026</u>
03-44-440030-25730000-034-500161	\$ 222,184
Dept. Environmental Services, 25-159:1-V1 Dam Repair & Reconstruction, Capital Appropriations	

#### EXPLANATION

The requests for continued support and upgrades are **SOLE SOURCE** because the flood forecasting and reservoir operations modeling systems produced by RTI are the industry standard for hydrologic modeling and forecasting. The software and systems were developed by RTI for NHDES over a 25-year period, making them the only vendor capable of implementing improvements to the existing forecast system. RTI is also uniquely positioned to provide secure hosting and support services in the most efficient and effective manner. Developing an alternative system with another vendor would require complete redevelopment of the underlying hydrologic models and duplication of work already completed. Furthermore, because the models and interface were created, and now are maintained by RTI, no other vendor could provide support services for the existing system. While cloud hosting could theoretically be arranged with another vendor, the cost for hosting in the Microsoft Azure environment would likely remain unchanged. Introducing a separate vendor for hosting would likely complicate RTI's ability to provide integrated support and model improvement services.

With the passage of RSA 483-D:1 in 1998, NHDES was tasked with developing a computer-based system to help manage water flows in the Winnepesaukee River Basin. Since that time, NHDES has been successful with not only generating a model for the Winnepesaukee River Basin but has expanded this effort to include 14 major watersheds and more than 70 lakes and rivers across the state. This includes the ability to forecast inflows and outflows using real-time meteorological and lake and river level data at some of New Hampshire's most critical water resources, including Lake Winnepesaukee, Lake Sunapee, Newfound Lake, and Ossipee Lake.

Since 2001, NHDES has worked with RTI International to develop and maintain this system through modernization efforts, which included enhancing the forecasting tools and moving the system to a secure cloud environment to improve performance and reliability. The most significant upgrade occurred in 2021, when RTI moved from the nearly twenty-year-old legacy RiverTrak® Forecast System to the Amanzi® Forecast System. During development of the Amanzi system, NHDES, in consultation with the Department of Information Technology (DoIT), allowed RTI to host and support the system in an industry standard Microsoft AZURE Cloud environment. Though this move to the cloud, RTI was able to develop better forecasting and hosting tools and develop the public-facing web portal (<https://nhdes.rtiamanzi.org>) which provides real-time lake, river, and weather data, serving as a critical tool for emergency responders, state agencies, and the public.

Proposed improvements to the forecast system will focus on expanding and refining hydrologic modeling capabilities and enhancing system usability. Key modeling upgrades include the development of new forecast models for the Lamprey and Isinglass River Basins, incorporating subbasin delineation and calibration for reservoirs like Pawtuckaway Lake, Mendums Pond, and Bow Lake. These models will

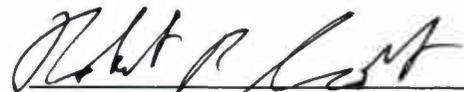
improve lake level and streamflow forecasting by accounting for complex hydraulic behaviors and dam operational settings. Additionally, hydraulic modeling will be integrated for Ossipee Dam, Lake Winnisquam, and Silver Lake in Tilton and Belmont to better represent flow dynamics in areas with complex hydrology. These enhancements will significantly improve forecast accuracy and operational decision-making in flood-prone areas. RTI has agreed to provide the services necessary to implement improvements to the forecast system at a cost of \$222,184.

On the user interface side, the forecast system will receive several usability and performance upgrades. These include migrating dam discharge information into a database for easier editing by NHDES staff, improving data visualization, and optimizing the loading of information. The system will also gain redundancy through the configuration of an alternative observed precipitation source. Together, these improvements will make the forecast system more robust, user-friendly, and capable of supporting NHDES's mission to manage water resources and protect public safety.

Without this system, NHDES would lose the ability to forecast water conditions in key watersheds, putting communities at greater risk. The forecasting system is essential not only for water management but also for public safety, emergency planning, and protecting New Hampshire's natural resources. RTI has agreed to provide annual maintenance services through fiscal year 2030. The total cost for the four-year hosting and support agreement would be \$263,563.

The agreement have been approved by the Department of Justice as to form, substance and execution. NHDES also requested and received approval from the Department of Information Technology (DoIT) under DoIT #2026-043 and DoIT #2026-044.

We respectfully request your approval.



Robert R. Scott, Commissioner



**STATE OF NEW HAMPSHIRE  
DEPARTMENT OF INFORMATION TECHNOLOGY**

27 Hazen Drive | Concord, NH | 03301  
Fax: (603) 271-1516 | TDD: (800) 753-2964  
[doit.nh.gov](http://doit.nh.gov)



Denis Goulet, *Commissioner*

October 20, 2025

Robert R. Scott, Commissioner  
Department of Environmental  
Services State of New Hampshire  
29 Hazen Drive  
Concord, NH 03302

Dear Commissioner Scott:

This letter represents formal notification that the Department of Information Technology (DoIT) has approved your agency's request to enter into a contract with Research Triangle Institute, doing business as RTI International, as described below and referenced in DOIT No. 2026-043.

The purpose of this request is for hosting and support of the Amanzi® Forecast System, enabling watershed modeling and forecasting as well as public access to observed watershed data.

The Total Price Limitation shall be \$263,563 effective upon Governor and Council approval through October 31, 2029.

A copy of this letter must accompany the Department of Environmental Services' submission to the Governor and Executive Council for approval.

Sincerely,

A handwritten signature in black ink that reads "Denis Goulet".

Denis Goulet

DG/jd  
DOIT #2026-043

cc: Bill Boudreaux, IT Manager



**STATE OF NEW HAMPSHIRE**  
**DEPARTMENT OF INFORMATION TECHNOLOGY**

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Denis Goulet, *Commissioner*

October 20, 2025

Robert R. Scott, Commissioner  
Department of Environmental  
Services State of New Hampshire  
29 Hazen Drive  
Concord, NH 03302

Dear Commissioner Scott:

This letter represents formal notification that the Department of Information Technology (DoIT) has approved your agency's request to enter into a contract with Research Triangle Institute, doing business as RTI International, as described below and referenced in DOIT No. 2026-044.

The purpose of this request is to develop new basin models, implement improvements to existing basin models, and implement general interface improvements to the Amanzi® Forecast System.

The Total Price Limitation shall be \$222,184 effective upon Governor and Council approval through October 31, 2029.

A copy of this letter must accompany the Department of Environmental Services' submission to the Governor and Executive Council for approval.

Sincerely,

A handwritten signature in black ink, appearing to read "Denis Goulet". The signature is fluid and cursive, with a horizontal line extending to the right.

Denis Goulet

DG/jd  
DOIT #2026-044

cc: Bill Boudreaux, IT Manager

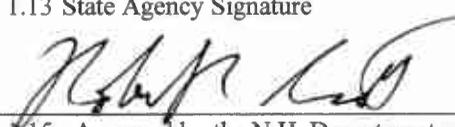
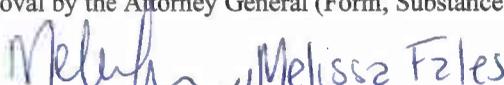
Notice: This agreement and all of its attachments shall become public upon submission to Governor and Executive Council for approval. Any information that is private, confidential or proprietary must be clearly identified to the agency and agreed to in writing prior to signing the contract.

**AGREEMENT**

The State of New Hampshire and the Contractor hereby mutually agree as follows:

**GENERAL PROVISIONS**

**1. IDENTIFICATION.**

1.1 State Agency Name New Hampshire Department of Environmental Services		1.2 State Agency Address 29 Hazen Drive - PO Box 95 Concord, NH 03302-0095	
1.3 Contractor Name Research Triangle Institute (d/b/a RTI International)		1.4 Contractor Address 3040 Cornwallis Rd  PO Box 12194  Research Triangle Park NC 27709-2194 USA	
1.5 Contractor Phone Number (919) -541-6624	1.6 Account Unit and Class 03-44-442010-38170000-038-500177 03-44-442010-29540000-038-500177	1.7 Completion Date 10/31/2029	1.8 Price Limitation \$263,563
1.9 Contracting Officer for State Agency Corey J. Clark, P.E.		1.10 State Agency Telephone Number Office: (603) 271-1961 Cell: (603) 419-0967	
1.11 Contractor Signature  Date: 10/20/25		1.12 Name and Title of Contractor Signatory Kellyn Cassell, Sr. Contracting Officer RTI International	
1.13 State Agency Signature  Date: 10/28/25		1.14 Name and Title of State Agency Signatory Robert R. Scott, Commissioner	
1.15 Approval by the N.H. Department of Administration, Division of Personnel (if applicable)  By: _____ Director, On: _____			
1.16 Approval by the Attorney General (Form, Substance and Execution) (if applicable)  By:  Melissa Fyles On: 10/30/25			
1.17 Approval by the Governor and Executive Council (if applicable)  G&C Item number: _____ G&C Meeting Date: _____			

**2. SERVICES TO BE PERFORMED.** The State of New Hampshire, acting through the agency identified in block 1.1 ("State"), engages contractor identified in block 1.3 ("Contractor") to perform, and the Contractor shall perform, the work or sale of goods, or both, identified and more particularly described in the attached EXHIBIT B which is incorporated herein by reference ("Services").

**3. EFFECTIVE DATE/COMPLETION OF SERVICES.**

3.1 Notwithstanding any provision of this Agreement to the contrary, and subject to the approval of the Governor and Executive Council of the State of New Hampshire, if applicable, this Agreement, and all obligations of the parties hereunder, shall become effective on the date the Governor and Executive Council approve this Agreement, unless no such approval is required, in which case the Agreement shall become effective on the date the Agreement is signed by the State Agency as shown in block 1.13 ("Effective Date").

3.2 If the Contractor commences the Services prior to the Effective Date, all Services performed by the Contractor prior to the Effective Date shall be performed at the sole risk of the Contractor, and in the event that this Agreement does not become effective, the State shall have no liability to the Contractor, including without limitation, any obligation to pay the Contractor for any costs incurred or Services performed.

3.3 Contractor must complete all Services by the Completion Date specified in block 1.7.

**4. CONDITIONAL NATURE OF AGREEMENT.**

Notwithstanding any provision of this Agreement to the contrary, all obligations of the State hereunder, including, without limitation, the continuance of payments hereunder, are contingent upon the availability and continued appropriation of funds. In no event shall the State be liable for any payments hereunder in excess of such available appropriated funds. In the event of a reduction or termination of appropriated funds by any state or federal legislative or executive action that reduces, eliminates or otherwise modifies the appropriation or availability of funding for this Agreement and the Scope for Services provided in EXHIBIT B, in whole or in part, the State shall have the right to withhold payment until such funds become available, if ever, and shall have the right to reduce or terminate the Services under this Agreement immediately upon giving the Contractor notice of such reduction or termination. The State shall not be required to transfer funds from any other account or source to the Account identified in block 1.6 in the event funds in that Account are reduced or unavailable.

**5. CONTRACT PRICE/PRICE LIMITATION/ PAYMENT.**

5.1 The contract price, method of payment, and terms of payment are identified and more particularly described in EXHIBIT C which is incorporated herein by reference.

5.2 Notwithstanding any provision in this Agreement to the contrary, and notwithstanding unexpected circumstances, in no event shall the total of all payments authorized, or actually made hereunder, exceed the Price Limitation set forth in block 1.8. The payment by the State of the contract price shall be the only and the complete reimbursement to the Contractor for all expenses, of whatever nature incurred by the Contractor in the performance

hereof, and shall be the only and the complete compensation to the Contractor for the Services.

5.3 The State reserves the right to offset from any amounts otherwise payable to the Contractor under this Agreement those liquidated amounts required or permitted by N.H. RSA 80:7 through RSA 80:7-c or any other provision of law.

5.4 The State's liability under this Agreement shall be limited to monetary damages not to exceed the total fees paid. The Contractor agrees that it has an adequate remedy at law for any breach of this Agreement by the State and hereby waives any right to specific performance or other equitable remedies against the State.

**6. COMPLIANCE BY CONTRACTOR WITH LAWS AND REGULATIONS/EQUAL EMPLOYMENT OPPORTUNITY.**

6.1 In connection with the performance of the Services, the Contractor shall comply with all applicable statutes, laws, regulations, and orders of federal, state, county or municipal authorities which impose any obligation or duty upon the Contractor, including, but not limited to, civil rights and equal employment opportunity laws and the Governor's order on Respect and Civility in the Workplace, Executive order 2020-01. In addition, if this Agreement is funded in any part by monies of the United States, the Contractor shall comply with all federal executive orders, rules, regulations and statutes, and with any rules, regulations and guidelines as the State or the United States issue to implement these regulations. The Contractor shall also comply with all applicable intellectual property laws.

6.2 During the term of this Agreement, the Contractor shall not discriminate against employees or applicants for employment because of age, sex, sexual orientation, race, color, marital status, physical or mental disability, religious creed, national origin, gender identity, or gender expression, and will take affirmative action to prevent such discrimination, unless exempt by state or federal law. The Contractor shall ensure any subcontractors comply with these nondiscrimination requirements.

6.3 No payments or transfers of value by Contractor or its representatives in connection with this Agreement have or shall be made which have the purpose or effect of public or commercial bribery, or acceptance of or acquiescence in extortion, kickbacks, or other unlawful or improper means of obtaining business.

6.4. The Contractor agrees to permit the State or United States access to any of the Contractor's books, records and accounts for the purpose of ascertaining compliance with this Agreement and all rules, regulations and orders pertaining to the covenants, terms and conditions of this Agreement.

**7. PERSONNEL.**

7.1 The Contractor shall at its own expense provide all personnel necessary to perform the Services. The Contractor warrants that all personnel engaged in the Services shall be qualified to perform the Services, and shall be properly licensed and otherwise authorized to do so under all applicable laws.

7.2 The Contracting Officer specified in block 1.9, or any successor, shall be the State's point of contact pertaining to this Agreement.

## 8. EVENT OF DEFAULT/REMEDIES.

8.1 Any one or more of the following acts or omissions of the Contractor shall constitute an event of default hereunder ("Event of Default"):

- 8.1.1 failure to perform the Services satisfactorily or on schedule;
- 8.1.2 failure to submit any report required hereunder; and/or
- 8.1.3 failure to perform any other covenant, term or condition of this Agreement.

8.2 Upon the occurrence of any Event of Default, the State may take any one, or more, or all, of the following actions:

8.2.1 give the Contractor a written notice specifying the Event of Default and requiring it to be remedied within, in the absence of a greater or lesser specification of time, thirty (30) calendar days from the date of the notice; and if the Event of Default is not timely cured, terminate this Agreement, effective two (2) calendar days after giving the Contractor notice of termination;

8.2.2 give the Contractor a written notice specifying the Event of Default and suspending all payments to be made under this Agreement and ordering that the portion of the contract price which would otherwise accrue to the Contractor during the period from the date of such notice until such time as the State determines that the Contractor has cured the Event of Default shall never be paid to the Contractor;

8.2.3 give the Contractor a written notice specifying the Event of Default and set off against any other obligations the State may owe to the Contractor any damages the State suffers by reason of any Event of Default; and/or

8.2.4 give the Contractor a written notice specifying the Event of Default, treat the Agreement as breached, terminate the Agreement and pursue any of its remedies at law or in equity, or both.

## 9. TERMINATION.

9.1 Notwithstanding paragraph 8, the State may, at its sole discretion, terminate the Agreement for any reason, in whole or in part, by thirty (30) calendar days written notice to the Contractor that the State is exercising its option to terminate the Agreement.

9.2 In the event of an early termination of this Agreement for any reason other than the completion of the Services, the Contractor shall, at the State's discretion, deliver to the Contracting Officer, not later than fifteen (15) calendar days after the date of termination, a report ("Termination Report") describing in detail all Services performed, and the contract price earned, to and including the date of termination. In addition, at the State's discretion, the Contractor shall, within fifteen (15) calendar days of notice of early termination, develop and submit to the State a transition plan for Services under the Agreement.

## 10. PROPERTY OWNERSHIP/DISCLOSURE.

10.1 As used in this Agreement, the word "Property" shall mean all data, information and things developed or obtained during the performance of, or acquired or developed by reason of, this Agreement, including, but not limited to, all studies, reports, files, formulae, surveys, maps, charts, sound recordings, video recordings, pictorial reproductions, drawings, analyses, graphic representations, computer programs, computer printouts, notes, letters, memoranda, papers, and documents, all whether finished or unfinished.

10.2 All data and any Property which has been received from the State, or purchased with funds provided for that purpose under this Agreement, shall be the property of the State, and shall be returned to the State upon demand or upon termination of this Agreement for any reason.

10.3 Disclosure of data, information and other records shall be governed by N.H. RSA chapter 91-A and/or other applicable law. Disclosure requires prior written approval of the State.

**11. CONTRACTOR'S RELATION TO THE STATE.** In the performance of this Agreement the Contractor is in all respects an independent contractor, and is neither an agent nor an employee of the State. Neither the Contractor nor any of its officers, employees, agents or members shall have authority to bind the State or receive any benefits, workers' compensation or other emoluments provided by the State to its employees.

## 12. ASSIGNMENT/DELEGATION/SUBCONTRACTS.

12.1 Contractor shall provide the State written notice at least fifteen (15) calendar days before any proposed assignment, delegation, or other transfer of any interest in this Agreement. No such assignment, delegation, or other transfer shall be effective without the written consent of the State.

12.2 For purposes of paragraph 12, a Change of Control shall constitute assignment. "Change of Control" means (a) merger, consolidation, or a transaction or series of related transactions in which a third party, together with its affiliates, becomes the direct or indirect owner of fifty percent (50%) or more of the voting shares or similar equity interests, or combined voting power of the Contractor, or (b) the sale of all or substantially all of the assets of the Contractor.

12.3 None of the Services shall be subcontracted by the Contractor without prior written notice and consent of the State.

12.4 The State is entitled to copies of all subcontracts and assignment agreements and shall not be bound by any provisions contained in a subcontract or an assignment agreement to which it is not a party.

**13. INDEMNIFICATION.** The Contractor shall indemnify, defend, and hold harmless the State, its officers, and employees from and against all actions, claims, damages, demands, judgments, fines, liabilities, losses, and other expenses, including, without limitation, reasonable attorneys' fees, arising out of or relating to this Agreement directly or indirectly arising from death, personal injury, property damage, intellectual property infringement, or other claims asserted against the State, its officers, or employees caused by the acts or omissions of negligence, reckless or willful misconduct, or fraud by the Contractor, its employees, agents, or subcontractors. The State shall not be liable for any costs incurred by the Contractor arising under this paragraph 13. Notwithstanding the foregoing, nothing herein contained shall be deemed to constitute a waiver of the State's sovereign immunity, which immunity is hereby reserved to the State. This covenant in paragraph 13 shall survive the termination of this Agreement.

#### 14. INSURANCE.

14.1 The Contractor shall, at its sole expense, obtain and continuously maintain in force, and shall require any subcontractor or assignee to obtain and maintain in force, the following insurance:

14.1.1 commercial general liability insurance against all claims of bodily injury, death or property damage, in amounts of not less than \$1,000,000 per occurrence and \$2,000,000 aggregate or excess; and

14.1.2 special cause of loss coverage form covering all Property subject to subparagraph 10.2 herein, in an amount not less than 80% of the whole replacement value of the Property.

14.2 The policies described in subparagraph 14.1 herein shall be on policy forms and endorsements approved for use in the State of New Hampshire by the N.H. Department of Insurance, and issued by insurers licensed in the State of New Hampshire.

14.3 The Contractor shall furnish to the Contracting Officer identified in block 1.9, or any successor, a certificate(s) of insurance for all insurance required under this Agreement. At the request of the Contracting Officer, or any successor, the Contractor shall provide certificate(s) of insurance for all renewal(s) of insurance required under this Agreement. The certificate(s) of insurance and any renewals thereof shall be attached and are incorporated herein by reference.

#### 15. WORKERS' COMPENSATION.

15.1 By signing this agreement, the Contractor agrees, certifies and warrants that the Contractor is in compliance with or exempt from, the requirements of N.H. RSA chapter 281-A ("*Workers' Compensation*").

15.2 To the extent the Contractor is subject to the requirements of N.H. RSA chapter 281-A, Contractor shall maintain, and require any subcontractor or assignee to secure and maintain, payment of Workers' Compensation in connection with activities which the person proposes to undertake pursuant to this Agreement. The Contractor shall furnish the Contracting Officer identified in block 1.9, or any successor, proof of Workers' Compensation in the manner described in N.H. RSA chapter 281-A and any applicable renewal(s) thereof, which shall be attached and are incorporated herein by reference. The State shall not be responsible for payment of any Workers' Compensation premiums or for any other claim or benefit for Contractor, or any subcontractor or employee of Contractor, which might arise under applicable State of New Hampshire Workers' Compensation laws in connection with the performance of the Services under this Agreement.

**16. WAIVER OF BREACH.** A State's failure to enforce its rights with respect to any single or continuing breach of this Agreement shall not act as a waiver of the right of the State to later enforce any such rights or to enforce any other or any subsequent breach.

**17. NOTICE.** Any notice by a party hereto to the other party shall be deemed to have been duly delivered or given at the time of mailing by certified mail, postage prepaid, in a United States Post Office addressed to the parties at the addresses given in blocks 1.2 and 1.4, herein.

**18. AMENDMENT.** This Agreement may be amended, waived or discharged only by an instrument in writing signed by the parties hereto and only after approval of such amendment, waiver or discharge by the Governor and Executive Council of the State of New Hampshire unless no such approval is required under the circumstances pursuant to State law, rule or policy.

#### 19. CHOICE OF LAW AND FORUM.

19.1 This Agreement shall be governed, interpreted and construed in accordance with the laws of the State of New Hampshire except where the Federal supremacy clause requires otherwise. The wording used in this Agreement is the wording chosen by the parties to express their mutual intent, and no rule of construction shall be applied against or in favor of any party.

19.2 Any actions arising out of this Agreement, including the breach or alleged breach thereof, may not be submitted to binding arbitration, but must, instead, be brought and maintained in the Merrimack County Superior Court of New Hampshire which shall have exclusive jurisdiction thereof.

**20. CONFLICTING TERMS.** In the event of a conflict between the terms of this P-37 form (as modified in EXHIBIT A) and any other portion of this Agreement including any attachments thereto, the terms of the P-37 (as modified in EXHIBIT A) shall control.

**21. THIRD PARTIES.** This Agreement is being entered into for the sole benefit of the parties hereto, and nothing herein, express or implied, is intended to or will confer any legal or equitable right, benefit, or remedy of any nature upon any other person.

**22. HEADINGS.** The headings throughout the Agreement are for reference purposes only, and the words contained therein shall in no way be held to explain, modify, amplify or aid in the interpretation, construction or meaning of the provisions of this Agreement.

**23. SPECIAL PROVISIONS.** Additional or modifying provisions set forth in the attached EXHIBIT A are incorporated herein by reference.

**24. FURTHER ASSURANCES.** The Contractor, along with its agents and affiliates, shall, at its own cost and expense, execute any additional documents and take such further actions as may be reasonably required to carry out the provisions of this Agreement and give effect to the transactions contemplated hereby.

**25. SEVERABILITY.** In the event any of the provisions of this Agreement are held by a court of competent jurisdiction to be contrary to any state or federal law, the remaining provisions of this Agreement will remain in full force and effect.

**26. ENTIRE AGREEMENT.** This Agreement, which may be executed in a number of counterparts, each of which shall be deemed an original, constitutes the entire agreement and understanding between the parties, and supersedes all prior agreements and understandings with respect to the subject matter hereof.

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**EXHIBIT A**  
**Special Provisions**

There are no Special Provisions.

Contractor Initials: KC  
Date: 10/29/25

## EXHIBIT B

### Scope of Services

Research Triangle Institute, d/b/a RTI International (“RTI”) shall perform the tasks as described in the attached detailed proposal titled:

“Hosting and Support of the Amanzi Forecast System”,  
submitted by RTI International, dated September 23, 2025.

Contractor Initials: KC  
Date: 10/20/25

## EXHIBIT C

### Price and Payments

All services shall be performed to the satisfaction of NHDES before payment is made. All payments shall be made upon receipt and approval of stated outputs and upon receipt of an associated invoice. The billing for the "Hosting and Support of the Amanzi Forecast System" detailed in Exhibit B, is to be done upon a quarterly basis as detailed in Table C-1 below.

The total cost of the contract shall not exceed \$263,563. NHDES agrees to pay the invoices as submitted by the Contractor. Invoices are subject to the approval of the Contract Officer before payment is processed.

1. **DELIVERABLE PAYMENT SCHEDULE.**

All charges by Research Triangle Institute (RTI International), under this Contract for the "Hosting and Support of the Amanzi Forecast System" shall be at a quarterly fixed price in accordance with the schedules set forth in Table C-1 below.

2. **FIXED PRICE PAYMENT SCHEDULE**

Table C-1 Payment Schedule:

Contractor Initials: KC  
Date: 10/20/25

**Table C-1**

<b>Support and Hosting of Amanzi® Forecast System</b>			
<b>Deliverable</b>	<b>Percentage</b>	<b>Due Date</b>	<b>Payment Amount</b>
1. 3 months AFS support and hosting	6.25%	January 31, 2026	<u>\$ 15,633</u>
2. 3 months AFS support and hosting	6.25%	April 30, 2026	<u>\$ 15,633</u>
3. 3 months AFS support and hosting	6.25%	July 31, 2026	<u>\$ 15,633</u>
4. 3 months AFS support and hosting	6.25%	October 31, 2026	<u>\$ 15,633</u>
5. 3 months AFS support and hosting	6.25%	January 31, 2027	<u>\$ 16,180</u>
6. 3 months AFS support and hosting	6.25%	April 30, 2027	<u>\$ 16,180</u>
7. 3 months AFS support and hosting	6.25%	July 31, 2027	<u>\$ 16,180</u>
8. 3 months AFS support and hosting	6.25%	October 31, 2027	<u>\$ 16,180</u>
9. 3 months AFS support and hosting	6.25%	January 31, 2028	<u>\$ 16,746</u>
10. 3 months AFS support and hosting	6.25%	April 30, 2028	<u>\$ 16,746</u>
11. 3 months AFS support and hosting	6.25%	July 31, 2028	<u>\$ 16,746</u>
12. 3 months AFS support and hosting	6.25%	October 31, 2028	<u>\$ 16,746</u>
13. 3 months AFS support and hosting	6.25%	January 31, 2029	<u>\$ 17,332</u>
14. 3 months AFS support and hosting	6.25%	April 30, 2029	<u>\$ 17,332</u>
15. 3 months AFS support and hosting	6.25%	July 31, 2029	<u>\$ 17,332</u>
16. 3 months AFS support and hosting	6.25%	October 31, 2029	<u>\$ 17,331</u>
<b>AFS Support and Hosting Total:</b>	<b>100%</b>		<b><u>\$ 263,563</u></b>

Notwithstanding any other provision of this Contract, in no event shall the total payment made by the State exceed \$263,563.

Contractor Initials: KC  
Date: 10/29/25

**3. PAYMENTS**

The State shall pay RTI International within thirty (30) calendar days of the State's receipt of a correct and undisputed invoice.

Contractor Initials: KC  
Date: 10/20/25



# Hosting and Support of the Amanzi Forecast System

Prepared for:



September 23 2025





Technical and Cost Proposal  
September 23 2025

# Hosting and Support of the Amanzi Forecast System

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**Submitted by:**

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This proposal includes data that shall not be disclosed outside the Government of New Hampshire and shall not be duplicated, used, or disclosed—in whole or in part—for any purpose other than to evaluate this proposal. If, however, a contract is awarded to this offeror as a result of—or in connection with—the submission of these data, the Government shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in these data if obtained from another source without restriction. The data subject to this restriction are contained in the entire proposal.





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# Technical and Cost Proposal





# 1 Background

RTI International<sup>1</sup> (RTI) implemented and deployed for the New Hampshire Department of Environmental Services – Dam Bureau (NHDES - Dam Bureau) a replacement for its Rivertrak<sup>®</sup> reservoir inflow forecast system. The new system, called the Amanzi™ Forecast System (AFS) which is a distributed application, with components deployable on a several servers and access provided through a web-interface. The AFS was deployed on Azure for production on 11/1/2022. RTI has been hosting and maintaining the system under two hosting and support contracts, with the latest one ending on 10/31/2025.

Figure 1-1 depicts an architecture and infrastructure diagram for the AFS deployment, using an application server, a web server, and a central database. Work under the latest hosting and support contract included minor updates to the component architecture, however these nuanced changes don't show in the diagram below.

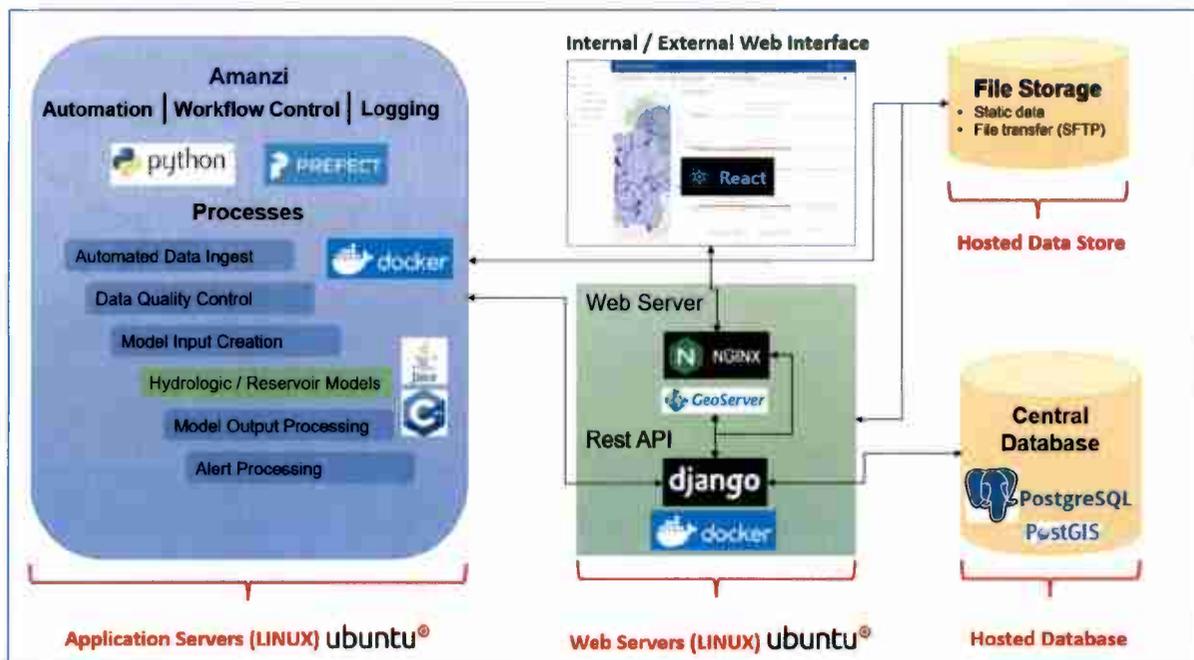


Figure 1-1. AFS Architectural Diagram

<sup>1</sup> RTI International is a trade name of Research Triangle Institute. RTI and the RTI logo are U.S. registered trademarks of Research Triangle Institute.





## 2 AFS Resources on Azure

As part of an AFS hosting agreement RTI will continue to host the AFS on Microsoft (MS) Azure cloud infrastructure ([What is Azure—Microsoft Cloud Services | Microsoft Azure](#)) using the resources listed in Table 2-1.

Note that the shown specifications with respect to CPUs, memory, database size and disk space have shown to allow effective operation of the AFS and lag-free access to its web interface under normal conditions. Should usage patterns change, upgraded services could be provided for additional fee.

**Table 2-1. Hosting of AFS Components on MS Azure**

AFS Component	Azure Resource	Specifications
<b>Application Server</b>	Virtual Machine	Standard D8s v3 (8 vcpus, 32 GiB memory)
<b>Web Server</b>	Virtual Machine	Standard D2s v3 (2 vcpus, 8 GiB memory)
<b>Database</b>	Hosted Database	General Purpose, D2ds_v4, 2 vCores, 8 GiB RAM, 128 GiB storage
<b>Shared disk space</b>	Disk	Up to 250 GB TiB Premium SSD
<b>Static data and SFTP</b>	Storage account	Up to 5 TB

The AFS services are hosted in a dedicated Azure account (subscription) managed by RTI.

## 3 AFS Support

RTI will provide continuous support for the Azure hosted AFS system as follows:

### 3.1 Supported AFS Hydrologic Domain

This support shall be applicable to the following forecast domain:

- Up to 20 basins within the State of New Hampshire.
- Hydrometeorological monitoring sites in and near the State of New Hampshire.

### 3.2 AFS Hosting

This support shall be applicable to the following hosted AFS components:

- Weekly system monitoring and review. This includes review of all workflow statuses to ensure all are running per schedule, review of VM disk usage and database storage, and clean-up of logs.
- Maintenance and software updates of Docker, Prefect, Django, NGINX2. This includes bug fixes and security patch versions but excludes version changes that introduce backwards incompatibility.
- Installation of operating system security updates and patches.
- Troubleshooting and restarts of the above components as needed.
- Cleanout of the virtual machines as needed (temporary files, log files, etc.).

<sup>2</sup> Maintenance of PostgreSQL and PostGIS will be provided through MS Azure





- Maintaining network connectivity and communication between AFS components (database, application server, web server, docker network, docker containers, microservices).
- Perform database maintenance as needed.

Please note that the above support does not cover:

- Interpretation of inflow forecasts created by the AFS.
- Software upgrades to any of the AFS components that go beyond security patches. Software upgrades (for example to a new major version) can introduce breaking changes. This contract does not include upgrading AFS components to new major versions that are not backwards compatible.
- Addition of new features and functionality

### 3.3 AFS Support

This proposal includes 80 hours of general AFS support annually, that can be used to make configuration changes to the AFS or troubleshoot and correct more significant ingest or model execution issues. This could include for example:

- Adding a new observation location, timeseries or plot.
- Setting up custom users and permissions for data access.
- Training and writing how-to documents.
- Making configuration changes to imports.
- Troubleshoot and correct a significant failing data ingest process.
- Troubleshoot and correct model execution issues.

### 3.4 Service Uptime

Service uptime is provided on a best-effort basis. RTI will take all reasonable steps to ensure maximum availability of our services, however we do not make any specific guarantees.

### 3.5 Support Hours

Support will be provided as follows:

- RTI will respond to support requests within 8 business hours.
- Normal business hours are 8:00 am to 5:00 pm EST Monday through Friday.
- Emergency support will be provided during on weekends and holidays, as staff are available.
- All requests for support should be directed to [amanzi\\_support@rti.org](mailto:amanzi_support@rti.org).

### 3.6 Disaster Recovery / Data Loss Prevention

Disaster recovery and data loss prevention is on a best effort basis to include:

- RTI will continue to maintain system back-ups using the tools available in MS Azure to allow us to recover from a disaster or data loss event. This includes snap-shots of the OS and data drives for the VMs as well as database snapshots of the database.
- All system configuration and code is also stored in RTI's enterprise GitHub account allowing the system to be reestablished on new VMs in the very unlikely event of a catastrophic MS Azure data loss the includes loss of regular backups.





## 4 Assumptions

The following technical assumptions are made with respect to the AFS hosting and support:

- Number of concurrent users of the AFS processing modeling components will be limited to one (1) model or processing job at a time (models execute consecutively).
- It is assumed that the variable costs for hosting, which include network bandwidth, domain name server, virtual networking, container registry, etc. will not exceed \$50 per month.
- Secure shell (SSH) will be used to provide remote access to the VMs hosting the AFS.
- The specified system is expected to support up to ten (10) simultaneous authenticated users (i.e. forecasters with read and write permissions) and up to fifty (50) simultaneous un-authenticated users (i.e. public users). Unauthenticated users may be throttled/limited as needed to prevent them from degrading system performance for authenticated users.
- The Application Server and the Web Server virtual machines will run a Long-term Support (LTS) version of Ubuntu (currently version 20.04, likely to be upgraded to version 24.04).
- Hosting under this proposal/contract will start on 11/1/2025 when hosting under the current contract ends.

## 5 Deliverables and Schedule

The deliverables and the schedule for this project is provided in Table 5-1.

**Table 5-1. Deliverables and Schedule**

Deliverable Number	Deliverable	Ending on
1	3 months of AFS hosting and support	January 31, 2026
2	3 months of AFS hosting and support	April 30, 2026
3	3 months of AFS hosting and support	July 31, 2026
4	3 months of AFS hosting and support	October 31, 2026
5	3 months of AFS hosting and support	January 31, 2027
6	3 months of AFS hosting and support	April 30, 2027
7	3 months of AFS hosting and support	July 31, 2027
8	3 months of AFS hosting and support	October 31, 2027
9	3 months of AFS hosting and support	January 31, 2028
10	3 months of AFS hosting and support	April 30, 2028
11	3 months of AFS hosting and support	July 31, 2028
12	3 months of AFS hosting and support	October 31, 2028
13	3 months of AFS hosting and support	January 31, 2029
14	3 months of AFS hosting and support	April 30, 2029
15	3 months of AFS hosting and support	July 31, 2029
16	3 months of AFS hosting and support	October 31, 2029





## 6 Costs and Invoicing Schedule

Table 6-1 provides costs for the deliverables listed above. RTI's Fixed Price budget is based on the assumptions described herein. If NH Dept of Env Services intends to revise the project scope in a way that impacts the assumptions herein, RTI reserves the right to revise the budget accordingly.

**Table 6-1. Fixed Cost Payment Schedule**

<b>Deliverable Number</b>	<b>Estimated Due Date</b>	<b>Cost</b>
<b>1</b>	January 31, 2026	\$ 15,633
<b>2</b>	April 30, 2026	\$ 15,633
<b>3</b>	July 31, 2026	\$ 15,633
<b>4</b>	October 31, 2026	\$ 15,633
<b>5</b>	January 31, 2027	\$ 16,180
<b>6</b>	April 30, 2027	\$ 16,180
<b>7</b>	July 31, 2027	\$ 16,180
<b>8</b>	October 31, 2027	\$ 16,180
<b>9</b>	January 31, 2028	\$ 16,746
<b>10</b>	April 30, 2028	\$ 16,746
<b>11</b>	July 31, 2028	\$ 16,746
<b>12</b>	October 31, 2028	\$ 16,746
<b>13</b>	January 31, 2029	\$ 17,332
<b>14</b>	April 30, 2029	\$ 17,332
<b>15</b>	July 31, 2029	\$ 17,332
<b>16</b>	October 31, 2029	\$ 17,331
<b>Total for 48 Months of Service</b>		<b>\$ 263,563</b>

This proposal is valid for 90 days.



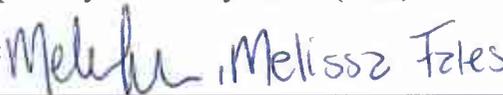
**Notice:** This agreement and all of its attachments shall become public upon submission to Governor and Executive Council for approval. Any information that is private, confidential or proprietary must be clearly identified to the agency and agreed to in writing prior to signing the contract.

**AGREEMENT**

The State of New Hampshire and the Contractor hereby mutually agree as follows:

**GENERAL PROVISIONS**

**1. IDENTIFICATION.**

1.1 State Agency Name New Hampshire Department of Environmental Services		1.2 State Agency Address 29 Hazen Drive - PO Box 95 Concord, NH 03302-0095	
1.3 Contractor Name Research Triangle Institute (d/b/a RTI International)		1.4 Contractor Address 3040 Cornwallis Rd  PO Box 12194  Research Triangle Park NC 27709-2194 USA	
1.5 Contractor Phone Number (919) -541-6624	1.6 Account Unit and Class 03-44-440030- 25730000-034-500161	1.7 Completion Date 10/31/2029	1.8 Price Limitation \$222,184
1.9 Contracting Officer for State Agency Corey J. Clark, P.E.		1.10 State Agency Telephone Number Office: (603) 271-1961 Cell: (603) 419-0967	
1.11 Contractor Signature  Date: 10/20/25		1.12 Name and Title of Contractor Signatory Kellyn Cassell, Sr. Contracting Officer RTI International	
1.13 State Agency Signature  Date: 10/28/25		1.14 Name and Title of State Agency Signatory Robert R. Scott, Commissioner	
1.15 Approval by the N.H. Department of Administration, Division of Personnel (if applicable)  By: _____ Director, On: _____			
1.16 Approval by the Attorney General (Form, Substance and Execution) (if applicable)  By:  Melissa Fates On: 10/30/25			
1.17 Approval by the Governor and Executive Council (if applicable)  G&C Item number: _____ G&C Meeting Date: _____			

**2. SERVICES TO BE PERFORMED.** The State of New Hampshire, acting through the agency identified in block 1.1 (“State”), engages contractor identified in block 1.3 (“Contractor”) to perform, and the Contractor shall perform, the work or sale of goods, or both, identified and more particularly described in the attached EXHIBIT B which is incorporated herein by reference (“Services”).

**3. EFFECTIVE DATE/COMPLETION OF SERVICES.**

3.1 Notwithstanding any provision of this Agreement to the contrary, and subject to the approval of the Governor and Executive Council of the State of New Hampshire, if applicable, this Agreement, and all obligations of the parties hereunder, shall become effective on the date the Governor and Executive Council approve this Agreement, unless no such approval is required, in which case the Agreement shall become effective on the date the Agreement is signed by the State Agency as shown in block 1.13 (“Effective Date”).

3.2 If the Contractor commences the Services prior to the Effective Date, all Services performed by the Contractor prior to the Effective Date shall be performed at the sole risk of the Contractor, and in the event that this Agreement does not become effective, the State shall have no liability to the Contractor, including without limitation, any obligation to pay the Contractor for any costs incurred or Services performed.

3.3 Contractor must complete all Services by the Completion Date specified in block 1.7.

**4. CONDITIONAL NATURE OF AGREEMENT.**

Notwithstanding any provision of this Agreement to the contrary, all obligations of the State hereunder, including, without limitation, the continuance of payments hereunder, are contingent upon the availability and continued appropriation of funds. In no event shall the State be liable for any payments hereunder in excess of such available appropriated funds. In the event of a reduction or termination of appropriated funds by any state or federal legislative or executive action that reduces, eliminates or otherwise modifies the appropriation or availability of funding for this Agreement and the Scope for Services provided in EXHIBIT B, in whole or in part, the State shall have the right to withhold payment until such funds become available, if ever, and shall have the right to reduce or terminate the Services under this Agreement immediately upon giving the Contractor notice of such reduction or termination. The State shall not be required to transfer funds from any other account or source to the Account identified in block 1.6 in the event funds in that Account are reduced or unavailable.

**5. CONTRACT PRICE/PRICE LIMITATION/ PAYMENT.**

5.1 The contract price, method of payment, and terms of payment are identified and more particularly described in EXHIBIT C which is incorporated herein by reference.

5.2 Notwithstanding any provision in this Agreement to the contrary, and notwithstanding unexpected circumstances, in no event shall the total of all payments authorized, or actually made hereunder, exceed the Price Limitation set forth in block 1.8. The payment by the State of the contract price shall be the only and the complete reimbursement to the Contractor for all expenses, of whatever nature incurred by the Contractor in the performance

hereof, and shall be the only and the complete compensation to the Contractor for the Services.

5.3 The State reserves the right to offset from any amounts otherwise payable to the Contractor under this Agreement those liquidated amounts required or permitted by N.H. RSA 80:7 through RSA 80:7-c or any other provision of law.

5.4 The State’s liability under this Agreement shall be limited to monetary damages not to exceed the total fees paid. The Contractor agrees that it has an adequate remedy at law for any breach of this Agreement by the State and hereby waives any right to specific performance or other equitable remedies against the State.

**6. COMPLIANCE BY CONTRACTOR WITH LAWS AND REGULATIONS/EQUAL EMPLOYMENT OPPORTUNITY.**

6.1 In connection with the performance of the Services, the Contractor shall comply with all applicable statutes, laws, regulations, and orders of federal, state, county or municipal authorities which impose any obligation or duty upon the Contractor, including, but not limited to, civil rights and equal employment opportunity laws and the Governor’s order on Respect and Civility in the Workplace, Executive order 2020-01. In addition, if this Agreement is funded in any part by monies of the United States, the Contractor shall comply with all federal executive orders, rules, regulations and statutes, and with any rules, regulations and guidelines as the State or the United States issue to implement these regulations. The Contractor shall also comply with all applicable intellectual property laws.

6.2 During the term of this Agreement, the Contractor shall not discriminate against employees or applicants for employment because of age, sex, sexual orientation, race, color, marital status, physical or mental disability, religious creed, national origin, gender identity, or gender expression, and will take affirmative action to prevent such discrimination, unless exempt by state or federal law. The Contractor shall ensure any subcontractors comply with these nondiscrimination requirements.

6.3 No payments or transfers of value by Contractor or its representatives in connection with this Agreement have or shall be made which have the purpose or effect of public or commercial bribery, or acceptance of or acquiescence in extortion, kickbacks, or other unlawful or improper means of obtaining business.

6.4. The Contractor agrees to permit the State or United States access to any of the Contractor’s books, records and accounts for the purpose of ascertaining compliance with this Agreement and all rules, regulations and orders pertaining to the covenants, terms and conditions of this Agreement.

**7. PERSONNEL.**

7.1 The Contractor shall at its own expense provide all personnel necessary to perform the Services. The Contractor warrants that all personnel engaged in the Services shall be qualified to perform the Services, and shall be properly licensed and otherwise authorized to do so under all applicable laws.

7.2 The Contracting Officer specified in block 1.9, or any successor, shall be the State’s point of contact pertaining to this Agreement.

## 8. EVENT OF DEFAULT/REMEDIES.

8.1 Any one or more of the following acts or omissions of the Contractor shall constitute an event of default hereunder ("Event of Default"):

- 8.1.1 failure to perform the Services satisfactorily or on schedule;
- 8.1.2 failure to submit any report required hereunder; and/or
- 8.1.3 failure to perform any other covenant, term or condition of this Agreement.

8.2 Upon the occurrence of any Event of Default, the State may take any one, or more, or all, of the following actions:

8.2.1 give the Contractor a written notice specifying the Event of Default and requiring it to be remedied within, in the absence of a greater or lesser specification of time, thirty (30) calendar days from the date of the notice; and if the Event of Default is not timely cured, terminate this Agreement, effective two (2) calendar days after giving the Contractor notice of termination;

8.2.2 give the Contractor a written notice specifying the Event of Default and suspending all payments to be made under this Agreement and ordering that the portion of the contract price which would otherwise accrue to the Contractor during the period from the date of such notice until such time as the State determines that the Contractor has cured the Event of Default shall never be paid to the Contractor;

8.2.3 give the Contractor a written notice specifying the Event of Default and set off against any other obligations the State may owe to the Contractor any damages the State suffers by reason of any Event of Default; and/or

8.2.4 give the Contractor a written notice specifying the Event of Default, treat the Agreement as breached, terminate the Agreement and pursue any of its remedies at law or in equity, or both.

## 9. TERMINATION.

9.1 Notwithstanding paragraph 8, the State may, at its sole discretion, terminate the Agreement for any reason, in whole or in part, by thirty (30) calendar days written notice to the Contractor that the State is exercising its option to terminate the Agreement.

9.2 In the event of an early termination of this Agreement for any reason other than the completion of the Services, the Contractor shall, at the State's discretion, deliver to the Contracting Officer, not later than fifteen (15) calendar days after the date of termination, a report ("Termination Report") describing in detail all Services performed, and the contract price earned, to and including the date of termination. In addition, at the State's discretion, the Contractor shall, within fifteen (15) calendar days of notice of early termination, develop and submit to the State a transition plan for Services under the Agreement.

## 10. PROPERTY OWNERSHIP/DISCLOSURE.

10.1 As used in this Agreement, the word "Property" shall mean all data, information and things developed or obtained during the performance of, or acquired or developed by reason of, this Agreement, including, but not limited to, all studies, reports, files, formulae, surveys, maps, charts, sound recordings, video recordings, pictorial reproductions, drawings, analyses, graphic representations, computer programs, computer printouts, notes, letters, memoranda, papers, and documents, all whether finished or unfinished.

10.2 All data and any Property which has been received from the State, or purchased with funds provided for that purpose under this Agreement, shall be the property of the State, and shall be returned to the State upon demand or upon termination of this Agreement for any reason.

10.3 Disclosure of data, information and other records shall be governed by N.H. RSA chapter 91-A and/or other applicable law. Disclosure requires prior written approval of the State.

**11. CONTRACTOR'S RELATION TO THE STATE.** In the performance of this Agreement the Contractor is in all respects an independent contractor, and is neither an agent nor an employee of the State. Neither the Contractor nor any of its officers, employees, agents or members shall have authority to bind the State or receive any benefits, workers' compensation or other emoluments provided by the State to its employees.

## 12. ASSIGNMENT/DELEGATION/SUBCONTRACTS.

12.1 Contractor shall provide the State written notice at least fifteen (15) calendar days before any proposed assignment, delegation, or other transfer of any interest in this Agreement. No such assignment, delegation, or other transfer shall be effective without the written consent of the State.

12.2 For purposes of paragraph 12, a Change of Control shall constitute assignment. "Change of Control" means (a) merger, consolidation, or a transaction or series of related transactions in which a third party, together with its affiliates, becomes the direct or indirect owner of fifty percent (50%) or more of the voting shares or similar equity interests, or combined voting power of the Contractor, or (b) the sale of all or substantially all of the assets of the Contractor.

12.3 None of the Services shall be subcontracted by the Contractor without prior written notice and consent of the State.

12.4 The State is entitled to copies of all subcontracts and assignment agreements and shall not be bound by any provisions contained in a subcontract or an assignment agreement to which it is not a party.

**13. INDEMNIFICATION.** The Contractor shall indemnify, defend, and hold harmless the State, its officers, and employees from and against all actions, claims, damages, demands, judgments, fines, liabilities, losses, and other expenses, including, without limitation, reasonable attorneys' fees, arising out of or relating to this Agreement directly or indirectly arising from death, personal injury, property damage, intellectual property infringement, or other claims asserted against the State, its officers, or employees caused by the acts or omissions of negligence, reckless or willful misconduct, or fraud by the Contractor, its employees, agents, or subcontractors. The State shall not be liable for any costs incurred by the Contractor arising under this paragraph 13. Notwithstanding the foregoing, nothing herein contained shall be deemed to constitute a waiver of the State's sovereign immunity, which immunity is hereby reserved to the State. This covenant in paragraph 13 shall survive the termination of this Agreement.

**14. INSURANCE.**

14.1 The Contractor shall, at its sole expense, obtain and continuously maintain in force, and shall require any subcontractor or assignee to obtain and maintain in force, the following insurance:

14.1.1 commercial general liability insurance against all claims of bodily injury, death or property damage, in amounts of not less than \$1,000,000 per occurrence and \$2,000,000 aggregate or excess; and

14.1.2 special cause of loss coverage form covering all Property subject to subparagraph 10.2 herein, in an amount not less than 80% of the whole replacement value of the Property.

14.2 The policies described in subparagraph 14.1 herein shall be on policy forms and endorsements approved for use in the State of New Hampshire by the N.H. Department of Insurance, and issued by insurers licensed in the State of New Hampshire.

14.3 The Contractor shall furnish to the Contracting Officer identified in block 1.9, or any successor, a certificate(s) of insurance for all insurance required under this Agreement. At the request of the Contracting Officer, or any successor, the Contractor shall provide certificate(s) of insurance for all renewal(s) of insurance required under this Agreement. The certificate(s) of insurance and any renewals thereof shall be attached and are incorporated herein by reference.

**15. WORKERS' COMPENSATION.**

15.1 By signing this agreement, the Contractor agrees, certifies and warrants that the Contractor is in compliance with or exempt from, the requirements of N.H. RSA chapter 281-A ("*Workers' Compensation*").

15.2 To the extent the Contractor is subject to the requirements of N.H. RSA chapter 281-A, Contractor shall maintain, and require any subcontractor or assignee to secure and maintain, payment of Workers' Compensation in connection with activities which the person proposes to undertake pursuant to this Agreement. The Contractor shall furnish the Contracting Officer identified in block 1.9, or any successor, proof of Workers' Compensation in the manner described in N.H. RSA chapter 281-A and any applicable renewal(s) thereof, which shall be attached and are incorporated herein by reference. The State shall not be responsible for payment of any Workers' Compensation premiums or for any other claim or benefit for Contractor, or any subcontractor or employee of Contractor, which might arise under applicable State of New Hampshire Workers' Compensation laws in connection with the performance of the Services under this Agreement.

**16. WAIVER OF BREACH.** A State's failure to enforce its rights with respect to any single or continuing breach of this Agreement shall not act as a waiver of the right of the State to later enforce any such rights or to enforce any other or any subsequent breach.

**17. NOTICE.** Any notice by a party hereto to the other party shall be deemed to have been duly delivered or given at the time of mailing by certified mail, postage prepaid, in a United States Post Office addressed to the parties at the addresses given in blocks 1.2 and 1.4, herein.

**18. AMENDMENT.** This Agreement may be amended, waived or discharged only by an instrument in writing signed by the parties hereto and only after approval of such amendment, waiver or discharge by the Governor and Executive Council of the State of New Hampshire unless no such approval is required under the circumstances pursuant to State law, rule or policy.

**19. CHOICE OF LAW AND FORUM.**

19.1 This Agreement shall be governed, interpreted and construed in accordance with the laws of the State of New Hampshire except where the Federal supremacy clause requires otherwise. The wording used in this Agreement is the wording chosen by the parties to express their mutual intent, and no rule of construction shall be applied against or in favor of any party.

19.2 Any actions arising out of this Agreement, including the breach or alleged breach thereof, may not be submitted to binding arbitration, but must, instead, be brought and maintained in the Merrimack County Superior Court of New Hampshire which shall have exclusive jurisdiction thereof.

**20. CONFLICTING TERMS.** In the event of a conflict between the terms of this P-37 form (as modified in EXHIBIT A) and any other portion of this Agreement including any attachments thereto, the terms of the P-37 (as modified in EXHIBIT A) shall control.

**21. THIRD PARTIES.** This Agreement is being entered into for the sole benefit of the parties hereto, and nothing herein, express or implied, is intended to or will confer any legal or equitable right, benefit, or remedy of any nature upon any other person.

**22. HEADINGS.** The headings throughout the Agreement are for reference purposes only, and the words contained therein shall in no way be held to explain, modify, amplify or aid in the interpretation, construction or meaning of the provisions of this Agreement.

**23. SPECIAL PROVISIONS.** Additional or modifying provisions set forth in the attached EXHIBIT A are incorporated herein by reference.

**24. FURTHER ASSURANCES.** The Contractor, along with its agents and affiliates, shall, at its own cost and expense, execute any additional documents and take such further actions as may be reasonably required to carry out the provisions of this Agreement and give effect to the transactions contemplated hereby.

**25. SEVERABILITY.** In the event any of the provisions of this Agreement are held by a court of competent jurisdiction to be contrary to any state or federal law, the remaining provisions of this Agreement will remain in full force and effect.

**26. ENTIRE AGREEMENT.** This Agreement, which may be executed in a number of counterparts, each of which shall be deemed an original, constitutes the entire agreement and understanding between the parties, and supersedes all prior agreements and understandings with respect to the subject matter hereof.

**EXHIBIT A**  
**Special Provisions**

There are no Special Provisions.

Contractor Initials: KC  
Date: 10/20/25

## **EXHIBIT B**

### **Scope of Services**

Research Triangle Institute, d/b/a RTI International (“RTI”) shall perform the tasks as described in the attached detailed proposal titled:

“NHDES Amanzi Forecasting Improvements”,  
submitted by RTI International, dated October 1, 2025.

Contractor Initials: RC  
Date: 10/20/25

## EXHIBIT C

### Price and Payments

All services shall be performed to the satisfaction of NHDES before payment is made. All payments shall be made upon receipt and approval of stated outputs and upon receipt of an associated invoice. The billing for the "NHDES Amanzi Forecast System Improvements", detailed in Exhibit B, is to be done upon task completions as detailed in Table C-1 below.

The total cost of the contract shall not exceed \$222,184. NHDES agrees to pay the invoices as submitted by the Contractor. Invoices are subject to the approval of the Contract Officer before payment is processed.

#### 1. DELIVERABLE PAYMENT SCHEDULE

All charges by Research Triangle Institute (RTI International), under this Contract for the "NHDES Amanzi Forecast System Improvements", shall be at a quarterly fixed price in accordance with the schedules set forth in Table C-1 below.

#### 2. FIXED PRICE PAYMENT SCHEDULE

Table C-1 Payment Schedule:

Contractor Initials: KC  
Date: 10/20/25

**Table C-1**

<b>NHDES Amanzi® Forecast System Improvements</b>			
<b>Deliverable</b>	<b>Percentage</b>	<b>Due Date</b>	<b>Payment Amount</b>
1. Lamprey River Basin Modeling Updates	21.02%	5 months after Task 1 work begins	<b><u>\$ 46,708</u></b>
2. Isinglass River Basin Modeling Updates	16.62%	5 months after Task 2 work begins	<b><u>\$ 36,924</u></b>
3. AFS Configuration Updates for Lamprey and Isinglass Basins	11.75%	2 months after Task 3 work begins	<b><u>\$ 26,117</u></b>
4.1 Review and possible modification of Ossipee HEC-RAS model	10.96%	2 months after Task 4.1 work begins	<b><u>\$ 24,346</u></b>
4.2 Review and possible modification of Winnepesaukee down to Silver Lake HEC-RAS model	10.96%	2 months after Task 4.2 work begins	<b><u>\$ 24,346</u></b>
4.3 Integration of HEC-RAS models into the AFS	10.96%	4 months after completion of task 4.1 and 4.2	<b><u>\$ 24,346</u></b>
5.1 Stage-Discharge Curve Database Integration	2.13%	6 months after Task 5 work begins	<b><u>\$ 4,727</u></b>
5.2 UI Update for Gridded Data Visualization	3.44%	6 months after Task 5 work begins	<b><u>\$ 7,644</u></b>
5.3 Timeseries Explorer Performance Upgrade	3.44%	6 months after Task 5 work begins	<b><u>\$ 7,644</u></b>
5.4 Configure Alternative Observed Precipitation Source	4.09%	6 months after Task 5 work begins	<b><u>\$ 9,089</u></b>
5.5 Password Resets	3.31%	6 months after Task 5 work begins	<b><u>\$ 7,359</u></b>
5.6 Improve Login Page	1.32%	6 months after Task 5 work begins	<b><u>\$ 2,934</u></b>
<b>AFS Improvements Total:</b>	<b>100%</b>		<b><u>\$ 222,184</u></b>

Notwithstanding any other provision of this Contract, in no event shall the total payment made by the State exceed \$222,184.

**3. PAYMENTS**

The State shall pay RTI International within thirty (30) calendar days of the State’s receipt of a correct and undisputed invoice.

Contractor Initials: KC  
Date: 10/20/25



# Amanzi Forecasting Improvements

Prepared for:  
New Hampshire Department of Environmental Services



October 1, 2025

# Technical and Cost Proposal

October 1, 2025

- Amanzi Forecasting Improvements

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This proposal includes data that shall not be disclosed outside the Government of New Hampshire and shall not be duplicated, used, or disclosed—in whole or in part—for any purpose other than to evaluate this proposal. If, however, a contract is awarded to this offeror as a result of—or in connection with—the submission of these data, the Government shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting contract. This restriction does not limit the Government's right to use information contained in these data if obtained from another source without restriction. The data subject to this restriction are contained in the entire proposal.

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# 1 Background

The New Hampshire Department of Environmental Services (NHDES) Dam Bureau and RTI have a longstanding history of working together since the early 2000s, starting with the RTI RiverTrak® forecast system implemented to help operate 48 reservoirs, lakes, and flood control structures in New Hampshire. As changes in computer technology and data security standards evolved over time, it became increasingly difficult to properly maintain RiverTrak® under full functionality. In 2021, NHDES opted to replace RiverTrak® with RTI's Amanzi™ framework. The web-based Amanzi Forecast System (AFS) replicated the deterministic forecasting functionality from RiverTrak® and expanded functionality to include probabilistic forecasting for the Winnepesaukee Basin and corresponding optimization model of Winnepesaukee and Winnisquam decisions. Since 2022, RTI has been maintaining the AFS system and implementing minor user interface and data ingest/processing enhancements.

The basin modeling underlying the AFS has remained largely unchanged from the original RiverTrak® implementation. NHDES has identified several basins where updates would enhance lake level and streamflow forecasting. The updates include adding new lake level and streamflow forecast locations and improving lake level forecasting in areas with complex hydraulic effects that the current models cannot adequately capture. The following technical and cost proposal provides a scope of work for requested improvements. Each task includes a description of the technical approach, data and other needs from NHDES, deliverables, and risks.

## 2 Scope of Work

The project is divided into 6 tasks:

**Task 1:** Lamprey Basin Modeling Updates

**Task 2:** Isinglass Basin Modeling

**Task 3:** AFS Configuration Updates for Lamprey and Isinglass Basins

**Task 4:** Water Level Forecast Improvements for Ossipee Dam, Lochmere Channel, and Silver Lake

**Task 5:** Amanzi Infrastructure and Usability Improvements

**Task 6:** Project Management

A detailed description of each task, including the methodology that will be used to complete the proposed task, the deliverables that will be prepared, what is needed from NHDES, and any known risks, is provided below. Tasks 1 through 5 describe modeling and Amanzi updates. Task 6 describes project management responsibilities for the proposed work.

### Task 1: Lamprey Basin Modeling Updates

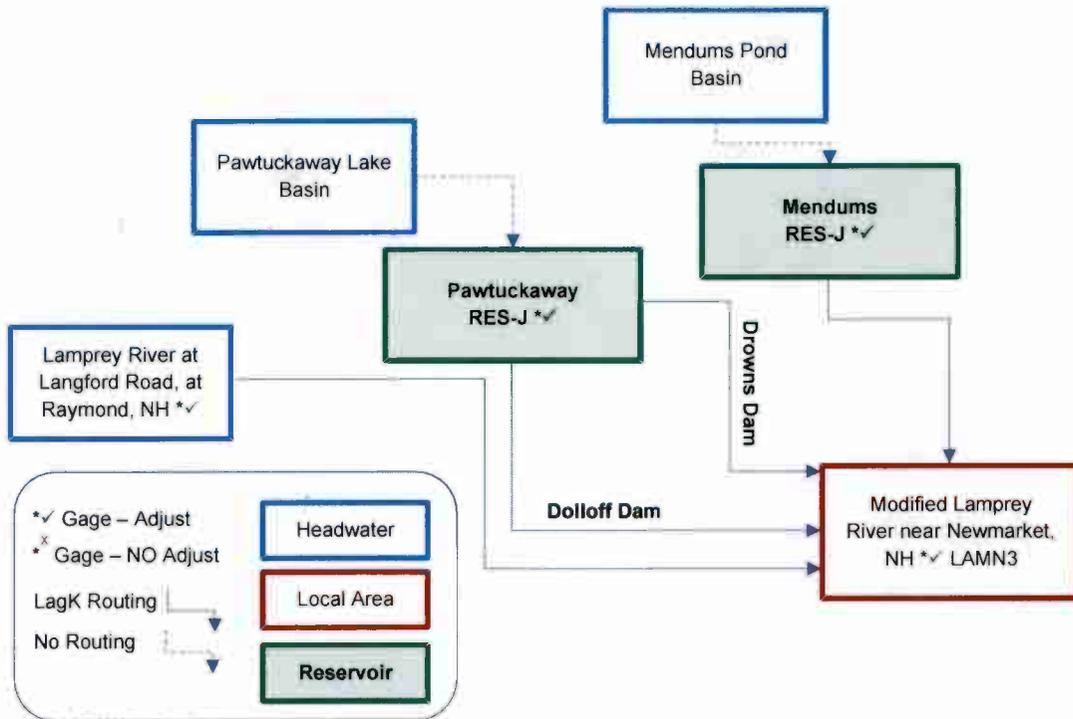
The goal of this task is to enhance modeling in the Lamprey Basin (LAMN3) to include lake level forecasts for Pawtuckaway Lake in Nottingham and Mendums Pond Dam in Barrington.

Hydrologic/operational modeling and calibration will be performed outside of the AFS using the NWSRFS Interactive Calibration Program (ICP) and internal RTI tools. The finalized models will be integrated into the AFS under Task 3.

The current basin modeling in Lamprey is limited to SNOW-17 and SAC-SMA models over a large basin area (approximately 180 mi<sup>2</sup>) that includes both reservoirs, forecasting flow at the basin outlet (Lamprey River near Newmarket; USGS-01073500). This current approach implicitly accounts for lake operations in the mass balance.

To incorporate NHDES planned gate operations to forecast lake levels for both reservoirs, RTI proposes to sub-divide the Lamprey Basin into four subbasins (as shown in the diagram below):

- Lamprey River at Langford Road, at Raymond, NH (USGS-01073319) [RAYN3]
- Pawtuckaway Lake [PAWNH]
- Mendums Pond [MEND3]
- Modified Lamprey River near Newmarket, NH (USGS-01073500) [LAMN3]



The inclusion of Lamprey River at Langford Road is not required to split out Pawtuckaway Lake and Mendums Pond. However, given the available historical data at the associated USGS gage, incorporating this subbasin will better capture the variability of rainfall over Lamprey Basin and will likely improve the calibration of the neighboring Pawtuckaway Lake basin.

For each subbasin, RTI will develop SNOW-17, Sacramento Soil Moisture Accounting model (SAC-SMA), Unit Hydrograph (UNIT-HG) and LAG/K models, leveraging the current LAMN3 model parameters as a starting point for calibration. It is assumed that these standard models will be sufficient for modeling inflows to the reservoir, without the need to explicitly account for consumptive use or other hydrologic activities within the modeling process.

The hydrologic model development process is as follows:

- Delineate subbasins

- RTI will coordinate with NHDES and NWS to finalize subbasin IDs, ensuring that new NHDES IDs are unique and do not conflict with NWS IDs in other locations.
- Determine if elevation zones are warranted
  - Depending on the terrain (relief, orography, etc.), it may be beneficial to sub-divide each subbasin vertically into elevation zones to capture differences in snow accumulation and melt timing.
- Define initial model parameters
  - Initial model parameters will be borrowed from LAMN3 (or neighboring subbasin, if already calibrated). However, some hydrological modeling parameters must be estimated rather than inferred from neighboring basins. These parameters are detailed below.
    - For the SNOW-17 modeling, it will be necessary to develop the area-elevation curve, compute the mean elevation of each elevation zone from the DEM, and define seasonal melt variation factors, if desired.
    - For the UNIT-HG modeling, ordinates will be scaled to subbasin drainage area.
    - For the SAC-SMA modeling, monthly potential evapotranspiration (PET) estimates will be derived.
- Develop historical forcings such as Mean Areal Precipitation (MAP) and Mean Areal Temperature (MAT), potentially leveraging the NOAA Analysis of Record for Calibration [AORC] dataset
- Collect, quality control, and process available historical data from NHDES and USGS
- Calibrate subbasin models
- Model peer and senior review

For the Pawtuckaway Lake and Mendums Pond subbasins, RTI will develop RES-J models that will allow NHDES to input gate operations over the forecast simulation period. RES-J modeling will include dam operations (i.e., user input gate operations) and calculation of net lake surface evaporative losses (if necessary). Known operations and inputs are captured in the following table:

**Table 1 Pawtuckaway Lake and Mendums Pond Background Information**

	Pawtuckaway Lake	Mendums Pond
<b>Description</b>	<ul style="list-style-type: none"> <li>● Two geographically separate outlet control structures: Dolloff Dam and Drowns Dam</li> <li>● Dolloff Dam is used most frequently</li> <li>● Drowns Dam is used during Fall</li> <li>● Lower head conditions in Winter (drawdown below 5 ft) can cause odd hydraulic effects</li> <li>● There are two dikes with invert elevations that are susceptible to overtopping; it will be important to indicate when these elevations are exceeded in the forecast. There will be no consideration of the dikes within the RES-J model.</li> </ul>	<ul style="list-style-type: none"> <li>● Dam reconstruction project underway; will not impact gate sizing</li> <li>● Weir gate is used most frequently; flow is estimated based on gate position</li> </ul>
<b>Measurements</b>	<ul style="list-style-type: none"> <li>● Elevation at Dolloff (no longer measure elevation at Drowns)</li> </ul>	<ul style="list-style-type: none"> <li>● Elevation (since 2014)</li> </ul>

	Pawtuckaway Lake	Mendums Pond
	<ul style="list-style-type: none"> <li>Flows at Dolloff and Drowns (starting in 2007)</li> <li>Gate operations at Dolloff and Drowns (some gaps)</li> </ul>	<ul style="list-style-type: none"> <li>Flows (since 2012, with some gaps)</li> <li>Gate operations</li> </ul>
<b>User Inputs</b>	<ul style="list-style-type: none"> <li>Dolloff Logbay 1</li> <li>Dolloff Logbay 2</li> <li>Dolloff Logbay 3</li> <li>Dolloff Pond Drain Gate</li> <li>Drowns Gate</li> </ul>	<ul style="list-style-type: none"> <li>Weir Gate</li> <li>Pond Drain Gate</li> </ul>
<b>Assumptions</b>	<ul style="list-style-type: none"> <li>Level pool modeling is sufficient, meaning that elevation recorded at Dolloff is sufficient to assume for Drowns</li> <li>Wintertime hydraulic effects will be ignored and modeling will focus on performance in Spring, Summer, and Fall seasons</li> </ul>	<ul style="list-style-type: none"> <li>Level pool modeling is sufficient</li> </ul>

In addition to the modeling, RTI will maintain calculation files and summarize the modeling in a memo.

#### Needs from NHDES

1. Stage-storage curves for Pawtuckaway Lake and Mendums Pond. If not available, bathymetric data to support stage-storage curve development
2. Dike (2) invert elevations at Pawtuckaway
3. Stop log bay rating tables (Number of Logs / Pool Elevation / Outflow relationship)
4. Pond drain gate rating tables (Gate Opening / Pond Elevation / Outflow relationship)
5. Gate and weir rating tables
6. Pan evaporation data, if available
7. NHDES observed data (flow, elevation, and gate operations)
8. NHDES (or USGS) rating curves at USGS stations
9. Any other hydraulic or physical characteristic data available for the reservoirs and control structures.

#### Deliverables

1. Memo with calibration calculation notes and performance statistics
2. Updated model files

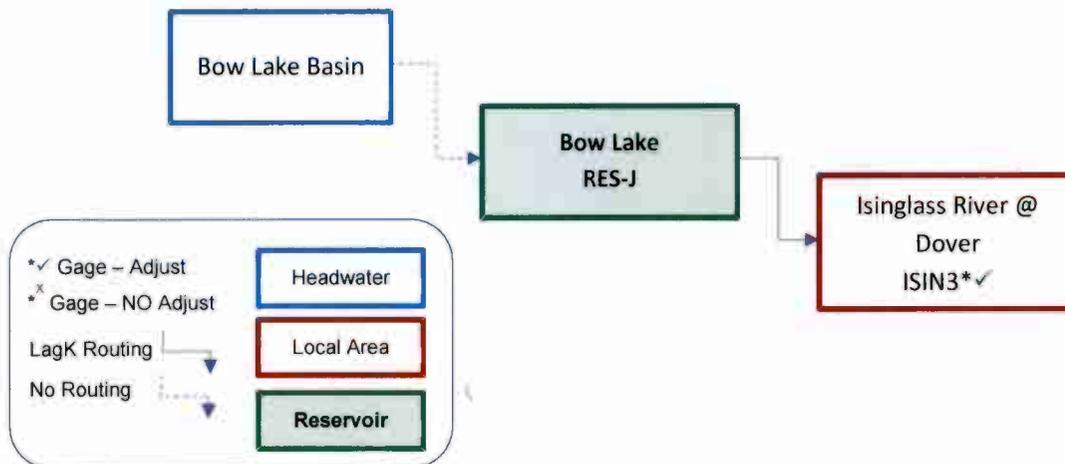
#### Assumptions and Risks

1. It is assumed that consumptive use modeling and hydraulic modeling are not necessary for the Lamprey Basin modeling updates.
2. It is assumed that AORC forcings will be adequate for calibration. If the signal between forcings and streamflow (or computed reservoir inflows) is poor, reasonable adjustments (MAP scaling and/or MAT lapsing) to the AORC time series will be made.
3. It is assumed that no correction between AORC and operational precipitation and temperature (MRMS) will be required.

## Task 2: Isinglass Basin Modeling

The goal of this task is to forecast lake levels at Bow Lake and flow at the Isinglass River near Dover (ISIN3; USGS-01072870). Like Task 1, hydrologic/operational modeling and calibration will be completed outside of the AFS using the NWSRFS Interactive Calibration Program (ICP) and internal RTI tools. The finalized modeling will be integrated into the AFS under Task 3.

RTI proposes subdividing the basin above Isinglass River near Dover (ISIN3; USGS-01072870) at Bow Lake, resulting in two subbasins. It is anticipated that SNOW-17, SAC-SMA, and UNIT-HG models will be developed for each subbasin and one RES-J model for Bow Lake where LAG/K routing will be calibrated to route releases down to ISIN3. It is assumed that these standard models will be sufficient for modeling inflows to the reservoir, without the need to explicitly account for consumptive use or other hydrologic activities within the modeling process.



For hydrological modeling, RTI will perform similar steps as identified in Task 1:

- Delineate subbasins
- Determine if elevation zones are warranted
- Define initial model parameters
- Develop historical forcings such as Mean Areal Precipitation (MAP) and Mean Areal Temperature (MAT), leveraging the NOAA Analysis of Record for Calibration [AORC] dataset)
- Gather, quality-control and process/fill available historical data from NHDES and USGS
- Calibrate subbasin models

To calibrate the Bow Lake subbasin, typically reservoir inflows would be back-calculated from historical reservoir releases and pool elevation, leveraging the stage-storage curve. Due to the lack of a reliable historical record of reservoir releases for the Bow Lake basin, RTI will work with NHDES and review historical records of logbay and gate settings to attempt to reconstruct a record of releases. If back-calculating inflows is not feasible, RTI will calibrate the hydrology of both the new Bow Lake Basin and ISIN3 simultaneously during RES-J model development, utilizing observed streamflow data from the USGS gage. The same SNOW-17 and SAC-SMA parameters will be applied to both basins

unless analysis shows that distinct parameters are necessary, such as when separate contributions to the downstream hydrograph can be identified for each subbasin.

- Model peer and senior review

For Bow Lake, RTI will develop a RES-J that will allow NHDES to input gate operations over the forecast simulation period. RES-J modeling will include dam operations (i.e., user input gate operations) and net lake surface evaporative losses (if necessary). Known operations and inputs are captured in the following table:

**Table 2 Bow Lake Background Information**

Bow Lake	
Description	<ul style="list-style-type: none"> <li>• Stage-storage information currently unavailable outside of contours from the State of New Hampshire Fish and Game</li> <li>• Drawdown operation in the fall</li> </ul>
Measurements	<ul style="list-style-type: none"> <li>• Pool Elevation</li> <li>• Gate and logbay settings have been recorded, but not officially</li> </ul>
User Inputs	<ul style="list-style-type: none"> <li>• Logbay 1</li> <li>• Logbay 2</li> <li>• Logbay 3</li> <li>• Logbay 4</li> <li>• Pond-Drain Gate 1</li> <li>• Pond-Drain Gate 2</li> </ul>
Assumptions	<ul style="list-style-type: none"> <li>• Level pool modeling is sufficient</li> <li>• Bathymetric data can be obtained to inform stage-storage curve</li> </ul>

In addition to the modeling, RTI will maintain calculation files and summarize the modeling in a memo.

#### Needs from NHDES

1. Bathymetric data for Bow Lake to support stage-storage curve development
2. Stop log bay rating tables (Number of Logs / Pool Elevation / Outflow relationship)
3. Pond drain gate rating tables (Gate Opening / Pond Elevation / Outflow relationship; if not available, RTI will develop a table using the weir equation)
4. Pan evaporation data, if available
5. NHDES observed data (flow, elevation, and gate operations)
6. NHDES (or USGS) rating curves at USGS stations
7. Any other hydraulic or physical characteristic data available for the reservoirs and control structures.

#### Deliverables

1. Memo with calibration calculation notes and performance statistics
2. Model files

#### Assumptions and Risks

1. It is assumed that consumptive use modeling and hydraulic modeling are not necessary for the Isinglass Basin modeling.

2. It is assumed that AORC forcings will be adequate for calibration. If the signal between forcings and streamflow (or computed reservoir inflows) is poor, reasonable adjustments (MAP scaling and/or MAT lapping) to the AORC time series will be made.
3. It is assumed that no correction between AORC and operational precipitation and temperature (MRMS) will be required.
4. If NHDES is unable to obtain adequate stage-storage information, any simplified assumptions will impact the reservoir model performance.

### Task 3: AFS Configuration Updates for Lamprey and Isinglass Basins

Once all hydrology and operational models are developed for the Lamprey and Isinglass Basins, AFS configurations will be updated. Updates include:

- Replacing underlying sub-basin geospatial data for spatial processing of forcing data
- Replacing and adding base models (Model files, I/O mappings, etc.)
- Adding basin observed and forecasted time series.
  - Ingests (USGS, NHDES-SHEF, SNODAS, MRMS, NBM)
  - Sub-basin model state "overwrite time series" for each new basin
- Creating new manual data entry for gate operations inputs
  - Time series
  - Paired data tables for discharge computation
- Adding paired data tables for stage-storage information
- Creating new plots for each subbasin (forecast points) and reservoirs
- Plotting thresholds for Pawtuckaway corresponding to the two dike invert elevations
- Updating of object level permissions for public data access to observed time series
- Adding alerts to new forecast points

See Table 3 for a list of time series that currently exist within the AFS alongside additional time series resulting from this task.

**Table 3 Summary of Relevant Time Series in the Current AFS and Future AFS**

Location	Current AFS	Future AFS Additions
Lamprey River at Langford Road, at Raymond, NH (USGS-01073319) [RAYN3]	<b>Observed</b> <ul style="list-style-type: none"> <li>• Stage</li> <li>• Discharge</li> </ul> <b>Forecasted</b> <ul style="list-style-type: none"> <li>• None</li> </ul>	<b>Observed</b> <ul style="list-style-type: none"> <li>• Subbasin MAP, MAT, SWE</li> <li>• Subbasin State Overwrites (6)</li> </ul> <b>Forecasted</b> <ul style="list-style-type: none"> <li>• Discharge</li> <li>• Stage</li> <li>• Subbasin MAP, MAT, SWE</li> <li>• Subbasin States (6)</li> </ul>
Pawtuckaway Lake [PAWNH]	<b>Observed</b> <ul style="list-style-type: none"> <li>• Pool elevation</li> <li>• Point air temperature</li> </ul>	<b>Observed</b> <ul style="list-style-type: none"> <li>• Subbasin MAP, MAT, SWE</li> <li>• Reservoir release</li> <li>• Control Structures (5)</li> </ul>

Location	Current AFS	Future AFS Additions
	<ul style="list-style-type: none"> <li>• Daily point precipitation increment</li> <li>• Point precipitation increment</li> </ul> <p><b>Forecasted</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Subbasin State Overwrites (6)</li> </ul> <p><b>Forecasted</b></p> <ul style="list-style-type: none"> <li>• Reservoir release</li> <li>• Discharge</li> <li>• Stage</li> <li>• Pool elevation</li> <li>• Subbasin MAP, MAT, SWE</li> <li>• Subbasin States (6)</li> </ul>
Mendums Pond [MEND3] / Mendums Pond (Snow) [MEPNH]	<p><b>Observed</b></p> <ul style="list-style-type: none"> <li>• Pool elevation</li> <li>• Reservoir release</li> <li>• Point air temperature</li> <li>• Daily point precipitation increment</li> <li>• Point precipitation increment</li> <li>• Water temperature</li> <li>• Snow Water Equivalent</li> <li>• Inst. Snow Depth</li> </ul> <p><b>Forecasted</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>	<p><b>Observed</b></p> <ul style="list-style-type: none"> <li>• Subbasin MAP, MAT, SWE</li> <li>• Control Structures (5)</li> <li>• Subbasin State Overwrites (6)</li> </ul> <p><b>Forecasted</b></p> <ul style="list-style-type: none"> <li>• Discharge</li> <li>• Stage</li> <li>• Pool elevation</li> <li>• Reservoir release</li> <li>• Subbasin MAP, MAT, SWE</li> <li>• Subbasin States (6)</li> </ul>
Lamprey River near Newmarket, NH (USGS-01073500) [LAMN3]	<p><b>Observed</b></p> <ul style="list-style-type: none"> <li>• Stage</li> <li>• Discharge</li> </ul> <p><b>Forecasted</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>	<p><b>Observed</b></p> <ul style="list-style-type: none"> <li>• Subbasin MAP, MAT, SWE</li> </ul> <p><b>Forecasted</b></p> <ul style="list-style-type: none"> <li>• Discharge</li> <li>• Stage</li> <li>• Subbasin MAP, MAT, SWE</li> <li>• Subbasin States (6)</li> </ul>
Bow Lake [NEW ID]	<p><b>Observed</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul> <p><b>Forecasted</b></p> <ul style="list-style-type: none"> <li>• None</li> </ul>	<p><b>Observed</b></p> <ul style="list-style-type: none"> <li>• Subbasin MAP, MAT, SWE</li> <li>• Control Structures (2)</li> </ul> <p><b>Forecasted</b></p> <ul style="list-style-type: none"> <li>• Discharge</li> <li>• Stage</li> <li>• Subbasin MAP, MAT, SWE</li> </ul>

Location	Current AFS	Future AFS Additions
Isinglass River nr Dover (ISIN3)	<b>Observed</b> <ul style="list-style-type: none"> <li>• Stage</li> <li>• Discharge</li> </ul> <b>Forecasted</b> <ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• Subbasin States (6)</li> </ul> <b>Observed</b> <ul style="list-style-type: none"> <li>• None</li> </ul> <b>Forecasted</b> <ul style="list-style-type: none"> <li>• Discharge</li> <li>• Stage</li> <li>• Subbasin MAP, MAT, SWE</li> <li>• Subbasin States (6)</li> </ul>

### Needs from NHDES

Beyond the data that is required for Task 1 and Task 2, this task requires:

1. Alert definitions (Location, Parameter, Threshold- or Alert-type, Value)
2. Disclaimers and other verbiage

RTI will provide spreadsheet templates to align with previous AFS work.

### Deliverables

1. Documentation of updated system components and database objects
2. Updated AFS

### Assumptions and Risks

1. RTI will continue to maintain the AFS code base in RTI's GitHub Enterprise repository.
2. RTI will carry out system updates using scripts that will be tested before being applied to the production system.
3. If issues arise during the deployment to the live system, database backups are available to safely reset the AFS, revise, and re-deploy the updates.

### Task 4: HEC-RAS Implementation for Ossipee Dam, Lochmere Channel, and Silver Lake

The goal of this task is to improve lake level forecasts for several critical locations within the NHDES watersheds by implementing hydraulic modeling within the AFS. At Ossipee Dam and Lochmere Channel, the dams are hydraulically separated from the main reservoir pool, and as such the level pool routing implemented in RES-J is not appropriate for calculating dam releases at these locations. This underlying modeling issue has required NHDES to iteratively and artificially adjust releases to adequately forecast lake levels in the AFS. Additionally, the lake level at Silver Lake, a natural lake with no control structure, is forecasted using a lookup table based on total forecasted flow at Tilton and would benefit from improvement. RTI proposes implementing NHDES HEC-RAS models encompassing these three locations within the AFS to better represent the complex hydraulics of these locations and improve lake level forecasting.

In both the Ossipee and Winnepesaukee basins, the existing hydrologic models will be maintained and executed as they currently are. The workflow that runs the existing models will be updated so that it will first execute the current hydrologic models and will subsequently execute the HEC-RAS model to provide

more accurate water level and discharge estimates for the main reservoir pool and at the subject dams. The boundary conditions for the HEC-RAS models will be derived from the outputs of the hydrologic models and user input gate operations. RTI will evaluate the existing HEC-RAS models and compare them to the hydrologic modeling to determine the optimal extent of the HEC-RAS model for inclusion into the AFS.

This task will include the review and possible modification of the provided HEC-RAS models as well as setting up and executing the models as part of the existing forecast model execution workflow.

The existing HEC-RAS models will first be reviewed and modified as needed to run in the AFS. This will include:

- Evaluate existing versions of models and update them to versions compatible with Amanzi as needed
- Evaluate the extent of the existing models
  - RTI assumes the Winnepesaukee model will end at the USGS streamflow gage at Tilton. RTI will work with NHDES to determine the optimal upstream extent of the model.
  - RTI assumes that the Ossipee model will extend from Ossipee Dam through Ossipee lake.
- Evaluate the accuracy of the models
  - Compare reservoir stage-storage relationships and dam rating curves in HEC-RAS models to those used in RES-J or existing documentation.
  - Evaluate the accuracy of routing in the models using three historical events.
- Ensure that models have cross-sections at locations of interest or add additional cross-sections if required. Added cross-sections will be interpolated unless terrain data that incorporates bathymetric data is provided.
- Update boundary conditions for hydrologic inflows to specific locations in HEC-RAS based on drainage area ratios of existing sub-basin configurations
- Ensure time series that need to be imported to or exported from HEC-RAS are in DSS file format
- Ensure that gate position time series collected from the AFS are compatible with the models (gate opening vs. gate height)
- Update the models to work with initial states for hot starts (HEC-RAS "restart" files).
- Update model boundary conditions to fit within AFS framework
  - RTI will assume either rating curve or normal depth downstream boundary conditions.
  - RTI will assume flow hydrograph upstream boundary condition.
  - Initial stage and flows will be set using hot start files.
- Increase model stability and robustness under a wide range of flows

The existing hydrologic modeling workflows will be updated to execute HEC-RAS models for the Ossipee and Winnepesaukee as follows:

- The HEC-RAS models will be stored in the Amanzi database as is currently being done with the hydrologic models.
- After the hydrologic model has been executed, the HEC-RAS model for the target basin will be fetched from the database.
- The initial conditions will be updated with previously created model states files if available and appropriate, otherwise a default set of initial states will be used.

- The boundary condition time series will be updated in the model based on the hydrologic model results as well as gate position data from the AFS database.
- The HEC-RAS model will be executed.
- Model states files will be written to the database for use in subsequent model runs as initial conditions.
- Time series from the HEC-RAS model at points of interest will be extracted from the HEC-RAS model and stored in the AFS database for display in the AFS interface.
- Existing reservoir, lake and dam plots will be updated to display the HEC-RAS model results.

### Needs from NHDES

1. Ossipee HEC-RAS model
2. Winnepesaukee down to Silver Lake HEC-RAS model
3. Additional stage-storage curve and/or dam rating curve information for Lochmere Dam and Ossipee Dam not already included in RES-J
4. If model extension is required or if existing models are found to not have an accurate stage-storage relationship then bathymetric data for the reservoirs in question would be required.

### Deliverables

1. Updated AFS, including model files

### Assumptions and Risks

1. RTI assumes NHDES HEC-RAS models are unsteady, 1D models with all reservoirs modeled using cross-sections and not storage areas.
2. If, during model review, the HEC-RAS models are found unsuitable for operational implementation, RTI will work with NHDES to prepare a scope and budget to update the models, or pursue a simplified approach, such as that described in Task 4b.
3. If the stage-storage curve discrepancies are minor, RTI can artificially adjust the cross-section data to match the observed stage-storage. If discrepancies are large, terrain data with bathymetry would be required to accurately update the model. In this case, RTI will work with NHDES to prepare a scope and budget to update the models.
4. RTI assumes that both models incorporate the dam structures as inline structures with gates and that no major updates will be required to incorporate structures or gates into the models.
5. RTI assumes that cross-section data will be available at all required forecast points. If cross-section data are not available, RTI will add interpolated cross-sections at forecast locations. If terrain data with bathymetry data are available RTI can add cross-sections at required locations.
6. RTI assumes that the existing models will cover the required extent. If additional model development is required, RTI will work with NHDES to prepare a scope and budget to update the models.

## Task 5: Amanzi Infrastructure and Usability Improvements

The following are infrastructure and usability improvements for the AFS.

### Task 5.1. Stage-Discharge Curve Database Integration

The AFS converts observed stage to discharge using rating curves saved as CSV files. These CSV files are not accessible to the NHDES forecasters or system admin staff, and therefore any updates must be made by RTI. Under this task, the rating curves would be migrated to the existing paired data tables, allowing NHDES system admin to edit the data via the admin console.

### **Task 5.2. UI Update for Gridded Data Visualization**

The current gridded precipitation viewer in the AFS is rudimentary and has limited functionality. Under this task, RTI would implement advanced map viewers that allow the map to be animated and provide controls that allow the users to adjust animation speed, map overlay transparency, and change the basemap.

### **Task 5.3. Timeseries Explorer Performance Upgrade**

The current Timeseries Explorer in the AFS loads slowly because it fetches and renders the entire folder structure when the page is initialized. Under this task, RTI would improve the user experience by fetching user-selected folders rather than the entire folder structure (this is called "lazy loading"), resulting in faster loading.

### **Task 5.4. Configure Alternative Observed Precipitation Source**

The AFS is currently configured to utilize MRMS as a source of observed precipitation. If this source of precipitation were not to be available, there is no fail-over source for observed precipitation. Under this task, RTI would configure the AFS to utilize available precipitation gages as a last priority source.

### **Task 5.5. Password Resets**

Within the current AFS, users are unable to reset or change their password. Under this task, RTI would add password reset functionality to the AFS that would allow users to reset and change their password without assistance from an AFS admin.

### **Task 5.6. Improve Login Page**

Within the current AFS, when a login attempt fails the user is redirected back to the home page. Under this task, RTI will update the login page to inform the user that their login attempt failed and let them try to login again without being sent back to the home page.

### **Needs from NHDES**

1. (Task 5.4.) RTI will start by using all available point precipitation data that the current system ingests. Should NHDES possess knowledge of any stations not being suited for this process (e.g. due to biases or long reporting latency), a list of such stations is needed.

### **Deliverables**

1. Updated AFS.

### **Assumptions and Risks**

1. (Task 5.4.) RTI will implement a state-of-the-art geostatistical interpolation approach that is suited for the relatively short recording intervals. The approach will not include physiographic factors (variables) such as elevation.

### **Task 6: Project Management**

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Coordination between NHDES and RTI is necessary for the success of this project. To facilitate the coordination, the following tasks will be performed by RTI throughout the duration of the project:

- Virtual monthly project update meetings (1 hour duration each). Each meeting will review current task progress and will include a high-level check in on budget and schedule. The project update meetings will also provide an opportunity to discuss project needs or challenges.
- Complete invoicing, communication, management of staff, and other miscellaneous project management tasks. Submit invoices monthly to Accounts Payable.

RTI will lean on the NHDES project manager/coordinator to coordinate NHDES staff attendance at various project meetings. RTI will work directly with the NHDES project manager/coordinator to request project data, review needs (identified in this proposal for each task), and schedule miscellaneous project meetings. RTI anticipates continuing to use a shared Microsoft Teams site for data sharing.

#### Needs from NHDES

1. NHDES-designated preferred points of contact for project management and technical communications.

#### Deliverables

1. Notes and action items from project update and ad hoc project meetings.

#### Assumptions and Risks

1. RTI will provide project status updates, which may include critical questions requiring input from NHDES to complete specific tasks. It is assumed that NHDES will provide timely input and feedback so as not to affect the project schedule or budget.

### 3 Schedule and Budget

To meet the requirements outlined in the scope of work, RTI is pleased to provide the following budget, shown in Table 4. RTI's Fixed Price budget estimate is based on the assumptions outlined in this proposal.

**Table 4 Project Costs**

	Task	Cost
1	Lamprey Basin Modeling Updates	\$42,461
2	Isinglass Basin Modeling	\$33,566
3	AFS Configuration Updates for Lamprey and Isinglass Basins	\$23,742
4	HEC-RAS Implementation for Ossipee Dam, Lochmere Channel, and Silver Lake	\$66,396
5	Amanzi Infrastructure and Usability Improvements	\$35,816
6	Project Management	\$20,203
	<b>Total</b>	<b>\$222,184</b>

The schedule for completion and invoicing of the proposed tasks is as follows. The costs include the labor required for project management throughout the duration of the project. Tasks will be performed in parallel, when appropriate, to expedite project timelines. The initiation of each task will occur once all task needs (data, model files, etc.), as outlined in the proposal are received and the Parties have agreed upon the timeline for the task(s).

**Table 5 Project Schedule**

Task	Deliverables	Due Date	Cost
<b>Task 1</b>			
1. Lamprey Basin Modeling Updates	1. Memo with calibration calculation notes and performance statistics 2. Updated model files	5 months after Task 1 work begins	\$46,708
<b>Task 2</b>			
2. Isinglass Basin Modeling	1. Memo with calibration calculation notes and performance statistics 2. Model files	5 months after Task 2 work begins	\$36,924
<b>Task 3</b>			
3. AFS Configuration Updates for Lamprey and Isinglass Basins	1. Documentation of updated system components and database objects 2. Updated AFS	2 months after Task 3 work begins	\$26,117
<b>Task 4</b>			
4.1 Review and possible modification of Ossipee HEC-RAS model	1. Updated model files	2 months after Task 4.1 work begins	\$24,346
4.2 Review and possible modification of Winnepesaukee down to Silver Lake HEC-RAS model	1. Updated model files	2 months after Task 4.2 work begins	\$24,346
4.3 Integration of HEC-RAS models into the AFS	1. Updated AFS	4 months after completion of tasks 4.1 and 4.2	\$24,346
<b>Task 5</b>			
5.1 Stage-Discharge Curve Database Integration	1. Updated AFS	6 months after Task 5 work begins	\$4,727
5.2 UI Update for Gridded Data Visualization	1. Updated AFS	6 months after Task 5 work begins	\$7,644
5.3 Timeseries Explorer Performance Upgrade	1. Updated AFS	6 months after Task 5 work begins	\$7,644
5.4 Configure Alternative Observed Precipitation Source	1. Updated AFS	6 months after Task 5 work begins	\$9,089
5.5 Password Resets	1. Updated AFS	6 months after Task 5 work begins	\$7,359
5.6 Improve Login Page	1. Updated AFS	6 months after Task 5 work begins	\$2,934

## 4 Resumes

Resumes for the following key technical staff are included:

- **Ryan Johnson:** Project manager and HEC-RAS modeling lead
- **Jeremy Carlston:** Basin modeling lead
- **Chris Lemasters:** Basin modeling support
- **Florian Kluibenschädl:** Amanzi Forecast System developer
- **Abby Watson:** RES-J modeling lead
- **John Park:** Basin modeling lead reviewer
- **Matt Denno:** Amanzi Forecast System and HEC-RAS lead reviewer

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## Ryan Johnson

### Water Resources Engineer

Ryan Johnson is a research environmental engineer in the Center for Water Resources at RTI International. In this capacity, he is responsible for completing technical tasks involving various hydraulic and hydrologic models. These tasks include data acquisition, model development, model calibration model verification, and technical documentation. Mr. Johnson's recent work has included the development of the Hydrologic Engineering Center's Hydrologic Modeling System (HEC-HMS) and River Analysis System (HEC-RAS) models for dam breach analyses, Corps Water Management System (CWMS) platforms, Deltares Flood Forecasting System (FEWS) platforms, Probable Maximum Flood (PMF) studies, and Probabilistic Flood Hazard Analyses (PFHA) using the Stochastic Event Flood Model (SEFM). Mr. Johnson has also been responsible for maintenance and configuration of data management systems including WISKI and AQUARIUS using applications built in ASP.NET or Python. Mr. Johnson has experience with HEC-GeoRAS, HEC-GeoHMS, HEC-RAS, HEC-HMS, HEC-FIA, SEFM, and SAC-SMA modeling.



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### Education

MS, Civil Engineering,  
University of Wyoming, 2015.  
BS, Civil Engineering,  
University of Wyoming, 2013.

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### Certifications

Professional Engineer  
Wyoming, #20556

### Relevant Project Experience

#### **Oregon Water Resources Department (OWRD) Dam Hazard**

**Classification and Inundation Mapping** (2024-2025)—*Project Manager/H&H Task Lead*. Is responsible for leading team to perform hazard classification evaluations for Rink Creek Dam, Panther Creek Dam, Deardorff Dam as well as an EAP mapping analysis for Franzen Dam. Tasks included overseeing and review of the development of either 500-year or PMF inflows using HEC-HMS, development of 2D HEC-RAS models for each dam, mapping of inundation resulting from dam breaches and determining a recommended hazard classification for each dam.

**State of Vermont Dam Portfolio Risk Assessment** (2023)—*Hydraulic Modeling Task Lead*. Was responsible for the leading team in development of two-dimensional (2-D) HEC-RAS models for screening analysis of consequences at 18 dams in Vermont. Tasks include preparation of model terrain, land use data, and structure point data, development and review of HEC-RAS models and review of computed consequence outputs.

**Idaho National Laboratory (INL) Probabilistic Flood Hazard Analyses (PFHA)** (2021 to Present)—*Project Manager/H&H Modeling Lead*. Is responsible for the development of two-dimensional (2-D) HEC-RAS and HEC-HMS models used in PFHA to simulate Annual Exceedance Probability (AEP) water surface elevation curves for areas of established and proposed nuclear development sites caused by local intense precipitation events, riverine flooding, or mid-latitude cyclone precipitation events. Tasks include development and calibration of a long-term HEC-HMS model, 2-D HEC-RAS site models, parameterization of all models, and quantification of model parameter uncertainty and documentation.

**Eagle Creek Mongaup PMF Study** (2020 to 2021)—*Staff Engineer*. For this project for Eagle Creek Renewable Energy, was responsible for the development of a HEC-HMS and HEC-RAS model used in a PMF study for five dams in the Mongaup River Basin. An HEC-HMS model was calibrated along with HEC-RAS model (with inline structure release rules) to observed peak inflow events. Models were then used in a PFHA framework to develop AEP water surface elevation curves for each structure.

**Alabama Power FEWS Implementation** (2020 to 2021)—*Staff Engineer*. For this project for Alabama Power, was responsible for configuration of eight HEC-RAS models into a FEWS. Models read in time series data from observed gages, SAC-SMA hydrologic model, and RiverWare reservoir model in order to simulate forecasted river stages and flows. Configuration included visualization of HEC-RAS model results in within the FEWS interface.

**USACE Truman and Stockton Dam Probable Maximum Flood (PMF) Analyses** (2019-2021)—*H&H Modeling Task Lead*. Was responsible for development, calibration and validation of a HEC-HMS and HEC-RAS models to update the probable maximum flood that could occur at Truman and Stockton dams located in Missouri, USA. Model calibration and validation was performed for six observed storms that occurred in the watershed and optimization of the probable maximum precipitation over the watershed. To validate the parameters and modeling over 40 sensitivity runs were performed to ensure that model simulations represented conditions that would produce the maximum flood at each of the dams.

**Boise River 2-D HEC-RAS Modeling** (2016 to 2017)—*Staff Engineer*. For this project, for the USACE Walla Walla District, was responsible for converting an existing one-dimensional (1-D) HEC-RAS 4.1 model to a 1-D/2-D HEC-RAS 5.0 model for a 65-mile stretch of the Boise River from the Lucky Peak Dam to the confluence with the Snake River. The new 2-D HEC-RAS model was part of a CWMS implementation for the basin. Responsibilities included updating existing HEC-RAS geometry to reflect new terrain data, model calibration, and model verification. The new 2-D HEC-RAS model was calibrated to the observed stage for the 1-D model components and aerial imagery for the 2-D areas.

**Tennessee Valley Authority (TVA) Consequence Analyses** (2015 to 2020)—*Staff Engineer*. Multiple projects conducted in conjunction with the Tennessee Valley Authority (TVA). Responsible for development of HEC-RAS and HEC-FIA models for 10 dams across TVA watershed to evaluate downstream consequences of dam failures. Results of the analyses included economic impact, loss of life estimates and inundation maps for all dams.

**Federal Entity: Project Name Confidential** (2015 to 2017)—*Staff Engineer*. For this confidential project, was responsible for assisting with an analysis of flooding along a 450-mile stretch of a river in the central United States. Responsibilities included reviewing construction documents to track projects along the river of interest, building individual HEC-RAS model geometries for 6 years of flood analysis, developing a HEC-RAS model that incorporated 30 flood scenarios, calibrating the model to observed stages, and assessing and calibrating the extent of inundation

## Professional Experience

2015 to date. RTI International (formerly Riverside Technology, inc.) Fort Collins, CO.

**Water Resources Engineer**. Is responsible for completing and leading technical tasks associated with various hydraulic and hydrologic models. These tasks include project management, data acquisition, model development, model calibration model verification, and technical documentation.

2013 to 2015. University of Wyoming, Laramie, WY.

**Graduate Research Assistant**. Department of Civil and Architectural Engineering. Helped develop a long-term model for inland glaciers that uses a dynamic equilibrium concept to account for factors related to climate change. Gained experience with Fortran programming.

2012. HDR Engineering, Inc., Salt Lake City, UT.

**Resident Project Representative** (summer). Performed construction inspections for concrete pavement patching, fishing lake improvement, and sanitary sewer main replacement. Checked for compliance with contract documents drawings and submittals, ordered and oversaw materials testing, and kept track of quantities to prepare contractor pay requests.

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## Jeremy Carlston

### Water Resources Engineer

Jeremy Carlston is a water resources engineer at RTI International (formerly Riverside Technology, Inc.), with extensive experience in hydrologic model development and calibration, as well as forecast system, design, implementation and maintenance. Further expertise includes hydraulic modeling, particularly with HEC-RAS, where he works with both 1-D and 2-D models under steady-state and unsteady conditions. He has also been involved with machine learning model development, leveraging advanced data analytics to enhance forecasting accuracy.

In addition to his technical skills, Jeremy also serves as a project manager for many clients, leads technical teams on various initiatives, and fosters business development opportunities. Earlier in his career, he spent two years analyzing, designing, and inspecting stormwater management facilities for highway improvement projects in Maryland. His graduate studies focused on hydraulic modeling techniques, specifically researching mixing efficiencies of water disinfection systems utilizing computational fluid dynamics.

Mr. Carlston's software experience includes but is not limited to: coding in Python, VBA, and Java; modeling in the National Weather Service's Interactive Calibration Program (ICP), HEC-RAS, and HEC-HMS; Deltares' Delft-FEWS hydrologic forecasting platform; applying recurrent neural networks for hydrologic forecasting; and leveraging PostgreSQL databases for information systems. He is highly proficient in Spanish.

### Relevant Project Experience

**Rio Grande and Pecos Basin Hydrologic Model Calibration and Model Configuration for the West Gulf River Forecast Center (WGRFC)** (2021 to 2025)—*Project Manager and Staff Engineer*. Prepared and quality-controlled precipitation, temperature, streamflow, and reservoir data for calibration of water supply models used by the WGRFC. Calibrated various sub-models including SNOW-17, SAC-SMA, UNIT-HG, LAG/K, CHANLOSS, and CONS-USE. Conducted senior review of calibration by junior engineers to ensure optimal model performance. Prepared high-quality reports detailing results of analysis and calibration. Assimilated final calibrated parameters and updated basin topography into WGRFC's FEWS operational forecast system. Managed project to provide all deliverables on time and within budget.

**Idaho Power Company (IPC) Hydrologic Calibration** (2020 to present)—*Project Manager and Staff Engineer*. Develops mean areal precipitation and temperature time series (MAP and MAT) for the entire IPC watershed. Reviews historical meteorological station inventory and selected suitable stations. Conducts quality control and disaggregates daily station-based MAPs and MATs to 6-hour timesteps for model input. Calibrates various sub-models including SNOW-17, SAC-SMA, UNIT-HG, LAG/K, CHANLOSS, and CONS-USE for water supply forecasting. Conducts senior review of calibration by junior engineers to ensure optimal model performance. Updates IPC's hydrologic forecasting system with final models and parameters. Oversees project milestones to ensure timely progress and alignment with project goals.



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### Education

MS, Civil Engineering,  
Colorado State University,  
2015.

BS (cum laude), Civil  
Engineering, Colorado State  
University, 2013.

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### Certifications

Professional Engineer  
Colorado, #55166

**Tennessee Valley Authority (TVA) Consequence Analyses, Saddle Dam Breach Floodplain Mapping, and Automatic Hydrologic Calibration** (2018 to 2023)—*Staff Engineer*. Assisted various hydrologic and hydraulic tasks across multiple projects. Responsible for development of HEC-RAS and HEC-FIA models for several dams across the TVA watershed to evaluate downstream consequences of dam failures. Developed and ran eight 2-D HEC-RAS models to determine floodplain extents in the event of saddle dam failures. Recalibrated hydrologic models for all 139 forecast points by first incorporating consumptive estimates, then implementing a state-of-the-art automatic-manual hybrid approach to determine final model parameters. Assists in finetuning of hydrologic models for use in probabilistic flood hazard analyses.

**Panama Canal Authority (ACP) Hydrologic Forecast System Maintenance and Support** (2018 to present)—*Project Manager and Staff Engineer*. Provides annual support and maintenance to ACP's flood and water supply forecast system. Updates server and forecast system software. Incorporates new data feeds and maintains pre-existing workflows and data feeds. Provides training of general water supply forecasting and SAC-SMA model concepts.

**State of Vermont Dam Portfolio Risk Assessment** (2023)—*Staff Engineer*. Assisted in development of two 2-D HEC-RAS models for screening of additional consequence analyses of dams in Vermont. Leveraged various datasets to develop and refine terrain, land use, and structure points within the model. Finetuned model by adjusting flow mesh, timesteps, and geometry to stabilize model behavior and accurately represent known flood elevations.

**Pilot Forecast System Development and Implementation for the Meteorological and Hydrologic Institute of Panama (IMHPA)** (2023-2024)—*Technical Lead and Staff Engineer*. Was responsible for leading the technical efforts of the pilot hydrologic forecast system of the Chiriquí watershed using Deltares' Flood Early Warning System (FEWS) software. Traveled to client office to understand their needs and translate to system design. Gathered, analyzed, and quality-controlled historic data to develop hydrologic modeling framework. Created and calibrated models, then transferred to pilot system. Provided system and model training to IMHPA forecasters.

## Professional Experience

2017 to date. RTI International (formerly Riverside Technology, inc., merged with RTI in 2016), Fort Collins, CO.

**Water Resources Engineer.** Is responsible for completing and leading technical tasks associated with various hydraulic and hydrologic models. These tasks include project management, data acquisition, model development, model calibration model verification, and technical documentation.

2015 to 2016. Whitney, Bailey, Cox, and Magnani, Baltimore, MD.

**Junior Water Resources Engineer.** Designed best-management practices (BMPs) to address stormwater quality issues in the Chesapeake Bay region. Inspected BMPs for maintenance concerns and recommended restorative action to clients. Modeled stream restoration designs, storm drain systems, and watershed hydrology. Prepared stormwater management and drainage reports, plans, and cost estimates for clients. Obtained environmental permitting for a variety of clients and projects.

2013 to 2015. Colorado State University, Fort Collins, CO.

**Graduate Research and Teaching Assistant.** Researched disinfection systems for drinking water using full-scale prototypes and computational fluid dynamics. Collaborated with adviser to draft a thesis and publish two research articles in peer-reviewed journals. Worked independently and with a team to supervise and teach laboratories in fluid mechanics. Graded assignments, provided feedback, and further educated undergraduate students during office hours.

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## Chris Lemasters

### Water Resources Engineer

Chris Lemasters is an Early Career Water Resources Engineer at RTI International, specializing in hydrologic and hydraulic modeling, data analysis, and GIS-based spatial analysis. He has experience using hydrologic models such as HEC-HMS, SNOW17, and SAC-SMA and supports the calibration and implementation of operational river forecast systems. Chris holds an MS in Hydrology from the Colorado School of Mines and a BS in Environmental Engineering from MSU Denver. During his master's program he worked at RTI as an intern supporting research for National Oceanic and Atmospheric Administration (NOAA) Cooperative Institute for Research to Operations in Hydrology by evaluating new observational snowpack data to improve the performance of NOAA's SNOw Data Assimilation System (SNODAS).



### Education

MS, Hydrology, Colorado School of Mines, 2024. BS, Environmental Engineering, MSU Denver, 2023.

### Relevant Project Experience

#### **Research for National Oceanic and Atmospheric Administration (NOAA) Cooperative Institute for Research to Operations in Hydrology**

(2024 to date)—*Water Resources Engineer*. Helped evaluate the use of new observational snowpack data from the Upper Missouri River Basin (UMRB) Monitoring Network to improve the performance of NOAA's SNOw Data Assimilation System (SNODAS). Wrote various Python Scripts to run various statistical analysis tools on large data sets to better understand the impact of the new observational snowpack data.

**Duke FEWS and RiverWare Forecasting Project** (2024 to date)—*Water Resources Engineer*. Computed reservoir inflows using TSTool as well as calibrated the Sacramento Soil Moisture Accounting Model (SAC-SMA) for multiple basins to enhance the models hydrologic forecasting abilities.

**Washington Department of Transportation Flow Frequency Analysis** (2024 to 2025)—*Water Resources Engineer*. Compiled and analyzed extensive streamflow datasets and watershed attributes for over 500 stream gauges within the state of Washington, supporting a flow frequency analysis for the Washington Department of Transportation.

### Professional Experience

2024 to date. RTI International, Fort Collins, CO.

**Water Resources Engineer** (2025 to date). Job responsibilities included hydrologic/hydraulic modeling, data analysis, and programming.

**Water Resources Engineer/Hydrologist Research Intern** (2024 to 2025). Job responsibilities included hydrologic model calibration, statistical data analysis, GIS, programming, and reservoir modeling.

2023 to 2024. Colorado School of Mines, Golden, CO.

**Research Assistant**. Assisted PHD candidate in their research into the effectiveness of an engineered Geomedium for treating storm water.

2023 to 2024. MSU Denver, Denver, CO.

**Teachers Assistant (Mechanics of Static Systems/Fluid Mechanics)**. Job responsibilities included designing lesson plans and holding two help sessions a week to better help students understand the material, while providing feedback to professors about where students are struggling.

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## Florian Kluibenschädl

### Research Environmental Engineer & Applications Developer

Florian Kluibenschädl is a research environmental engineer in the Hydrology and Ecosystem Research Unit at RTI International. In this capacity, he develops technologies, workflows, and standards that support the engineering and analysis of projects in the fields of hydrology, hydraulics, and water management. Mr. Kluibenschädl is an expert in the analysis, breakdown, and mapping of complex systems in various environmental and engineering fields, including water, energy, and soil. He has practical experience with most aspects of state-of-the-art software development life-cycle types. These include Waterfall, Agile, and various DevOps tools. Mr. Kluibenschädl also has an in-depth knowledge of various hydraulic and hydrologic software tools, allowing him to quickly learn their interface and workflow design.



As part of Mr. Kluibenschädl's MSc degree, he performed extensive research in Ethiopia, where he specialized in technologies for water supply and sanitary engineering, hydrology, rural water management, and soil conservation. The following years of practical experience as a civil engineer for water supply and sanitary engineering in the Austrian Alps and in the U.S. irrigation industry ingrained in him an excellent sense for a client's needs.

### Relevant Project Experience

**Amanzi. RTI International Strategic Investment Funds** (2019 to date)—*Systems and Application Developer.* Amanzi™ is RTI's software system architecture for the flexible and scalable deployment of a range of environmental data processing and modeling systems. The Amanzi Forecast System is an implementation of this architecture, focusing on the forecasting element of hydraulic and hydrological decision support systems. As a software engineer, involved in the design and implementation of key components such as data exchange formats, data storage, workflow orchestration, and model services (e.g., Hec-HMS as a web service). The role combined experience working with a variety of software architectures, broad understanding of environmental model applications, and sensitivity for the needs of the diverse stakeholders typically involved in the development of decision support systems.

Implementations of Amanzi-based analysis and forecast systems that Florian Kluibenschädl contributed to and led are:

*New Hampshire Department of Environmental Services - Real-Time Data & Information for Watersheds:* Near real-time acquisition of eight data products. Integrates the proprietary hydrology and routing model. Automatically produces and publishes 12 warm start forecasts per day, including one extended lookback run. The system further incorporates a stochastic dual dynamic programming model for reservoir operation optimization. Fully granular permissions management for data dissemination via single page web front-end.

*Extended Hydrologic Prediction project – India:* A multi-week hydrologic forecasting solution for three major river basins across India. Implements bias correction approach for ensemble and deterministic forcing data (quantile mapping). Currently runs dry and wet season multi week

### Education

MSc, Water Management and Environmental Engineering, University of Natural Resources and Life Sciences, Vienna, Austria, 2014. (Graduated with distinction)

BSc, Civil Engineering and Water Management, University of Natural Resources and Life Sciences, Vienna, Austria, 2011.

HTL Innsbruck, Industrial Engineering and Business Informatics, 2002.

forecasts using a LSTM artificial neural network and a regression model respectively. Designed to incorporate a multi-model approach (dedicated basin or sub-basin models).

**Environment-Grid Flow Tradeoff Tool, Oak Ridge National Laboratory (2024 to date)**—*Software development lead, PM*: RTI's Center for Water Resources (CWR) supported Oak Ridge National Laboratory (ORNL) and four other national labs on a project exploring how to identify win-win solutions for environmental and grid tradeoffs. In 2022, as part of the *HydroWIRES* program (Topic A), DOE's Water Power Technology Office (WPTO) awarded a three-year follow-up project that sought to build on previous work and create a generalized set of tools for use by various stakeholders to evaluate alternative river management operations that balance environmental needs with needs of the current and future power grid. After contributing to the scientific aspects of the project, RTI took on the leadership for developing a software platform that integrates the various tools and allows for streamlined scenario evaluation and comparison. The platform connects with two external modeling tools (HEC-RAS and MODSIM), background task execution, an intuitive user interface, and a comprehensive and extendable data model, and a command line interface for system and workspace management.

**Flood Inundation Mapping Software (FIMS), Yuba County Office of Emergency Management, Yuba County, CA (2023 to present)**—*Systems and Application Developer*. The Yuba RTIM system tackles the challenge of producing near real-time inundation maps. It incorporates a 2D HEC-RAS model of the Feather river, Yuba river, and Dry creek. It ingests reservoir releases and local inflows produced by the California-Nevada Regional Forecast Center, applies them to a HEC-RAS model of the system and simulates the river hydraulics with user specified levee breaches, thus allowing for creating dam breach scenarios through an intuitive and simple web user interface. Through the use of scalable cloud infrastructure, the system can produce high resolution inundation depth forecasts for disaster management and recovery efforts withing one hour (maps are published at a two-hour interval with a 10 day maximum lead time).

**Rainfall-Runoff Frequency Tool (RRFT) Enhancements, United States Army Corps of Engineers, Risk Management Center, Vicksburg, MS (2021 to date)**—*Systems and Application Developer*. The RRFT is a web-based stochastic rainfall-runoff frequency tool that can be used to develop screening and intermediate-level hydrologic hazard information for dam and levee safety risk assessments. Following the successful development of the core RRFT application, an effort was undertaken to make the application scale horizontally on a Kubernetes cluster hosted in the commercial cloud. Mr. Kluibenschädl focused on the improvement and modification of the *HEC-HMS Model*- and the *Precipitation Frequency Analysis*- micro services.

**Rainfall and Flood Forecast Capacity Building for Kenyan Agencies (2020 to 2021)**—*Lead Project Engineer*. The project, managed by the Kenyan Red Cross, aimed at building rainfall and flood forecasting capacity and the Kenya Meteorological Department (KMD) and Water Resources Authority (WRA). Planned and implemented data exchange infrastructure for the governmental agencies. Coordinated the installation of a short-term rainfall forecasting system at KMD, and implemented the ingestion of meteorological results into a new deployment of a flood forecast system implemented by Mr. Kluibenschädl under the ISC project, including extensive system and hydrologic improvements and end-user training.

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## Abby Watson

### Water Resources Engineer

Abby Watson is a water resources engineer specializing in modeling water management and reservoir operations, applying optimization techniques to water systems, and conducting data-driven analyses. Through her work at RTI and previously at Denver Water, she has built and applied reservoir operation models across the continental United States, including in both snowmelt-driven and rain-dominated watersheds.

Ms. Watson has extensive experience using RiverWare, RES-J, HEC-ResSim, and MODSIM, as well as developing custom reservoir models in Python. She specializes in developing reservoir models for integration into operational forecast systems that support real-time water management and hydropower decision-making. Her optimization experience includes the application of Sampling Stochastic Dynamic Programming (SSDP), Stochastic Dual Dynamic Programming (SDDP), and the use of multi-objective evolutionary algorithms (MOEAs) in water resources planning and operations.

To meet client needs, Ms. Watson develops customized data workflows and decision support systems using Python, VBA, and C# programming languages and works within Delft-FEWS systems. For time series and statistical analysis, she has used TSTool, Python, and Julia.

### Relevant Project Experience

**Duke Energy Hydrologic Forecast System** (2023 to date)—*Project Engineer*. Duke Energy has tasked RTI with developing an operational hydrologic forecast system and accompanying RiverWare models for approximately 30 storage and hydropower reservoirs across six basins in North Carolina and South Carolina. Responsible for developing RiverWare models that simulate user input hydropower operations and gated operations (including Obermeyer gate settings) to generate forecasted pool elevations and energy production across multiple inflow forecasts.

**Fort Collins Utilities (FCU) On-Call Modeling Support** (2021 to 2023)—*Project Engineer*. RTI provides support to FCU to develop updates to the system MODSIM model and system modeling framework, which includes a GUI, backend codebase, and database integration. upgrade its system model to the most current version of MODSIM and implement new constructs that enhance simulation of agreements, operational preferences, and water management plans. Serves as technical support for on-call modeling support efforts, with primary responsibilities including enhancing the modeling framework to automatically generate user-input metrics and creating new modeling constructs to improve simulating contractual agreements and system operational constraints.

**Winnepesaukee River Optimization Model Development** (2021 to 2022)—*Project Engineer*. For the New Hampshire Department of Environmental Services (NHDES), RTI is updating the NHDES legacy forecast system with an Amanzi™ operational forecast system and dashboard for performing deterministic short-term forecasts and long-term probabilistic forecasts for the Winnepesaukee River system. Responsible for developing a weekly optimization model that ingests the long-range probabilistic forecasts to inform operations of Lake Winnepesaukee and Lake Winnisquam. The optimization is an application of the Stochastic Dual Dynamic Programming (SDDP) algorithm with a weighted objective function to balance flood mitigation, power generation, minimum flow requirements, and desired recreational pool elevations.



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### Education

MS, Civil Engineering,  
University of Colorado-  
Boulder, 2015.

BS, Civil Engineering,  
Virginia Tech, 2012.

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### Certifications

Professional Engineer  
(Colorado), #0057828,  
2020

**Department of Energy HydroWIREs - Improving the Representation of Hydropower in Grid Operations Modeling** (2020 to 2022)—Water Resources Engineer. As a part of the Department of Energy (DOE) HydroWIREs initiative, the National Renewable Energy Laboratory (NREL) is lead a project to test and develop methodologies that will allow for the integration of stochastic hydrologic forecasts (weekly, monthly, and seasonal) and operational constraints into production cost models, allowing for water to be used most effectively for the overall power system. NREL and RTI together have enhanced the production cost modeling for hydropower through a joint-simulation framework, connecting NREL's production cost model with MODSIM to explicitly represent water system connectivity and operational constraints. Supported research, development, and testing of new techniques for data-driven water systems modeling in MODSIM and automating water system model development. Automation will enable and ease implementation for large-scale basin modeling. Responsible for applying new techniques and framework for modeling five major river basins in California to co-simulate historical and forecasted operations for hydropower projects within the Balancing Authority of Northern California (BANC).

**Alabama Power Hydrologic Forecast System** (2020 to present)—*Project Manager*. Alabama Power, a subsidiary of Southern Company, has tasked RTI with developing a RiverWare model and operational hydrologic forecast system for their Tallapoosa, Coosa, and Black Warrior river systems. Responsible for project management as well as for developing and integrating a rule-based RiverWare model that informs hourly operations as well as a simulation RiverWare model that represents operations at an hourly timestep into the FEWS forecast system.

**Dillon Reservoir Operational Model Development** (2019 to 2020)—*Water Resource Engineer*. Denver Water is the water supplier for the city of Denver and surrounding service area. Denver Water manages multiple reservoirs in both the Colorado River and South Platte River basins. Worked with the Raw Water Operations team to develop a RiverWare model for Dillon Reservoir, Denver Water's major water supply reservoir in the Colorado River basin. Led the design and development of both the model and framework. To inform seasonal operations, the framework ingests an Ensemble Streamflow Prediction (ESP) forecast provided by the Colorado Basin River Forecast Center for Dillon Reservoir and iterates modeled operations to output a set of inflow-outflow relationship curves.

## Professional Experience

2020 to date. RTI International, Fort Collins, CO.

**Research Environmental Engineer I.** Responsibilities include reservoir optimization and modeling, data analysis, and programming.

2018 to 2020. Denver Water, Denver, CO.

**Water Resource Engineer.** Conducted long-range water supply modeling of the Denver Water collection system.

2015 to 2018. RTI International (formerly Riverside Technology, inc., merged with RTI in 2016), Fort Collins, CO.

**Water Resource Engineer.** Developed water resources models and conducted data analysis.

2012 to 2013. U.S. Army Corps of Engineers - Engineer Research and Development Center - Geospatial Research Laboratory, Alexandria, VA.

**Civil Engineer.** Conducted GIS analysis and basic research.

## Computer Skills

Reservoir modeling: RiverWare, HEC-ResSim, MODSIM, RES-J

Optimization: Sampling Stochastic Dynamic Programming, Stochastic Dual Dynamic Programming, and multi-objective evolutionary algorithms (MOEAs; NSGA-II, BORG)

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## John Park

### Water Resources Engineer & Certified ML Modeler

Gi-Hyeon (John) Park is a senior manager, water resources engineer, and certified machine learning scientist at RTI International (formerly Riverside Technology, Inc.). He manages a group of application developers with the center for water resources to support. He has expertise in hydrologic model development, analysis, calibration, forecast system design and implementation, machine learning, and remote sensing. His hydrological modeling experience involves using the National Weather Service River Forecast System (NWSRFS), the Variable Infiltration Capacity (VIC) model, the Common Land Model (CLM), the Soil and Water Assessment Tool (SWAT), the Kinematic Runoff and Erosion (KINEROS) hydrologic model, and the Hydrologic Engineering Center's Hydrologic Modeling System (HEC-HMS) and River Analysis System (HEC-RAS). Dr. Park has extensive experience with the Delft-Flood Early Warning System (FEWS)/Community Hydrologic Prediction System (CHPS) forecasting system, ensemble streamflow prediction (ESP) - Hirsch, eHirsch, ESP, and the NWS Hydrologic Ensemble Forecast Service (HEFS) and forecast verification. His work has included model calibration and optimization (Shuffled Complex Evolution–University of Arizona [SCE-UA], Multi-objective Complex [MOCOM], Multi-objective Complex Evolution Metropolis–University of Arizona [MOCSEM], Non-dominated Sorting Genetic Algorithm [NSGA-II], and particle filter). He is a certified machine learning scientist and has applied machine learning models for regulated reservoir inflow prediction, hydrological inflow forecasting using existing forecasts, and ungagged basin inflow forecasting.

### Relevant Project Experience

**CIROH: Gridded precipitation post-processing for ensemble streamflow forecasts to improve the prediction of anomalously high precipitation and inflow** (2024 – 2026) – *Project Manager*. This is a NOAA CIROH project in collaboration with the University of Texas, Arlington will develop an improved precipitation preprocessor for Hydrological Ensemble Forecast System (HEFS), and RTI will conducting forecast verification and implementation to the NOAA's nextGen framework.

**CIROH: Developing and refining ensemble streamflow forecasts in Nextgen and the RFC Hydrologic Ensemble Forecast Service** (2023-2025) – *Project Manager*. This is a CIROH project in collaboration with Colorado School of Mines, University of Calgary, and Pennsylvania State University to connect NOAA ensemble hydrologic forecasting science and development efforts with both the 'next generation' Water Resources Modeling framework (Nextgen) as well as the River Forecast Center (RFC) Hydrologic Ensemble Forecast Service (HEFS) capabilities.

**Enhancement for New York City Ensemble Post Processor (EPP)** (2022 to date) – *Project Manager*. A major component of the City's unfiltered water supply system is the Operations Support Tool (OST). The chief purpose of OST is to help guide operating decisions. OST is a computerized decision-support system designed to inform water supply decision making. OST provides the City's operations staff with



### Education

PhD, Civil Engineering/Water Resources, University of California, Irvine, Irvine, CA, 2006.

MS, Hydrology and Water Resources, University of Arizona, Tucson, AZ, 2000.

MS, Geological Sciences, Seoul National University, Seoul, South Korea, 1993.

BS, Geological Sciences, Seoul National University, Seoul, South Korea, 1991

the analytical guidance necessary to operate the complex New York City reservoir system and strike a balance between multiple objectives including water supply reliability, water quality goals, environmental concerns, and downstream flow objectives. RTI will develop a new EPP model, provide technical support, knowledge transfer, and operational support. A machine learning model will be developed and evaluated against the existing models, and it will be implemented if it performs better than the existing models.

**Extended Hydrologic Prediction (EHP) Project** (2020 to date)—*AI modeler*. The Government of India, under the Ministry of Water, Central Water Commission, utilized a portion of a World Bank loan to support the development of an extended sub-seasonal forecasting system for three major river basins in India. The development period of two-years involves the collection of base data across the river basins of the Yamuna, Narmada, and Cauvery rivers, and the development and testing of four different hydrologic methods for volume forecasting over a 30-day horizon. The four models include a distributed model, lumped model, statistical model, and machine learning model. I developed the machine learning model that outperformed the other three models.

**Alabama Power Operational Forecast System and RiverWare Model Development** (2020 to date)—*Senior Technical Lead*. Alabama Power, a subsidiary of Southern Company, tasked RTI with developing a RiverWare model and operational hydrologic forecast system for its Tallapoosa, Coosa, and Black Warrior river systems. The primary objective of the forecast system (developed in Delft-FEWS) and accompanying RiverWare model is to ease or eliminate current tedious modeling tasks and allow Alabama Power reservoir management staff to focus on improved operations through advanced decision support tools.

**Northern Water Delft-FEWS Implementation & Support** (2020 to date) — *Project Manager/Project Engineer*. Lead the work to migrate Northern Water's RiverTrak® forecast system to Delft-FEWS. Also performed most of the coordination and Delft-FEWS configuration work, including the implementation of data imports and processing as well as the integration of the existing SNOW-17 and SAC-SMA models. Provided forecasting and troubleshooting training to Northern Water Staff.

**Development, Implementation, and Operation Support for the Panama Canal Forecasting System** (2014 to date)—*Project Manager/Project Engineer*. The purpose of this project, which was conducted for the Panama Canal Commission (PCC), was to develop and implement the standalone and live CHPS-FEWS for the Panama Canal. This project involved collecting and analyzing hydrometeorological data and calibrating NWSRFS models, including a new multi-reservoir operation model developed by Riverside Technology. The system now is used to forecast inflows to the Panama Canal watershed and optimize water use for lock transports, hydropower, municipal use, and flood control. RTI continues to work with the PCC on subsequent projects for support tasks, additional training, system enhancement, Y2K compliance, and conversion of the system from the UNIX to LINUX operating system. In 2014, a Live CHPS-FEWS was implemented and delivered to PCC. In 2022, the hydrological model was replaced with State-Space Sacramento Soil Moisture Model that implements a data assimilation to auto adjust soil moisture condition based on observed flow.

## Professional Experience

2023 to date. RTI International. **Senior manager, Environmental Sciences & Engineering.**

2017 to 2023. RTI International. **Senior Water Resources Engineer.**

2014 to 2016. Riverside Technology, Inc. **Senior Water Resources Engineer.**

2018 to 2013. Department of Civil and Architectural Engineering, University of Wyoming. **Assistant Professor.**

2007 to 2008. Center for Hydrometeorology and Remote Sensing, University of California, Irvine. **Project Scientist.**

2006 to 2007. Center for Hydrometeorology and Remote Sensing, University of California, Irvine. **Post-doctoral Researcher.**

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## Matt Denno

### Senior Environmental Applications Developer

Matthew Denno is a senior environmental application developer at RTI's Center for Water Resources with more than 20 years of experience designing and implementing data management, visualization and forecast systems to support real-time water resources management systems. He has completed all phases of system development from planning through deployment, operations and maintenance. This includes working with stakeholders to prepare requirements documents, developing data system architectures, automated data collection and processing, full-stack web development (database, web service and web interface design), numeric model development, and system implementation and integration. Mr. Denno has experience developing easy to use, intuitive dashboards to help visualize and make sense of complex geospatial and timeseries data to support water managers.



### Relevant Project Experience

**Flood Inundation Mapping Software (FIMS), Yuba County Office of Emergency Management, Yuba County, CA** (2023 to present) – System Architect/Technical Lead. RTI developed a cloud-based river forecast system for the Feather and Yuba rivers, which includes the levee system. The system ingests reservoir releases and local inflows produced by the California-Nevada Regional Forecast Center, applies them to a HEC-RAS model of the system and simulates the river hydraulics with user specified levee breaches. The tool is used to develop real-time levee breach maps during flood emergencies to inform evacuation plans and emergency planning. Inundation mapping is produced and displayed in an online platform and pertinent GIS files exported for use in other evacuation planning software. Mr. Denno was the software technical lead responsible for the overall system architecture, code reviews, and cloud deployment.

**Rainfall-Runoff Frequency Tool (RRFT), United States Army Corps of Engineers, Risk Management Center, Vicksburg, MS** (2019 to date, multiple contracts)—Technical Leader/Project Manager. The RRFT is a web-based stochastic rainfall-runoff frequency tool that can be used to develop screening and intermediate-level hydrologic hazard information for dam and levee safety risk assessments. The RRFT employs a precipitation-driven approach for developing reservoir flow-, volume-, and stage-frequency analysis. To use the RRFT, the user provides (or selects) a precipitation frequency distribution (using one of three methods) and stratified sampling criteria along with a HEC-HMS rainfall-runoff model, which contains extreme precipitation storm templates and is used to route precipitation frequency events through the hydrologic system. The HEC-HMS model is programmatically executed for each sampled precipitation depth and the results are post-processed to construct flow-, volume-, and stage-frequency relationships. In addition to software development, Mr. Denno was responsible for working directly with the client subject matter experts and development team to ensure that the project requirements are met. Following the successful development of the core RRFT application, an effort was undertaken to make the application scale horizontally on a Kubernetes cluster hosted in the commercial cloud, add new sampling methods, and improve the user experience and user interface. RTI is currently providing support to the USACE RMC for the RRFT application and working to deploy the RRFT to production in the USACE AWS GovCloud.

### Education

MS, Civil Engineering/Water Resources Planning and Management, Colorado State University, Fort Collins, CO, 2007.  
BS, Civil Engineering, University of Massachusetts, Amherst, MA, 2002.

### Certifications

Licensed Professional Engineer (New York)  
Certified Flood Plain Manager (CFM)

**Modernization of the Dam Bureau RiverTrak Forecast System. New Hampshire Department of Environmental Services (NHDES)** (2020 to date, multiple contracts)—Project Manager and Technical Lead. Since the early 2000s, the NHDES has utilized the RTI RiverTrak® forecast system to help operate 48 reservoirs, lakes, and flood control structures in New Hampshire. Changes in computer technology as well as with data security standards make it increasingly difficult to properly maintain RiverTrak and provide full functionality. Under this contract the RTI worked with NHDES to replace the outdated RiverTrak system with a modern Amanzi-based system. This included the addition of ensemble forecasts and the development of an optimization model to help NHDES with their long-term reservoir operations. RTI subsequently implemented several enhancements to improve the usability of system, including making the application mobile ready so that NHDES forecasters and water managers can operate the system from their mobile devices, and also the addition of integrated “flow calculators” that can be used to calculate what the expected reservoir releases would be at different gate settings. RTI is also providing NHDES with on-going system operations, hosting and maintenance.

**Competition for Emerging Inflow Forecast Technologies. CEATI International** (2020 to 2021)—Project Manager and Technical Lead. CEATI International (CEATI) hosted the Competition for Emerging Inflow Forecast Technologies as a contest to compare flow forecasts from various sources and to evaluate their performance. The competition was sponsored by 5 CEATI members and included 19 forecast locations throughout North America. Over the course of the competition, forecast vendors provided stream flow forecasts each day at one or more locations. Observed stream flows were also collected daily at each location and the accuracy (skill) of each forecast was evaluated over a variety of performance metrics, time frames, and flow ranges. RTI built the computer system to collect, process, and evaluate the forecasts provided by the vendors. This included a dashboard to allow members and vendors to visualize the forecasts and various ways and to see in real-time how forecasts were performing.

**State of Kerala Flood Forecasting (FF) and Integrated Reservoir Operations System (IROS). World Bank** (2020 to 2021)—Technical Lead. The Kerala FF & IROS is a web-based tool that allows users at the Kerala Water Resources Department (WRD) and the Kerala State Electricity Board (KSEB) to estimate future flows at specific locations in the Pamba, Achenkovil, and Manimala rivers. The tool converts observed and forecasted rainfall over the basin into runoff, which either flows into the Pamba and Kakki reservoirs, or drains directly into the river systems. The reservoir operations component of the tool mimics the releases and spills from the Pamba and Kakki reservoirs and routed them downstream to the various forecast points. This allows users to assess the impact of both rainfall and operations on the flows in the Pamba River. It utilizes HEC-HMS and HEC-ResSIM to translate rainfall to runoff and HEC-ResSIM to route flows through the large reservoirs. The FF and IROS is a cloud-based application that is built on Amanzi technology and utilizes a microservices and models as a service (MaaS) architecture to build a robust and scalable system.

# State of New Hampshire

## Department of State

### CERTIFICATE

I, David M. Scanlan, Secretary of State of the State of New Hampshire, do hereby certify that RESEARCH TRIANGLE INSTITUTE is a North Carolina Nonprofit Corporation registered to transact business in New Hampshire on April 05, 2000. I further certify that all fees and documents required by the Secretary of State's office have been received and is in good standing as far as this office is concerned.

Business ID: **338837**

Certificate Number: **0007293532**



IN TESTIMONY WHEREOF,

I hereto set my hand and cause to be affixed  
the Seal of the State of New Hampshire,  
this 24th day of September A.D. 2025.

A handwritten signature in black ink, appearing to read "David M. Scanlan".

David M. Scanlan  
Secretary of State

## Filing History

 [Back to Home \(/online\)](#)

<b>Business Name</b>	<b>Business ID</b>
RESEARCH TRIANGLE INSTITUTE	338837

Filing#	Filing Date	Effective Date	Filing Type	Annual Report Year
0007310757	10/10/2025	10/10/2025	Nonprofit Report	2025
0004874695	03/31/2020	03/31/2020	Nonprofit Report	2020
0004769996	01/16/2020	01/16/2020	Annual Report Reminder	N/A
0004152104	07/17/2018	07/17/2018	Commercial Registered Agent Address Change	N/A
0003104216	04/02/2015	04/02/2015	Nonprofit Report	2015
0001182517	04/08/2010	04/08/2010	Annual Report	2010
0001182516	12/29/2005	12/29/2005	Annual Report	2005
0001182515	04/05/2000	04/05/2000	Business Formation	N/A

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NH Department of State, 107 North Main St. Room 204, Concord, NH 03301 — [Contact Us \(/online/Home/ContactUS\)](#)

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## Delegation of Signatory Authority Warrant

### Kellyn Cassell

*In accordance with my delegation from the President and CEO, whose authority is authorized by resolution of the Board of Governors, and within the responsibilities of your position, you are hereby delegated the authority to execute all such documents, affidavits, certifications, contracts and other agreements related to Contracts that evidence a commitment on the part of RTI International and are undertaken in the ordinary course of business. The limitations of your delegated signatory authority are set forth below. This delegation remains in effect until it is amended and may not be subdelegated. All signature authority is deemed null and void once employment with RTI ends.*

Limits of Signatory Authority  
\$5,000,000

A handwritten signature in black ink that reads 'Stacey Passwaters'.

---

Stacey Passwaters  
Sr. Director, SSES Contracts & Subcontracts  
RTI International

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18 July 2022

Date





# EVIDENCE OF PROPERTY INSURANCE

DATE (MM/DD/YYYY)  
12/04/2025

THIS EVIDENCE OF PROPERTY INSURANCE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE ADDITIONAL INTEREST NAMED BELOW. THIS EVIDENCE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS EVIDENCE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE ADDITIONAL INTEREST.

AGENCY Aon Risk Services South, Inc. Charlotte NC office MSC# 17693 PO Box 551343 Atlanta GA 30355 USA		PHONE (A/C, NO, Ext) (866) 283-7122	COMPANY Affiliated FM Insurance Co.	
FAX (A/C No) (800) 363-0105	E-MAIL ADDRESS			
CODE	SUB CODE			
AGENCY CUSTOMER ID # 570000061132				
INSURED Research Triangle Institute 3040 Cornwallis Rd PO Box 12194 Research Triangle Park NC 27709-2194 USA		LOAN NUMBER	POLICY NUMBER 1152424	
		EFFECTIVE DATE 06/01/2025	EXPIRATION DATE 06/01/2026	<input type="checkbox"/> CONTINUED UNTIL TERMINATED IF CHECKED
THIS REPLACES PRIOR EVIDENCE DATED				

Holder Identifier : 570116964748  
Certificate No :

### PROPERTY INFORMATION

LOCATION/DESCRIPTION

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS EVIDENCE OF PROPERTY INSURANCE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

COVERAGE INFORMATION	PERILS INSURED	BASIC	BROAD	SPECIAL	ALL RISK - subject to exclusions
Commercial Property Coverage	Loss Limit			<input checked="" type="checkbox"/>	

COVERAGES/PERILS/FORMS	AMOUNT OF INSURANCE	DEDUCTIBLE
Commercial Property Coverage	\$ 1,000,000	\$ 100,000

### REMARKS (Including Special Conditions)

REMARKS (Including Special Conditions)

### CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

### ADDITIONAL INTEREST

NAME AND ADDRESS NH Department of Environmental Services 29 Hazen Drive PO Box 95 Concord NH 03302-0095 USA	ADDITIONAL INSURED	LENDER'S LOSS PAYABLE	<input type="checkbox"/> LOSS PAYEE
	MORTGAGEE		
	LOAN #		
	AUTHORIZED REPRESENTATIVE	<i>Aon Risk Services South, Inc.</i>	

# NONPROFIT COVER SHEET

A. Entity Name: Research Triangle Institute (d/b/a RTI International)

B. Entity's Contact Information:

For Records Requests (e.g., resumes of key personnel; audited financial statements):

Name / Phone / Email: Kellyn Cassell, 919-541-6624, kcassell@rti.org

Person responsible for Accuracy and Completeness of information provided:

Name: Kellyn Cassell

Title: Sr. Contracting Officer



Signature: \_\_\_\_\_

C. List Board of Directors and Affiliations

- Dr. Warwick Arden Executive Vice Chancellor & Provost, North Carolina State University
- Mr. Thomas F. Darden Chief Executive Officer, Cherokee Investment Partners, LLC
- Dr. Alec Gallimore Provost Duke University
- Mr. Tim J. Gabel President & CEO, RTI International
- Dr. Franklin D. Gilliam Jr. Chancellor, University of North Carolina Greensboro
- Dr. Penny Gordon-Larsen Vice Chancellor for Research, University of North Carolina at Chapel Hill
- Dr. Peter Lange Provost Emeritus, Duke University
- Dr. Jennifer Lodge Vice President for Research & Innovation, Duke University
- Gina Loftin Former Tech Executive; Corporate Board Director & Consultant
- Dr. Harold L. Martin Sr. Chancellor Emeritus, NC A&T State University General
- John H. Moellering Chairman Emeritus, USAA
- Mr. C. Howard (Ward) Nye Chairman of the Board, President & CEO, Martin Marietta Materials, Inc.
- Ms. Hilda Pinnix-Ragland Former Energy Executive (Duke Energy)/AHK Global Resources, LLC-Managing Director
- Dr. Meg Booth Powell Founder and CEO, 501 Ventures, LLC

D. List Key Personnel (Resumes must be available upon request to the person(s) listed in section B or may be attached):

Name	Role	Annual Salary	Amount Paid From This Contract
Denno, Matthew	Amanzi Subject Matter Expert	\$175,843	\$17,901
Kluibenschaedl, Florian	Lead Amanzi Developer	\$129,418	\$20,682

Turnipseed, Christopher	Amanzi Developer	\$115,419	\$18,755

**DISCLOSURE OF LEGAL ACTIVITIES INVOLVING THE STATE OF NEW HAMPSHIRE OR ANOTHER  
GOVERNMENT ENTITY**

**E. Check one of the following:**

- The entity is **not currently or has not been** party to any legal proceeding involving the State of New Hampshire (or any agency or subdivision thereof) or any other state/federal government entity before any adjudicative body in any jurisdiction **OR**
- The entity is or has been party to one or more legal proceedings as set forth above. Identify the jurisdiction, court or other adjudicative body, case number, and briefly describe the nature of the proceeding. (Attached extra sheet if necessary.)

**CHARITABLE TRUSTS UNIT COMPLIANCE CERTIFICATION**

**F. Check one of the following:**

- is registered and in good standing with the New Hampshire Department of Justice Charitable Trusts Unit (\*\* see note below) **or** has submitted a complete application for registration to the Charitable Trusts Unit and is awaiting a registration determination **OR**
- is not required to register with the Charitable Trusts Unit because it is neither tax-exempt under section 501(c)(3) of the Internal Revenue Code nor engages in charitable solicitations in the State of New Hampshire **OR**
- is exempt from registration with the Charitable Trusts Unit because it is a federal or state government, agency, or subdivision or is a religious organization, an integrated auxiliary of a religious organization, or is a convention or association of churches.

\*\* Note: Attached screenshot from the [DOJ Registered Charities List found online:](#)

## FINANCIAL DISCLOSURES

**G. Check one the following:**

- [X] The organization hired an outside firm to audit its financial statements or to prepare GAAP-compliant financial statements for its most recently completed fiscal year. If so, please ensure that the financial statements and audit results are available to be requested from the contact listed on Page 1 (audited financials may be attached) **OR**
- [ ] The above does not apply, but the organization filed an IRS Form 990 or Form 990-EZ for its most recently completed fiscal year. Please attach that IRS Form 990 or Form 990-EZ to the submission. (Form 990 Schedule B is not required) **OR**
- [ ] ***If neither of the above apply***, complete the Income Statement and Balance Sheet below with the following basic financial information from the organization's most recently completed fiscal year:

### 1. INCOME STATEMENT

	Revenue		Expenses
<i>Grants</i>	\$	<i>Compensation of officers, directors, and key personnel</i>	\$
<i>Donations</i>	\$		
<i>Program Services Revenue</i>	\$	<i>Other salaries &amp; wages</i>	\$
<i>Interest &amp; Dividends</i>	\$	<i>Payroll taxes &amp; employee benefits</i>	\$
<i>All other Revenue</i>	\$	<i>Occupancy, rent, utilities, and insurance</i>	\$
<b>Total Revenue</b>	<b>\$</b>	<i>Printing, publications, postage, office supplies, and IT</i>	\$
		<i>All other expenses</i>	\$
		<b>Total Expenses</b>	<b>\$</b>

## 2. BALANCE SHEET

Assets		Liabilities	
<i>Cash &amp; Equivalents</i>	\$	<i>Accounts Payable</i>	\$
<i>Investments</i>	\$	<i>Loans Payable</i>	\$
<i>Real Estate (less any depreciation)</i>	\$	<i>All other liabilities</i>	\$
<i>Other Property &amp; Equipment (less any depreciation)</i>	\$	<b>Total Liabilities</b>	\$
<i>Pledges, grants, accounts receivable</i>	\$		
<i>All other assets</i>	\$		
<b>Total Assets</b>	\$		

# Research Triangle Institute

Consolidated Financial Statements as of and for  
the Years Ended September 30, 2023 and 2022,  
Federal Awards Supplemental Information as of  
and for the Year Ended September 30, 2023, and  
Independent Auditor's Report

# RESEARCH TRIANGLE INSTITUTE

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**Deloitte & Touche LLP**  
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## **INDEPENDENT AUDITOR'S REPORT**

To the Board of Governors of  
Research Triangle Institute:

### **Report on the Audit of the Consolidated Financial Statements**

#### **Opinion**

We have audited the consolidated financial statements of Research Triangle Institute and subsidiaries (the "Institute"), which comprise the consolidated balance sheets as of September 30, 2023 and 2022, and the related consolidated statements of revenue, costs, and changes in net assets and cash flows for the years then ended, and the related notes to the consolidated financial statements (collectively referred to as the "financial statements").

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Institute as of September 30, 2023 and 2022, and the changes in its net assets and its cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

#### **Basis for Opinion**

We conducted our audits in accordance with auditing standards generally accepted in the United States of America (GAAS) and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States (*Government Auditing Standards*). Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of the Institute and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audits. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

#### **Responsibilities of Management for the Financial Statements**

Management is responsible for the preparation and fair presentation of the financial statements in accordance with accounting principles generally accepted in the United States of America, and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the Institute's ability to continue as a going concern for one year after the date that the financial statements are issued.

#### **Auditor's Responsibilities for the Audit of the Financial Statements**

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not absolute

assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS and *Government Auditing Standards* will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with GAAS and *Government Auditing Standards*, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Institute's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about the Institute's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control-related matters that we identified during the audit.

#### **Other Reporting Required by *Government Auditing Standards***

In accordance with *Government Auditing Standards*, we have also issued our report dated December 7, 2023 on our consideration of the Institute's internal control over financial reporting and on our tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is solely to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the Institute's internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Institute's internal control over financial reporting and compliance.



December 7, 2023

# RESEARCH TRIANGLE INSTITUTE

## CONSOLIDATED BALANCE SHEETS AS OF SEPTEMBER 30, 2023 AND 2022 (In thousands)

	2023	2022
<b>ASSETS</b>		
CURRENT ASSETS:		
Cash and cash equivalents	\$ 29,012	\$ 57,391
Restricted cash	9,782	12,702
Short-term investments	188,837	168,530
Accounts receivable—net of allowance of \$889 and \$334, respectively	92,570	86,320
Unbilled costs, fees, and contract assets	184,139	157,729
Prepaid expenses and other current assets	<u>22,687</u>	<u>20,861</u>
Total current assets	527,027	503,533
PROPERTY AND EQUIPMENT—Net	150,685	157,127
OPERATING LEASE RIGHT-OF-USE-ASSETS—Net	17,848	20,833
INVESTMENTS	93,367	84,603
GOODWILL—Net	6,717	7,842
OTHER NONCURRENT ASSETS	<u>26,114</u>	<u>22,041</u>
<b>TOTAL ASSETS</b>	<b><u>\$821,758</u></b>	<b><u>\$795,979</u></b>
<b>LIABILITIES AND NET ASSETS</b>		
CURRENT LIABILITIES:		
Accounts payable and accrued expenses	\$136,644	\$123,712
Operating lease liabilities current	7,012	7,702
Current portion of long-term debt	30,610	31,770
Accrued compensated absences	29,855	27,610
Deferred revenue and contract liabilities	<u>56,811</u>	<u>56,270</u>
Total current liabilities	260,932	247,064
LONG-TERM LIABILITIES:		
Long-term debt	38,094	44,169
Operating lease liabilities noncurrent	13,306	16,810
Other long-term liabilities	<u>15,052</u>	<u>11,782</u>
Total liabilities	<u>327,384</u>	<u>319,825</u>
COMMITMENTS AND CONTINGENCIES (Note 17)		
NET ASSETS:		
Net assets without donor restrictions:		
Undesignated net assets	483,776	465,324
Board-designated net assets	<u>9,919</u>	<u>10,103</u>
Total net assets without donor restrictions	493,695	475,427
Net assets with donor restrictions	<u>679</u>	<u>727</u>
Total net assets	<u>494,374</u>	<u>476,154</u>
<b>TOTAL LIABILITIES AND NET ASSETS</b>	<b><u>\$821,758</u></b>	<b><u>\$795,979</u></b>

See notes to consolidated financial statements.

## RESEARCH TRIANGLE INSTITUTE

### CONSOLIDATED STATEMENTS OF REVENUE, COSTS, AND CHANGES IN NET ASSETS FOR THE YEARS ENDED SEPTEMBER 30, 2023 AND 2022 (In thousands)

	2023	2022
REVENUE:		
Revenues from contracts and contribution awards	\$ 1,216,436	\$ 1,179,594
Contributions of nonfinancial assets	<u>13,347</u>	<u>14,808</u>
Total revenue	<u>1,229,783</u>	<u>1,194,402</u>
DIRECT COSTS:		
Salaries and employee benefits	362,716	329,043
Other direct costs	<u>456,858</u>	<u>494,495</u>
Total direct costs	819,574	823,538
INDIRECT COSTS	<u>410,114</u>	<u>358,920</u>
Total direct and indirect costs	<u>1,229,688</u>	<u>1,182,458</u>
EXCESS OF REVENUE OVER DIRECT AND INDIRECT COSTS	95	11,944
INVESTMENT INCOME (EXPENSE)—Net	28,368	(24,836)
OTHER EXPENSE—Net	(12,351)	(12,314)
INTEREST (EXPENSE) INCOME—Net	<u>(857)</u>	<u>7,661</u>
OPERATING INCOME (LOSS) BEFORE INCOME TAX EXPENSE	15,255	(17,545)
INCOME TAX EXPENSE	<u>(960)</u>	<u>(614)</u>
NET OPERATING INCOME (LOSS)	14,295	(18,159)
POSTRETIREMENT CHANGES OTHER THAN NET PERIODIC BENEFIT COSTS	3,973	(1,862)
CURRENCY TRANSLATION	<u>-</u>	<u>(5)</u>
INCREASE (DECREASE) IN NET ASSETS WITHOUT DONOR RESTRICTIONS	18,268	(20,026)
DECREASE IN NET ASSETS WITH DONOR RESTRICTIONS	<u>(48)</u>	<u>(1,742)</u>
Total increase (decrease) in net assets	18,220	(21,768)
TOTAL NET ASSETS:		
Beginning of year	<u>476,154</u>	<u>497,922</u>
End of year	<u>\$ 494,374</u>	<u>\$ 476,154</u>

See notes to consolidated financial statements.

# RESEARCH TRIANGLE INSTITUTE

## CONSOLIDATED STATEMENTS OF CASH FLOWS FOR THE YEARS ENDED SEPTEMBER 30, 2023 AND 2022 (In thousands)

	2023	2022
CASH FLOWS FROM OPERATING ACTIVITIES:		
Increase (decrease) in net assets	\$ 18,220	\$ (21,768)
Adjustments to reconcile change in net assets to cash (used in) provided by operating activities:		
Depreciation and amortization	15,764	16,631
Noncash lease expense	6,840	7,233
Dividends reinvested	(13,152)	(22,355)
Realized and unrealized gain (loss) on investments—net	(12,314)	49,797
Realized and unrealized gain on derivatives—net	(1,440)	(10,698)
Postretirement changes other than net periodic pension cost	(3,973)	1,862
Other loss—net	7,734	13,485
Changes in other operating assets and liabilities:		
Accounts receivable, unbilled costs and fees, and contract assets	(31,748)	13,121
Other operating assets	(3,306)	(7,225)
Accounts payable and accrued expenses	11,788	(22,046)
Deferred revenue and contract liabilities	541	(1,068)
Other operating liabilities	(1,441)	(15,431)
Net cash (used in) provided by operating activities	<u>(6,487)</u>	<u>1,538</u>
CASH FLOWS FROM INVESTING ACTIVITIES:		
Proceeds from sale of investments	22,987	49,558
Purchases of investments	(28,192)	(18,338)
Acquisition of property and equipment	(12,447)	(13,576)
Net cash (used in) provided by investing activities	<u>(17,652)</u>	<u>17,644</u>
CASH FLOWS FROM FINANCING ACTIVITIES:		
Proceeds from lines of credit	246,341	290,314
Payments on lines of credit	(246,341)	(290,314)
Payments on variable rate term loan	(4,000)	(4,000)
Payments on bonds payable	(3,160)	(3,040)
Net cash used in financing activities	<u>(7,160)</u>	<u>(7,040)</u>
NET (DECREASE) INCREASE IN CASH, CASH EQUIVALENTS, AND RESTRICTED CASH	(31,299)	12,142
EFFECT OF EXCHANGE RATE CHANGES ON CASH AND CASH EQUIVALENTS	-	(9)
CASH, CASH EQUIVALENTS, AND RESTRICTED CASH:		
Beginning of year	<u>70,093</u>	<u>57,960</u>
End of year	<u>\$ 38,794</u>	<u>\$ 70,093</u>

(Continued)

# RESEARCH TRIANGLE INSTITUTE

## CONSOLIDATED STATEMENTS OF CASH FLOWS FOR THE YEARS ENDED SEPTEMBER 30, 2023 AND 2022 (In thousands)

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	2023	2022
SUPPLEMENTAL DISCLOSURES OF CASH FLOW INFORMATION—		
Cash paid during the year for:		
Income taxes	\$ <u>752</u>	\$ <u>664</u>
Interest	\$ <u>2,231</u>	\$ <u>2,432</u>
SUPPLEMENTAL DISCLOSURE OF CASH FLOW INFORMATION—Noncash transactions:		
Construction in process accruals	\$ <u>952</u>	\$ <u>623</u>
Limited partnership interest transfer received	\$ <u>-</u>	\$ <u>1,404</u>
Receivable from investment liquidation held at escrow	\$ <u>-</u>	\$ <u>1,331</u>
SUPPLEMENTAL DISCLOSURE OF CASH FLOW INFORMATION—		
Reconciliation of cash, cash equivalents, and restricted cash reported in consolidated balance sheets:		
Cash and cash equivalents	\$ 29,012	\$ 57,391
Restricted cash	<u>9,782</u>	<u>12,702</u>
Total cash, cash equivalents, and restricted cash	\$ <u>38,794</u>	\$ <u>70,093</u>
See notes to consolidated financial statements.		(Concluded)

# RESEARCH TRIANGLE INSTITUTE

## NOTES TO CONSOLIDATED FINANCIAL STATEMENTS AS OF AND FOR THE YEARS ENDED SEPTEMBER 30, 2023 AND 2022

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### 1. ORGANIZATION AND SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

**Organization**—Research Triangle Institute (the “Institute”), which operates under the trade name RTI International, is one of the world’s leading independent nonprofit research organizations, dedicated to conducting research and development that improves the human condition by turning knowledge into practice. The Institute was established in 1958 by a joint action of Duke University, the University of North Carolina, and North Carolina State University (the latter two are governed under the University of North Carolina System), as the founding tenant of Research Triangle Park, North Carolina. The Institute is a separately operated North Carolina nonprofit corporation that performs multidisciplinary research, development, and technical services under contract to clients in federal and foreign governments, industry, and public service agencies and is exempt from taxation under Section 501(c)(3) of the Internal Revenue Code (IRC). With a worldwide staff of more than 6,200 employees, the Institute offers a full spectrum of multidisciplinary services in health, education and workforce development, energy and environment, food security and agriculture, international development, and innovation.

Four individuals from the Institute’s founding institutions—Duke University and the University of North Carolina System—serve as the members of the Institute and are responsible for electing the Board of Governors (the “Board”). Corporate oversight is provided by the Board, which consists of representatives from the founding institutions, members elected from business and professional communities, and the president of the Institute. The Institute collaborates with its founding institutions on research programs and projects and maintains such relationships as adjunct faculty appointments, cooperative research programs, and other professional contacts. During the years ended September 30, 2023 and 2022, revenues from these activities amounted to \$10.9 million and \$10.6 million, respectively. Further, for the years ended September 30, 2023 and 2022, expenditures related to these activities amounted to \$24.5 million and \$10.8 million, respectively.

**Basis of Presentation**—The accompanying consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America (GAAP). The consolidated financial statements include the accounts of the Institute and its wholly owned subsidiaries. All significant intercompany balances and transactions have been eliminated.

The preparation of the consolidated financial statements in accordance with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the dates of the consolidated financial statements. Actual results could differ from those estimates.

**Reclassification of Prior Year Presentation** — Certain prior year amounts have been reclassified for consistency with current year presentation. An adjustment has been made to the September 30, 2022 consolidated balance sheet to reclassify accounts payable of \$83.8 million and other accrued expenses of \$39.9 million, to accounts payable and accrued expenses. Further, the same adjustment has been reflected in the statement of cash flows for the year ended September 30, 2022 to reclassify the \$20.3 million change in accounts payable and \$1.8 million change from other operating liabilities to the change in accounts payable and accrued expenses. The reclassification had no effect on the reported results of operations.

**Subsequent Events**—Management has updated its consideration of subsequent events through December 7, 2023 the date these consolidated financial statements were issued.

**Business Combinations**—Business combinations are accounted for using the acquisition method of accounting. Under the acquisition method of accounting, acquired assets and assumed liabilities are included with the acquirer’s accounts as of the date of acquisition at estimated fair value, with any excess of purchase price over the fair value of the net assets acquired (including certain identifiable intangible assets), capitalized as goodwill. Certain intangible assets are recognized as an asset apart from goodwill when it arises from contractual or other legal rights or if it is capable of being separated or divided from the acquired entity and sold, transferred, licensed, rented, or exchanged. Intangible assets related to noncompetition agreements or customer-related intangibles are recognized as part of goodwill. In addition, acquisition-related costs and restructuring costs are recognized as period expenses as incurred.

**Revenue Recognition**—The Institute’s sources of revenue include contract and contribution revenues primarily from agreements with agencies of the federal government.

Generally, it has been concluded that fixed fee, fee-bearing cost reimbursable, and time and materials contracts are exchange transactions subject to Accounting Standards Codification (ASC) 606, *Revenue from Contracts with Customers* (ASC 606), and grants, cooperative agreements, and non-fee-bearing cost reimbursable contracts are contributions subject to ASC 958, *Not-for-Profit Entities* (ASC 958).

**Exchange Transactions**—In accordance with ASC 606 for exchange transactions, the Institute recognizes revenue when, or as, performance obligations are satisfied under a contract. A performance obligation is the unit of account for revenue recognition and refers to a promise in a contract to transfer a distinct service or good to the customer. For the majority of contracts, the Institute combines multiple promises into a single performance obligation due to the multiple promises being either highly interrelated or through providing a significant integration of services that represent a combined output. Performance obligations may be satisfied over time or at a point in time, but the majority of the Institute’s performance obligations are satisfied over time.

The Institute evaluates whether it has an enforceable contract with a customer when rights of the parties and payment terms are identified, and collectability is probable. The Institute also evaluates if a contract has multiple promises and if each promise should be accounted for as separate performance obligations or as a single performance obligation.

The transaction price is the estimated amount of consideration expected to be received for performance under the Institute’s contracts. Contract terms may contain variable consideration. The Institute includes variable consideration in the transaction price only to the extent it is probable that a significant reversal of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is resolved. The Institute does not include unfunded contract balances in the transaction price until funding is provided from the customer.

For the majority of its exchange transactions, the Institute recognizes revenue over time as there is a continuous transfer of control to the customer over the contract’s period of performance.

Generally, the cost-to-cost method is used to recognize revenue over time for fixed price and cost reimbursement contracts. The cost-to-cost method recognizes revenue based on the entity’s efforts or inputs to the satisfaction of a performance obligation relative to the total expected inputs to the satisfaction of that performance obligation. The cost-to-cost method is considered a faithful

representation of the delivery of services as efforts to complete a contract are expended over the period of performance. Changes in estimates of costs to complete result in the recognition of a cumulative effect adjustment in the period a change in estimate occurs. Estimated losses on agreements are provided for in the period the losses are first determined.

The Institute recognizes revenue using the right to invoice practical expedient for time and materials contracts as the Institute can invoice the customer in an amount that corresponds directly with the value received by the customer for performance completed to date.

**Contributions**—Grants, cooperative agreements, and non-fee-bearing cost reimbursable contracts are classified as contributions in instances where there is not an exchange of commensurate value. In general, the Institute recognizes revenue over the contribution agreement's period of performance and not at the time of its award. Where these agreements contain barriers and restrictions with a right of return, contribution revenue is recognized upon satisfaction of the indicated conditions, which is generally by the occurrence of an allowable cost. The Institute has elected to present contributions whose restrictions are met in the same reporting period that revenue is recognized as net assets without donor restrictions.

The Institute also enters into cost-sharing arrangements in which it receives in-kind contributed services or supplies from third-party contractors. In-kind contributions received by the Institute are valued at fair value and recorded as revenue in the consolidated statements of revenue, costs, and changes in net assets. Likewise, in-kind contributions received by the Institute are recognized as an expense on the related project and are reflected as direct costs in the consolidated statements of revenue, costs, and changes in net assets.

**Expense Recognition**—Direct and indirect costs are expensed as incurred. Direct costs are those costs that can be specifically identified with a particular project. Indirect costs represent overhead costs, which primarily consist of salaries and benefits, materials and services, strategic initiatives, depreciation, rent, and utilities expenditures.

**Internal Service Center Allocations**—Indirect labor and other costs of certain service centers, such as information technology services and facilities, are charged directly to contracts and overhead cost centers as direct or indirect services.

**Concentration of Credit Risk**—Financial instruments that potentially subject the Institute to concentration of credit risk consist principally of cash and cash equivalents. The Institute places its cash and cash equivalents in the United States primarily in federally insured financial institutions, which limits its credit exposure. At times, these cash amounts may be in excess of the Federal Deposit Insurance Corporation insurance limits. In addition, as of September 30, 2023 and 2022, the Institute had approximately \$3.8 million and \$4.5 million, respectively, of international cash deposits in financial institutions that may not be insured to the same extent as monies in U.S. institutions. In order to mitigate this risk, the Institute maintains cash accounts in international financial institutions with certain required credit ratings and maintains minimal necessary balances in smaller international financial institutions.

The federal government is the Institute's major client, making up 84.3% and 84.0% of revenue for the years ended September 30, 2023 and 2022, respectively. As of September 30, 2023 and 2022, accounts receivable from the federal government amounted to \$55.6 million and \$48.7 million, respectively.

**Cash and Cash Equivalents and Restricted Cash**—All highly liquid investments purchased with an original maturity of three months or less are considered cash equivalents. As of September 30, 2023 and 2022, restricted cash included \$9.1 million and \$12.0 million, respectively, in customer advances that must be returned if not expended by the Institute.

**Accounts Receivable**—Accounts receivable consists of costs that have been incurred for which the Institute has invoiced the client in accordance with the contractual terms and conditions of the underlying agreements. Receivables are recorded at approved rates for services and goods. The Institute has established an allowance for uncollectible accounts based upon historical performance.

**Unbilled Costs, Fees, and Contract Assets/Deferred Revenue and Contract Liabilities**—The timing of revenue recognition may differ from the timing of billing and cash receipts from customers. Amounts are invoiced as work progresses, typically monthly in arrears, or upon achievement of contractual milestones. The Institute records an asset when revenue is recognized prior to invoicing, or a contract liability when cash is received in advance of recognizing revenue. Contract assets are recognized on exchange transactions and represent a right to consideration that is conditional upon factors other than the passage of time. Contract assets include unbillable receivables but exclude billed and billable receivables. Billed and billable receivables are rights to consideration, which are unconditional other than to the passage of time. Contract liabilities include customer advances and deferred revenue. Contract assets and liabilities are recorded net on a contract by contract basis and are generally classified as current based on the Institute's contract operating cycle.

**Accounts Payable and Accrued Expenses**—Accounts payable and accrued expenses consist of costs which have been incurred but have not yet been paid. As of September 30, 2023, accounts payable and accrued expenses amounted to \$136.6 million, consisting primarily of \$21.8 million of vendor invoices, \$51.4 million of accrued subcontractor and consultant expenses, and \$36.8 million of mostly employee related expenses.

**Debt and Equity Securities**—Debt securities and equity securities with readily determinable fair values are recorded at fair value. Certain investments' fair value is measured using net asset value (NAV) per share, based on the fair value of the respective fund's underlying investments less the fund's liabilities. Unrealized gains and losses associated with these securities are recognized in the consolidated statements of revenue, costs, and changes in net assets.

For equity securities without readily determinable fair values, the Institute has elected a measurement alternative whereby these securities are recorded at cost, adjusted for changes resulting from observable price changes (in orderly transactions for the identical or similar investment of the same issuer), and less impairment. To determine impairment, a qualitative assessment is performed and if this assessment indicates that impairment exists, an estimate of fair value is determined. Any impairments are recognized in the consolidated statements of revenue, costs, and changes in net assets.

Certain debt securities are classified as available-for-sale and evaluated for impairment. When a decline in fair value below a security's cost is determined to be other-than-temporary, an impairment charge is recorded in the consolidated statements of revenue, costs, and changes in net assets.

While the Institute believes its valuation methods are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different fair value measurement at the reporting date.

**Equity Method Investments**—Equity method investments include those in which the Institute does not have control but has the ability to exercise significant influence over operating and financial policies. These investments are initially recorded at cost and are subsequently adjusted for the Institute’s share of earnings and cash contributions and distributions. The Institute analyzes other-than-temporary impairment of these investments regularly. Other-than-temporary impairments are recognized in the consolidated statements of revenue, costs, and changes in net assets.

**Property and Equipment**—Property and equipment is composed of land, research facilities, office space, furniture, computer equipment, internal-use software, and leasehold improvements, which are recorded at cost and depreciated over the asset’s useful life using the straight-line method as follows:

Buildings and improvements	10 to 45 years
Equipment, software, and furniture	3 to 10 years

Leasehold improvements are amortized over the life of the related asset or the life of the lease, whichever is shorter.

Expenditures for maintenance and repairs of property and equipment, which do not materially prolong the useful lives or significantly increase the productive capacity of the assets, are charged to indirect costs as incurred. Major expenditures for betterments or renovations are capitalized and depreciated.

The Institute incurs costs to develop internal-use software that are not hosted by third-party vendors and are not considered service contracts. Costs incurred to develop internal-use software during the application development stage or for upgrades and enhancements that result in additional functionality are capitalized. Costs related to preliminary project activities and postimplementation activities are expensed as incurred. Once a development project is substantially complete and the software is ready for its intended use, capitalization ceases, and amortization begins.

The Institute also acquires equipment and furniture under its contracts with agencies of the federal government. The Institute does not have title to these assets, and the assets are not included in the consolidated balance sheets. The Institute must maintain an inventory and return the assets to the government entity as instructed.

**Leases**—The Institute leases property and equipment under operating leases and determines if an arrangement is a lease at the inception of the contract. Right-of-use (“ROU”) assets represent the Institute’s right to use the underlying assets for the lease term, and lease liabilities represent the Institute’s obligation to make lease payments arising from the leases. For leases with terms greater than 12 months, the related ROU assets and lease liabilities are recorded at the present value of the future lease payments over the term of the lease. The initial measurement of the ROU asset is equal to the initial lease liability plus any indirect costs and prepayments, less any lease incentives.

The Institute made an accounting policy election not to recognize ROU assets and lease liabilities for leases with a term of 12 months or less. Lease payments for these leases are recognized as lease costs on a straight-line basis over the lease term.

The Institute has elected to account for lease components and the associated non-lease components in contracts as a single lease component for all classes of underlying assets. Further, as the Institute generally does not know the implicit rate for its leases, in calculating lease liabilities, the Institute has elected to use the risk-free rate of return across the portfolio of leases with similar durations.

The Institute's operating leases are primarily for real estate, including office space, research facilities and equipment. Certain of the Institute's real estate leases contain options to renew or extend the terms of the lease, as well as termination options that could shorten the original lease term, which are included in the determination of the ROU assets and lease liabilities when it is reasonably certain that the Institute will exercise the option.

The Institute recognizes lease costs on a straight-line basis over the remaining lease term, except for variable lease payments that are expensed in the period in which the obligation for those payments is incurred. Lease agreements do not contain any material residual value guarantees, restrictions, or covenants.

**Goodwill and Other Intangible Assets**—Goodwill represents the excess purchase price over the fair value of the net assets acquired. The Institute has elected to amortize goodwill on a straight-line basis over 10 years and has made the elections to perform goodwill impairment triggering event evaluation as of the end of the annual reporting period and to perform goodwill impairment tests at the entity level. Goodwill is evaluated for impairment whenever events or changes in circumstances would indicate impairment. Should a triggering event occur, and the estimated fair value of the Institute is less than its respective carrying value, including goodwill, an impairment charge equal to the difference between the Institute's fair value and carrying value will be incurred. Goodwill is reported separately in the consolidated balance sheets.

Other intangible assets consist of customer relationships, acquired customer backlog, developed technology, trademarks, and noncompete agreements. Other intangible assets are stated at amortized cost and amortized based upon the asset's economic life. Other intangible assets are tested for impairment whenever factors indicate the carrying amount may not be recoverable. Other intangible assets are recorded in other noncurrent assets in the consolidated balance sheets.

**Cloud Computing Service Arrangements**—The Institute incurs costs to implement cloud computing arrangements (CCAs) that are hosted by third-party vendors under service contracts. Costs incurred in the preliminary project and postimplementation stages are expensed, while certain costs incurred during the application development stage are capitalized and recorded in prepaid expenses and other current assets and other noncurrent assets in the consolidated balance sheets. Capitalized costs are amortized on a straight-line basis over the reasonably certain term of the hosting arrangement for each module or component of the related hosting arrangement when it is ready for its intended use. Expenses related to the capitalized implementation costs are presented in the same line item of the consolidated statements of revenue, costs, and changes in net assets as the fees associated with the hosting element of the arrangement.

**Impairment of Long-lived Assets**—The Institute evaluates the potential impairment of long-lived assets whenever events or changes in circumstances indicate that the related carrying amounts may not be recoverable. If the carrying value of long-lived assets held and used exceeds the sum of the undiscounted expected future cash flows, the carrying value is written down to fair value. In order for long-lived assets to be considered held for disposal, the Institute must have committed to a plan to dispose of the assets. Once deemed held for disposal, the assets are stated at the lower of the carrying amount or fair value. In addition, the Institute may decide to abandon an asset. A decision to abandon an asset requires the establishment of a plan of abandonment, which occurs when the Institute has committed to a plan to abandon the asset before the end of its previously estimated useful life, and there is no expectation that the Institute will re-use or re-purpose the asset.

**Derivative Instruments**—Derivatives are recognized at fair value in the consolidated balance sheets.

**Accrued Compensated Absences**—Accrued compensated absences are paid leave, which may be used by employees for time away from work for vacation, as well as for illness of the employee or family members. Full-time and part-time employees are eligible for accrued compensated absences and accrue time off at various rates depending on years of service.

**Self-Insurance**—The Institute has self-insured medical and dental plans, which cover the majority of its employees, Consolidated Omnibus Reconciliation Act participants, and all non-Medicare eligible retirees. These plans are administered by separate third party administrators. The Institute is also self-insured for workers' compensation. The Institute purchases, per occurrence, stop-loss insurance policies to cover medical and workers' compensation claims in excess of the policy deductibles. The appropriateness of stop-loss deductible limits is evaluated annually and adjusted as warranted.

Included in the estimated liability are estimates of incurred, but not reported claims and incremental claim adjustments. As of September 30, 2023 and 2022, the Institute had related reserves approximating \$3.7 million and \$3.4 million, respectively, reflected in accounts payable and accrued expenses in the consolidated balance sheets.

**Income Taxes**—As provided by Section 501(c)(3) of the IRC and the Internal Revenue Service's determination, the Institute's charitable, scientific, and educational operations are exempt from corporate income taxes and no provision for corporate income tax is generally required. However, this tax exemption does not pertain to activities unrelated to the Institute's exempt purposes. The Institute's presence in certain foreign countries results in income taxation in these countries. Additionally, the Institute has several for-profit entities subject to corporate income taxation. These for-profit entities' operating losses and goodwill impairments have primarily contributed to a \$7.8 million and a \$2.8 million net deferred tax asset that has been offset with a full valuation allowance as of the years ended September 30, 2023 and 2022, respectively. Income taxes associated with foreign operations, unrelated business income, and income generated by the Institute's for-profit entities are not material for the Institute.

All not-for-profit organizations, including the Institute, are subject to the provisions of ASC 740, *Income Taxes*, related to the accounting for uncertainty in tax positions, including the financial statement recognition and measurement of a tax position taken or expected to be taken in a tax return. The tax benefit from an uncertain tax position is only recognized in the consolidated balance sheets if the tax position is more likely than not to be sustained upon an examination, based on the technical merits of the position. Interest and penalties, if any, are included in tax expense in the consolidated statements of revenue, costs, and changes in net assets. As of September 30, 2023 and 2022, the Institute had no uncertain tax positions that qualify for recognition or disclosure in the consolidated financial statements. The Institute's earliest open tax year for U.S. federal income tax purposes is its fiscal year ended September 30, 2020.

**Foreign Currency**—For reporting purposes, the Institute translates the assets and liabilities of its foreign entities at the exchange rates in effect at year end. Revenue and costs are reported using average exchange rates in effect during the period. Gains and losses from foreign currency translation are credited or charged to net assets in the accompanying consolidated statements of revenue, costs, and changes in net assets. Realized exchange gains and losses are included in net operating results for the years presented.

**Net Assets**—Net assets without donor restrictions include undesignated amounts as well as amounts designated by the Board for a specific purpose. The undesignated net assets are available for the overall operations of the Institute. The Board-designated net assets are to be used for multi-lateral

collaborative initiatives by and among the Institute, Duke University, the University of North Carolina System, and other parties as determined by the University Research Collaboration Committee of the Board.

Net assets with donor restrictions include contributions and other inflows of assets whose use is limited by donor-imposed stipulations that either expire by passage of time or can be fulfilled and removed by actions of the Institute pursuant to those stipulations.

Net assets with donor restrictions also include contributions and other inflows of assets whose use by the Institute is limited by donor-imposed stipulations in perpetuity. Prior to June 20, 2022, these assets primarily related to the Institute's 25% beneficial interest in the George Watts Hill Foundation Trust (the "Trust"). As a beneficiary, the Institute was required to hold the corpus of this interest in perpetuity. Under the Trust agreement, Trust income and distributions were to be used for certain facility costs, which are defined by the Trust and are classified as restricted until these facility costs are incurred. Unrealized gains and losses on the fair value beneficial interest in the Trust are recorded as an adjustment to the beneficial interest asset and net assets with donor restrictions.

On June 20, 2022, a modification to the Trust was decreed (the "Modification"), and the Institute's 25% beneficial interest in the Trust was reallocated to another beneficiary. At the time of the Modification, the fair value of the corpus of the Institute's beneficial interest in the Trust approximated \$1.6 million. The Institute adjusted the beneficial interest asset to zero and recognized a decrease of \$1.6 million in net assets with donor restrictions. The Institute retained the previously earned Trust income and distributions, which continue to be designated for certain facility costs defined by the Modification and are classified as restricted until these costs are incurred.

**Consolidated Statements of Revenue, Costs, and Changes in Net Assets**—The Institute utilizes a business financial reporting model similar to the accounting guidance on comprehensive income. This includes identification and use of a measure that is the functional equivalent of income from continuing operations of a for-profit organization (i.e., a performance indicator). The caption in the consolidated statements of revenue, costs, and changes in net assets titled "Net operating income" represents such a performance indicator. Net operating income includes all changes in net assets without donor restrictions except for actuarial or experience gains and losses of other postretirement benefit plans (as well as prior service costs or credits), foreign currency translation adjustments, and unrealized gains and losses on other than trading debt securities.

## **2. RECENT ACCOUNTING PRONOUNCEMENTS**

Our accounting policies are consistent with those of the previous year.

There are certain new and revised ASUs pending adoption after September 30, 2023, which are not expected to have a material impact on the Institute's financial statements in the current or future reporting periods or on foreseeable future transactions.

## **3. REVENUE RECOGNITION**

Revenue recognized for exchange transactions and contributions totaled \$1,229.8 million and \$1,194.4 million for the years ended September 30, 2023 and 2022, respectively, and is reported in revenue in the consolidated statements of revenue, costs, and changes in net assets. For the years ended September 30, 2023 and 2022, the Institute recognized revenues from exchange transactions of \$749.0 million and \$687.4 million, respectively, and contributions of \$480.8 million and \$507.0 million, respectively.

**Exchange Transactions**—The Institute disaggregates its revenue from contracts with customers by contract type and customer type, as management believes that they best depict how the nature, amount, timing, and uncertainty of the Institute’s revenue and cash flows are affected by economic factors. The following table summarizes revenue from contracts with customers by contract type and customer type for the years ended September 30, 2023 and 2022 (in thousands):

<b>Contract Types</b>	<b>2023</b>		
	<b>Federal</b>	<b>Nonfederal</b>	<b>Total</b>
Cost reimbursable	\$ 356,070	\$ 2,909	\$ 358,979
Fixed price	81,087	127,448	208,535
Time and materials	127,872	48,412	176,284
Other	<u>3,527</u>	<u>1,625</u>	<u>5,152</u>
Total revenues	<u>\$ 568,556</u>	<u>\$ 180,394</u>	<u>\$ 748,950</u>
<b>Contract Types</b>	<b>2022</b>		
	<b>Federal</b>	<b>Nonfederal</b>	<b>Total</b>
Cost reimbursable	\$ 333,855	\$ 7,447	\$ 341,302
Fixed price	66,043	126,740	192,783
Time and materials	108,238	43,366	151,604
Other	<u>(600)</u>	<u>2,301</u>	<u>1,701</u>
Total revenues	<u>\$ 507,536</u>	<u>\$ 179,854</u>	<u>\$ 687,390</u>

At year end, contracts remain active and have periods of performance that extend into subsequent fiscal years. As of September 30, 2023 and 2022, the aggregate amount of contract transaction price that remains for future revenue recognition, excluding time and materials and unfunded contract balances, was \$693.2 million and \$549.2 million, respectively, the majority of which the Institute expects to recognize in revenue over the next 24 months.

The components of contract balances associated with contract assets and contract liabilities associated with exchange transactions as of September 30, 2023 and 2022, consisted of the following (in thousands):

<b>Contract Balances</b>	<b>Consolidated Balance Sheet Line Item</b>	<b>2023</b>	<b>2022</b>
Contract assets	Unbilled costs, fees, and contract assets	\$ 105,267	\$ 91,965
Billable receivables	Unbilled costs, fees, and contract assets	4,284	4,716
Contract liabilities	Deferred revenue and contract liabilities	42,047	38,018

The increase in unbilled receivables was primarily due to the timing of billings and revenue recognized on certain contracts. The increase in deferred revenue was primarily due to the timing of advance payments from customers partially offset by revenue recognized during the year ended September 30, 2023.

The Institute expects to bill its customers for a majority of the September 30, 2023, contract assets during the next 12 months. During the years ended September 30, 2023 and 2022, the Institute recognized revenues of \$28.7 million and \$27.0 million, respectively, relating to amounts that were included as a contract liability as of September 30, 2022, and September 30, 2021, respectively. It is anticipated that the majority of the deferred revenue balance as of September 30, 2023, will be recognized as revenue during the next 12 months.

The Institute recognized impairment losses on contract assets of \$0.4 million in other direct costs in the consolidated statements of revenue, costs, and changes in net assets during the year ended September 30, 2023. There were no impairment losses during the year ended September 30, 2022.

**Contributions**—The table below summarizes contributions received, exclusive of contributions of nonfinancial assets, by type and funding source, for the years ended September 30, 2023 and 2022 (in thousands):

<b>Agreement Types</b>	<b>2023</b>		
	<b>Federal</b>	<b>Nonfederal</b>	<b>Total</b>
Cooperative agreement	\$ 294,606	\$ -	\$ 294,606
Grant	67,586	11,627	79,213
Non-fee-bearing cost reimbursable	<u>92,430</u>	<u>1,242</u>	<u>93,672</u>
Total revenues	<u>\$ 454,622</u>	<u>\$ 12,869</u>	<u>\$ 467,491</u>
<b>Agreement Types</b>	<b>2022</b>		
	<b>Federal</b>	<b>Nonfederal</b>	<b>Total</b>
Cooperative agreement	\$ 274,488	\$ -	\$ 274,488
Grant	62,544	8,509	71,053
Non-fee-bearing cost reimbursable	<u>143,481</u>	<u>3,182</u>	<u>146,663</u>
Total revenues	<u>\$ 480,513</u>	<u>\$ 11,691</u>	<u>\$ 492,204</u>

As of September 30, 2023 and 2022, the aggregate amount of conditional promises to be received in future years related to the Institute's ongoing operating programs totaled \$700.3 million and \$554.7 million, respectively. The Institute had billable receivables of \$74.6 million and \$61.2 million for contributions as of September 30, 2023 and 2022, respectively, and is included in the unbilled costs, fees, and contract assets line in the consolidated balance sheets. The amounts are expected to be billed and received within one year.

**Contributed Nonfinancial Assets**—For the years ended September 30, 2023 and 2022, contributed nonfinancial assets recognized within the consolidated statements of revenue, costs, and changes in net assets consisted of the following (in thousands):

	<b>2023</b>	<b>2022</b>
Professional services	\$ 5,801	\$ 13,663
Equipment and supplies	<u>7,546</u>	<u>1,145</u>
Total contributed nonfinancial assets	<u>\$ 13,347</u>	<u>\$ 14,808</u>

The Institute recognizes contributed nonfinancial assets, consisting of professional services, and equipment and supplies. These assets are utilized in the ongoing mission of the Institute, to improve the human condition, through its varied project work both domestically and internationally. These projects include research, community building, medical and educational services, research and development, and logistical and administrative assistance. Contributed nonfinancial assets did not have donor-imposed restrictions.

Contributed professional services recognized comprise professional services in fields such as medicine, education, research, and retail services. Contributed services are valued and are reported at the estimated fair value in the consolidated financial statements based on the rates of similar services in the jurisdiction where the services were performed.

Contributed equipment and supplies consist of technology, such as laptops and peripherals, as well as research and educational supplies. In valuing contributed equipment and supplies, the Institute estimated the fair value on the basis of estimates of wholesale values that would be received for selling similar products in the jurisdiction the equipment and supplies were provided.

#### 4. FUNCTIONAL EXPENSES

The Institute performs applied and basic research and technical services under contract to clients in business, industry, public service agencies, and federal and foreign governments. Costs are allocated in accordance with Cost Accounting Standards established by the federal government. Expenses, by function, related to providing these services during the years ended September 30, 2023 and 2022, are as follows (in thousands):

	<b>2023</b>	<b>2022</b>
Programs expense (including research and other projects):		
Salaries and employee benefits	\$ 545,767	\$ 478,017
Subcontractor and consultant costs	299,471	344,537
Other direct program costs	<u>258,677</u>	<u>246,588</u>
Total programs expense	<u>1,103,915</u>	<u>1,069,142</u>
Support expense (principally general and administrative):		
Salaries and employee benefits	107,743	96,702
Other support costs	<u>18,030</u>	<u>16,614</u>
Total support expense	<u>125,773</u>	<u>113,316</u>
Total	<u>\$ 1,229,688</u>	<u>\$ 1,182,458</u>

## 5. LIQUIDITY

The Institute's financial assets available for general expenditure within one year of September 30, 2023 and 2022, include the following (in thousands):

	2023	2022
Cash and cash equivalents	\$ 29,012	\$ 57,391
Short-term investments	188,837	168,530
Accounts receivable—net	92,570	86,320
Unbilled costs, fees, and contract assets	<u>184,139</u>	<u>157,729</u>
 Total financial assets	 494,558	 469,970
 Less: Board-designated funds for future use	 <u>9,919</u>	 <u>10,103</u>
 Financial assets available to meet general expenditures over the next twelve months	 <u>\$ 484,639</u>	 <u>\$ 459,867</u>

None of the financial assets are subject to donor or other contractual restrictions that make them unavailable for general expenditures within one year of the consolidated balance sheet date. The accounts receivable balance is subject to implied time restrictions but are expected to be collected within one year. The Institute has a goal to maintain financial assets, which consist of cash, cash equivalents, and investments, on hand to meet 15% of the Institute's annual revenue, which is approximately \$184.5 million as of September 30, 2023. The Institute has a policy to structure its financial assets to be available as its general expenditures, liabilities, and other obligations come due. In addition, as part of its liquidity management, the Institute invests cash in excess of daily requirements in various short-term investments. As more fully described in Note 10, the Institute also has an operating line of credit, which matures in April 2024, and can be drawn up to \$50 million, as of September 30, 2023 and 2022, in the event of an unanticipated liquidity need.

## 6. INVESTMENTS

Short-term investments and noncurrent investments consisted of the following as of September 30, 2023 and 2022 (in thousands):

	2023	2022
Short-term investments—debt and equity securities and warrants	<u>\$ 188,837</u>	<u>\$ 168,530</u>
 Noncurrent investments:		
GEM investment fund	78,568	73,036
Debt securities	430	2,040
Other noncurrent investments	<u>14,369</u>	<u>9,527</u>
 Total noncurrent investments	 <u>93,367</u>	 <u>84,603</u>
 Total investments	 <u>\$ 282,204</u>	 <u>\$ 253,133</u>

Realized and unrealized gains and losses on investments are recorded in investment income, net in the consolidated statements of revenue, costs, and changes in net assets.

**Debt and Equity Securities and Warrants**—Short-term debt and equity securities are primarily composed of U.S. Treasury securities, U.S. government and agency bonds and mortgage-backed securities, corporate equity and debt obligations, and multi asset mutual funds. These securities are recorded at fair value.

During the year ended September 30, 2022, certain investments in preferred stock and warrants were liquidated, and the Institute received \$17.7 million in cash. In addition to the cash received in connection with the liquidation of these previously owned investments, the Institute also has the right to receive earnout distributions based upon the privately held company achieving certain future qualifying sales over 12 months. These earnout distributions are considered gain contingencies and are recognized at such time, when related assets received or held are readily convertible to known amounts of cash or claims to cash. For the year ended September 30, 2023, \$2.2 million in earnout distributions were recognized in investment income, net in the consolidated statements of revenue, costs, and changes in net assets. There were no earnout distributions recognized for the year ended September 30, 2022.

**GEM Investment Fund**—The Institute has an investment in a global multi asset fund, Global Endowment Fund II (GEM), with a cost basis of \$50.0 million and estimated net asset value of \$78.6 million and \$73.0 million as of September 30, 2023 and 2022, respectively. Withdrawals from the fund have restrictions, and certain distributions require approval of the general partner, as such, this investment has been classified as noncurrent within the consolidated balance sheets.

**Debt Securities**—As of September 30, 2023 and 2022, the Institute held convertible notes with privately held companies of \$0.4 million and \$2.0 million, respectively. These securities are recorded at fair value and generally mature within two years of issuance. During the year ended September 30, 2022, the maturity date for each note was extended. Each note has similar conversion features, such as upon qualified or nonqualified financing, corporate transaction, or maturity. During the years ended September 30, 2023 and September 30, 2022, there were no recorded unrealized gains on these securities.

During the year ended September 30, 2023, the maturity date for each note was met, and the Institute did not exercise its rights to declare the notes due and payable or to convert the notes to equity. The Institute performed an impairment analysis for each convertible note investment and determined that one debt security was other-than-temporarily impaired recognizing a \$1.6 million loss in other expense in the consolidated statements of revenue, costs, and changes in net assets.

**Equity Method Investments**—The Institute has investments in common stock of several privately held companies, which are accounted for under the equity method. For the years ended September 30, 2023 and 2022, no equity method income or losses were recorded for these common stock investments.

**Other Noncurrent Investments**—As of September 30, 2023 and 2022, the Institute had \$3.0 million invested in noncontrolling interests in equity investments in several privately held companies through preferred stock. These equity securities are recorded at initial cost, adjusted for observable transactions, less impairment, given they are equity securities with no readily determinable fair value. During the years ending September 30, 2023 and 2022, no observable transactions, impairments, or upward or downward adjustments have been recorded on these investments.

During the year ended September 30, 2022, the Institute liquidated one of its preferred stock investments and received \$6.8 million in cash proceeds and \$1.4 million as a noncash transfer of interest in a newly established limited partnership investment fund. The Institute's resulting investment in the limited partnership investment fund consists of preferred units and common units. Additionally, the Institute entered a second limited partnership and committed future funds totaling \$5.0 million. During the year ended September 30, 2023, the Institute made a \$5.0 million contribution to this limited partnership resulting in the co-ownership of a limited liability company. The Institute owns less than 3% of both of these limited partnership investment funds. As the partnerships do not have readily determinable fair values, the Institute's interests are measured at cost, adjusting for observable transactions, less impairment. Since acquisition, no observable transactions, impairments, or upward or downward adjustments have been recorded on these investments.

Additionally, during the year ended September 30, 2022, the Institute liquidated one of its preferred stock investments and received \$7.5 million in cash.

As of September 30, 2023 and 2022, the Institute had \$4.9 million and \$5.1 million invested in four private equity partnerships through the Commonfund. The Institute has committed future funds totaling \$0.9 million to these four different partnerships as of September 30, 2023. When fully funded, the Institute will have 3% or less ownership in each partnership. As these partnerships do not have a readily determinable fair value, the Institute's interest is measured at cost, adjusting for observable transactions, less impairment. Since acquisition, no observable transactions, impairments, or upward or downward adjustments have been recorded on these investments. During the years ended September 30, 2023 and 2022, the Institute recognized realized gains of \$0.4 million and \$0.8 million, respectively, through the Commonfund partnerships.

## 7. PROPERTY AND EQUIPMENT

Property and equipment as of September 30, 2023 and 2022, consisted of the following (in thousands):

	<b>2023</b>	<b>2022</b>
Land	\$ 2,674	\$ 2,674
Buildings and improvements	255,359	251,394
Equipment, software, and furniture	103,231	100,697
Construction in process	<u>7,309</u>	<u>6,990</u>
Total property and equipment at cost	368,573	361,755
Less: accumulated depreciation	<u>217,888</u>	<u>204,628</u>
Property and equipment—net	<u>\$ 150,685</u>	<u>\$ 157,127</u>

Depreciation expense for the years ended September 30, 2023 and 2022 was \$14.2 million and \$15.1 million, respectively.

During the year ended September 30, 2023, the Institute recognized an impairment charge of \$5.8 million in other expense in the consolidated statements of revenue, costs, and changes in net assets to reduce the carrying value of previously capitalized internal-use software costs to zero, as it was no longer probable the software being developed would be completed and placed in service.

## 8. LEASES

The following table presents the components of our ROU assets and liabilities related to leases as of September 30 (in thousands):

	<b>2023</b>	<b>2022</b>
Operating lease right-of-use assets—net	<u>\$ 17,848</u>	<u>\$ 20,833</u>
Operating lease liabilities, current portion	\$ 7,012	\$ 7,702
Operating lease liabilities—net of current portion	<u>13,306</u>	<u>16,810</u>
Total lease liabilities	<u>\$ 20,318</u>	<u>\$ 24,512</u>

Total operating lease costs are comprised of the following for the year ended September 30 (in thousands):

	<b>2023</b>	<b>2022</b>
Operating lease cost	\$ 6,874	\$ 7,293
Variable lease cost	1,011	863
Short-term lease cost	<u>1,493</u>	<u>2,054</u>
Total lease cost	<u>\$ 9,378</u>	<u>\$ 10,210</u>

Operating lease costs are included in other direct cost or indirect cost in the consolidated statements of revenue, costs, and changes in net assets, depending on the project type.

During the year ended September 30, 2022, the Institute concluded, based on the Institute's quantitative fair value analyses, that certain long-lived assets were not recoverable resulting in the recognition of impairment charges of \$0.9 million related to ROU assets which are recorded in indirect costs in the consolidated statements of revenue, costs, and changes in net assets. There were no impairment charges during the year ended September 30, 2023.

The following table presents other supplemental operating lease information as of and for the year ended September 30 (in thousands):

	<b>2023</b>	<b>2022</b>
ROU assets obtained in exchange for new operating lease liabilities	\$ 3,338	\$ 2,816
Net increase in ROU assets due to modifications and remeasurements	\$ 426	\$ 15
Cash paid for amounts included in the measurement of operating lease liabilities	\$ 8,451	\$ 9,342
Weighted-average remaining lease term	3.80 years	3.75 years
Weighted-average discount rate	1.64 %	0.54 %

Future maturities of operating lease liabilities as of September 30, 2023 are presented in the following table (in thousands):

<b>Years Ending September 30</b>	
2024	\$ 7,198
2025	5,789
2026	4,737
2027	1,431
2028	335
Thereafter	<u>1,463</u>
Total lease payments	20,953
Less: imputed interest	<u>635</u>
Total lease obligations	20,318
Less: current obligations	<u>7,012</u>
Long-term lease obligations	<u>\$ 13,306</u>

#### 9. GOODWILL, OTHER INTANGIBLE ASSETS, AND CLOUD COMPUTING SERVICE ARRANGEMENTS

**Goodwill**—The following table details the changes in goodwill for the years ended September 30, 2023 and 2022 (in thousands):

	<b>Goodwill</b>	<b>Accumulated Impairment</b>	<b>Accumulated Amortization</b>	<b>Goodwill—Net</b>
September 30, 2021	\$ 24,526	\$(13,272)	\$(2,286)	\$ 8,968
Amortization	<u>-</u>	<u>-</u>	<u>(1,126)</u>	<u>(1,126)</u>
September 30, 2022	24,526	(13,272)	(3,412)	7,842
Amortization	<u>-</u>	<u>-</u>	<u>(1,125)</u>	<u>(1,125)</u>
September 30, 2023	<u>\$ 24,526</u>	<u>\$(13,272)</u>	<u>\$(4,537)</u>	<u>\$ 6,717</u>

Amortization is applied on a straight-line basis over a period of 10 years and is recorded in other expense in the consolidated statements of revenue, costs, and changes in net assets.

**Other Intangible Assets**—Other intangible assets are included within other noncurrent assets in the accompanying consolidated balance sheets and consist of the following for the years ended September 30, 2023 and 2022 (in thousands):

	<b>2023</b>		
	<b>Gross Carrying Value</b>	<b>Accumulated Amortization</b>	<b>Net Carrying Value</b>
Customer relationships	\$ 4,510	\$ 2,833	\$ 1,677
Other	<u>1,690</u>	<u>1,540</u>	<u>150</u>
Total other intangible assets	<u>\$ 6,200</u>	<u>\$ 4,373</u>	<u>\$ 1,827</u>
	<b>2022</b>		
	<b>Gross Carrying Value</b>	<b>Accumulated Amortization</b>	<b>Net Carrying Value</b>
Customer relationships	\$ 4,510	\$ 2,464	\$ 2,046
Other	<u>1,690</u>	<u>1,474</u>	<u>216</u>
Total other intangible assets	<u>\$ 6,200</u>	<u>\$ 3,938</u>	<u>\$ 2,262</u>

Amortization expense for other intangible assets was \$0.4 million and \$0.5 million for the years ended September 30, 2023 and 2022, respectively. Each intangible asset is amortized on a straight-line basis and is recorded in other expense in the consolidated statements of revenue, costs, and changes in net assets. In the aggregate, as of September 30, 2023, these assets had a weighted-average expected useful life of 13 years from the date of acquisition. Estimated future amortization expense associated with other intangible assets as of September 30, 2023, is as follows (in thousands):

<b>Years Ending September 30</b>	
2024	\$ 435
2025	435
2026	321
2027	113
2028	57
Thereafter	<u>466</u>
	<u>\$ 1,827</u>

**Cloud Computing Service Arrangements**—As of the years ended September 30, 2023 and 2022, capitalized implementation costs related to CCAs under service contracts amounted to \$2.0 million and \$0.8 million, respectively. Amortization expense related to CCAs under service contracts amounted to \$0.2 million and \$0.1 million for the years ended September 30, 2023, and 2022, respectively. Accumulated amortization amounted to \$0.4 million and \$0.1 million as of the years ended September 30, 2023, and 2022, respectively. Capitalized implementation costs and accumulated amortization related to CCAs under service contracts are included in prepaid expenses and other current assets and other noncurrent assets in the consolidated balance sheets. Amortization expense of capitalized cloud computing costs under service contracts is recorded in indirect costs in the consolidated statements of revenue, costs, and changes in net assets.

During fiscal year 2020, the Institute began the implementation of an Institute-wide enterprise resource planning (ERP) system to replace various legacy applications and serve as the Institute's core business and finance system that included CCAs hosted by third party vendors. During the fourth quarter of 2022, it was determined that this ERP no longer met the Institute's long-term strategic goals and other ERP options needed to be evaluated. As such, the Institute recognized an impairment loss of \$10.8 million for the previously capitalized implementation costs. The impairment loss reduced the carrying value of the ERP system to zero and was recorded in other expense in the consolidated statements of revenue, costs, and changes in net assets for the year ended September 30, 2022.

## 10. DEBT

A summary of Institute's debt as of September 30, 2023 and 2022, is as follows (in thousands):

	<b>2023</b>	<b>2022</b>
Variable-rate term loan	\$ 40,000	\$ 44,000
Variable-rate Series 2007 Revenue Bonds	24,610	25,920
Fixed-rate Series 2010 Revenue Bonds	4,035	5,885
Plus unamortized premium	<u>59</u>	<u>134</u>
<b>Total outstanding debt</b>	<b><u>68,704</u></b>	<b><u>75,939</u></b>
Current maturities of long-term debt	7,365	7,160
Current classification due to redemption features	<u>23,245</u>	<u>24,610</u>
<b>Total current maturities of long-term debt</b>	<b><u>30,610</u></b>	<b><u>31,770</u></b>
<b>Total long-term debt</b>	<b><u>\$ 38,094</u></b>	<b><u>\$ 44,169</u></b>

The combined aggregate amount of maturity and annual mandatory sinking fund requirements for the years subsequent to the year ended September 30, 2023, are as follows (in thousands):

<b>Years Ending September 30</b>	
2024	\$ 7,365
2025	7,450
2026	5,470
2027	5,525
2028	5,585
2029 and thereafter	<u>37,250</u>
<b>Total</b>	<b><u>\$ 68,645</u></b>

The carrying amount of the Institute's debt as of the consolidated balance sheet date approximates fair value. The fair value of these instruments is determined using Level 2 inputs within the fair value hierarchy and based on quoted market prices for similar instruments or on current rates offered for debt with similar maturities.

**Lines of Credit**—The Institute has an unsecured \$50.0 million revolving line of credit as of September 30, 2023. On April 27, 2023, the Institute amended its unsecured revolving line of credit extending the maturity date through April 26, 2024. No balances were outstanding under the revolving line of credit as of September 30, 2023 and 2022. For 2023 and 2022, there were issued outstanding letters of credit in the amount of \$3.3 million and \$3.0 million, respectively, reducing the available balance on the revolving line of credit to \$46.7 million and \$47.0 million as of September 30, 2023 and 2022, respectively. Interest is accrued at an interest rate indexed to the Daily Simple Secured Overnight Financing Rate (SOFR) plus 1.34%.

**Variable Term Loan**—On January 1, 2018, the Institute entered into a \$60.0 million term loan to finance the construction of an office building and parking deck located on the Institute’s campus in Research Triangle Park (RTP). The term loan will mature on January 1, 2033. The term loan requires annual principal payments of \$4.0 million with interest payments due monthly. Upon the cessation of the London Interbank Offered Rate (LIBOR) on June 30, 2023, borrowings under the term loan bear an interest rate indexed to SOFR, plus a LIBOR benchmark replacement adjustment of 0.11% and a 0.8% spread.

To mitigate changes in interest rates, upon entering the loan agreement, the Institute simultaneously entered an interest rate swap to achieve an effective fixed interest rate of 2.49%. Refer to Note 11 for additional information.

**Series 2007 Revenue Bonds**—In November 2007, the Durham County Industrial Facilities and Pollution Control Financing Authority (Durham County) issued the Series 2007 Revenue Bonds on behalf of the Institute. The payment of the principal and interest on the bonds is currently secured by an additional irrevocable, direct pay letter of credit. The Series 2007 Revenue Bonds were issued to provide funds to finance (a) the cost of constructing and equipping an office building and parking deck located on the RTP campus; (b) the cost of refinancing certain indebtedness previously incurred by the Institute to finance improvements on the Institute’s campus; and (c) certain expenses incurred in connection with the authorization and issuance of the bonds, including certain initial costs associated with the issuance of the letter of credit.

The Series 2007 Revenue Bonds are subject to optional, extraordinary, and mandatory redemption, including redemption at par, and optional and mandatory tender for purchase prior to the stated maturity of September 2037. The bonds bear interest at a weekly rate, determined by prevailing market conditions and payable monthly in arrears. The Series 2007 Revenue Bonds are subject to mandatory sinking fund redemption payments on September 1 annually through 2037.

The irrevocable, direct pay letter of credit was issued to ensure bond payments to the bondholders and to enhance the credit rating of the bonds. In the event the Series 2007 Revenue Bonds are not successfully remarketed, the Institute would be obligated to reimburse the letter of credit holder for any bonds tendered and not remarketed. The original direct pay letter of credit expired in August 2022. A new direct pay letter of credit was entered into in July 2022 which expires in July 2025. Given the Series 2007 Revenue Bonds’ redemption features and the irrevocable, direct-pay letter of credit’s material adverse event clause, this debt is presented as a current liability.

Additionally, the Institute executed a 30 year floating to fixed interest-rate swap to provide interest rate protection for the Series 2007 Revenue Bonds and effectively created synthetic fixed rate debt at a borrowing rate of 3.75%. Refer to Note 11 for additional information.

**Series 2010 Revenue Bonds**—In February 2010, Durham County issued \$23.0 million, 15 year tax exempt fixed rate Series 2010 Revenue Bonds on behalf of the Institute. The Series 2010 Revenue Bonds were issued pursuant to indentures between Durham County and trustee and are payable pursuant to a loan agreement, between Durham County and the Institute. The Series 2010 Revenue Bonds were issued to provide funds to (a) finance the construction and equipping of a new office building and related parking deck on the RTP campus and (b) pay and reimburse the Institute for paying certain expenses incurred in connection with the issuance of the Series 2010 Revenue Bonds.

The Series 2010 Revenue Bonds were issued at a premium of \$1.9 million. The average coupon rate of the bonds approximated 4.37% and the effective interest rate approximated 3.14%.

The Series 2010 Revenue Bonds are not subject to optional redemption before maturity but are subject to extraordinary mandatory redemption prior to the stated maturity of February 1, 2025.

**Debt Covenants**—Certain of the Institute’s loan agreements and direct-pay letters of credit contain various covenants, including cross-default provisions and certain financial covenants. As of September 30, 2023, the Institute believes it was in compliance with all covenants that were in effect on such date.

## 11. DERIVATIVE INSTRUMENTS

The following table summarizes the fair value of the Institute’s derivatives by type as of September 30, 2023 and 2022 (in thousands):

Financial Instrument	Balance Sheet Account	Fair Value	
		2023	2022
Interest rate swap	Other long-term liabilities	\$ (1,131)	\$ (2,225)
Interest rate swap	Other non-current assets	<u>4,719</u>	<u>4,327</u>
Total		<u>\$ 3,588</u>	<u>\$ 2,102</u>

**Interest Rate Swaps**—During the year ended September 30, 2017, the Institute entered a floating-to-fixed interest-rate swap to manage fluctuations in cash flows resulting from the variable term loan entered during fiscal year 2017. The swap has a notional amount of \$60.0 million with an effective date of January 1, 2018, and a termination date of January 1, 2033. As of September 30, 2023, the swap had a remaining notional amount of \$40 million. Under the interest rate swap, the Institute receives LIBOR-based variable interest payments and makes fixed interest rate payments at 2.49%. Upon the cessation of LIBOR on June 30, 2023, the Institute transitioned from receiving LIBOR-based variable interest payments to receiving SOFR-based variable interest payments. The Institute did not designate the interest rate swap as a hedge in accordance with the accounting standards on derivatives and hedging.

The Institute also entered a floating-to-fixed interest-rate swap to manage fluctuations in cash flows resulting from the issuance of the Series 2007 Revenue Bonds. The swap had an original notional amount of \$40.6 million and termination date of September 1, 2037. As of September 30, 2023, the swap had a remaining notional amount of \$24.6 million. Under the interest rate swap, the Institute receives LIBOR-based variable interest payments and makes fixed interest rate payments at 3.75%. Upon the cessation of LIBOR on June 30, 2023, the Institute transitioned from receiving LIBOR-based variable interest payments to receiving SOFR-based variable interest payments. The Institute did not designate the interest rate swap as a hedge in accordance with the accounting standards on derivatives and hedging.

**Foreign Currency Forward Contracts**—From time to time, the Institute enters into currency rate protection agreements (“FX forward contracts”) to manage the foreign currency exchange exposure risk on transactions denominated in foreign currencies. The Institute had a nominal amount of FX forward contracts outstanding as of September 30, 2023 and 2022. These FX forward contracts typically have maturity dates ranging from less than a year to two years. The Institute did not designate these contracts for hedge accounting in accordance with the accounting standards on derivatives and hedging.

**Investment in Common and Preferred Stock Warrants**—During the year ended September 30, 2022, the Institute liquidated a noncontrolling interest in a privately held company, which included common and preferred stocks warrants that met the definition of a derivative. Refer to Note 6 for further details.

The following table summarizes the earning effects of derivatives in the consolidated statements of revenue, costs, and changes in net assets for the years ended September 30, 2023 and 2022 (in thousands):

Financial Instrument	Location of Gain (Loss)	Gain (Loss) Recognized	
		2023	2022
Common and preferred stock warrants	Investment income—net	\$ -	\$ 508
Interest rate swap	Interest income (expense)—net	1,486	10,140
FX currency forward contracts	Other expense—net	<u>(46)</u>	<u>50</u>
Total		<u>\$ 1,440</u>	<u>\$ 10,698</u>

Financial instruments, including derivatives, expose the Institute to credit loss in the event of nonperformance by counterparties. The Institute manages its exposure to counterparty credit risk through procedures to monitor the counterparty’s financial standing. If a counterparty fails to meet the terms of an arrangement, the Institute’s exposure is limited to the net amount that would have been received, if any, over the arrangement’s remaining life. Currently, the Institute does not anticipate nonperformance by any counterparty and no material loss is expected from such nonperformance.

## 12. FAIR VALUE MEASUREMENTS

Fair value is based on the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between independent market participants at the measurement date. To increase consistency and comparability in fair value measurements, a fair value hierarchy was established that prioritizes observable and unobservable inputs used to measure fair value into three broad levels, which are described below:

**Level 1**—Quoted prices for identical instruments in active markets.

**Level 2**—Quoted prices for similar instruments in active markets; quoted prices for identical or similar instruments in markets that are not active; and model derived valuations whose inputs are observable or whose significant value drivers are observable, such as interest rates, credit risks, and net asset value.

**Level 3**—Significant unobservable inputs (including the Institute’s own assumptions in determining the fair value of assets and liabilities).

The following sections provide a description of the valuation methodologies used for instruments measured at fair value as well as the general classification of such instruments pursuant to the fair value hierarchy:

**Investment Securities**—Where quoted prices are available in an active market, securities are classified within Level 1 of the valuation hierarchy. Level 1 securities would include highly liquid government bonds, such as Treasury securities and exchange-traded equities. If quoted market prices are not available, then fair values are estimated by using pricing models, quoted prices of securities with similar characteristics, discounted cash flow, or at net asset value per share. Level 2 securities would include U.S. government agency securities; obligations of states and political subdivisions; and certain corporate, asset-backed, multi asset fund, and other securities. In certain cases where there is limited activity or less transparency around inputs to the valuation, securities are classified within Level 3 of the valuation hierarchy.

**Nonqualified Deferred Compensation Plan—Mutual Funds**—These are valued at the daily closing price as reported by the fund. Mutual funds held by the plan are open-end mutual funds that are registered with the Securities and Exchange Commission. These funds are required to publish their daily net asset value and to transact at that price. The mutual funds held by the plan are deemed to be actively traded; thus, the investment is classified within Level 1 of the valuation hierarchy.

**Derivatives**—Derivative instruments include interest rate swaps and are valued on a recurring basis using quoted market prices, dealer quotes, or third-party pricing models that are primarily sensitive to market observable data. Current outstanding interest rate swap derivatives are classified as Level 2 within the fair value hierarchy.

Financial assets and liabilities recorded at fair value on a recurring basis as of September 30, 2023 and 2022, were as follows (in thousands):

Description	2023			
	Total	Level 1	Level 2	Level 3
<b>Assets</b>				
Short-term investments:				
US Treasury securities	\$ 29,857	\$ 29,857	\$ -	\$ -
Federal agency securities	6,426	-	6,426	-
Corporate debt obligations	3,715	-	3,715	-
Multiasset fund	<u>148,839</u>	<u>-</u>	<u>148,839</u>	<u>-</u>
Total short-term investments	<u>188,837</u>	<u>29,857</u>	<u>158,980</u>	<u>-</u>
Securities with donor restrictions	<u>9</u>	<u>-</u>	<u>9</u>	<u>-</u>
Noncurrent assets:				
Nonqualified deferred compensation plan—mutual funds	9,123	9,123	-	-
Derivatives—interest rate swaps	4,719	-	4,719	-
Debt securities	430	-	-	430
GEM investment fund—measured at net asset value	<u>78,568</u>	<u>-</u>	<u>-</u>	<u>-</u>
Total noncurrent assets	<u>92,840</u>	<u>9,123</u>	<u>4,719</u>	<u>430</u>
Total assets	<u>\$ 281,686</u>	<u>\$ 38,980</u>	<u>\$ 163,708</u>	<u>\$ 430</u>
<b>Liabilities</b>				
Other long-term liabilities:				
Derivatives—interest rate swaps	\$ 1,131	\$ -	\$ 1,131	\$ -
Nonqualified deferred compensation plan obligation	<u>9,123</u>	<u>9,123</u>	<u>-</u>	<u>-</u>
Total other long-term liabilities	<u>10,254</u>	<u>9,123</u>	<u>1,131</u>	<u>-</u>
Total liabilities	<u>\$ 10,254</u>	<u>\$ 9,123</u>	<u>\$ 1,131</u>	<u>\$ -</u>

Description	2022			
	Total	Level 1	Level 2	Level 3
<b>Assets</b>				
Short-term investments:				
US Treasury securities	\$ 35,955	\$ 35,955	\$ -	\$ -
Federal agency securities	574	-	574	-
Corporate debt obligations	2,690	-	2,690	-
Multiasset fund	129,284	-	129,284	-
Ultra short-term bond securities	27	27	-	-
Total short-term investments	<u>168,530</u>	<u>35,982</u>	<u>132,548</u>	<u>-</u>
Securities with donor restrictions	<u>19</u>	<u>-</u>	<u>19</u>	<u>-</u>
Noncurrent assets:				
Nonqualified deferred compensation plan—mutual funds	8,286	8,286	-	-
Derivatives—interest rate swaps	4,327	-	4,327	-
Debt securities	2,040	-	-	2,040
GEM investment fund—measured at net asset value	73,036	-	-	-
Total noncurrent assets	<u>87,689</u>	<u>8,286</u>	<u>4,327</u>	<u>2,040</u>
Total assets	<u>\$ 256,238</u>	<u>\$ 44,268</u>	<u>\$ 136,894</u>	<u>\$ 2,040</u>
<b>Liabilities</b>				
Other long-term liabilities:				
Derivatives—interest rate swaps	\$ 2,225	\$ -	\$ 2,225	\$ -
Nonqualified deferred compensation plan obligation	8,286	8,286	-	-
Total other long-term liabilities	<u>10,511</u>	<u>8,286</u>	<u>2,225</u>	<u>-</u>
Total liabilities	<u>\$ 10,511</u>	<u>\$ 8,286</u>	<u>\$ 2,225</u>	<u>\$ -</u>

As of September 30, 2022, debt securities were measured at a Level 3 fair value of \$2.0 million. During the year ended September 30, 2023, a \$1.6 million other-than-temporary impairment of a convertible note debt security was recognized in other expense in the consolidated statements of revenue, costs, and changes in net assets. See Note 6 for further details.

The carrying value of the Institute's other financial instruments, including cash and cash equivalents, accounts receivable, unbilled costs, fees and contract assets, prepaid expenses and other current assets, accounts payable and accrued expenses, and deferred revenue and contract liabilities, approximates fair value as of September 30, 2023 and 2022.

There were no changes during the periods presented to the valuation techniques the Institute used to measure asset and liability fair values on a recurring basis.

Certain of the Institute's nonfinancial assets and liabilities are subject to impairment analysis, including long-lived assets, intangible assets, and goodwill. The significant inputs utilized in these analyses are classified as Level 3 in the fair value hierarchy. See Note 7 for the capitalized internal-use software impairment recognized. See Note 8 for the ROU lease asset impairment recognized and details of the valuation methods and inputs used in these analyses. See Note 9 for the capitalized cloud computing arrangement impairment recognized. The Institute did not have any other nonfinancial assets or liabilities that were required to be measured at fair value on a nonrecurring basis for the year ended September 30, 2023 or 2022.

### **13. EMPLOYEE RETIREMENT PLANS**

The Institute has a defined contribution plan covering all US-based employees who are 19 years of age or older with one year of 500 hours or more of continuous service during the plan year. Each U.S. employee of the Institute is immediately eligible to make elective deferrals under the plan. Employees are eligible to receive Institute contributions once they have completed one year of continuous service.

The Institute's contributions to the plan for the year ended September 30, 2023 were \$29.9 million with \$0.4 million in applied forfeitures. The Institute's contributions to the plan for the year ended September 30, 2022 were \$26.6 million with \$0.6 million in applied forfeitures.

### **14. DEFERRED COMPENSATION PLANS**

The Institute maintains an Employee Retirement Income Security Act of 1974 nonqualified deferred compensation plan under IRC Section 457 to permit eligible employees to save for their retirement.

A Salary Deferral Arrangement 457(b) plan is available to certain highly compensated employees. Participation is voluntary and permits eligible employees to defer compensation up to a maximum annual amount established by federal law. There are no Institute contributions associated with this deferred compensation plan. Invested employee deferrals are recorded at fair value, which totaled \$9.1 million and \$8.3 million as of September 30, 2023 and 2022, respectively, and are included in other noncurrent assets with an offsetting deferred compensation obligation recorded in other long-term liabilities. Deferred amounts ultimately payable to the participants are based on the value of the underlying investments.

### **15. POSTRETIREMENT BENEFITS OTHER THAN PENSIONS**

The Institute provides medical and dental benefits to certain retired employees under the Research Triangle Institute Retiree Health Plan (the "Plan"). This plan has been frozen. As a result, no new participants can enter the plan, and no additional benefit obligations will accumulate.

**Cost of Postretirement Benefits**—The cost of providing retiree medical and dental benefits is actuarially determined and accrued over the active service period of eligible employees. The components of the net periodic postretirement benefit cost for the years ended September 30, 2023 and 2022, are presented in the following table (in thousands):

	<b>2023</b>	<b>2022</b>
Interest cost	\$ 527	\$ 342
Expected return on Plan assets	(779)	(936)
Amortization of prior service credit	(51)	(51)
Net gain	<u>(33)</u>	<u>(126)</u>
 Net periodic postretirement benefit cost	 <u><u>\$ (336)</u></u>	 <u><u>\$ (771)</u></u>

The net periodic postretirement benefit cost is reflected in the consolidated statements of revenue, costs, and changes in net assets as indirect costs.

**Benefit Obligations and Accrued Costs**—The funded status of the postretirement benefit plan is measured as the difference between the fair value of the Plan assets and the benefit obligation.

The following table sets forth the changes in the Institute’s benefit obligations and the benefit plan’s funded status for the years ended September 30, 2023 and 2022 (in thousands):

	<b>2023</b>	<b>2022</b>
Change in benefit obligation:		
Postretirement benefit obligation at beginning of year	\$ 10,350	\$ 12,509
Interest cost	527	342
Actuarial gain	(3,461)	(2,191)
Plan participant contributions	217	545
Benefits paid	<u>(473)</u>	<u>(854)</u>
 Postretirement benefit obligation at end of year	 7,160	 10,351
 Fair value of Plan assets at end of year	 <u>14,420</u>	 <u>13,300</u>
 Funded status	 <u><u>\$ 7,260</u></u>	 <u><u>\$ 2,949</u></u>

The funded status as of September 30, 2023 and 2022, was in an overfunded position. The funded status of the Plan is reflected in the consolidated balance sheets as other noncurrent assets. The funded status is dependent upon many factors, including returns on invested assets and the level of market interest rates.

A summary of amounts included in net assets without donor restrictions as of September 30, 2023 and 2022, that have not been recognized as components of net periodic benefit cost is as follows (in thousands):

	<b>2023</b>	<b>2022</b>
Net actuarial gain	\$(5,819)	\$(1,795)
Prior service credit	<u>(419)</u>	<u>(470)</u>
Total	<u><u>\$(6,238)</u></u>	<u><u>\$(2,265)</u></u>

Amounts recognized as a change in Institute's net assets, but reflected outside of the performance indicator for the years ended September 30, 2023 and 2022, were as follows (in thousands):

	<b>2023</b>	<b>2022</b>
Net actuarial (gain) loss	\$(4,057)	\$1,684
Reclassification of amortization of prior service credit and actuarial gain	<u>84</u>	<u>178</u>
Total	<u><u>\$(3,973)</u></u>	<u><u>\$1,862</u></u>

The following weighted-average assumptions were used in calculating the above benefit obligations, net periodic benefit cost, and fair value of Plan assets as of September 30, 2023 and 2022:

	<b>2023</b>	<b>2022</b>
Discount rate used to determine benefit obligation	5.6 %	5.3 %
Expected return on Plan assets	6.0%	6.0%

The change in the discount rate is attributed to fluctuations in the interest rate environment resulting from the Federal Reserve monetary policy and global economic pressures during the current year. The Plan seeks to achieve a total return on Plan assets (price appreciation, plus dividends) that, over a majority of market cycles, exceeds the estimated discount rate used to determine the benefit obligation, which the benefit obligation discount rate is assumed to be 5.6% per annum. The total expected long-term rate of return on the Plan portfolio is based upon the portfolio's historical allocated fund performance since the funds' inception.

Health care cost trends do not have a significant effect on the obligation or net periodic benefit costs.

**Postretirement Plan Assets**—The following table sets forth the changes in the fair value of Plan assets for the years ended September 30, 2023 and 2022 (in thousands):

	<b>2023</b>	<b>2022</b>
Fair value of Plan assets at beginning of year	\$13,300	\$16,549
Return on Plan assets, less trustee's fee	1,376	(2,940)
Plan participant contributions	217	545
Benefits paid	<u>(473)</u>	<u>(854)</u>
Fair value of Plan assets at end of year	<u><u>\$14,420</u></u>	<u><u>\$13,300</u></u>

The investment objectives of the Institute’s Plan are designed to generate returns that will enable the Plan to meet its future obligations. The Plan’s targeted strategic allocation to each asset class was determined in collaboration with Wells Fargo Institutional Retirement and Trust using its asset risk tolerance modeling. The Institute currently targets a “Balanced Income” strategic asset allocation that provides for an allocation range around target of plus or minus 5% for each asset category. The Plan will, at times, also invest in money market funds as it seeks to rebalance the strategic asset allocation, reinvest portfolio capital gains and/or dividends, or reinvest maturing bond proceeds. The fair values of Plan assets and related strategic asset allocations as of September 30, 2023 and 2022, are as follows (in thousands):

<b>Asset Category</b>	<b>Fair Value <sup>(a)</sup></b>		<b>Asset</b>
	<b>2023</b>	<b>2022</b>	<b>Allocation Target</b>
Cash and cash equivalents	<u>\$ 378</u>	<u>\$ 380</u>	<u>      </u> %
Bond mutual funds (investment grade)	<u>6,868</u>	<u>6,438</u>	<u>50</u>
Equity mutual funds:			
Large/mid cap	4,829	4,670	30
Small cap	575	521	10
International	<u>1,770</u>	<u>1,291</u>	<u>10</u>
Total equity mutual funds	<u>7,174</u>	<u>6,482</u>	<u>50</u>
Noninvestment assets	<u>14,420</u>	<u>13,300</u>	<u>100</u> %
Total Plan assets	<u>\$ 14,420</u>	<u>\$ 13,300</u>	

<sup>(a)</sup> All investments, excluding cash and cash equivalents, held by the Plan are considered Level 1 assets within the fair value hierarchy.

The Institute contributes to the Plan based on actuarially determined amounts necessary to provide assets sufficient to meet benefits to be paid to Plan members. The Institute’s policy is to fund the above-mentioned benefits quarterly. Attributed to the overfunded status of the Plan, the Institute did not make contributions to postretirement plan assets in fiscal year 2023 and does not anticipate making contributions to postretirement plan assets in fiscal year 2024.

The following schedule summarizes net benefit payments that are expected to be made in the years ending September 30, which reflect expected future service (in thousands):

<b>Years Ending September 30</b>	
2024	\$ 483
2025	623
2026	611
2027	627
2028	650
Five subsequent years ending 2033	<u>2,967</u>
Total	<u>\$ 5,961</u>

## 16. NET ASSETS

The following table details the changes in net assets for the years ended September 30, 2023 and 2022 (in thousands):

	<u>Net Assets without donor restrictions</u>			Net Assets with donor restrictions	Total Net Assets
	Undesignated	Board- designated	Total		
BALANCE—October 1, 2021	\$485,371	\$10,082	\$495,453	\$ 2,469	\$497,922
Decrease in net assets	(19,966)	(60)	(20,026)	(1,742)	(21,768)
Transfer	<u>(81)</u>	<u>81</u>	<u>-</u>	<u>-</u>	<u>-</u>
BALANCE—September 30, 2022	465,324	10,103	475,427	727	476,154
Increase (decrease) in net assets	18,509	(241)	18,268	(48)	18,220
Transfer	<u>(57)</u>	<u>57</u>	<u>-</u>	<u>-</u>	<u>-</u>
BALANCE—September 30, 2023	<u>\$483,776</u>	<u>\$ 9,919</u>	<u>\$493,695</u>	<u>\$ 679</u>	<u>\$494,374</u>

During the year ended September 30, 2022, the Institute relinquished its interest in a donor restricted trust, which caused a decrease in net assets with donor restrictions by \$1.6 million. See Note 1 for further details.

During the year ended September 30, 2022, as part of its Board-designated activity, the Institute committed to providing \$3.5 million of conditional funding, plus an additional \$1.5 million in the Institute's services, over the next five years to the University of North Carolina for a collaborative research project among North Carolina State University, Duke University, and North Carolina Central University. Expenses are recognized when the specified conditions are met. As of September 30, 2023, \$3.1 million in conditional funding and \$1.4 million in the Institute's services remain to be expensed.

## 17. COMMITMENTS AND CONTINGENCIES

**Legal and Regulatory Matters**—The Institute is involved in litigation, administrative proceedings, and regulatory examinations arising in the normal course of business. Management believes that the ultimate outcome of these matters will not have a material impact on the Institute’s net assets, operations, or cash flows.

During fiscal year 2020, the Institute received notice of a tax assessment from the United Republic of Tanzania’s Revenue Authority (TRA) related to several taxation matters including vendor withholding and skill development levy taxes. The tax assessment covered fiscal years 2010 through 2018 and totaled over \$2.9 million (utilizing September 30, 2023 translation rates) including penalties and interest. The Institute believes that it has complied with Tanzanian law and has contested the assessment through the TRA’s appeals process. While the Institute is unable to ascertain the ultimate outcome of this matter based on the information currently available nor the amount of time it will take to work through the appeals process, the Institute believes that a partial loss with respect to this matter is probable and has recorded a liability of \$1.3 million as of September 30, 2023 in other long-term liabilities in the consolidated balance sheets and in indirect costs in the consolidated statements of revenue, costs and changes in net assets.

**Unconditional Promise**—During the year ended September 30, 2023, the Institute made an unconditional promise to give \$3.0 million in support of creating economic opportunity across the state of North Carolina and accrued the amount in other expense in the consolidated statements of revenue, costs and changes in asset. As of September 30, 2023, \$2.3 million remains unpaid with equal installments due each year of the next four years and is included in other long-term liabilities in the consolidated balance sheets.

**Other Contingencies**—The Institute has negotiated and settled final indirect costs through fiscal year 2021 with its cognizant federal agency, the Department of Health and Human Services (DHHS). Contract costs on federal government contracts, including indirect costs, are subject to audit by the federal government and adjustments pursuant to negotiation between the Institute and government representatives. Revenue on federal government contracts has been recorded in amounts that are expected to be realized upon final settlement of the Institute’s indirect rates. As of September 30, 2023, management believes that the final settlement of indirect rates will not have a material impact on the Institute’s net assets, operations, or cash flows.

International Resources Group Ltd. (IRG) is a 100% owned subsidiary of the Institute acquired in 2017. IRG is required to separately negotiate final indirect cost rates with its cognizant federal agency, the United States Agency for International Development (USAID). IRG and USAID have negotiated and settled IRG’s final indirect cost rates through fiscal year 2020 and adjusted billings on contracts to which those rates apply. Fiscal year 2021 was the final year of operations for IRG. USAID has communicated that it plans to perform a desk review of IRG’s fiscal year 2021 indirect cost rates.

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**FEDERAL AWARDS SUPPLEMENTAL INFORMATION  
AS OF AND FOR THE YEAR END SEPTEMBER 30, 2023**



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## **INDEPENDENT AUDITOR'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING AND ON COMPLIANCE AND OTHER MATTERS BASED ON AN AUDIT OF FINANCIAL STATEMENTS PERFORMED IN ACCORDANCE WITH GOVERNMENT AUDITING STANDARDS**

To the Board of Governors  
Research Triangle Institute:

We have audited, in accordance with the auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States (*Government Auditing Standards*), the consolidated financial statements of Research Triangle Institute and subsidiaries (the "Institute") as of and for the year ended September 30, 2023, and the related notes to the consolidated financial statements, which collectively comprise the Institute's consolidated financial statements, and have issued our report thereon dated December 7, 2023.

### **Report on Internal Control Over Financial Reporting**

In planning and performing our audit of the consolidated financial statements, we considered the Institute's internal control over financial reporting (internal control) as a basis for designing audit procedures that are appropriate in the circumstances for the purpose of expressing our opinion on the consolidated financial statements, but not for the purpose of expressing an opinion on the effectiveness of the Institute's internal control. Accordingly, we do not express an opinion on the effectiveness of the Institute's internal control.

A *deficiency in internal control* exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, misstatements on a timely basis. A *material weakness* is a deficiency, or a combination of deficiencies, in internal control, such that there is a reasonable possibility that a material misstatement of the Institute's financial statements will not be prevented, or detected and corrected, on a timely basis. A *significant deficiency* is a deficiency, or a combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

Our consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during our audit we did not identify any deficiencies in internal control that we consider to be material weaknesses. However, material weaknesses or significant deficiencies may exist that were not identified.

### **Report on Compliance and Other Matters**

As part of obtaining reasonable assurance about whether the Institute's consolidated financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the consolidated financial statements. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express

such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

**Purpose of this Report**

The purpose of this report is solely to describe the scope of our testing of internal control and compliance and the results of that testing, and not to provide an opinion on the effectiveness of the Institute's internal control or on compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Institute's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.

*Deloitte & Touche LLP*

December 7, 2023



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**INDEPENDENT AUDITOR'S REPORT ON COMPLIANCE FOR EACH MAJOR FEDERAL PROGRAM;  
REPORT ON INTERNAL CONTROL OVER COMPLIANCE; AND REPORT ON SCHEDULE OF  
EXPENDITURES OF FEDERAL AWARDS REQUIRED BY THE UNIFORM GUIDANCE**

To the Board of Governors  
Research Triangle Institute:

**Report on Compliance for Each Major Federal Program**

***Opinion on Each Major Federal Program***

We have audited Research Triangle Institute and subsidiaries' (the "Institute") compliance with the types of compliance requirements identified as subject to audit in the OMB *Compliance Supplement* that could have a direct and material effect on each of the Institute's major federal programs for the year ended September 30, 2023. The Institute's major federal programs are identified in the summary of auditor's results section of the accompanying schedule of findings and questioned costs.

In our opinion, the Institute complied, in all material respects, with the compliance requirements referred to above that could have a direct and material effect on each of its major federal programs for the year ended September 30, 2023.

***Basis for Opinion on Each Major Federal Program***

We conducted our audit of compliance in accordance with auditing standards generally accepted in the United States of America (GAAS); the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States (*Government Auditing Standards*); and the audit requirements of Title 2 U.S. *Code of Federal Regulations* Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance). Our responsibilities under those standards and the Uniform Guidance are further described in the Auditor's Responsibilities for the Audit of Compliance section of our report.

We are required to be independent of the Institute and to meet our other ethical responsibilities, in accordance with relevant ethical requirements relating to our audit. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion on compliance for each major federal program. Our audit does not provide a legal determination of the Institute's compliance with the compliance requirements referred to above.

***Responsibilities of Management for Compliance***

Management is responsible for compliance with the requirements referred to above and for the design, implementation, and maintenance of effective internal control over compliance with the requirements of laws, statutes, regulations, rules and provisions of contracts or grant agreements applicable to Institute's federal programs.

### ***Auditor's Responsibilities for the Audit of Compliance***

Our objectives are to obtain reasonable assurance about whether material noncompliance with the compliance requirements referred to above occurred, whether due to fraud or error, and express an opinion on the Institute's compliance based on our audit. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS, *Government Auditing Standards*, and the Uniform Guidance will always detect material noncompliance when it exists. The risk of not detecting material noncompliance resulting from fraud is higher than for that resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Noncompliance with the compliance requirements referred to above is considered material, if there is a substantial likelihood that, individually or in the aggregate, it would influence the judgment made by a reasonable user of the report on compliance about the Institute's compliance with the requirements of each major federal program as a whole.

In performing an audit in accordance with GAAS, *Government Auditing Standards*, and the Uniform Guidance, we

- exercise professional judgment and maintain professional skepticism throughout the audit.
- identify and assess the risks of material noncompliance, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the Institute's compliance with the compliance requirements referred to above and performing such other procedures as we considered necessary in the circumstances.
- obtain an understanding of the Institute's internal control over compliance relevant to the audit in order to design audit procedures that are appropriate in the circumstances and to test and report on internal control over compliance in accordance with the Uniform Guidance, but not for the purpose of expressing an opinion on the effectiveness of the Institute's internal control over compliance. Accordingly, no such opinion is expressed.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and any significant deficiencies and material weaknesses in internal control over compliance that we identified during the audit.

### **Report on Internal Control Over Compliance**

*A deficiency in internal control over compliance* exists when the design or operation of a control over compliance does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, noncompliance with a type of compliance requirement of a federal program on a timely basis. *A material weakness in internal control over compliance* is a deficiency, or a combination of deficiencies, in internal control over compliance, such that there is a reasonable possibility that material noncompliance with a type of compliance requirement of a federal program will not be prevented, or detected and corrected, on a timely basis. *A significant deficiency in internal control over compliance* is a deficiency, or a combination of deficiencies, in internal control over compliance with a type of compliance requirement of a federal program that is less severe than a material weakness in internal control over compliance, yet important enough to merit attention by those charged with governance.

Our consideration of internal control over compliance was for the limited purpose described in the Auditor's Responsibilities for the Audit of Compliance section above and was not designed to identify all deficiencies in internal control over compliance that might be material weaknesses or significant deficiencies in internal control over compliance. Given these limitations, during our audit we did not identify any deficiencies in internal control over compliance that we consider to be material weaknesses, as defined above. However, material weaknesses or significant deficiencies in internal control over compliance may exist that were not identified.

Our audit was not designed for the purpose of expressing an opinion on the effectiveness of internal control over compliance. Accordingly, no such opinion is expressed.

The purpose of this report on internal control over compliance is solely to describe the scope of our testing of internal control over compliance and the results of that testing based on the requirements of the Uniform Guidance. Accordingly, this report is not suitable for any other purpose.

**Report on Schedule of Expenditures of Federal Awards Required by the Uniform Guidance**

We have audited the consolidated financial statements of the Institute as of and for the year ended September 30, 2023, and have issued our report thereon dated December 7, 2023, which contained an unmodified opinion on those consolidated financial statements. Our audit was performed for the purpose of forming an opinion on the consolidated financial statements as a whole. The accompanying schedule of expenditures of federal awards is presented for purposes of additional analysis as required by the Uniform Guidance and is not a required part of the consolidated financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the financial statements. The information has been subjected to the auditing procedures applied in the audit of the consolidated financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the consolidated financial statements or to the consolidated financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the schedule of expenditures of federal awards is fairly stated in all material respects in relation to the consolidated financial statements as a whole.

*Deloitte & Touche LLP*

June 25, 2024

RESEARCH TRIANGLE INSTITUTE

SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS  
FOR THE YEAR ENDED SEPTEMBER 30, 2023

Federal Assistance Listing Number	Additional Award Identification	Federal Program Name	Cluster Name	Federal Program Total	Cluster Total	Direct Award	Name of Passthrough Entity	Identifying Number Assigned to the Pass-through Entity	Amount Passed Through to Subrecipients	Amount Expended	
10	557	103097-00001	WIC Special Supplemental Nutrition Program for Women, Infants, and Children	RESEARCH AND DEVELOPMENT	\$ 82,518	\$622,102,744	N	Tufts University	103097-00001	\$ 17,800	\$ 82,518
10	RD	12325A21F0063	NASS Engineer Support OY1	RESEARCH AND DEVELOPMENT	160,931	622,102,744	N	Summit Consulting, LLC	12325A21F0063	-	140,727
10	328	2020-70020-32278	Food Safety Outreach Program	RESEARCH AND DEVELOPMENT	114,348	622,102,744	Y			102,322	114,348
10	707	20-JV-11330180-100	Research Joint Venture and Cost Reimbursable Agreements	RESEARCH AND DEVELOPMENT	137	622,102,744	Y			-	137
10	253	59-5000-0-0054R	Consumer Data and Nutrition Research	RESEARCH AND DEVELOPMENT	99,911	622,102,744	Y			64,949	99,911
10	RD	AG-3A94-D-16-0130	Opt Yr 4 Labor Foc Groups	RESEARCH AND DEVELOPMENT	160,931	622,102,744	Y			-	20,295
10	025	Contract signed 10/13/21	Plant and Animal Disease, Pest Control, and Animal Care	RESEARCH AND DEVELOPMENT	14,276	622,102,744	N	Iowa State University	Contract signed 10/13/21	-	14,276
10	RD	Effective 10/15/2020	Trade Algorithms	RESEARCH AND DEVELOPMENT	160,931	622,102,744	N	Virginia Tech	Effective 10/15/2020	-	(91)
11	RD	1333LB20A00000006	ROPQAR OLMs	RESEARCH AND DEVELOPMENT	1,389,921	622,102,744	Y			-	413,320
11	RD	1333LB20A00000006 1333LB22F00000166	COB SNAP Travel OLMs	RESEARCH AND DEVELOPMENT	1,389,921	622,102,744	Y			-	89,486
11	432	2019-2869-07	National Oceanic and Atmospheric Administration (NOAA) Cooperative Institutes	RESEARCH AND DEVELOPMENT	1,727,285	622,102,744	N	North Carolina State Univ	2019-2869-07	-	372,956
11	609	70NANB19H105	Measurement and Engineering Research and Standards	RESEARCH AND DEVELOPMENT	976,061	622,102,744	Y			-	247,164
11	609	70NANB20H168	Measurement and Engineering Research and Standards	RESEARCH AND DEVELOPMENT	976,061	622,102,744	Y			-	5,080
11	620	70NANB21H023	Science, Technology, Business and/or Education Outreach	RESEARCH AND DEVELOPMENT	328,037	622,102,744	Y			-	328,037
11	609	70NANB21H028	Measurement and Engineering Research and Standards	RESEARCH AND DEVELOPMENT	976,061	622,102,744	Y			21,600	322,935
11	609	70NANB21H098	Measurement and Engineering Research and Standards	RESEARCH AND DEVELOPMENT	976,061	622,102,744	Y			-	398,122
11	609	70NANB22H019	Measurement and Engineering Research and Standards	RESEARCH AND DEVELOPMENT	976,061	622,102,744	Y			-	1,394
11	432	A22-0304-S001	National Oceanic and Atmospheric Administration (NOAA) Cooperative Institutes	RESEARCH AND DEVELOPMENT	1,727,285	622,102,744	N	Univ of Alabama Tuscaloos	A22-0304-S001	-	144,998
11	432	A22-0309-S001	National Oceanic and Atmospheric Administration (NOAA) Cooperative Institutes	RESEARCH AND DEVELOPMENT	1,727,285	622,102,744	N	Univ of Alabama Tuscaloos	A22-0309-S001	-	384,465
11	432	A22-0311-S001	National Oceanic and Atmospheric Administration (NOAA) Cooperative Institutes	RESEARCH AND DEVELOPMENT	1,727,285	622,102,744	N	Univ of Alabama Tuscaloos	A22-0311-S001	-	682,859
11	432	A23-0228-S001	National Oceanic and Atmospheric Administration (NOAA) Cooperative Institutes	RESEARCH AND DEVELOPMENT	1,727,285	622,102,744	N	Univ of Alabama Tuscaloos	A23-0228-S001	-	123,614
11	405	A23-0229-S001	Cooperative Institute (Inter-Agency Funded Activities)	RESEARCH AND DEVELOPMENT	138,316	622,102,744	N	Univ of Alabama Tuscaloos	A23-0229-S001	-	138,316
11	016	CB20ADR0160003	Statistical, Research, and Methodology Assistance	RESEARCH AND DEVELOPMENT	150,444	622,102,744	Y			-	150,444
11	RD	IBSS-RTI-Atlas 15 1305M323FNWWY0050	CLIN 1 Protech Atlas 15	RESEARCH AND DEVELOPMENT	1,389,921	622,102,744	N	IBSS Corporation	IBSS-RTI-Atlas 15 1305M323FNWWY0050	-	199,212
11	432	JJHCMK4NTS3	National Oceanic and Atmospheric Administration (NOAA) Cooperative Institutes	RESEARCH AND DEVELOPMENT	1,727,285	622,102,744	N	Univ of Alabama Tuscaloos	JJHCMK4NTS3	-	18,120
11	432	JJHCMK4NTS3 A23-0255-5001	National Oceanic and Atmospheric Administration (NOAA) Cooperative Institutes	RESEARCH AND DEVELOPMENT	1,727,285	622,102,744	N	Univ of Alabama Tuscaloos	JJHCMK4NTS3 A23-0255-5001	-	152
11	432	JJHCMK4NTS3 TO 11	Cooperative Institutes	RESEARCH AND DEVELOPMENT	1,727,285	622,102,744	N	Univ of Alabama Tuscaloos	JJHCMK4NTS3 TO 11	-	121
11	609	Master Agmt # 01-01	Measurement and Engineering Research and Standards	RESEARCH AND DEVELOPMENT	976,061	622,102,744	N	North Carolina State Univ	Master Agmt # 01-01	-	366
11	RD	NOAA/PROTECH/WW0062-0001	Protech Weather Atlas 14	RESEARCH AND DEVELOPMENT	1,389,921	622,102,744	N	IBSS Corporation	NOAA/PROTECH/WW0062-0001	-	355,075
11	RD	NTIS-2601A-1.1 Effective 7/08/2021	NTIS Process Inter Maps	RESEARCH AND DEVELOPMENT	1,389,921	622,102,744	N	Dept of Commerce NTIS	NTIS-2601A-1.1 Effective 7/08/2021	-	48,443
11	RD	NTIS-2601C-2 Effective 7/08/2021	NTIS Extension	RESEARCH AND DEVELOPMENT	1,389,921	622,102,744	N	Dept of Commerce NTIS	NTIS-2601C-2 Effective 7/08/2021	-	284,385
12	RD	850369	Air 2022-UIPE	RESEARCH AND DEVELOPMENT	4,723,753	622,102,744	N	Battelle	850369	-	(147)
12	007	0072FEDac	Military Health Services Research (MHSR)	RESEARCH AND DEVELOPMENT	7,060	622,102,744	N	BVARI	0072FEDac	-	7,060
12	RD	14006319C0023	SIGMA Algo Dev	RESEARCH AND DEVELOPMENT	4,723,753	622,102,744	Y			-	1,493,015
12	RD	2016-630 Task Order 02	MTEC Phase 3	RESEARCH AND DEVELOPMENT	4,723,753	622,102,744	N	Advanced Technology Intl	2016-630 Task Order 02	-	435,763
12	RD	2021-534	MTEC Chem Bio Exposure	RESEARCH AND DEVELOPMENT	4,723,753	622,102,744	N	Advanced Technology Intl	2021-534	-	41,211
12	RD	2021-534 Project award no 003	SGB Omics and Wearables	RESEARCH AND DEVELOPMENT	4,723,753	622,102,744	N	Advanced Technology Intl	2021-534 Project award no 003	-	222,639
12	RD	2021-534 TO #002	MTEC Warfighter Brian HTI	RESEARCH AND DEVELOPMENT	4,723,753	622,102,744	N	Advanced Technology Intl	2021-534 TO #002	-	1,010,307
12	RD	2021-534 TO#001	Sexi Assit and Alc Misuse	RESEARCH AND DEVELOPMENT	4,723,753	622,102,744	N	Advanced Technology Intl	2021-534 TO#001	-	625,015
12	RD	68582/00(under fund 585970)	DOSE OPT BTI CT STUDY OPE	RESEARCH AND DEVELOPMENT	4,723,753	622,102,744	N	Univ of Pennsylvania	68582/00(under fund 585970)	-	94,188
12	RD	Agreement effective 5/1/2023	SELSYM PRE IND MRL	RESEARCH AND DEVELOPMENT	4,723,753	622,102,744	N	SelSym Biotech, inc.	Agreement effective 5/1/2023	-	2,169
12	RD	Base Agreement 2023-424	CBRN Phase 1	RESEARCH AND DEVELOPMENT	4,723,753	622,102,744	N	Advanced Technology Intl	Base Agreement 2023-424	-	505,439
12	RD	COVID-19, PO US001-0000779181	COVID-19 - Testing of CBRN	RESEARCH AND DEVELOPMENT	4,723,753	622,102,744	N	Battelle	PO US001-0000779181	-	(466)
12	420	CPZER-D-1-RTI	Military Medical Research and Development	RESEARCH AND DEVELOPMENT	6,409,196	622,102,744	N	PAI Life Sciences, Inc	CPZER-D-1-RTI	113,718	295,273
12	420	Dtd 4/2/19	Military Medical Research and Development	RESEARCH AND DEVELOPMENT	6,409,196	622,102,744	N	Nova Southeastern Univ	Dtd 4/2/19	-	592,248
12	351	HDTRA-122-1-0019	Scientific Research - Combating Weapons of Mass Destruction	RESEARCH AND DEVELOPMENT	970,142	622,102,744	Y			-	970,142
12	006	HQ00342010045	National Defense Education Program	RESEARCH AND DEVELOPMENT	899,992	622,102,744	Y			158,129	899,992
12	RD	HT001121F0089	DHAPP ODCs	RESEARCH AND DEVELOPMENT	4,723,753	622,102,744	Y			-	80,290
12	600	Master Agreement 01-01	Community Investment	RESEARCH AND DEVELOPMENT	110,763	622,102,744	N	NCSU Industry Expansion	Master Agreement 01-01	-	110,763
12	350	N00244-17-2-0001	Department of Defense HIV/AIDS Prevention Program	RESEARCH AND DEVELOPMENT	3,115,762	622,102,744	Y			-	8,557
12	350	N00244-21-1-0002	Department of Defense HIV/AIDS Prevention Program	RESEARCH AND DEVELOPMENT	3,115,762	622,102,744	Y			794,550	3,055,899
12	RD	N4175619C3056	TDM Sim-CLIN 0001-0002	RESEARCH AND DEVELOPMENT	4,723,753	622,102,744	N	IWTSO	N4175619C3056	-	47,399
12	420	PC210478WB1XWH-22-1-0698	Military Medical Research and Development	RESEARCH AND DEVELOPMENT	6,409,196	622,102,744	N	Duke University	PC210478WB1XWH-22-1-0698	-	4,185
12	800	PIA-AF CyberWork-19-3 FA7000-20-3-0001	Air Force Defense Research Sciences Program	RESEARCH AND DEVELOPMENT	(189)	622,102,744	Y			-	(189)
12	420	ProjectOrder1 R10543	Military Medical Research and Development	RESEARCH AND DEVELOPMENT	6,409,196	622,102,744	N	Roskamp Institute	R10543	-	15,938

(Continued)

RESEARCH TRIANGLE INSTITUTE

SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS  
FOR THE YEAR ENDED SEPTEMBER 30, 2023

Federal Assistance Listing Number	Additional Award Identification	Federal Program Name	Cluster Name	Federal Program Total	Cluster Total	Direct Award	Name of Passthrough Entity	Identifying Number Assigned by the Pass-through Entity	Amount Passed Through to Subrecipients	Amount Expended
12 350	RTI-CRA-2020-01	Department of Defense HIV/AIDS Prevention Program	RESEARCH AND DEVELOPMENT	\$ 3,115,762	\$ 622,102,744	N	Two Oceans in Health	RTI-CRA-2020-01	\$ -	\$ 51,306
12 420	SUB0002411	Military Medical Research and Development	RESEARCH AND DEVELOPMENT	6,409,196	622,102,744	N	University of Florida	SUB0002411	-	86,817
12 12	US001-0000811312	UIPE FoS GP Testing 2021	RESEARCH AND DEVELOPMENT	4,723,753	622,102,744	N	Battelle	US001-0000811312	-	1
12 420	W81XWH-15-2-0077	Military Medical Research and Development	RESEARCH AND DEVELOPMENT	6,409,196	622,102,744	Y			268,097	687,541
12 420	W81XWH1820044	Military Medical Research and Development	RESEARCH AND DEVELOPMENT	6,409,196	622,102,744	Y			1,186,108	2,739,107
12 420	W81XWH2010847	Military Medical Research and Development	RESEARCH AND DEVELOPMENT	6,409,196	622,102,744	Y			-	200,260
12 420	W81XWH2020011	Military Medical Research and Development	RESEARCH AND DEVELOPMENT	6,409,196	622,102,744	Y			1,004	1,569,787
12 420	W81XWH2220081	Military Medical Research and Development	RESEARCH AND DEVELOPMENT	6,409,196	622,102,744	Y			129,056	218,040
12 560	W911NF1920007	DDO, NDEP, DOTC-STEM Education Outreach Implementation	RESEARCH AND DEVELOPMENT	19,878,744	622,102,744	Y			10,397,674	19,878,244
12 RD	W911QY-11-D-0056 0002	Scientific Support OY 2/4	RESEARCH AND DEVELOPMENT	4,723,753	622,102,744	Y			-	108,880
12 RD	W911QY-17-C-0055	Female I-AST	RESEARCH AND DEVELOPMENT	4,723,753	622,102,744	Y			-	58,050
14 902	8882	Lead Technical Studies Grants	RESEARCH AND DEVELOPMENT	43,131	622,102,744	N	Indiana University	8882	-	43,131
15 RD	07-1734	3 - Proj. Management	RESEARCH AND DEVELOPMENT	83	622,102,744	N	Stantec - USA	07-1734	-	83
15 560	R22AC00160-00	SECURE Water Act - Research Agreements	RESEARCH AND DEVELOPMENT	219,397	622,102,744	Y			-	108,260
15 560	R22AC00175-00	SECURE Water Act - Research Agreements	RESEARCH AND DEVELOPMENT	219,397	622,102,744	Y			-	111,058
15 560	R23AP0492-00	SECURE Water Act - Research Agreements	RESEARCH AND DEVELOPMENT	219,397	622,102,744	Y			-	79
16 734	2017-BJ-CX-K056	Special Data Collections and Statistical Studies	RESEARCH AND DEVELOPMENT	7,094,891	622,102,744	Y			33,428	247,196
16 RD	48970002	NIRC TTA	RESEARCH AND DEVELOPMENT	11,822,590	622,102,744	N	AIR	48970002	-	142
16 738	15PBIA-22-GK-01556-IAGT	Edward Byrne Memorial Justice Assistance Grant Program	RESEARCH AND DEVELOPMENT	11,822,590	622,102,744	Y			-	687,736
16 738	15PBIA-22-GK-03701-IAGT	Edward Byrne Memorial Justice Assistance Grant Program	RESEARCH AND DEVELOPMENT	1,860,675	622,102,744	Y			-	156,299
16 734	15PBIS-21-GK-00005-BJSB	Special Data Collections and Statistical Studies	RESEARCH AND DEVELOPMENT	7,094,891	622,102,744	Y			13,671	405,868
16 734	15PBIS-22-GK-00267-MUMU	Special Data Collections and Statistical Studies	RESEARCH AND DEVELOPMENT	7,094,891	622,102,744	Y			-	221,382
16 734	15PBIS-22-GK-00476-BJSB	Special Data Collections and Statistical Studies	RESEARCH AND DEVELOPMENT	7,094,891	622,102,744	Y			-	168,256
16 734	15PBIS-22-GK-00713-BJSB	Special Data Collections and Statistical Studies	RESEARCH AND DEVELOPMENT	7,094,891	622,102,744	Y			-	1,669,807
16 734	15PBIS-22-GK-04504-BJSB	Special Data Collections and Statistical Studies	RESEARCH AND DEVELOPMENT	7,094,891	622,102,744	Y			-	162,571
16 560	15PNIJ-21-GG-00140-NIJB	National Institute of Justice Research, Evaluation, and Development Project Grants	RESEARCH AND DEVELOPMENT	13,331,750	622,102,744	Y			34,776	274,809
16 560	15PNIJ-21-GG-00997-NONF	National Institute of Justice Research, Evaluation, and Development Project Grants	RESEARCH AND DEVELOPMENT	13,331,750	622,102,744	Y			-	189,209
16 560	15PNIJ-21-GG-02721-DOHR	National Institute of Justice Research, Evaluation, and Development Project Grants	RESEARCH AND DEVELOPMENT	13,331,750	622,102,744	Y			132,908	370,123
16 320	15PNIJ-21-GG-03632-HT	Services for Trafficking Victims	RESEARCH AND DEVELOPMENT	756,364	622,102,744	Y			97,608	367,332
16 560	15PNIJ-21-GG-04176-COAP	National Institute of Justice Research, Evaluation, and Development Project Grants	RESEARCH AND DEVELOPMENT	13,331,750	622,102,744	Y			-	28,065
16 560	15PNIJ-21-GK-02192-MUMU	National Institute of Justice Research, Evaluation, and Development Project Grants	RESEARCH AND DEVELOPMENT	13,331,750	622,102,744	Y			102,632	3,713,806
16 560	15PNIJ-22-GG-03146-RESS	National Institute of Justice Research, Evaluation, and Development Project Grants	RESEARCH AND DEVELOPMENT	13,331,750	622,102,744	Y			-	92,463
16 560	15PNIJ-22-GG-03575-RESS	National Institute of Justice Research, Evaluation, and Development Project Grants	RESEARCH AND DEVELOPMENT	13,331,750	622,102,744	Y			-	41,025
16 560	15PNIJ-22-GG-04394-RESS	National Institute of Justice Research, Evaluation, and Development Project Grants	RESEARCH AND DEVELOPMENT	13,331,750	622,102,744	Y			-	1,234
16 560	15PNIJ-22-GG-04404-SLFO	National Institute of Justice Research, Evaluation, and Development Project Grants	RESEARCH AND DEVELOPMENT	13,331,750	622,102,744	Y			-	2,770
16 045	15PNIJ-22-GK-03016-CVIP	Community-Based Violence Intervention and Prevention Initiative	RESEARCH AND DEVELOPMENT	33,097	622,102,744	Y			-	33,097
16 RD	15PNJD19F00000001	DC preparation	RESEARCH AND DEVELOPMENT	11,822,590	622,102,744	Y			-	88,447
16 RD	15PNJD21F00000007	NamUs CLIN 0003	RESEARCH AND DEVELOPMENT	11,822,590	622,102,744	Y			-	4,844,056
16 RD	15PNJD21F00000013	Case Studies	RESEARCH AND DEVELOPMENT	11,822,590	622,102,744	Y			-	530,576
16 RD	15PNJD22F00000003	DO NOT USE	RESEARCH AND DEVELOPMENT	11,822,590	622,102,744	Y			-	709,586
16 RD	15PNJD23F00000003	NIJ RH Project Labor	RESEARCH AND DEVELOPMENT	11,822,590	622,102,744	Y			-	3,908
16 582	15POVC-21-GK-00654-NONF	Crime Victim Assistance/Discretionary Grants	RESEARCH AND DEVELOPMENT	1,293,947	622,102,744	Y			-	140,328
16 320	15POVC-22-GK-01576-HT	Services for Trafficking Victims	RESEARCH AND DEVELOPMENT	756,364	622,102,744	Y			-	86,348
16 582	15POVC-22-GK-04503-NONF	Crime Victim Assistance/Discretionary Grants	RESEARCH AND DEVELOPMENT	1,293,947	622,102,744	Y			-	257,209
16 026	19333	OVW Research and Evaluation Program	RESEARCH AND DEVELOPMENT	3,716	622,102,744	N	Univ of Illinois Chicago	19333	-	3,716
16 560	2016-CX-BX-0011	National Institute of Justice Research, Evaluation, and Development Project Grants	RESEARCH AND DEVELOPMENT	13,331,750	622,102,744	Y			-	(12)
16 734	2017-BJ-CX-K054	Special Data Collections and Statistical Studies	RESEARCH AND DEVELOPMENT	7,094,891	622,102,744	Y			88,215	923,526
16 560	2017-CX-BX-0015	National Institute of Justice Research, Evaluation, and Development Project Grants	RESEARCH AND DEVELOPMENT	13,331,750	622,102,744	Y			-	18,176
16 710	2017CKWKK009	Public Safety Partnership and Community Policing Grants	RESEARCH AND DEVELOPMENT	107,471	622,102,744	Y			17,927	44,145
16 739	2017-RP-BX-K053	National Prison Rape Statistics Program	RESEARCH AND DEVELOPMENT	4,939,683	622,102,744	Y			-	4,939,683
16 560	2018-75-CX-0018	National Institute of Justice Research, Evaluation, and Development Project Grants	RESEARCH AND DEVELOPMENT	13,331,750	622,102,744	Y			30,000	149,255
16 560	2018-75-CX-K003	National Institute of Justice Research, Evaluation, and Development Project Grants	RESEARCH AND DEVELOPMENT	13,331,750	622,102,744	Y			107,002	3,669,151
16 734	2018-85-CX-K030	Special Data Collections and Statistical Studies	RESEARCH AND DEVELOPMENT	7,094,891	622,102,744	Y			-	83,782
16 734	2018-85-CX-K040	Special Data Collections and Statistical Studies	RESEARCH AND DEVELOPMENT	7,094,891	622,102,744	Y			1,397	45,521
16 734	2018-85-CX-K041	Special Data Collections and Statistical Studies	RESEARCH AND DEVELOPMENT	7,094,891	622,102,744	Y			-	454,432
16 560	2018-DU-BX-0227	National Institute of Justice Research, Evaluation, and Development Project Grants	RESEARCH AND DEVELOPMENT	13,331,750	622,102,744	Y			-	10,366
16 560	2018-MU-MU-0033	National Institute of Justice Research, Evaluation, and Development Project Grants	RESEARCH AND DEVELOPMENT	13,331,750	622,102,744	Y			-	235,634
16 320	2018-VT-BX-KD02	Services for Trafficking Victims	RESEARCH AND DEVELOPMENT	756,364	622,102,744	Y			-	302,684
16 560	2019-75-CX-0008	National Institute of Justice Research, Evaluation, and Development Project Grants	RESEARCH AND DEVELOPMENT	13,331,750	622,102,744	Y			246,051	1,280,187

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SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS  
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Federal Assistance Listing Number	Additional Award Identification	Federal Program Name	Cluster Name	Federal Program Total	Cluster Total	Direct Award	Name of Passthrough Entity	Identifying Number Assigned by the Pass-through Entity	Amount Passed Through to Subrecipients	Amount Expended
16	560	2019-75-CX-0012	National Institute of Justice Research, Evaluation, and Development Project Grants	\$ 13,331,750	\$622,102,744	Y			\$ 6,567	\$ 262,995
16	734	2019-85-CX-K005	Special Data Collections and Statistical Studies	7,094,891	622,102,744	Y			6,235	1,284,708
16	734	2019-85-CX-K006	Special Data Collections and Statistical Studies	7,094,891	622,102,744	Y			-	23,108
16	838	2019-AR-BX-K053	Comprehensive Opioid, Stimulant, and other Substances Use Program	1,723,054	622,102,744	Y			65,047	1,723,054
16	560	2019-DU-BX-0021	National Institute of Justice Research, Evaluation, and Development Project Grants	13,331,750	622,102,744	Y			-	79,772
16	833	2019-MU-BX-K011	National Sexual Assault Kit Initiative	2,485,834	622,102,744	Y			237,037	2,485,834
16	812	2019-MU-BX-K041	Second Chance Act Reentry Initiative	1,098,168	622,102,744	Y			249,431	900,824
16	560	2019-MU-CX-0068	National Institute of Justice Research, Evaluation, and Development Project Grants	13,331,750	622,102,744	Y			22,360	107,353
16	560	2019-MU-MU-K026	National Institute of Justice Research, Evaluation, and Development Project Grants	13,331,750	622,102,744	Y			30,829	275,141
16	560	2019-R2-CX-0017	National Institute of Justice Research, Evaluation, and Development Project Grants	13,331,750	622,102,744	Y			-	136,500
16	560	2019-R2-CX-0023	National Institute of Justice Research, Evaluation, and Development Project Grants	13,331,750	622,102,744	Y			-	201,611
16	560	2019-R2-CX-0027	National Institute of Justice Research, Evaluation, and Development Project Grants	13,331,750	622,102,744	Y			22,496	232,427
16	560	2019-R2-CX-0053	National Institute of Justice Research, Evaluation, and Development Project Grants	13,331,750	622,102,744	Y			28,639	382,894
16	582	2019-V3-GX-K141	Crime Victim Assistance/Discretionary Grants	1,293,947	622,102,744	Y			-	49,040
16	560	2020-75-CX-0010	National Institute of Justice Research, Evaluation, and Development Project Grants	13,331,750	622,102,744	Y			62,405	253,302
16	734	2020-85-CX-K002	Special Data Collections and Statistical Studies	7,094,891	622,102,744	Y			31,976	687,869
16	734	2020-85-CX-K010	Special Data Collections and Statistical Studies	7,094,891	622,102,744	Y			-	436,551
16	734	2020-85-CX-K017	Special Data Collections and Statistical Studies	7,094,891	622,102,744	Y			-	280,314
16	812	2020-CZ-BX-K003	Second Chance Act Reentry Initiative	1,098,168	622,102,744	N	VERA Institute of Justice	2020-CZ-BX-K003	-	95,683
16	560	2020-DQ-BX-0016	National Institute of Justice Research, Evaluation, and Development Project Grants	13,331,750	622,102,744	Y			-	126,569
16	560	2020-R2-CX-0027	National Institute of Justice Research, Evaluation, and Development Project Grants	13,331,750	622,102,744	Y			4,781	258,040
16	582	2020-V3-GX-0045	Crime Victim Assistance/Discretionary Grants	1,293,947	622,102,744	Y			5,462	369,170
16	560	2020-V3-GX-0073	National Institute of Justice Research, Evaluation, and Development Project Grants	13,331,750	622,102,744	Y			160,589	373,671
16	560	2020-V3-GX-0074	National Institute of Justice Research, Evaluation, and Development Project Grants	13,331,750	622,102,744	Y			53,715	364,914
16	582	2020-V3-GX-K010	Crime Victim Assistance/Discretionary Grants	1,293,947	622,102,744	Y			55,675	434,722
16	839	2020-V5-BX-0107	STOP School Violence	565,246	622,102,744	Y			-	313,633
16	710	202262786-00	Public Safety Partnership and Community Policing Grants	107,471	622,102,744	N	CO Denver Police Dept	202262786-00	-	48,709
16	560	504633-78050	National Institute of Justice Research, Evaluation, and Development Project Grants	13,331,750	622,102,744	N	Northeastern University	504633-78050	-	34,759
16	560	9920190047	National Institute of Justice Research, Evaluation, and Development Project Grants	13,331,750	622,102,744	N	Rand Corporation	9920190047	-	105,596
16	839	Agreement 1/13/2022	STOP School Violence	565,246	622,102,744	N	NKCES	Agreement 1/13/2022	-	48,550
16	746	Agreement 12/05/2022	Capital Case Litigation Initiative	68,000	622,102,744	N	Nat Assoc of Crim Def Law	Agreement 12/05/2022	-	68,000
16	738	Agreement dated 1/31/20	Edward Byrne Memorial Justice Assistance Grant Program	1,860,675	622,102,744	N	Nat Assoc of Crim Def Law	Agreement dated 1/31/20	-	220,650
16	710	Agreement effective 10/12/20	Public Safety Partnership and Community Policing Grants	107,471	622,102,744	N	IACP	Agreement effective 10/12/20	-	14,617
16	839	Agreement effective 5/1/21	STOP School Violence	565,246	622,102,744	N	NC Ashe County Schools	Agreement effective 5/1/21	-	40,340
16	745	Agreement effective 8/17/2022	Criminal and Juvenile Justice and Mental Health Collaboration Program	45,309	622,102,744	N	LA Lafayette Parish	Agreement effective 8/17/2022	-	24,145
16	582	Agreement signed 1/18/20	Crime Victim Assistance/Discretionary Grants	1,293,947	622,102,744	N	IAFN	Agreement signed 1/18/20	-	43,478
16	560	Agmt signed 9/9/21	National Institute of Justice Research, Evaluation, and Development Project Grants	13,331,750	622,102,744	N	Police Foundation	Agmt signed 9/9/21	-	28,438
16	RD	ASMS-00017	NFLIS Comm and Outreach	11,822,590	622,102,744	N	Arctic Slope Mission Serv	ASMS-00017	-	5,567,166
16	RD	Effective 03/01/2023	Capital Litigation Init	11,822,590	622,102,744	N	APA	Effective 03/01/2023	-	34,284
16	RD	Effective 10/7/2020	OVW Campus Program Needs	11,822,590	622,102,744	N	Soteria Solutions	Effective 10/7/2020	-	25,285
16	745	Effective 8/27/19	Criminal and Juvenile Justice and Mental Health Collaboration Program	45,309	622,102,744	N	LA Lafayette Parish	Effective 8/27/19	-	21,164
16	827	EP5272922	Justice Reinvestment Initiative	112,672	622,102,744	N	NCDCAIJ	EP5272922	-	112,672
16	738	GRAN 113423991	Edward Byrne Memorial Justice Assistance Grant Program	1,860,675	622,102,744	Y			23,744	755,990
16	825	IP520-003	Smart Prosecution Initiative	37,225	622,102,744	N	Aequitas	IP520-003	-	37,225
16	RD	15AS322P00000229	DOJ Litigative Services	11,822,590	622,102,744	Y			-	19,140
16	839	order no 40-PR12013511	STOP School Violence	565,246	622,102,744	N	NC Dept of Public Instruc	order no 40-PR12013511	88,000	162,723
16	560	P008619003	National Institute of Justice Research, Evaluation, and Development Project Grants	13,331,750	622,102,744	N	University of Minnesota	P008619003	-	31,507
16	812	Q22757246	Second Chance Act Reentry Initiative	1,098,168	622,102,744	N	NC Dept of Public Safety	Q22757246	-	101,661
17	RD	1605C2-23-C-0014	Educator RA Intermediary	321,722	622,102,744	Y			-	200,287
17	RD	516895001	Early Implementation	321,722	622,102,744	N	MATHEMATICA POLICY RES.	516895001	-	121,435
19	705	SINLECI8CA0039	Trans-National Crime	(18)	622,102,744	Y			-	(18)
19	704	S-INLECI8CA2073	Counter Narcotics	1,180,582	622,102,744	Y			-	546,989
19	704	S-INLECI8CA0176	Counter Narcotics	1,180,582	622,102,744	Y			-	633,593
19	017	SLMAQM18CA2096	Environmental and Scientific Partnerships and Programs	318,259	622,102,744	Y			-	66,092
19	017	SLMAQM18CA2358	Environmental and Scientific Partnerships and Programs	318,259	622,102,744	Y			-	159,903
19	017	SLMAQM20CA2370	Environmental and Scientific Partnerships and Programs	318,259	622,102,744	Y			36,931	92,264
20	RD	DTNH2216C00014	Driving Attitudes Yr 5	356,319	622,102,744	Y			-	(4)
20	RD	TFPE-00	Every Day Counts	356,319	622,102,744	N	The Natl Academies NAS	TFPE-00	-	356,323

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**RESEARCH TRIANGLE INSTITUTE**

**SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS  
FOR THE YEAR ENDED SEPTEMBER 30, 2023**

Federal Assistance Listing Number	Additional Award Identification	Federal Program Name	Cluster Name	Federal Program Total	Cluster Total	Direct Award	Name of Passthrough Entity	Identifying Number Assigned by the Pass-through Entity	Amount Passed Through Subrecipients	Amount Expended	
30	RD	Agmt 2000012550	ECCO Proj Management	RESEARCH AND DEVELOPMENT	\$ 6,860	\$ 622,102,744	N	The Natl Academies NAS	Agmt 2000012550	\$ -	\$ 6,860
43	001	80NSSC21K1167	Science	RESEARCH AND DEVELOPMENT	363,802	622,102,744	Y			55,285	157,898
43	001	80NSSC18M0101	Science	RESEARCH AND DEVELOPMENT	363,802	622,102,744	Y			52,905	117,500
43	001	80NSSC22K1481	Science	RESEARCH AND DEVELOPMENT	363,802	622,102,744	Y			-	98,404
43	RD	80NSSC23AA005 80NSSC23FA270	BasePd Helpdesk Ops Spprt	RESEARCH AND DEVELOPMENT	116,195	622,102,744	Y			-	116,195
45	RD	IMLS-2017-030	Awarded Grants Addl	RESEARCH AND DEVELOPMENT	297,476	622,102,744	Y			-	297,476
47	074	140070 SPC002502	Biological Sciences	RESEARCH AND DEVELOPMENT	(29)	622,102,744	N	Washington State Univ	140070 SPC002502	-	(29)
47	070	1939111	Computer and Information Science and Engineering	RESEARCH AND DEVELOPMENT	3,228	622,102,744	Y			-	558
47	041	2039584	Engineering	RESEARCH AND DEVELOPMENT	307,798	622,102,744	N	Clemson University	2039584	-	61,124
47	083	2040521	Integrative Activities	RESEARCH AND DEVELOPMENT	-	622,102,744	Y			-	2,670
47	070	2127459	Computer and Information Science and Engineering	RESEARCH AND DEVELOPMENT	3,228	622,102,744	Y			-	119,309
47	041	2144382	Engineering	RESEARCH AND DEVELOPMENT	307,798	622,102,744	Y			-	431,473
47	RD	49100418F1261	Conduct the 2021 GSS	RESEARCH AND DEVELOPMENT	7,456,703	622,102,744	Y			-	1,578,758
47	RD	49100419F1060	SEO 2020 2022	RESEARCH AND DEVELOPMENT	7,456,703	622,102,744	Y			-	86,142
47	RD	49100420C0021	NCSES SQD Implementation	RESEARCH AND DEVELOPMENT	7,456,703	622,102,744	Y			-	334,947
47	RD	49100421D0013	HSI ODC Consultant Labor	RESEARCH AND DEVELOPMENT	7,456,703	622,102,744	Y			-	1,492,011
47	RD	49100421D0019 49100422F0059	TASS Y1 SciEngineerIndRpt	RESEARCH AND DEVELOPMENT	7,456,703	622,102,744	Y			-	11
47	RD	49100421F0205	OLM ECDS Support	RESEARCH AND DEVELOPMENT	7,456,703	622,102,744	Y			-	76,347
47	RD	49100422C0018	Low Burden Respondents	RESEARCH AND DEVELOPMENT	7,456,703	622,102,744	Y			-	1,370,153
47	RD	49100422F0122	GSS Base Year TM CLINs	RESEARCH AND DEVELOPMENT	7,456,703	622,102,744	Y			-	1,937,046
47	RD	4910422F0033	SED Base OLMs	RESEARCH AND DEVELOPMENT	471,826	622,102,744	N	California State Monterey	5052101A-10-12-2018C	-	60,362
47	076	5052101A-10-12-2018C	STEM Education (formerly Education and Human Resources)	RESEARCH AND DEVELOPMENT	9,744	622,102,744	N	UNC Wilmington	58706F-23-0083 RTI-SUB-INT	-	9,744
47	084	58706F-23-0083 RTI-SUB-INT	NSF Technology, Innovation, and Partnerships	RESEARCH AND DEVELOPMENT	7,456,703	622,102,744	N	Advanced Technology Intl	Contract 2022-375 Project Agmt No. 1	-	149,784
47	RD	Contract 2022-375 Project Agmt No. 1	Americas Data Hub	RESEARCH AND DEVELOPMENT	307,798	622,102,744	N	University of Pittsburgh	EEC-2135080	-	69,227
47	041	COVID-19, EEC-2135080	COVID-19 - Engineering	RESEARCH AND DEVELOPMENT	-	622,102,744	N	UNC Chapel Hill	MSA 01-01 -1	-	285,313
47	079	MSA 01-01 -1	Office of International Science and Engineering	RESEARCH AND DEVELOPMENT	28,332	622,102,744	N	North Carolina State Univ	Master Agreement 01-01 -1	-	28,332
47	RD	NSF0AC517T1045	WC21 103 SOB Content	RESEARCH AND DEVELOPMENT	7,456,703	622,102,744	Y			-	31
47	076	SCON-00003563	STEM Education (formerly Education and Human Resources)	RESEARCH AND DEVELOPMENT	471,826	622,102,744	N	University of Southern CA	SCON-00003563	-	411,464
47	041	TO 2021-2062-01	Engineering	RESEARCH AND DEVELOPMENT	307,798	622,102,744	N	North Carolina State Univ	TO 2021-2062-01	-	58,138
64	RD	36C25021P1991	VA TEAMS Y1	RESEARCH AND DEVELOPMENT	18,600	622,102,744	Y			-	18,600
66	309	13746193	Surveys, Studies, Investigations, Training and Special	RESEARCH AND DEVELOPMENT	107,791	622,102,744	Y			-	107,791
66	RD	140D0421A0003 140D0421F0509	Purpose Activities Relating to Environmental Justice EPA Region 9	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	83,480
66	461	2020-0284-02	Regional Wetland Program Development Grants	RESEARCH AND DEVELOPMENT	5,634	622,102,744	N	North Carolina State Univ	2020-0284-02	-	5,634
66	509	5128082	Science To Achieve Results (STAR) Research Program	RESEARCH AND DEVELOPMENT	341,290	622,102,744	N	UNC Chapel Hill	5128082	-	4,571
66	509	62580918-211633	Science To Achieve Results (STAR) Research Program	RESEARCH AND DEVELOPMENT	341,290	622,102,744	N	Stanford University	62680918-211633	-	44,387
66	RD	68HERD18D0008 68HERC21F0259	CLIN 1	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	292,100
66	RD	68HERD18D0008 68HERC23F0282	Task 1.Mgmt QA QAPP	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	87,274
66	RD	68HERD18D0008 68HERH19F0248	CLIN 0007	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	1,667,287
66	RD	68HERD18D0008 68HERH19F0359	3 3 2 Optl ACM	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	37,770
66	RD	68HERC20D0019 RTI 2020	EPA OW Biosolids Modeling	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	N	GREAT LAKES ENVIRONMENTAL	68HERC20D0019 RTI 2020	-	202,237
66	RD	68HERC21D0004	Use of VR Training	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	112,369
66	RD	68HERC21D0004 68HERC21F0372	UV-C Disinfection	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	120,564
66	RD	68HERC21D0004 68HERC21F0434	Lg Bldg Vapor Final Docu	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	106,579
66	RD	68HERC21D0004 68HERC22F0031	ETSC	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	634,239
66	RD	68HERC21D0004 68HERC22F0181	Characterization Dose Y1	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	249,957
66	RD	68HERC21D0004 68HERC22F0205	HLS Simulators	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	530,572
66	RD	68HERC21D0004 68HERC22F0214	Vapor Phase PFAS	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	85,867
66	RD	68HERC21D0004 68HERC22F0254	Soil Gas Safe Comm	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	230,083
66	RD	68HERC22A0020 68HERC23F0258	TO1 MPRSA BP	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	12,879
66	RD	68HERD20A0004 68HERH20F0389	Carbon Black	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	2,991
66	RD	68HERD20A0004 68HERH22F0052	Site Remediation Base	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	14,181
66	RD	68HERD20A0004 68HERH23F0190	Iron and Steel Sector BY	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	128,043
66	RD	68HERD20A0004 68HERH20F0274	Iron Steel OY2	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	286,694
66	RD	68HERD20A0004 68HERH20F0275	OPI Refractories	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	2,449
66	RD	68HERD20A0004 68HERH20F0287	Magnesium	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	(429)
66	RD	68HERD20A0004 68HERH20F0293	Gasoline Distribution y2	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	135,519
66	RD	68HERD20A0004 68HERH20F0295	Cordwood OY1	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	793,683
66	RD	68HERD20A0004 68HERH20F0422	Waste and Energy Sect OY1	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	34,785
66	RD	68HERD20A0004 68HERH21F0049	Clean Air Act OY 1	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	6,480
66	RD	68HERD20A0004 68HERH21F0064	Primary Copper Smelt Opt1	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	4,145
66	RD	68HERD20A0004 68HERH21F0094	Dry Cleaning OY1	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	14,472
66	RD	68HERD20A0004 68HERH21F0168	Dil Gas OY1	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	1,948,536
66	RD	68HERD20A0004 68HERH21F0184	Forest Products OP	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	156,731
66	RD	68HERD20A0004 68HERH21F0200	Ethylene Oxide Base	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	243,812
66	RD	68HERD20A0004 68HERH21F0208	Taconite OY1	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	202,027
66	RD	68HERD20A0004 68HERH21F0211	Magnesium Base	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	10,089
66	RD	68HERD20A0004 68HERH21F0224	EGU CT Base	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	527,088
66	RD	68HERD20A0004 68HERH21F0281	NESHAP Option Yr 1	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	85,499
66	RD	68HERD20A0004 68HERH21F0332	PopChange Brownfields OP1	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	262,456
66	RD	68HERD20A0004 68HERH22F0010	Tech Sup on Biofuels	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	86,266
66	RD	68HERD20A0004 68HERH22F0012	Materials Mgmt App Base	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	819,444
66	RD	68HERD20A0004 68HERH22F0191	Amend Cement NESHAP BY	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	30,472
66	RD	68HERD20A0004 68HERH22F0193	Circular Economy BY	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			-	1,569,196

RESEARCH TRIANGLE INSTITUTE

SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS  
FOR THE YEAR ENDED SEPTEMBER 30, 2023

Federal Assistance Listing Number	Additional Award Identification	Federal Program Name	Cluster Name	Federal Program Total	Cluster Total	Direct Award	Name of Passthrough Entity	Identifying Number Assigned by the Pass-through Entity	Amount Passed Through to Subrecipients	Amount Expended
RD	68HERD20A0004	68HERH22F0205	RPPSA Petroleum Refinery	RESEARCH AND DEVELOPMENT	\$ 24,608,848	\$ 622,102,744	Y		\$	\$ 4,851
RD	68HERD20A0004	68HERH22F0216	Pulp and Paper Sector BY	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			191,336
RD	68HERD20A0004	68HERH22F0219	Storage Tanks Model	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			157,837
RD	68HERD20A0004	68HERH22F0324	Public Hearing Supp OY1	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			153,867
RD	68HERD20A0004	68HERH23F0028	Triennial Report Lbr CLIN	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			105,358
RD	68HERD20A0004	68HERH23F0036	Primary Copper BY	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			95,328
RD	68HERD20A0004	68HERH23F0181	Forest Products ARS BY	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			196,470
RD	68HERD20A0004	68HERH23F0187	Lthy Oxide Base Year	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			161,773
RD	68HERD20A0004	68HERH23F0227	Petroleum Refineries BY	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			102,826
RD	68HERD20A0004	68HERH23F0247	Hosp Ster EO BY	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			17,860
RD	68HERD21A0004	68HERH22F0093	OAQPS Econ Modeling OY1	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			101,971
RD	68HERD21A0004	68HERH21F0246	Cost Manual Base Period	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			37,442
RD	68HERD21A0004	68HERH21F0262	OAQPS Rule Support OY1	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			121,195
RD	68HERD21A0004	68HERH21F0285	Advancing Critical Ld OY1	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			55,921
RD	68HERD21A0004	68HERH23F0147	Ozone Base Year	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			75,432
RD	68HERD21A0004	68HERH23F0175	Cost Manual Base	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			22,156
RD	68HERH19D0030	68HERH20F0191	GMI ASG Option 2	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			118,537
RD	68HERH19D0030	68HERH21F0294	Fuel Vehicle Tech OY1	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			368,129
RD	68HERH19D0030	68HERH23F0003	GMP BP	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			512,142
RD	68HERH19D0030	68HERH20F0226	GMI CCAC OP2	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			300,324
RD	68HERH19D0030	68HERH20F0281	Modeling & Clean Air OP2	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			1,497,604
RD	68HERH19D0030	68HERH20F0285	Green Gas Option	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			(7,635)
RD	68HERH19D0030	68HERH21F0022	Climate Change Base PD	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			(5)
RD	68HERH19D0030	68HERH21F0174	GGICBS Base Period	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			70,754
RD	68HERH19D0030	68HERH22F0109	GHGI Base Period	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			181,343
RD	68HERH19D0030	68HERH22F0285	Tech Supp GHGRP BP	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			3,606,855
RD	68HERH19D0030	68HERH22F0302	PGVP BP	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			30,167
RD	68HERH19D0030	68HERH22F0348	GMI Secretariat Base	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			439,530
RD	68HERH19D0030	68HERH23F0129	NCPB CMAP BP	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			24,685
RD	68HERH19D0030	68HERH23F0145	Modeling and Clean Air BP	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			74,544
RD	68HERH19D0030	68HERH23F0215	EPA CCD Econ Wide ModelBP	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			163,778
RD	68HERH22A0023	68HERH23F0122	OAR Fund Assist Base Year	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			352,642
S09	83616501	Science To Achieve Results (STAR) Research Program	RESEARCH AND DEVELOPMENT	341,290	622,102,744	N	North Carolina State Univ	83616501		(809)
S09	83618701	Science To Achieve Results (STAR) Research Program	RESEARCH AND DEVELOPMENT	341,290	622,102,744	Y				38,875
S09	84022101	Science To Achieve Results (STAR) Research Program	RESEARCH AND DEVELOPMENT	341,290	622,102,744	Y				235,029
S09	84056501	Science To Achieve Results (STAR) Research Program	RESEARCH AND DEVELOPMENT	341,290	622,102,744	Y				19,532
S11	8544	Office of Research and Development Consolidated Research/ Training/fellowships	RESEARCH AND DEVELOPMENT	(4,626)	622,102,744	N	Indiana University	8544		(4,626)
S09	8793	Science To Achieve Results (STAR) Research Program	RESEARCH AND DEVELOPMENT	341,290	622,102,744	N	Indiana University	8793		(295)
RD	Agreement 6/17/2021	68HERC22F0228	WARTS Streamflow Method	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	N	EPR	Agreement 6/17/2021 68HERC22F0228	46,958
RD	Agreement effective 8/1/2022		HEI Collett Study	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	N	HEI Energy	Agreement effective 8/1/2022	34,073
RD	Contract signed 11/2/22 TO 9/68HERH22F0024		TO1 CCR Support	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	N	Industrial Economics	Contract signed 11/2/22 TO 9/68HERH22F0024	352,233
RD	COVID-19_02D46023		COVID-19 - Surveys, Studies, Research, Investigations, Demonstrations, and Special Purpose Activities Relating to the Clean Air Act	RESEARCH AND DEVELOPMENT	4,657	622,102,744	Y			4,657
RD	COVID-19_68HERD20A0004	68HERH22F0018	COVID-19 - NME Oil Gas BaseYr	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			100,810
RD	COVID-19_68HERH19D0030	68HERH20F0281	COVID-19 - Modeling & Clean Air OP2	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			2,308
RD	EPAOW-1006-2022		EPA OW IT Portfolio TO2	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	N	Intepros Federal	EPAOW-1006-2022	19,257
RD	EP-C-11-045		OTIAQ Support Service OP4	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			91
RD	EP-C-16-016 0003		Soil Vapor extraction PH	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			1,593
RD	EP-C-16-016 68HERD18F0851		Vapor Intrusion	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			2,877
RD	EP-C-16-016 68HERC19F0100		Use of VtC to Argment Situ	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			193
RD	EP-C-16-016 68HERC19F0295		Evaluating of Methylmer	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			2,540
RD	EP-C-16-016 68HERC20F0370		PHAS Support	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			585
RD	EP-C-17-045		OP1 WQX ATTAINS CIP SUP	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			1,673,126
RD	EP-C-17-045 68HERC19F0235		OP2 EPA Regions 1 2 3	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			887,314
RD	EP-C-17-045 68HERC22F0242		EPA Support for WQX ATTA	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			149,393
RD	EP-W-15-005 68HERH21F0297		WinCMTF Modeling Supt OP1	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			114,014
RD	EP-W-15-005 68HERH22F0062		FY22 CCR Rulemakings	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			49,099
RD	EP-W-15-005 68HERH23F0151		QRCR 22 Sup VI Guidance	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			10,355
RD	EP-W-15-005 68HERH22F0301		QRCR 22 23 VI Guidance	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			279,117
RD	EP-W-15-005 68HERH22F0332		Tech Support Eval CCR	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			125,703
RD	EP-W-15-005 68HERH23F0048		NPRM Support 23	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			188,516
RD	EP-W-15-005 68HERH23F0347		Optimizing Materials Mgmt	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			15,886
RD	EP-W-15-005 68HERH23F0348		WinCMTF v3 0 Modeling	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			8,218
RD	EP-W-15-005 68HERH23F0357		Effects of Climate Change	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			1,226
RD	EP-W-15-005 68HERH23F0358		TO 6 Rev 4d CFA Part 192	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	Y			(1,396)
RD	HHSN316201800019W	68HERD21F0039	EPA OW IT Portfolio TO1	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	N	Intepros Federal	HHSN316201800019W 68HERD21F0039	7,540
RD	PSSCCC-0002/4	68HERH21F0059	EPA Waste Resiliency OP	RESEARCH AND DEVELOPMENT	24,608,848	622,102,744	N	Eastern Research Group	PSSCCC-0002/4 68HERH21F0059	95,335
I135	113349		Advanced Research Projects Agency - Energy	RESEARCH AND DEVELOPMENT	881,358	622,102,744	N	Creare Inc.	113349	98,239
I089	21-BIOSYS-212511-RTI		Fossil Energy Research and Development	RESEARCH AND DEVELOPMENT	3,736,479	622,102,744	N	Auburn University	21-BIOSYS-212511-RTI	29,788
I087	21E085-02		Renewable Energy Research and Development	RESEARCH AND DEVELOPMENT	1,562,205	622,102,744	N	Texas Tech Univ	21E085-02	49,717
I089	23-BIOSYS-212513-RTI		Fossil Energy Research and Development	RESEARCH AND DEVELOPMENT	3,736,479	622,102,744	N	Auburn University	23-BIOSYS-212513-RTI	10,413
I11	400207923		ORNL RiverWare Training	RESEARCH AND DEVELOPMENT	890,488	622,102,744	Y			1,796
RD	5000-121 PO-5000-121-001		PCW 5000-121	RESEARCH AND DEVELOPMENT	830,488	622,102,744	Y	KeyLogic	5000-121 PO-5000-121-001	(1,121)
I086	83824		Conservation Research and Development	RESEARCH AND DEVELOPMENT	627,595	622,102,744	N	Stony Brook University	83824	38,858

(Continued)

RESEARCH TRIANGLE INSTITUTE

SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS FOR THE YEAR ENDED SEPTEMBER 30, 2023

Federal Agency Prefix	Additional Award Identification	Federal Program Name	Cluster Name	Federal Program Total	Cluster Total	Direct Award	Name of Passthrough Entity	Identifying Number Assigned by the Pass-through Entity	Amount Passed Through to Subrecipients	Amount Expended
81 089	Agreement effective 12-6-19	Fossil Energy Research and Development	RESEARCH AND DEVELOPMENT	\$ 3,736,479	\$622,102,744	N	H Quest Vanguard, Inc.	Agreement effective 12-6-19	\$ -	\$ 201
81 135	DE-AR0001307	Advanced Research Projects Agency - Energy	RESEARCH AND DEVELOPMENT	881,358	622,102,744	Y			38,526	47,383
81 087	DE-AR0001479	Advanced Research Projects Agency - Energy	RESEARCH AND DEVELOPMENT	881,358	622,102,744	Y			172,555	700,056
81 087	DE-EED008509	Renewable Energy Research and Development	RESEARCH AND DEVELOPMENT	1,562,205	622,102,744	Y			83,039	405,573
81 087	DE-EED008918	Renewable Energy Research and Development	RESEARCH AND DEVELOPMENT	1,562,205	622,102,744	Y			-	870,855
81 087	DE-EED009262	Renewable Energy Research and Development	RESEARCH AND DEVELOPMENT	1,562,205	622,102,744	Y			-	236,060
81 086	DE-EED009415	Conservation Research and Development	RESEARCH AND DEVELOPMENT	627,595	622,102,744	Y			-	588,737
81 089	DE-FE0031590	Fossil Energy Research and Development	RESEARCH AND DEVELOPMENT	3,736,479	622,102,744	Y			845,620	1,611,003
81 089	DE-FE0031764	Fossil Energy Research and Development	RESEARCH AND DEVELOPMENT	3,736,479	622,102,744	Y			-	238,122
81 089	DE-FE0031945	Fossil Energy Research and Development	RESEARCH AND DEVELOPMENT	3,736,479	622,102,744	N	EPRI	DE-FE0031945	-	188,091
81 089	DE-FE0031954	Fossil Energy Research and Development	RESEARCH AND DEVELOPMENT	3,736,479	622,102,744	Y			171,849	131,103
81 089	DE-FE0032099	Fossil Energy Research and Development	RESEARCH AND DEVELOPMENT	3,736,479	622,102,744	Y			389,270	875,244
81 089	DE-FE0032218	Fossil Energy Research and Development	RESEARCH AND DEVELOPMENT	3,736,479	622,102,744	Y			-	190,191
81 089	DE-FE0032220	Fossil Energy Research and Development	RESEARCH AND DEVELOPMENT	3,736,479	622,102,744	Y			102,593	291,249
81 089	DE-FE0032241	Fossil Energy Research and Development	RESEARCH AND DEVELOPMENT	3,736,479	622,102,744	Y			-	94,365
81 RD	ESJV-EOPIV-SUB-0006 Task Order # 3	2020 RECS HH Survey Yr	RESEARCH AND DEVELOPMENT	830,488	622,102,744	N	IMG-Crown Energy Services	ESJV-EOPIV-SUB-0006 Task Order # 3	-	830
81 RD	ESJV-EOPIV-SUB-0006 Task Order #4	Y1 of 5 EIA2021 Ops Supp	RESEARCH AND DEVELOPMENT	830,488	622,102,744	N	IMG-Crown Energy Services	ESJV-EOPIV-SUB-0006 Task Order #4	-	827,037
81 RD	ESJV-EOPIV-SUB-0006 Task Order #5	CBCECS Redesign Pilot	RESEARCH AND DEVELOPMENT	830,488	622,102,744	N	IMG-Crown Energy Services	ESJV-EOPIV-SUB-0006 Task Order #5	-	847
81 089	SubAward:UTAUS-SUB80000250AM2	Fossil Energy Research and Development	RESEARCH AND DEVELOPMENT	3,736,479	622,102,744	N	AEC	SubAward:UTAUS-SUB80000250AM2	-	76,709
84 RD	91990022C0017	N24 Task 3	RESEARCH AND DEVELOPMENT	35,966,076	622,102,744	Y			-	5,612,698
84 305	84_305A, GR100504 SUB800000143	Education Research, Development and Dissemination	RESEARCH AND DEVELOPMENT	2,306,253	622,102,744	N	University of Virginia	GR100504 SUB800000143	-	46,383
84 305	84_305A, R305A170222	Education Research, Development and Dissemination	RESEARCH AND DEVELOPMENT	2,306,253	622,102,744	Y			-	31,268
84 305	84_305A, R305A180050	Education Research, Development and Dissemination	RESEARCH AND DEVELOPMENT	2,306,253	622,102,744	Y			135,091	644,354
84 305	84_305A, R305A210146	Education Research, Development and Dissemination	RESEARCH AND DEVELOPMENT	2,306,253	622,102,744	Y			-	512,107
84 305	84_305A, R305A220032	Education Research, Development and Dissemination	RESEARCH AND DEVELOPMENT	2,306,253	622,102,744	Y			-	421,222
84 305	84_305R, R305R210007	Education Research, Development and Dissemination	RESEARCH AND DEVELOPMENT	2,306,253	622,102,744	Y			189,159	650,919
84 411	84_411C, S411C220065	Investing in Innovation (I3) Fund)	RESEARCH AND DEVELOPMENT	484,073	622,102,744	Y			93,027	296,274
84 RD	91990018C0039	BP5 20 22 Opt Task 5	RESEARCH AND DEVELOPMENT	35,966,076	622,102,744	Y			-	4,195,424
84 RD	91990018C0018	BP Core Task Clin1 NONIT	RESEARCH AND DEVELOPMENT	35,966,076	622,102,744	Y			-	10,546,361
84 RD	91990021F0001	2 ICLIS Travel	RESEARCH AND DEVELOPMENT	35,966,076	622,102,744	Y			-	7,641,845
84 RD	91990022F0021	IPEDS 22 23 Base CPFF IT	RESEARCH AND DEVELOPMENT	35,966,076	622,102,744	Y			-	3,269,353
84 RD	ED-IES-13-C-0056	2022 College Scorecard	RESEARCH AND DEVELOPMENT	35,966,076	622,102,744	Y			-	2,642,227
84 RD	ED-IES-13-C0070	BB 16 20 CPFF	RESEARCH AND DEVELOPMENT	35,966,076	622,102,744	Y			-	365,710
84 RD	ED-IES-15-C-0046	Post HS Outcomes Base CR	RESEARCH AND DEVELOPMENT	35,966,076	622,102,744	Y			-	629,119
84 RD	ED-IES-15-O-5016	ZIT-MGLS:17-CPFF:IT Tasks	RESEARCH AND DEVELOPMENT	35,966,076	622,102,744	Y			-	85,989
84 RD	R000002990	REL Southeast Yr1	RESEARCH AND DEVELOPMENT	35,966,076	622,102,744	N	Florida State University	R000002990	-	315,016
84 RD	RTI_0001_DataLab	Additional Datasets Opt	RESEARCH AND DEVELOPMENT	35,966,076	622,102,744	N	Sanamatrix, Inc.	RTI_0001_DataLab	-	525,675
84 RD	RTI-0002_Postsecondary Analysis	OPE Postsecondary Anal	RESEARCH AND DEVELOPMENT	35,966,076	622,102,744	N	Sanamatrix, Inc.	RTI-0002_Postsecondary Analysis	-	136,659
84 411	UA 21-0123	Education Innovation and Research (formerly Investing in Innovation (I3) Fund)	RESEARCH AND DEVELOPMENT	484,073	622,102,744	N	Univ of Alaska Fairbanks	UA 21-0123	-	187,799
85 002	95332419T0019	MCC Foreign Assistance for Overseas Programs	RESEARCH AND DEVELOPMENT	98,347	622,102,744	Y			-	98,347
93 RD	At Risk	OMAS Y1 Quex Dev	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Ohio State University	At Risk	-	845,589
93 989	1R21TW011786-01	International Research and Research Training	RESEARCH AND DEVELOPMENT	266,328	622,102,744	Y			26,371	181,499
93 RD	51077506825	Y2 9 RD Model	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	MATHEMATICA POLICY RES.	51077506825	-	3
93 838	OS0000468/400492	Lung Diseases Research	RESEARCH AND DEVELOPMENT	77,212,501	622,102,744	N	Cincinnati Children's Hos	OS0000468/400492	-	67,002
93 279	1315	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	N	Brown University	1315	-	43
93 847	2138	Diabetes, Digestive, and Kidney Diseases Extramural Research	RESEARCH AND DEVELOPMENT	2,343,523	622,102,744	N	Brown University	2138	-	68,646
93 855	2782	Allergy and Infectious Diseases Research	RESEARCH AND DEVELOPMENT	6,029,438	622,102,744	N	University of Georgia	2782	-	76,206
93 242	1158578	Mental Health Research Grants	RESEARCH AND DEVELOPMENT	3,680,038	622,102,744	N	Fred Hutchinson Cancer	1158578	-	8,114
93 839	000532950-SC006	Blood Diseases and Resources Research	RESEARCH AND DEVELOPMENT	2,553,318	622,102,744	N	Univ Alabama Birmingham	000532950-SC006	-	151,475
93 242	000536327-SC002	Mental Health Research Grants	RESEARCH AND DEVELOPMENT	3,680,038	622,102,744	N	Univ Alabama Birmingham	000536327-SC002	-	59
93 RD	10246350	DRIVE 5	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Lelidos, Inc.	10246350	-	229
93 273	2371	Alcohol Research Programs	RESEARCH AND DEVELOPMENT	4,163,973	622,102,744	N	Public Health Institute	2371	-	37,527
93 103	026072D	Food and Drug Administration Research	RESEARCH AND DEVELOPMENT	77,692	622,102,744	N	Iowa State University	026072D	-	77,692
93 273	2613	Alcohol Research Programs	RESEARCH AND DEVELOPMENT	4,163,973	622,102,744	N	Public Health Institute	2613	-	10,811
93 273	2717	Alcohol Research Programs	RESEARCH AND DEVELOPMENT	4,163,973	622,102,744	N	Public Health Institute	2717	-	11,646
93 RD	282200_43	Med Patient & Comp	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Ohio State University	282200_43	-	1,217,383
93 273	028400_87CL	Alcohol Research Programs	RESEARCH AND DEVELOPMENT	4,163,973	622,102,744	N	University of New Mexico	028400_87CL	-	25,052
93 273	03255-AR04818	Alcohol Research Programs	RESEARCH AND DEVELOPMENT	4,163,973	622,102,744	N	Public Health Institute	03255-AR04818	-	136,272
93 989	1(GG016095-01)	International Research and Research Training	RESEARCH AND DEVELOPMENT	266,328	622,102,744	N	Columbia University	1(GG016095-01)	-	3,124
93 974	1FPPRA006072-01-00	Family Planning Service Delivery Improvement Research Grants	RESEARCH AND DEVELOPMENT	337,705	622,102,744	Y			32,486	337,705
93 845	1NUS80P06975-01-00	Promoting Population Health through Increased Capacity in Alcohol Epidemiology	RESEARCH AND DEVELOPMENT	197,686	622,102,744	Y			-	197,686
93 065	1NUS80E001333-01-00	Laboratory Leadership, Workforce Training and Management Development, Improving Public Health Laboratory Infrastructure	RESEARCH AND DEVELOPMENT	289,720	622,102,744	Y			-	289,720
93 136	1R01CE003191-01-00	Injury Prevention and Control Research and State and Community Based Programs	RESEARCH AND DEVELOPMENT	1,608,788	622,102,744	Y			45,207	283,401
93 136	1R01CE003295-01-00	Injury Prevention and Control Research and State and Community Based Programs	RESEARCH AND DEVELOPMENT	1,608,788	622,102,744	Y			65,362	206,632
93 136	1U01CE003482-01-00	Injury Prevention and Control Research and State and Community Based Programs	RESEARCH AND DEVELOPMENT	1,608,788	622,102,744	Y			30,605	500,508
93 68	1U18D006707-01-00	Chronic Diseases: Research, Control, and Prevention	RESEARCH AND DEVELOPMENT	318,470	622,102,744	Y			-	318,470
93 RD	1000377780	OFS 2022 Yr2	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Ohio State University	1000377780	-	302,607
93 RD	1001103995	2023 Ohio Big 3	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Ohio State University	1001103995	-	357,615

RESEARCH TRIANGLE INSTITUTE

SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS  
FOR THE YEAR ENDED SEPTEMBER 30, 2023

Federal Assistance Listing Number	Additional Award Identification	Federal Program Name	Cluster Name	Federal Program Total	Cluster Total	Direct Award	Name of Passthrough Entity	Identifying Number Assigned by the Passthrough Entity	Amount Passed Through to Subrecipients	Amount Expended
93 839	1001432-RTI	Blood Diseases and Resources Research	RESEARCH AND DEVELOPMENT	\$ 2,553,318	\$622,102,744	N	Versiti Blood Center WI	1001432-RTI	\$ -	\$ 33,723
93 RD	1001711317	OPTIMUM	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Univ of Colorado Denver	1001711317	-	12,176
93 RD	101379-0001-RTI-01	Baseline Interview	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Urban Institute	101379-0001-RTI-01	-	349,234
93 279	1017225-RTI-B3	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	N	Oregon Health Scien Univ	1017225-RTI-B3	-	1,486
93 RD	1072HL157844	Catalyze Comm Plat Mgmt	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			-	2,394,294
93 RD	112891-1	Task 5 Eval	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Deloitte Consulting LLP	112891-1	-	234,215
93 279	11385-2	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	N	Friends Research Inst	11385-2	-	26,792
93 839	11685RTI139	Blood Diseases and Resources Research	RESEARCH AND DEVELOPMENT	2,553,318	622,102,744	N	Vitalant Research Institu	11685RTI139	-	5,072
93 RD	126791-1-129073	Mitre Rx Pricing	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	The MITRE Corporation	126791-1-129073	-	403,534
93 RD	126791 1161483	CMMI Computer Services	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	The MITRE Corporation	126791 1161483	-	253,039
93 242	12845sc	Mental Health Research Grants	RESEARCH AND DEVELOPMENT	3,680,038	622,102,744	N	Univ of California SF	12845sc	-	16,661
93 279	131915C	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	N	Univ of California SF	131915C	-	61,210
93 242	13213sc	Mental Health Research Grants	RESEARCH AND DEVELOPMENT	3,680,038	622,102,744	N	Univ of California SF	13213sc	-	4,971
93 273	139075C	Alcohol Research Programs	RESEARCH AND DEVELOPMENT	4,163,973	622,102,744	N	Univ of California SF	139075C	-	22,262
93 242	139475C	Mental Health Research Grants	RESEARCH AND DEVELOPMENT	3,680,038	622,102,744	N	Univ of California SF	139475C	-	46,729
93 RD	1469-RTI-2000TM-01	WQI CLIN 1 Data Dissem	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	MDRC	1469-RTI-2000TM-01	-	4,324
93 RD	15-04-032	Administration	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	University of Mississippi	15-04-032	-	203,229
93 279	168729/168728	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	N	Univ Texas Hit San Antoni	168729/168728	-	269
93 RD	1802271	UMD NIH DC Facil Yr 5	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Univ of MD College Park	1802271	-	69,808
93 853	19012999	Extramural Research Programs in the Neurosciences and Neurological Disorders	RESEARCH AND DEVELOPMENT	3,129,048	622,102,744	N	Translational Sciences	19012999	-	55,633
93 310	19-AO-00-1003237_Proj# 114579	Trans-NIH Research Support	RESEARCH AND DEVELOPMENT	22,566,795	622,102,744	N	NYU School of Medicine	19-AO-00-1003237_Proj# 114579	-	207,505
93 279	10P1DA058362-01	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			-	16,194
93 853	1GG017542-01	Extramural Research Programs in the Neurosciences and Neurological Disorders	RESEARCH AND DEVELOPMENT	3,129,048	622,102,744	N	Columbia University	1GG017542-01	-	34,196
93 243	1H79FG000030-01	Substance Abuse and Mental Health Services Projects of Regional and National Significance	RESEARCH AND DEVELOPMENT	3,049,037	622,102,744	Y			494,693	3,049,037
93 279	1K01DA045752-01	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			-	89,549
93 318	1NU2HGHO00019-01-00	Protecting and Improving Health Globally: Building and Strengthening Public Health Impact, Systems, Capacity and Security	RESEARCH AND DEVELOPMENT	9,239,990	622,102,744	Y			-	230,293
93 318	1NU2HGHO00047001	Protecting and Improving Health Globally: Building and Strengthening Public Health Impact, Systems, Capacity and Security	RESEARCH AND DEVELOPMENT	9,239,990	622,102,744	Y			(3,594)	2,031,164
93 RD	1QT2HL167310-01	NHLBI DMC Accel subOTs	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			-	2,795,102
93 310	1QT2D0028395-01	Trans-NIH Research Support	RESEARCH AND DEVELOPMENT	22,566,795	622,102,744	Y			-	5,151,295
93 853	1OT2D0031940	Extramural Research Programs in the Neurosciences and Neurological Disorders	RESEARCH AND DEVELOPMENT	3,129,048	622,102,744	N	UNC Chapel Hill	1OT2D0031940	-	2,209,333
93 RD	1OT2D0034190-01-Revised	NCPI Monitor Interop Proj	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			-	1,523,645
93 279	1P50DA054071-01A1	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			289,712	1,418,101
93 865	1P1LHD101059-01	Child Health and Human Development Extramural Research	RESEARCH AND DEVELOPMENT	14,450,210	622,102,744	Y			1,060,036	1,916,754
93 273	1R01AA026820-01	Alcohol Research Programs	RESEARCH AND DEVELOPMENT	4,163,973	622,102,744	Y			101,624	365,451
93 273	1R01AA027049-01A1	Alcohol Research Programs	RESEARCH AND DEVELOPMENT	4,163,973	622,102,744	Y			238,143	636,343
93 273	1R01AA027796-01	Alcohol Research Programs	RESEARCH AND DEVELOPMENT	4,163,973	622,102,744	Y			31,300	182,167
93 273	1R01AA028255-01	Alcohol Research Programs	RESEARCH AND DEVELOPMENT	4,163,973	622,102,744	Y			314,238	796,226
93 273	1R01AA029812-01	Alcohol Research Programs	RESEARCH AND DEVELOPMENT	4,163,973	622,102,744	Y			123,075	928,051
93 273	1R01AA030452-01	Alcohol Research Programs	RESEARCH AND DEVELOPMENT	4,163,973	622,102,744	Y			-	177,443
93 855	1R01A1141082-01	Allergy and Infectious Diseases Research	RESEARCH AND DEVELOPMENT	6,029,438	622,102,744	Y			14,600	98,931
93 855	1R01A1152713-01	Allergy and Infectious Diseases Research	RESEARCH AND DEVELOPMENT	6,029,438	622,102,744	Y			123,186	504,758
93 855	1R01A1154549	Allergy and Infectious Diseases Research	RESEARCH AND DEVELOPMENT	6,029,438	622,102,744	Y			229,162	808,466
93 213	1R01AT010773-01	Research and Training in Complementary and Integrative Health	RESEARCH AND DEVELOPMENT	389,917	622,102,744	Y			134,176	389,917
93 393	1R01CA269472-01A1	Cancer Cause and Prevention Research	RESEARCH AND DEVELOPMENT	855,253	622,102,744	Y			10,509	53,798
93 279	1R01DA040460-01A1	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			52,098	286,986
93 279	1R01DA041009-01	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			-	304,313
93 279	1R01DA041227	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			-	123,219
93 279	1R01DA044014-01	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			101,443	155,395
93 279	1R01DA044051-01A1	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			(12,777)	(12,999)
93 279	1R01DA045009-01	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			-	356,116
93 279	1R01DA046444-01	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			-	62,069
93 279	1R01DA047334-01A1	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			258,589	462,703
93 279	1R01DA047994-01A1	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			-	634,151
93 279	1R01DA048824-01A1	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			237,014	629,528
93 279	1R01DA049612-01A1	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			193,168	604,123
93 279	1R01DA049761-01	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			18,456	528,273
93 279	1R01DA051908	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			332,846	625,439
93 279	1R01DA053193-01	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			53,395	311,765
93 279	1R01DA055277-01	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			-	507,543
93 279	1R01DA056449-01	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			-	257,739
93 279	1R01DA057613-01	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			19,437	338,105
93 847	1R01DK103625-01A1	Diabetes, Digestive, and Kidney Diseases Extramural Research	RESEARCH AND DEVELOPMENT	2,343,923	622,102,744	Y			-	331,258
93 847	1R01DK124615-01	Diabetes, Digestive, and Kidney Diseases Extramural Research	RESEARCH AND DEVELOPMENT	2,343,923	622,102,744	Y			-	456,734
93 865	1R01HD075787-01A1	Child Health and Human Development Extramural Research	RESEARCH AND DEVELOPMENT	14,450,210	622,102,744	Y			202,968	491,433
93 865	1R01HD093572-01	Child Health and Human Development Extramural Research	RESEARCH AND DEVELOPMENT	14,450,210	622,102,744	Y			44,910	204,539
93 865	1R01HD094629-01	Child Health and Human Development Extramural Research	RESEARCH AND DEVELOPMENT	14,450,210	622,102,744	Y			-	37,515
93 172	1R01HG011926-01	Human Genome Research	RESEARCH AND DEVELOPMENT	2,697,151	622,102,744	Y			87,185	191,161
93 837	1R01HL149352-01	Cardiovascular Diseases Research	RESEARCH AND DEVELOPMENT	3,311,770	622,102,744	Y			620,242	792,159
93 839	1R01HL166254-01A1	Blood Diseases and Resources Research	RESEARCH AND DEVELOPMENT	2,553,318	622,102,744	Y			-	20,928

(Continued)

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SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS  
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Federal Assistance Listing Number	Additional Award Identification	Federal Program Name	Cluster Name	Federal Program Total	Cluster Total	Direct Award	Name of Passthrough Entity	Identifying Number Assigned by the Pass-through Entity	Amount Passed Through to Subrecipients	Amount Expended
93 307	1R01MD016662-01	Minority Health and Health Disparities Research	RESEARCH AND DEVELOPMENT	\$ 527,461	\$ 622,102,744	Y			\$ -	\$ 465,210
93 242	1R01MH121148-01A1	Mental Health Research Grants	RESEARCH AND DEVELOPMENT	3,680,038	622,102,744	Y			253,886	754,556
93 242	1R01MH122196	Mental Health Research Grants	RESEARCH AND DEVELOPMENT	3,680,038	622,102,744	Y			51,665	484,578
93 242	1R01MH124438-01	Mental Health Research Grants	RESEARCH AND DEVELOPMENT	3,680,038	622,102,744	Y			138,695	457,688
93 242	1R01MH125671-01A1	Mental Health Research Grants	RESEARCH AND DEVELOPMENT	3,680,038	622,102,744	Y			212,077	567,814
93 242	1R01MH125938-01A1	Mental Health Research Grants	RESEARCH AND DEVELOPMENT	3,680,038	622,102,744	N	VA Commonwealth Univ	1R01MH125938-01A1	-	(5,368)
93 242	1R01MH127955-01A1	Mental Health Research Grants	RESEARCH AND DEVELOPMENT	3,680,038	622,102,744	Y			200,765	467,163
93 242	1R01MH131565-01A1	Mental Health Research Grants	RESEARCH AND DEVELOPMENT	3,680,038	622,102,744	Y			-	5,695
93 242	1R01MH132602-01	Mental Health Research Grants	RESEARCH AND DEVELOPMENT	3,680,038	622,102,744	Y			-	40,469
93 279	1R03DA045900-01A1	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			-	30,375
93 279	1R03DA058800-01	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			-	4,581
93 865	1R03HD105507-01	Child Health and Human Development Extramural Research	RESEARCH AND DEVELOPMENT	14,450,210	622,102,744	Y			11,712	93,324
93 853	1R03NS116577-01	Extramural Research Programs in the Neurosciences and Neurological Disorders	RESEARCH AND DEVELOPMENT	3,129,048	622,102,744	Y			-	1,047
93 853	1R03NS121831-01	Extramural Research Programs in the Neurosciences and Neurological Disorders	RESEARCH AND DEVELOPMENT	3,129,048	622,102,744	Y			-	51,109
93 853	1R03NS123731-01	Extramural Research Programs in the Neurosciences and Neurological Disorders	RESEARCH AND DEVELOPMENT	3,129,048	622,102,744	Y			11,350	81,266
93 273	1R21AA029048-01	Alcohol Research Programs	RESEARCH AND DEVELOPMENT	4,163,973	622,102,744	Y			83,918	173,340
93 395	1R21-CA-263414-01A1	Cancer Treatment Research	RESEARCH AND DEVELOPMENT	43,784	622,102,744	N	Duke University	1R21-CA263414-01A1	-	43,784
93 279	1R21DA044377-01	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			160,857	301,379
93 279	1R21DA053694-01	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			-	80,029
93 113	1R21ES030142-01A1	Environmental Health	RESEARCH AND DEVELOPMENT	2,320,720	622,102,744	Y			42,561	144,848
93 113	1R21ES033311-01A1	Environmental Health	RESEARCH AND DEVELOPMENT	2,320,720	622,102,744	Y			-	178,834
93 113	1R21ES035913-01	Environmental Health	RESEARCH AND DEVELOPMENT	2,320,720	622,102,744	Y			-	22,274
93 865	1R21HD106583-01	Child Health and Human Development Extramural Research	RESEARCH AND DEVELOPMENT	14,450,210	622,102,744	Y			87,786	223,296
93 242	1R21MH126358-01	Mental Health Research Grants	RESEARCH AND DEVELOPMENT	3,680,038	622,102,744	Y			51,883	136,180
93 350	1R21TR002402-01A1	National Center for Advancing Translational Sciences	RESEARCH AND DEVELOPMENT	472,308	622,102,744	Y			-	19,844
93 989	1R21TW011784-01	International Research and Research Training	RESEARCH AND DEVELOPMENT	266,328	622,102,744	Y			18,244	58,752
93 279	1R24DA057611-01	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			-	785,736
93 273	1R34AA030820-01	Alcohol Research Programs	RESEARCH AND DEVELOPMENT	4,163,973	622,102,744	Y			8,823	16,679
93 242	1R34MH124628-01	Mental Health Research Grants	RESEARCH AND DEVELOPMENT	3,680,038	622,102,744	Y			25,807	244,475
93 307	1R44MD012174-01	Minority Health and Health Disparities Research	RESEARCH AND DEVELOPMENT	527,461	622,102,744	N	Bentley Technologies	1R44MD012174-01	-	19,794
93 273	1R61AA030043-01	Alcohol Research Programs	RESEARCH AND DEVELOPMENT	4,163,973	622,102,744	Y			-	92,596
93 279	1R61DA047011-01	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			256,942	553,693
93 853	1R61NS131188-01	Extramural Research Programs in the Neurosciences and Neurological Disorders	RESEARCH AND DEVELOPMENT	3,129,048	622,102,744	Y			-	68,121
93 279	1R01DA046867-01	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			(1,453)	(1,529)
93 307	1R01MD10439-01A1	Minority Health and Health Disparities Research	RESEARCH AND DEVELOPMENT	527,461	622,102,744	Y			(2,559)	(2,602)
93 297	1R73AH000287-01-00	Teenage Pregnancy Prevention Program	RESEARCH AND DEVELOPMENT	4,960	622,102,744	Y			-	4,960
93 855	1U01AI151378-01	Allergy and Infectious Diseases Research	RESEARCH AND DEVELOPMENT	6,029,438	622,102,744	Y			995,258	2,415,654
93 393	1U01CA275054-01	Cancer Cause and Prevention Research	RESEARCH AND DEVELOPMENT	855,253	622,102,744	Y			264,343	444,725
93 136	1U01CE003216-01-00	Injury Prevention and Control Research and State and Community Based Programs	RESEARCH AND DEVELOPMENT	1,608,788	622,102,744	Y			96,991	480,193
93 315	1U01DD001253-01-00	Rare Disorders: Research, Surveillance, Health Promotion, and Education	RESEARCH AND DEVELOPMENT	905,044	622,102,744	Y			4,671	164,288
93 315	1U01DD00125401-00	Rare Disorders: Research, Surveillance, Health Promotion, and Education	RESEARCH AND DEVELOPMENT	905,044	622,102,744	Y			1,530	290,496
93 315	1U01DD001255-05-00	Rare Disorders: Research, Surveillance, Health Promotion, and Education	RESEARCH AND DEVELOPMENT	905,044	622,102,744	Y			37,739	450,260
93 113	1U01ES02754-01	Environmental Health	RESEARCH AND DEVELOPMENT	2,320,720	622,102,744	Y			48,873	75,464
93 839	1U01HL136306-01	Blood Diseases and Resources Research	RESEARCH AND DEVELOPMENT	2,553,318	622,102,744	Y			-	275,654
93 837	1U01HL145358-01A1	Cardiovascular Diseases Research	RESEARCH AND DEVELOPMENT	3,311,770	622,102,744	Y			846,281	2,458,480
93 350	1U01TR001792-01	National Center for Advancing Translational Sciences	RESEARCH AND DEVELOPMENT	472,308	622,102,744	Y			-	(224,331)
93 070	1U01TS000301-01-00	Environmental Public Health and Emergency Response	RESEARCH AND DEVELOPMENT	1,658,211	622,102,744	Y			106,253	1,141,504
93 837	1U01HL119991-04	Cardiovascular Diseases Research	RESEARCH AND DEVELOPMENT	3,311,770	622,102,744	Y			-	(4,076)
93 279	1U18DA052414-01	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			-	469
93 279	1U18DA052416-01	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			15,968	49,307
93 353	1U24CA232980-1	21st Century Cures Act - Beau Biden Cancer Moonshot	RESEARCH AND DEVELOPMENT	1,249,045	622,102,744	Y			-	669,774
93 353	1U24CA233218-01	21st Century Cures Act - Beau Biden Cancer Moonshot	RESEARCH AND DEVELOPMENT	1,249,045	622,102,744	Y			74,346	579,271
93 279	1U24DA050182-01	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			-	2,131,772
93 847	1U24DK130043-01	Diabetes, Digestive, and Kidney Diseases Extramural Research	RESEARCH AND DEVELOPMENT	2,343,923	622,102,744	Y			129,010	1,178,581
93 113	1U24ES035214-01	Environmental Health	RESEARCH AND DEVELOPMENT	2,320,720	622,102,744	N	UNC Chapel Hill	1U24ES035214-01	-	108,675
93 865	1U24HD092094-01	Child Health and Human Development Extramural Research	RESEARCH AND DEVELOPMENT	14,450,210	622,102,744	Y			-	1,922,011
93 865	1U24HD092254-01	Child Health and Human Development Extramural Research	RESEARCH AND DEVELOPMENT	14,450,210	622,102,744	Y			-	4,982,856
93 865	1U24HD076211-01	Child Health and Human Development Extramural Research	RESEARCH AND DEVELOPMENT	14,450,210	622,102,744	Y			69,482	1,006,358
93 172	1U24HG012556-01	Human Genome Research	RESEARCH AND DEVELOPMENT	2,697,151	622,102,744	Y			-	2,156,154
93 839	1U24HL133948-01	Blood Diseases and Resources Research	RESEARCH AND DEVELOPMENT	2,553,318	622,102,744	Y			14,987	651,311
93 838	1U24HL137729-01	Lung Diseases Research	RESEARCH AND DEVELOPMENT	77,212,501	622,102,744	Y			-	118,889
93 839	1U24HL140090-01A1	Blood Diseases and Resources Research	RESEARCH AND DEVELOPMENT	2,553,318	622,102,744	Y			-	478,580
93 839	1U24HL143216-01	Blood Diseases and Resources Research	RESEARCH AND DEVELOPMENT	2,553,318	622,102,744	Y			-	133,933
93 853	1U24NS105535-01	Extramural Research Programs in the Neurosciences and Neurological Disorders	RESEARCH AND DEVELOPMENT	3,129,048	622,102,744	Y			-	628,343
93 310	1U2CES026544-01	Trans-NIH Research Support	RESEARCH AND DEVELOPMENT	22,566,795	622,102,744	Y			-	56
93 113	1U2CES030857-01	Environmental Health	RESEARCH AND DEVELOPMENT	2,320,720	622,102,744	Y			1,079,842	1,656,256
93 279	1UG3 DA044823-01	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			16,611	593,205
93 865	1UG3HD096908-01	Child Health and Human Development Extramural Research	RESEARCH AND DEVELOPMENT	14,450,210	622,102,744	Y			428,056	708,478
93 279	1UM1DA049394	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y			1,005,146	7,756,864

(Continued)

**RESEARCH TRIANGLE INSTITUTE**

**SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS  
FOR THE YEAR ENDED SEPTEMBER 30, 2023**

Federal Assistance Listing Number	Additional Award Identification	Federal Program Name	Cluster Name	Federal Program Total	Cluster Total	Direct Award	Name of Passthrough Entity	Identifying Number Assigned by the Pass-through Entity	Amount Passed Through to Subrecipients	Amount Expended
93 RD	200-2013-M-539648 200-2014-F-61251	Lab Medicine Yr 3 Opt 2	RESEARCH AND DEVELOPMENT	\$254,064,064	\$ 622,102,744	Y			\$	\$ (1)
93 RD	200-2013-M-539648 75D30119F06146	Cancer Reg Data Travel	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				2,394
93 RD	200-2013-M-539648 75D30119F06594	CDC PT Program	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				
93 RD	200-2013-M-539648 75D30119F06759	MT 4 HIP Prev	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				174,743
93 RD	200-2013-M-539648 75D30120F09937	APHIR RFQ Base Year	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				1,560,992
93 RD	200-2013-M-539648 75D30121F12790	Diabetes Prevent Base Yr	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				467
93 RD	200-2013-M-539648 75D30121F12803	APHIR PreP DCE OLVs	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				49,854
93 RD	200-2013-M-539648 75D30122F15068	EHP Base Year	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				298,466
93 RD	200-2013-M-539648 75D30122F15235	MT 4 HIP Prev	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				411,247
93 RD	200-2014-61263 0010	Travel	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				(4)
93 RD	200-2014-61263 75D301118F00011	CDCs Colorectal C/E Comp	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				2,689
93 855	2002479577	Allergy and Infectious Diseases Research	RESEARCH AND DEVELOPMENT	6,029,438	622,102,744	N	Johns Hopkins University	2002479577		24,435
93 273	2003859010	Alcohol Research Programs	RESEARCH AND DEVELOPMENT	4,163,973	622,102,744	N	Johns Hopkins University	2003859010		50,259
93 310	2006069230	Trans-NIH Research Support	RESEARCH AND DEVELOPMENT	22,566,795	622,102,744	N	Johns Hopkins University	2006069230		677,556
93 273	201904102	Alcohol Research Programs	RESEARCH AND DEVELOPMENT	4,163,973	622,102,744	N	UNC Greensboro	201904102		7,187
93 RD	2021_3099	TTOR Epi and Eval Y2	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Univ of Texas Austin	2021_3099		631,889
93 RD	2023_5271	SHOUT Toolkit PM	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Univ of Texas Austin	2023_5271		14,869
93 RD	20-572-RTI West Virginia Univ	MATCH Data Collection	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	West Virginia University	20-572-RTI West Virginia Univ		167
93 RD	20CBP00001	Comp Exp Conf Labor Only	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	ICF Macro	20CBP00001		477
93 421	220341	Strengthening Public Health Systems and Services through	RESEARCH AND DEVELOPMENT	88,299	622,102,744	N	Natl Assoc Chronic Dis	220341		88,299
93 279	22-A0-00-1008771	National Partnerships to Improve and Protect the Nation's Health	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	N	New York University	22-A0-00-1008771		121
93 279	22-A1-00-1003947	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	N	New York University	22-A1-00-1003947		231
93 855	22-A1-00-1007329	Allergy and Infectious Diseases Research	RESEARCH AND DEVELOPMENT	6,029,438	622,102,744	N	New York University	22-A1-00-1007329		24,887
93 RD	Z3PIA2318673	FOODINSECURIPA	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				605
93 RD	25192967	Analysis of MySmartSkin	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Rutgers University	25192967		2,005
93 279	2R01DA031900-06A1	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	N	Drexel Univ	2R01DA031900-06A1		67,712
93 865	2U24HD069031-06	Child Health and Human Development Extramural Research	RESEARCH AND DEVELOPMENT	14,450,210	622,102,744	Y				(605)
93 865	2U24HD069031-11	Child Health and Human Development Extramural Research	RESEARCH AND DEVELOPMENT	14,450,210	622,102,744	Y				1,766,091
93 172	2L41HG007050-05	Human Genome Research	RESEARCH AND DEVELOPMENT	2,697,151	622,102,744	Y				135,568
93 396	303001327	Cancer Biology Research	RESEARCH AND DEVELOPMENT	107,077	622,102,744	N	Duke University	303001327		54,975
93 242	303002086	Mental Health Research Grants	RESEARCH AND DEVELOPMENT	3,680,038	622,102,744	N	Duke University	303002086		12,884
93 143	303-002203	NIHES Superfund Hazardous Substances_Basic Research and Education	RESEARCH AND DEVELOPMENT	246,338	622,102,744	N	Duke University	303-002203		41,881
93 838	311013	Lung Diseases Research	RESEARCH AND DEVELOPMENT	77,212,501	622,102,744	N	Cincinnati Children's Hos	311013		83,837
93 279	3200003979-21-307	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	N	University of Kentucky	3200003979-21-307		(151)
93 RD	3282871	Synthesis of Butyltinocyc	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				428,392
93 839	37309-2	Blood Diseases and Resources Research	RESEARCH AND DEVELOPMENT	2,553,318	622,102,744	N	Augusta University	37309-2		522
93 279	381X7	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	N	University of New Mexico	381X7		167,546
93 865	4UH3 HD096908-03	Child Health and Human Development Extramural Research	RESEARCH AND DEVELOPMENT	14,450,210	622,102,744	Y				(36,800)
93 279	412513-19154	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	N	Virginia Tech	412513-19154		93,514
93 279	43-45120-10000554952	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	N	Wake Forest Univ Hlth Sci	43-45120-10000554952		35,137
93 360	4500003576	Biomedical Advanced Research and Development Authority (BARDA), Biodefense Medical Countermeasure Development	RESEARCH AND DEVELOPMENT	(6,483)	622,102,744	N	Boston University	4500003576		(6,483)
93 RD	4600909874	SC MD STARnet Survey	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	SC State of South Carolin	4600909874		11,641
93 070	4-95611	Environmental Public Health and Emergency Response	RESEARCH AND DEVELOPMENT	1,658,211	622,102,744	N	University at Albany	4-95611		516,707
93 RD	50894506326	Ad Hoc	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	MATHEMATICA POLICY RES.	50894506326		1,648,271
93 310	5111326	Trans-NIH Research Support	RESEARCH AND DEVELOPMENT	22,566,795	622,102,744	N	UNC Chapel Hill	5111326		904,984
93 279	5118002	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	N	UNC Chapel Hill	5118002		8,650
93 242	5120620	Mental Health Research Grants	RESEARCH AND DEVELOPMENT	3,680,038	622,102,744	N	UNC Chapel Hill	5120620		125,034
93 307	5120795	Minority Health and Health Disparities Research	RESEARCH AND DEVELOPMENT	527,461	622,102,744	N	UNC Chapel Hill	5120795		152
93 242	5121738	Mental Health Research Grants	RESEARCH AND DEVELOPMENT	3,680,038	622,102,744	N	UNC Chapel Hill	5121738		29,838
93 855	5121828	Allergy and Infectious Diseases Research	RESEARCH AND DEVELOPMENT	6,029,438	622,102,744	N	UNC Chapel Hill	5121828		5,965
93 855	5121838	Allergy and Infectious Diseases Research	RESEARCH AND DEVELOPMENT	6,029,438	622,102,744	N	UNC Chapel Hill	5121838		3,899
93 855	5122853	Allergy and Infectious Diseases Research	RESEARCH AND DEVELOPMENT	6,029,438	622,102,744	N	UNC Chapel Hill	5122853		83,586
93 262	5123098	Occupational Safety and Health Program	RESEARCH AND DEVELOPMENT	139,728	622,102,744	N	UNC Chapel Hill	5123098		130,917
93 242	5124258	Mental Health Research Grants	RESEARCH AND DEVELOPMENT	3,680,038	622,102,744	N	UNC Chapel Hill	5124258		48,664
93 242	5125213	Mental Health Research Grants	RESEARCH AND DEVELOPMENT	3,680,038	622,102,744	N	UNC Chapel Hill	5125213		120,724
93 837	5127422	Cardiovascular Diseases Research	RESEARCH AND DEVELOPMENT	3,311,770	622,102,744	N	UNC Chapel Hill	5127422		4,378
93 RD	51285507750	SUN 2AA DP1	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	MATHEMATICA POLICY RES.	51285507750		25,567
93 273	5-54364	Alcohol Research Programs	RESEARCH AND DEVELOPMENT	4,163,973	622,102,744	N	The Scripps Research Inst	5-54364		41,033
93 273	5-54365	Alcohol Research Programs	RESEARCH AND DEVELOPMENT	4,163,973	622,102,744	N	The Scripps Research Inst	5-54365		23,199
93 242	574016	Mental Health Research Grants	RESEARCH AND DEVELOPMENT	3,680,038	622,102,744	N	Univ of Pennsylvania	574016		96
93 866	577437	Aging Research	RESEARCH AND DEVELOPMENT	3,292,727	622,102,744	N	Univ of Pennsylvania	577437		7,248
93 865	580891	Child Health and Human Development Extramural Research	RESEARCH AND DEVELOPMENT	14,450,210	622,102,744	N	Univ of Pennsylvania	580891		53,225
93 855	5P30A050410-25	Allergy and Infectious Diseases Research	RESEARCH AND DEVELOPMENT	6,029,438	622,102,744	N	UNC Chapel Hill	5P30A050410-25		86,658
93 279	5R01DA040693-05 FA1N: R01DA040693	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	Y				94,890
93 273	5R34AA028856-02	Alcohol Research Programs	RESEARCH AND DEVELOPMENT	4,163,973	622,102,744	N	UNC Chapel Hill	5R34AA028856-02		70,343
93 837	60060791 RTI	Cardiovascular Diseases Research	RESEARCH AND DEVELOPMENT	3,311,770	622,102,744	N	Northwestern University	60060791 RTI		21,899
93 279	60062766 RTI	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	N	Northwestern University	60062766 RTI		9,707
93 855	62147077-117727	Allergy and Infectious Diseases Research	RESEARCH AND DEVELOPMENT	6,029,438	622,102,744	N	Stanford University	62147077-117727		37,761
93 RD	62477319	Tobacco Retail Project	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Stanford University	62477319		4,501
93 393	64383_2011948_669301	Cancer Cause and Prevention Research	RESEARCH AND DEVELOPMENT	855,253	622,102,744	N	City of Hope	64383_2011948_669301		49,151
93 RD	6579-544	Zika In Pregnancy TO 18	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	WESTAT	6579-544		50,250
93 RD	6579-544 at risk	ZIP 2 0 NDASH TO 21	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	WESTAT	6579-544 at risk		50,250
93 279	705650	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	N	Univ of California SD	705650		175,156

(Continued)

RESEARCH TRIANGLE INSTITUTE

SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS  
FOR THE YEAR ENDED SEPTEMBER 30, 2023

Federal Assistance Listing Number	Additional Award Identification	Federal Program Name	Cluster Name	Federal Program Total	Cluster Total	Direct Award	Name of Passthrough Entity	Identifying Number Assigned by the Pass-through Entity	Amount Passed Through to Subrecipients	Amount Expended
93 RD 73791		Clean Slate	RESEARCH AND DEVELOPMENT	\$254,064,064	\$622,102,744	N	ICF ASSOCIATES, LLC	73791	\$	\$ 520,158
93 RD 745 0001302871		RURAL Cohort Study II	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Univ Texas Hlt San Antoni	745 0001302871		10,342
93 RD 75A CF 123F80022		Design Opts for Future DC	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				1,259,232
93 RD 75A CF 123F80015		SRA Tak1 Contractual	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				1,156,354
93 RD 75A CF 123F80038		BY ADP WTT Travel	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				2,200
93 RD 75D 30119F 05663		GYS 2022 CR	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				1,127
93 RD 75D 30120A07634 75D 30120F08701		Firefighter Registry Base	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				711,589
93 RD 75D 30120C09732		CLIN 3 Comm. with NCHS	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				6,789,087
93 RD 75D 30120F 08707		SICRCS Eval - Travel	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				8,437
93 RD 75D 30120F 09518		RCE Program OASIS CAF	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				7,576
93 RD 75D 30123F 12871		SMH OP1 CLIN 0003-0005	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				162,074
93 RD 75D 30122A 14759 75D 30122F 15538		Base Year GHS	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				19,468
93 RD 75D 30122C 13561		TBESC III LTB Labor ODCs	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				127,170
93 RD 75D 30122F 14520		Sample Plan	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				8,629
93 RD 75D 30122F 14781		MOUD Study OLM	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				1,311
93 RD 75D 30122F 15651		Cognitive Testing OLM	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				3,488
93 RD 75D 30123D 16071 75D 30123F 00001		NHANES BP DC PSUs	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				2,723,463
93 RD 75D 30123D 16071 75D 30123F 00002		NHANES BP MEC Build	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				3,388,087
93 RD 75F 40120A 00017		ALS RatingScale RemoteUse	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				6,337
93 RD 75F 40120A 00017 75F 40121F 19009		Tobacco Form Rsch OY 1	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				278,175
93 RD 75F 40120A 00017 75F 40122F 19022		FDA Adherence OLMs	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				741
93 RD 75F 40120A 00017 75F 40120F 19004		FDA CSAN OLM	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				25,662
93 RD 75F 40120A 00017 75F 40120F 19005		CDRH PPST B TM OLMs	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				53,106
93 RD 75F 40120A 00017 75F 40120F 19008		Pt Pref Info TM OLMs	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				(7,237)
93 RD 75F 40120A 00017 75F 40121F 19012		Main Studies Kantar	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				32,982
93 RD 75F 40120A 00017 75F 40121F 19013		CLIN 4 OLMs	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				66,958
93 RD 75F 40120A 00017 75F 40121F 19014		FDA TO1O OLMs	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				5
93 RD 75F 40120A 00017 75F 40121F 19015		Implied Claims ODCs	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				32,982
93 RD 75F 40120A 00017 75F 40122F 19019		OLMs Dosage Form Pres	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				7,234
93 RD 75F 40120A 00017 75F 40122F 19020		EUA Promotion Anlys OLMs	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				4,232
93 RD 75F 40120A 00017 75F 40122F 19021		FDA DMAR	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				604,544
93 RD 75F 40120A 00017 75F 40122F 19024		CPR-Cons Perc Res	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				303,601
93 RD 75F 40120A 00017 75F 40122F 19026		ALS RatingScale RemoteUse	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				748,487
93 RD 75F 40121D 00022 75F 40121F 19001		The Real Cost Evaluation	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				2,562,856
93 RD 75F 40121D 00022 75F 40123F 19002		Understanding Digital Adv	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				40,668
93 RD 75F 40121D 00022 75F 40123F 19003		Measures Dev	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				21,675
93 RD 75F 40121D 00022 75F 40123F 19004		Promising Themes	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				3,714
93 RD 75FCMC18D0038-001 75FCMC19F001 SOWR1		SDI Algmt Qual Pub OYS	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	SoftDev Incorporated	75FCMC18D0038-001 75FCMC19F001 SOWR1		303,479
93 RD 75FCMC18F 0067		CLIN 0013 T&M	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				2,681,607
93 RD 75FCMC19D0095 75FCMC23F 0001		Opioid Eval CLIN 0001	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				324,547
93 RD 75FCMC19D0095 75FCMC23F 0001		EGM Base Period	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				1,634,054
93 RD 75FCMC19D0095 75FCMC23F 0002		Federal Meta YR1	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				43,599
93 RD 75FCMC20F 0022		OAS CAHPS Base Yr Labor	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				1,674,796
93 RD 75FCMC20F 0068		HH CAHPS OY1 OT 10	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				1,596,515
93 RD 75FCMC20F 0078		ICH CAHPS ODCs OY1	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				1,897,685
93 RD 75FCMC21F 0064		BP T M ACC PAOS 2	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				12,606,494
93 RD 75FCMC21F 0091		Ad hoc Requests	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				69,681
93 RD 75FCMC23F 0119		CLIN 0001 T&M	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				146,022
93 RD 75N 91020D 00009 75N 91023F 00001		NCI GWAS	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				1,699
93 RD 75N 92022A 00005 75N 92022F 00001		Catalyze Preclinical 1 BY	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				407,792
93 RD 75N 92022A 00005 75N 92022F 00002		Catalyze Pre Clinical 2	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				832
93 RD 75N 92022F 00238		NHLBI Innovation	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				1,002,935
93 RD 75N 93021C 0002		CCACARB By Lab	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				4,633,073
93 RD 75N 94021D 00013 75N 94022F 00001		NIDDK DR B TO1	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				886,501
93 RD 75N 94021D 00020		Newborn Screening for MPS	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				1,022,786
93 RD 75N 94022A 00002 75N 94022F 00002		CLIN7 BP Contract Mgmt	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				150,285
93 RD 75N 95019C 00042		Administration	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				690,947
93 RD 75N 95019D 00042 75N 95021F 00001		Routine Analysis QC Test1	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				(992)
93 RD 75N 95019D 00042 75N 95021F 00003		NRC Campaign TO8	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				507,858
93 RD 75N 95019D 00042 75N 95022F 00001		Acquisition of Materials	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				714,214
93 RD 75N 95019D 00042 75N 95022F 00003		NRC Campaign 8 TO11	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				813,114
93 RD 75N 95019D 00042 75N 95023F 00001		Project Administration	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				687,393
93 RD 75N 95019D 00042 75N 95023F 00003		NRC Campaign 9 TO14	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				4,870
93 RD 75N 95022C 00014		ATDP Compound Purchases	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				561,272
93 RD 75N 95022D 00016 75N 95022F 00001		NDSP Synth Tasks TO1	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				1,733,863
93 RD 75N 95022D 00016 75N 95022F 00002		NDSP Admin TO2	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				173,682
93 RD 75N 95022D 00016 75N 95022F 00003		NDSP NIMH CSDSP TO3	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				222,696
93 RD 75N 95022D 00016 75N 95023F 00001		NDSP CV2 Tasks	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				936,206
93 RD 75N 95022D 00016 75N 95023F 00002		NDSP NIMH CSDSP TO5	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				75,805
93 RD 75N 95023C 00032		LitCoin Foundational Know	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				6,479
93 RD 75N 99223C 00004		ARPA H Partnership	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				835,233
93 RD 75P 00120P 00146		Fertility Dissemination	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				6
93 RD 75Q 80120D 00007 75Q 80120F 32002		Meth Dissemination YR3	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				40,682
93 RD 75Q 80120D 00021 75Q 80122F 32002		PCPKS	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				1,243,572
93 RD 75Q 80121C 00005		Coding	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				12,476,310

(Continued)

RESEARCH TRIANGLE INSTITUTE

SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS  
FOR THE YEAR ENDED SEPTEMBER 30, 2023

Federal Listing Number	Additional Award Identification	Federal Program Name	Cluster Name	Federal Program Total	Cluster Total	Direct Award	Name of Passthrough Entity	Identifying Number Assigned by the Pass-through Entity	Amount Passed Through to Subrecipients	Amount Expended
93	RD	75520122C0002	Administration	\$ 254,064,064	\$ 622,102,744	Y			\$	\$ 3,293,472
93	RD	75520322C0001	2023 NSDUH	254,064,064	622,102,744	Y				30,518,197
93	279	7R01DA06264-02	Drug Abuse and Addiction Research Programs	21,644,028	622,102,744	Y				176,471
93	310	7R03HD106123-02	Trans-NIH Research Support	2,566,795	622,102,744	Y			58,856	211,325
93	RD	848k993	Diabetes, Digestive, and Kidney Diseases Extramural Research	2,343,923	622,102,744	N	Univ of Wisconsin-Madison	848k993		25,762
93	RD	851731	U4me Intervention	254,064,064	622,102,744	N	Rutgers University	851731		2,716
93	092	90AP2694-01-00	Affordable Care Act (ACA) Personal Responsibility Education Program	168,146	622,102,744	Y				168,146
93	279	948S-RTI	Drug Abuse and Addiction Research Programs	21,644,028	622,102,744	N	Indiana Univ Schl of Med	948S-RTI		59,459
93	RD	9504.RTI.01	BY Medicaid Ben Cov Ovrsi	254,064,064	622,102,744	N	NORC	9504.RTI.01		171,049
93	855	9706	Allergy and Infectious Diseases Research	6,029,438	622,102,744	N	Magge-Womens Research	9706		523
93	273	9801AA030509 FAIN: R01DA040693	Alcohol Research Programs	4,163,973	622,102,744	Y			11,697	142,137
93	989	A035551	International Research and Research Training	266,328	622,102,744	N	Duke University	A035551		22,953
93	865	A816947	Child Health and Human Development Extramural Research	14,450,210	622,102,744	N	Emory University	A816947		1,587
93	279	Agreement 10/30/2024	Drug Abuse and Addiction Research Programs	21,644,028	622,102,744	N	DynamiCare Health, Inc	Agreement 10/30/2024		39,424
93	262	Agreement 4/12/2023	Occupational Safety and Health Program	139,728	622,102,744	N	UNC Chapel Hill	Agreement 4/12/2023		8,811
93	RD	Agreement 7/1/2022	2023 OMAS Data TA	254,064,064	622,102,744	N	Ohio State University	Agreement 7/1/2022		167,238
93	847	Agreement dated 10/25/21	Diabetes, Digestive, and Kidney Diseases Extramural Research	2,343,923	622,102,744	N	Artiam Bio Inc.	Agreement dated 10/25/21		38,388
93	RD	Agreement dated 12/1/20	VIQI CLIN6T3	254,064,064	622,102,744	N	MORC	Agreement dated 12/1/20		2,758
93	433	Agreement dated 8/24/20	ACL National Institute on Disability, Independent Living, and Rehabilitation Research	146,121	622,102,744	N	Shirley Ryan Ability Lab	Agreement dated 8/24/20		138,673
93	RD	Agreement eff 03/08/2023	Jackson Heart Health	254,064,064	622,102,744	N	University of Mississippi	Agreement eff 03/08/2023		13,212
93	RD	Agreement eff 5/1/2023	RURAL Cohort Study III	254,064,064	622,102,744	N	Univ Texas Hlt San Antoni	Agreement eff 5/1/2023		5,888
93	RD	Agreement effective 3/18/20	QUID MAT/NIDA Phase 3	254,064,064	622,102,744	N	Q2I	Agreement effective 3/18/20		36,742
93	113	Agreement effective 3/24/21	Environmental Health	2,320,720	622,102,744	N	North Carolina State Univ	Agreement effective 3/24/21		6,447
93	RD	Agreement effective 8/10/21 Task Order No: 3	Comm and Digital Supp Ser	254,064,064	622,102,744	N	Forum One	Agreement effective 8/10/21 Task Order No: 3		
93	RD	Agreement effective 9/24/21	Project Management	254,064,064	622,102,744	N	Brunet-Garcia	Agreement effective 9/24/21		125
93	RD	Agreement effective 9/29/19	HOS Sampling/Agmt Yr 4	254,064,064	622,102,744	N	NATL COMM QUAL ASSURANCE	Agreement effective 9/29/19		123,656
93	RD	Agreement effective 9/9/2022	Collab Pharm Batten PM	254,064,064	622,102,744	N	Collaborations Pharma	Agreement effective 9/9/2022		45,751
93	RD	Agreement effective 9-30-22	Opioid Response FY23 25	254,064,064	622,102,744	N	AAAP	Agreement effective 9-30-22		89,098
93	273	Agreement No. 02719	Alcohol Research Programs	4,163,973	622,102,744	N	Public Health Institute	Agreement No. 02719		13,945
93	172	Agreement Number 01-01	Human Genome Research	2,697,151	622,102,744	N	UNC Chapel Hill	Agreement Number 01-01		184,516
93	RD	AT RISK-2	Engage Implement Science	254,064,064	622,102,744	N	ICF International	AT RISK-2		22,810
93	361	AT RISK-3	Structural Racism Discrim	217,915	622,102,744	N	Columbia University	AT RISK-3		60,836
93	242	AWD00004478 (136628-3)	Mental Health Research Grants	3,680,038	622,102,744	N	University of Pittsburgh	AWD00004478 (136628-3)		16,099
93	113	Awd101249(Su800000367	Environmental Health	2,320,720	622,102,744	N	University of Chicago	Awd101249(Su800000367		72,257
93	RD	B002247646	Ambassadors for Health	254,064,064	622,102,744	N	Univ of California SF	B002247646		36,505
93	654	BH241HS0001-01-01	Indian Health Service Behavioral Health Programs	11,733	622,102,744	Y				11,733
93	RD	BPO75030	EFTouch billable	254,064,064	622,102,744	N	University of Washington	BPO75030		6,218
93	441	C21-127	Indian Self Determination	149,443	622,102,744	N	NPAIHB	C21-127		149,443
93	242	CE23CE96-685F-4249-850F	Mental Health Research Grants	3,680,038	622,102,744	N	Bridge HIV, SFDPH	CE23CE96-685F-4249-850F		[100]
93	865	CN00007031-00	COVID-19 - Protecting and Improving Health Globally: Building and Strengthening Public Health Impact, Systems, Capacity and Security	14,450,210	622,102,744	N	Queens College	CN00007031-00		134,928
93	318	COVID-19, 1 NUS2HG000093-01-00	COVID-19 - Protecting and Improving Health Globally: Building and Strengthening Public Health Impact, Systems, Capacity and Security	9,239,990	622,102,744	Y				333,102
93	318	COVID-19, 1 NUS0CK000575-01-00	COVID-19 - Protecting and Improving Health Globally: Building and Strengthening Public Health Impact, Systems, Capacity and Security	9,239,990	622,102,744	Y			743,835	3,326,935
93	318	COVID-19, 1NU2HG000047001	COVID-19 - Protecting and Improving Health Globally: Building and Strengthening Public Health Impact, Systems, Capacity and Security	9,239,990	622,102,744	Y			73,074	3,318,496
93	838	COVID-19, 10T2HL158812-01	COVID-19 - Lung Diseases Research	77,212,501	622,102,744	Y				76,512,608
93	RD	COVID-19, 75D30120F09375	COVID-19 - COVID19 T&M OLMs	254,064,064	622,102,744	Y				[1]
93	RD	COVID-19, 75D30122F15651	COVID-19 - Data Support Labor	254,064,064	622,102,744	Y				693,585
93	RD	COVID-19, 75F40122F80474	COVID-19 - CBER Labor Base	254,064,064	622,102,744	Y				590,966
93	RD	COVID-19, 75520322C0001	COVID-19 - 2023 NSDUH FY23	254,064,064	622,102,744	Y				4,000,000
93	838	COVID-19, FY23.1126.039	COVID-19 - Lung Diseases Research	77,212,501	622,102,744	N	Univ of Colorado Denver	FY23.1126.039		352,394
93	310	COVID-19, GR16642	COVID-19 - Trans-NIH Research Support	2,566,795	622,102,744	N	University of Kansas	GR16642		235,751
93	RD	COVID-19, HHSM-500-2014-000371 75FCMC18FD004	COVID-19 - Fed Meta Analysis Support	254,064,064	622,102,744	Y				698,653
93	RD	COVID-19, HHSF2332015000391 75PO0120F37026	COVID-19 - OP1 Year 3	254,064,064	622,102,744	Y				750,000
93	231	Effect 12/21/22	Epidemiology Cooperative Agreements	8,924	622,102,744	N	GLTEC	Effect 12/21/22		8,924
93	RD	Effective 6/1/2020	NVMAC Yr 2	254,064,064	622,102,744	N	Health Research, Inc.	Effective 6/1/2020		71,263
93	865	Effective 6/23/2021	Child Health and Human Development Extramural Research	14,450,210	622,102,744	N	Johns Hopkins Univ.	Effective 6/23/2021		(16,670)
93	837	Effective 7/12/19	Cardiovascular Diseases Research	3,311,770	622,102,744	N	Glycan Therapeutics	Effective 7/12/19		131
93	RD	Effective 8/24/2020	Trusted Exchange Framework and Common Agreement (TEFCA) Recognized	254,064,064	622,102,744	N	Rho, Inc.	Effective 8/24/2020		32,657
93	347	Effective 8/30/19	Coordinating Entity (RCE) Cooperative Agreement	52,380	622,102,744	N	The Sequoia Project	Effective 8/30/19		52,380
93	RD	Effective date 12/01/2019	Dissemination	254,064,064	622,102,744	N	American Soc Nephrology	Effective date 12/01/2019		4,891
93	242	FP00004618_SA002	Mental Health Research Grants	3,680,038	622,102,744	N	VA Commonwealth Univ	FP00004618_SA002		37,786
93	273	FP00009867_SA001	Alcohol Research Programs	4,163,973	622,102,744	N	VA Commonwealth Univ	FP00009867_SA001		22,772
93	837	FY23.1161.001	Cardiovascular Diseases Research	81,930	622,102,744	N	Univ of Colorado Denver	FY23.1161.001		81,930
93	855	G-03441-02	Allergy and Infectious Diseases Research	6,029,438	622,102,744	N	Colorado State University	G-03441-02		248,444
93	855	G45858-2	Allergy and Infectious Diseases Research	6,029,438	622,102,744	N	Colorado State University	G45858-2		2,307
93	067	GH21-2347-PH53	Global AIDS	175,507	622,102,744	N	APIN Public Health Init.	GH21-2347-PH53		175,507
93	279	GR105204 (CON-80001616)	Drug Abuse and Addiction Research Programs	21,644,028	622,102,744	N	Yale University	GR105204 (CON-80001616)		49,437
93	361	GR107985 (CON-80002035)	Nursing Research	217,915	622,102,744	N	Yale University	GR107985 (CON-80002035)		157,079
93	279	G-R12887	Drug Abuse and Addiction Research Programs	21,644,028	622,102,744	N	Ohio State University	G-R12887		49,325
93	279	GR128897	Drug Abuse and Addiction Research Programs	21,644,028	622,102,744	N	Ohio State University	GR128897		96,692
93	RD	GS00Q140A0DU217	OASIS CAF- CR NISVS 5	254,064,064	622,102,744	Y				6,837
93	RD	HHS290201700001C	Data Collection	254,064,064	622,102,744	Y				(7,194)
93	RD	HHS2002015M881628 75D30120F08511	Emerging Tobacco Base	254,064,064	622,102,744	Y				2,223,878
93	RD	HHS2002015M881628 75D30122F15643	TIPS12 CLIN 1 Labor	254,064,064	622,102,744	Y				1,551,818
93	RD	HHS2002015M881628 200-2016-F-91344	Natl Media Camp: TIPS6	254,064,064	622,102,744	Y				114
93	RD	HHS2002015M881628 75D30120F08512	HIV Continuum Care 2 OY1	254,064,064	622,102,744	Y				2,084,397

RESEARCH TRIANGLE INSTITUTE

SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS FOR THE YEAR ENDED SEPTEMBER 30, 2023

Federal Assistance Listing Number	Additional Award Identification	Federal Program Name	Cluster Name	Federal Program Total	Cluster Total	Direct Award	Name of Passthrough Entity	Identifying Number Assigned by the Pass-through Entity	Amount Passed Through to Subrecipients	Amount Expended
93 RD	HHS020002015M881628	75030120F08973	TIPS10 CLIN 1 Labor	RESEARCH AND DEVELOPMENT	\$ 254,064,064	\$ 622,102,744	Y		\$	\$ 1,103,630
93 RD	HHS020002015M881628	75030121F10967	TIPS11 CLIN 1 Labor	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			1,903,666
93 RD	HHSF2232015100028	75F40119F19014	National Ed on Nicotine	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			107,535
93 RD	HHSF2232015100028	75F40119F19020	Health Comm Research	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			131,691
93 RD	HHSF2232015100028	HHSF22318008	TR3 Option Year 4	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			498,876
93 RD	HHSF2232015100028	75F40119F19007	Data Migration	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			10,679
93 RD	HHSF2232015100028	75F40120F19008	FDA Next Legends	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			153,560
93 RD	HHSF2232015100028	75F40120F19009	Understanding Digital Adv	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			998,144
93 RD	HHSF2232015100028	HHSF22301001T	The Real Cost	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			2,122,475
93 RD	HHSF2232015100028	HHSF22301003T	RESPECT	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			162,668
93 RD	HHSF2232015100028	HHSF22301004T	RuSTEC	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			106,697
93 RD	HHSF2232015100028	HHSF22301006T	POSITiv	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			(19,762)
93 RD	HHSF2232015100028	75F40119F19001	OY3 Int Eval Support	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	FDA Ctr Tobacco Products	HHSF2232018100428 75F40119F19001	386,804
93 RD	HHSF2232018100428	75F40119F19002	OY1 Tob Prod Stds	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			275,009
93 RD	HHSF2232018100428	75F40120F19004	FDA NYS Eval	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			292,596
93 RD	HHSF2232018100428	75F40122F19005	FDA Canada Base Period	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			135,551
93 RD	HHSF2232018100471	75F4012F19002	Particle Size Dist	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			(866)
93 RD	HHSF223201810113C		FG Analysis and Report	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			20,969
93 RD	HHSF223201810194C		Biomarker Eval	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			144,258
93 RD	HHS2502013000221	HHS25034003T	2019 HCRS	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			13,536
93 RD	HHSM500201000023J	HHSM-500-1T0-13	MD All Payer	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			(2,480)
93 RD	HHSM-500-2014-00037I	75FCMC19F0002	PCF BY/OYS	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			20,313,175
93 RD	HHSM-500-2014-00037I	75FCMC18F0001	CPC POM Q, BS O4	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			2,390,581
93 RD	HHSM-500-2014-00037I	75FCMC18F0002	AHC Model	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			2,611,563
93 RD	HHSM-500-2014-00037I	75FCMC18F0003	Eval of Medicare DPP	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			949,062
93 RD	HHSM-500-2014-00037I	75FCMC18F0004	Fed Meta Analysis Support	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			3,041,369
93 RD	HHSM-500-2014-00037I	75FCMC19F0001	CKC HEALTHY KIDS	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			1,191,156
93 RD	HHSM-500-2014-00037I	75FCMC19F0003	Impl Supp IAH Demo	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			518,772
93 RD	HHSM-500-2014-00037I	75FCMC19F0004	DC KCC	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			24,123,557
93 RD	HHSM-500-2014-00037I	HHSM-500-1T0003	Oncology Care Model	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			1,979,382
93 RD	HHSM-500-2014-00037I	HHSM-500-1T0007	DEMME Stage Two	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			4,439,456
93 RD	HHSM-500-2017-00068G		ICI CAHPS 3vY Y3 of 3	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			
93 RD	HHSN2680201000021		Bravil SCID Study	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			5,096
93 RD	HHSN2680201000021		REDS III Phase 3 T04	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			58,605
93 RD	HHSN2680201000061U		NIMHD Pilot	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			(4,543)
93 RD	HHSN271201700034C		Compound Purchases	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			34,860
93 RD	HHSN271201800011I	75N95021F00001	NDSP Synthesis Tasks	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			282
93 RD	HHSN272201800002I	75N93019F00134	Drug Discovery Initiative	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			115,537
93 RD	HHSN273201400022C		NTP Option Period 8	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			4,269,469
93 RD	HHSN275201800021I	5512228 - 75N94019F00125	Prenatal and Child Mech	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			815,983
93 RD	HHS23320095651WC	HHS23337033T	ASPECARE Optional RR	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			306
93 RD	HHS233201500024I	75P00120F37004	ECPP w Mult CCs	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			179,325
93 RD	HHS233201500039I	75P00120F37025	OY1 APP PREP	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			2,051,800
93 RD	HHS233201500039I	75P00119F37022	HTPRAP OSC1b	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			1,675,968
93 RD	HHS233201500039I	75P00119F37023	Service Component 1 Base	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			194,435
93 RD	HHS233201500039I	75P00120F37026	CLIN 02	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			867,597
93 RD	HHS233201500039I	75P00120F37027	ACL OPE CLIN 2	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			2,454,679
93 RD	HHS233201500039I	75P0119F37024	FPAR 1.0 YR3	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			71
93 RD	HHS233201500039I	HHS23337001T	NSCAW - Clin 1	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			7,632,631
93 RD	HHS233201500039I	HHS23337011T	Clin 2 Optional Serv Comp	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			468
93 RD	HHS233201500039I	HHS23337015T	Postadopt Instability SC4	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			22,005
93 RD	HHS233201500039I	HHS23337016T	Res to Pract Ed Resources	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			19,984
93 RD	HHS233201500039I	HHS23337018T	CLIN 6	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			(633)
93 RD	HHS233201500039I	P331500039I-37015	Postadopt Instability SC1	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			2,587
93 RD	HHS233201600021I	HHS23337009T	ACL Tech Sup CLIN4001	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			1,724,702
93 RD	HHS277201800001C		DoD-Topical Study Phase 1	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			667,814
93 RD	HHS283201200006I	HHS28342003T	PEP Option Year 3	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			(1,587)
93 RD	HHS283201200006I	HHS28342010T	SPARS	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			(19)
93 RD	HHS283201200006I		15 DT 3.1 Redesign FT	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			18,510,745
93 RD	HHS283201200022I	75S20321F42002	PEPC Base Year	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y			837,971
93 RD	MA 20000000162		Data Analysis	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	MI State of Michigan	MA 20000000162	805,545
93 847	Master Agreement 01-01		Diabetes, Digestive, and Kidney Diseases Extramural Research	RESEARCH AND DEVELOPMENT	2,343,923	622,102,744	N	UNC Chapel Hill	Master Agreement 01-01	238,371
93 837	MM000442393		Cardiovascular Diseases Research	RESEARCH AND DEVELOPMENT	3,311,770	622,102,744	N	West Virginia University	MM000442393	38,799
93 866	MSA 01-01-10		Aging Research	RESEARCH AND DEVELOPMENT	3,292,727	622,102,744	N	UNC Chapel Hill	MSA 01-01-10	2,688
93 077	MSA 01-01-2		Family Smoking Prevention and Tobacco Control Act Regulatory Research	RESEARCH AND DEVELOPMENT	15,461	622,102,744	N	UNC Chapel Hill	MSA 01-01-2	15,461
93 143	MSA 01-01-3		HEHS Superfund Hazardous Substances, Basic Research and Education	RESEARCH AND DEVELOPMENT	246,338	622,102,744	N	UNC Chapel Hill	MSA 01-01-3	204,457
93 779	MSA 01-01-4		Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	N	UNC Chapel Hill	MSA 01-01-4	26,371
93 350	MSA 01-01-5		National Center for Advancing Translational Sciences	RESEARCH AND DEVELOPMENT	472,308	622,102,744	N	UNC Chapel Hill	MSA 01-01-5	450,434
93 394	MSA 01-01-6		Cancer Detection and Diagnostics Research	RESEARCH AND DEVELOPMENT	6,461	622,102,744	N	UNC Chapel Hill	MSA 01-01-6	6,461
93 397	MSA 01-01-7		Cancer Centers Support Grants	RESEARCH AND DEVELOPMENT	184,896	622,102,744	N	UNC Chapel Hill	MSA 01-01-7	184,896
93 855	MSA 01-01-8		Allergy and Infectious Diseases Research	RESEARCH AND DEVELOPMENT	6,029,438	622,102,744	N	UNC Chapel Hill	MSA 01-01-8	112,984
93 865	MSA 01-01-9		Child Health and Human Development Extramural Research	RESEARCH AND DEVELOPMENT	14,430,210	622,102,744	N	UNC Chapel Hill	MSA 01-01-9	35,593
93 855	MSA Dtd 7/1/14 SOW #18		Allergy and Infectious Diseases Research	RESEARCH AND DEVELOPMENT	6,029,438	622,102,744	N	Global Alliance for TB	MSA Dtd 7/1/14 SOW #18	18,745
93 855	MSA Dtd 7/1/14 SOW #15		Allergy and Infectious Diseases Research	RESEARCH AND DEVELOPMENT	6,029,438	622,102,744	N	Global Alliance for TB	MSA Dtd 7/1/14 SOW #15	135,747
93 RD	MSA Effect 9/27/21 SOW #3		MED EDUCATE LC MM	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	AAMC	MSA Effect 9/27/21 SOW #3	18,577

(Continued)

**RESEARCH TRIANGLE INSTITUTE**

**SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS  
FOR THE YEAR ENDED SEPTEMBER 30, 2023**

Federal Assistance Listing Number	Additional Award Identification	Federal Program Name	Cluster Name	Federal Program Total	Cluster Total	Direct Award	Name of Passthrough Entity	Identifying Number Assigned by the Pass-through Entity	Amount Passed Through to Subrecipients	Amount Expended
93 113	MSA01-01	Environmental Health	RESEARCH AND DEVELOPMENT	\$ 2,320,720	\$622,102,744	N	North Carolina State Univ	MSA01-01	\$	\$ 9,569
93 350	MSA-01-01	National Center for Advancing Translational Sciences	RESEARCH AND DEVELOPMENT	472,308	622,102,744	N	UNC Chapel Hill	MSA-01-01		30,788
93 855	MSA01-01 0214043	Allergy and Infectious Diseases Research	RESEARCH AND DEVELOPMENT	6,029,438	622,102,744	N	UNC Chapel Hill	MSA01-01 0214043		50,322
93 855	MUC_008_03_RTI	Allergy and Infectious Diseases Research	RESEARCH AND DEVELOPMENT	6,029,438	622,102,744	N	Mucommune, LLC	MUC_008_03_RTI		30,896
93 855	MUC_010_RTI	Allergy and Infectious Diseases Research	RESEARCH AND DEVELOPMENT	6,029,438	622,102,744	N	Mucommune, LLC	MUC_010_RTI		841
93 396	NCI-RTU-09-2021	Cancer Biology Research	RESEARCH AND DEVELOPMENT	107,077	622,102,744	N	Bentzen Technologies	NCI-RTU-09-2021		52,102
93 172	OOS030229-RTI	Human Genome Research	RESEARCH AND DEVELOPMENT	2,697,151	622,102,744	N	Kaiser Permanente	OOS030229-RTI		29,752
93 RD	OOS030484-RTI	FY22 USPTF T and A	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Kaiser Permanente	OOS030484-RTI		14,802
93 RD	OOS030484-RTI AT RISK	TF RS Support	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Kaiser Permanente	OOS030484-RTI AT RISK		(10)
93 RD	OOS030484-RTI Task Order No 3	FY23 USPTF T&A	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Kaiser Permanente	OOS030484-RTI Task Order No 3		32,648
93 393	OOS030500-RTI-02	Cancer Cause and Prevention Research	RESEARCH AND DEVELOPMENT	855,253	622,102,744	N	Kaiser Permanente	OOS030500-RTI-02		95,641
93 838	OT2HL161841	Lung Diseases Research	RESEARCH AND DEVELOPMENT	77,212,501	622,102,744	N	UNC Chapel Hill	OT2HL161841		55,874
93 350	OT2HL161847-01	National Center for Advancing Translational Sciences	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	UNC Chapel Hill	OT2HL161847-01		195,573
93 RD	OT3 HL147998-01	Clonal Hematopoiesis	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	Y				1,575,104
93 838	P01 HL132831-01A1	Lung Diseases Research	RESEARCH AND DEVELOPMENT	77,212,501	622,102,744	N	National Jewish Health	P01.HL132831-01A1		21,897
93 847	P010515501	Diabetes, Digestive, and Kidney Diseases Extramural Research	RESEARCH AND DEVELOPMENT	2,343,923	622,102,744	N	University of Minnesota	P010515501		6,183
93 RD	PO 1000134375	OMRES Data Collection	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Ohio State University	PO 1000134375		(61,339)
93 RD	PO 1000802574	OH SOARS 2023 YR1	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Ohio State University	PO 1000802574		25,125
93 RD	PO 1001370266	OhioRISE	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Ohio State University	PO 1001370266		77,878
93 RD	PO RF01603717	OH SOARS 2022 YR3	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Ohio State University	PO RF01603717		19,987
93 RD	PO RF01621421	OMCEE Data Collection	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Ohio State University	PO RF01621421		(27,005)
93 RD	PO- RF01509551	Data Collection	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Ohio State University	PO- RF01509551		(58)
93 RD	PO-1000267723	OMCEE2 Data Collection	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Ohio State University	PO-1000267723		(26,251)
93 RD	PO-1000377777	2021 OPAS Year 2B	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Ohio State University	PO-1000377777		570
93 RD	PO-1000378001	2022 OPAS	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Ohio State University	PO-1000378001		
93 RD	PO-1000450716	2021 OPAS Y2	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Ohio State University	PO-1000450716		9,832
93 RD	PO-1000792535	OH SOARS 2022 YR2	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Ohio State University	PO-1000792535		13,310
93 RD	PO-1000796703	OH SOARS 2021 YR3	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Ohio State University	PO-1000796703		12,310
93 RD	PO-1000808107	2023 MC5	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Ohio State University	PO-1000808107		392,616
93 RD	PO-1000814366	2021 OPAS YR3	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Ohio State University	PO-1000814366		403,776
93 307	R000003212	Minority Health and Health Disparities Research	RESEARCH AND DEVELOPMENT	527,461	622,102,744	N	Florida State University	R000003212		45,487
93 273	R01AA025853	Alcohol Research Programs	RESEARCH AND DEVELOPMENT	4,163,973	622,102,744	Y			204,668	168,163
93 865	R01HD094877	Child Health and Human Development Extramural Research	RESEARCH AND DEVELOPMENT	14,450,210	622,102,744	Y			215,622	509,842
93 279	R1171614	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	N	University at Buffalo	R1171614		25
93 855	R33A1149499	Allergy and Infectious Diseases Research	RESEARCH AND DEVELOPMENT	6,029,438	622,102,744	Y			234,865	845,284
93 279	R42DA056255-RTI	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	N	Q2i	R42DA056255-RTI		6,851
93 310	R923	Trans- NIH Research Support	RESEARCH AND DEVELOPMENT	22,566,795	622,102,744	N	Dartmouth College	R923		44,260
93 279	RE5512596	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	N	Case Western Res Univ	RE5512596		132,131
93 RD	RF 01624361	OMAS Y2 Data Collection	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Ohio State University	RF 01624361		(14,945)
93 393	RG114094_RTI	Cancer Cause and Prevention Research	RESEARCH AND DEVELOPMENT	855,253	622,102,744	N	Kaiser Permanente SoCAL	RG114094_RTI		119
93 866	RTI 2063	Aging Research	RESEARCH AND DEVELOPMENT	3,292,727	622,102,744	N	Archer Pharmaceuticals	RTI 2063		625
93 RD	RTI-11MARCH2022	DHHS ONC PHIT Evaluation	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	EMI Advisors LLC	RTI-11MARCH2022		95,951
93 RD	SCA-2020-03	NIH SEED Accelerator OY1	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	DS Federal	SCA-2020-03		733,548
93 273	SCDN-00005137	Alcohol Research Programs	RESEARCH AND DEVELOPMENT	4,163,973	622,102,744	N	University of Southern CA	SCDN-00005137		13,069
93 855	See Tasks	Allergy and Infectious Diseases Research	RESEARCH AND DEVELOPMENT	6,029,438	622,102,744	N	Magee-Womens Research	See Tasks		268,729
93 279	SP14241-581	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	N	University of Mississippi	SP14241-581		15,451
93 433	SUB00000230	ACL National Institute on Disability, Independent Living, and Rehabilitation Research	RESEARCH AND DEVELOPMENT	146,121	622,102,744	N	Univ of Massachusetts Med	SUB00000230		7,448
93 113	SubAward no. UWSC13846	Environmental Health	RESEARCH AND DEVELOPMENT	2,320,720	622,102,744	N	University of Washington	SubAward no. UWSC13846		46,096
93 866	SUBK00009629	Aging Research	RESEARCH AND DEVELOPMENT	3,292,727	622,102,744	N	University of Michigan	SUBK00009629		5,172
93 RD	SVC Agrmt signed 2/20/23	TX Substance Use Disorder	RESEARCH AND DEVELOPMENT	254,064,064	622,102,744	N	Univ of Texas Austin	SVC Agrmt signed 2/20/23		135,833
93 855	U01A1168477	Allergy and Infectious Diseases Research	RESEARCH AND DEVELOPMENT	6,029,438	622,102,744	Y			282,882	153,861
93 310	U24HD101676	Trans- NIH Research Support	RESEARCH AND DEVELOPMENT	22,566,795	622,102,744	Y			6,652,620	6,652,620
93 310	U24OD1002382	Trans- NIH Research Support	RESEARCH AND DEVELOPMENT	22,566,795	622,102,744	N	Johns Hopkins University	U24OD1002382		8,483,443
93 279	UCHC7-148745933	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	N	University of Connecticut	UCHC7-148745933		1,987
93 279	UWSC14124	Drug Abuse and Addiction Research Programs	RESEARCH AND DEVELOPMENT	21,644,028	622,102,744	N	University of Washington	UWSC14124		146,460
93 839	UWSC14208	Blood Diseases and Resources Research	RESEARCH AND DEVELOPMENT	2,553,318	622,102,744	N	University of Washington	UWSC14208		802,050
93 865	VUMC86278	Child Health and Human Development Extramural Research	RESEARCH AND DEVELOPMENT	14,450,210	622,102,744	N	Vanderbilt Univ	VUMC86278		71,609
93 136	WSU22118	Injury Prevention and Control Research and State and Community Based Programs	RESEARCH AND DEVELOPMENT	1,608,788	622,102,744	N	Wayne State Univ	WSU22118		138,054
93 855	Y23MT50064	Allergy and Infectious Diseases Research	RESEARCH AND DEVELOPMENT	6,029,438	622,102,744	N	UNC Chapel Hill	Y23MT50064		8,149
93 393	ZAR00070	Cancer Cause and Prevention Research	RESEARCH AND DEVELOPMENT	855,253	622,102,744	N	University of Kansas	ZAR00070		211,819
97 RD	1400DA18C0012	CVE Eval FY20 T E	RESEARCH AND DEVELOPMENT	1,637,726	622,102,744	Y				6,669
97 RD	45-0108-1005-304	Eval Soft Target Sec&Prev	RESEARCH AND DEVELOPMENT	1,637,726	622,102,744	N	Univ of Nebraska Omaha	45-0108-1005-304		1,524,003
97 67	45-0108-1008-201	Homeland Security Grant Program	RESEARCH AND DEVELOPMENT	1,010,722	622,102,744	N	Univ of Nebraska Omaha	45-0108-1008-201		1,010,722
97 RD	70RSA118C8000037	Formative Research	RESEARCH AND DEVELOPMENT	1,637,726	622,102,744	Y				11,187
97 RD	Agreement signed 7/7/20	DHS ST IPA Owens	RESEARCH AND DEVELOPMENT	1,637,726	622,102,744	Y				95,867
96 001	9782	USAID Foreign Assistance for Programs Overseas	RESEARCH AND DEVELOPMENT	167,943,954	622,102,744	N	Magee- Womens Research	9782		654,712
93 242	72052223CA00001-1	Mental Health Research Grants	RESEARCH AND DEVELOPMENT	3,680,038	622,102,744	N	Univ of California SF	72052223CA00001-1		49,235
99 RD	MEDPAC3108021RTI001A MED23P0050	MEDPACACSHOSPMEASURE	RESEARCH AND DEVELOPMENT	51,894	622,102,744	Y				27,570
99 RD	S1000481	HCBS Interviews Reports	RESEARCH AND DEVELOPMENT	51,894	622,102,744	N	CHCS	S1000481		24,324
93 778	PO-1000271758, CO 1	Medical Assistance Program	MEDICAID CLUSTER	137,968	137,968	N	Ohio State University	PO-1000271758, CO 1		(17,247)
93 778	1.00142E+19	Medical Assistance Program	MEDICAID CLUSTER	137,968	137,968	N	Ohio State University	1.00142E+19		187,411
93 778	PO-1000271741	Medical Assistance Program	MEDICAID CLUSTER	137,968	137,968	N	Ohio State University	PO-1000271741		(5,584)
93 778	PO-1000643735	Medical Assistance Program	MEDICAID CLUSTER	137,968	137,968	N	Ohio State University	PO-1000643735		(5,034)
93 778	RF01602506	Medical Assistance Program	MEDICAID CLUSTER	137,968	137,968	N	Ohio State University	RF01602506		
93 778	RF01607731	Medical Assistance Program	MEDICAID CLUSTER	137,968	137,968	N	Ohio State University	RF01607731		(11,453)

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RESEARCH TRIANGLE INSTITUTE

SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS  
FOR THE YEAR ENDED SEPTEMBER 30, 2023

Federal Assistance Listing Number	Additional Award Identification	Federal Program Name	Cluster Name	Federal Program Total	Cluster Total	Direct Award	Name of Passthrough Entity	Identifying Number Assigned by the Pass-through Entity	Amount Passed Through Subrecipients	Amount Expended
93	778	RFO1603989	Medical Assistance Program							
		Health Center Program (Community Health Centers, Migrant Health Centers, Health Care for the Homeless, and Public Housing Primary Care)	MEDICAID CLUSTER	\$ 137,968	\$ 137,968	N	Ohio State University	RFO1603989	\$ -	\$ (10,125)
93	224	14050C	HEALTH CENTER PROGRAM CLUS	66,322	66,322	N	Univ of California SF	14050C	-	66,322
98	007	FH-GMT-21G-008	FOOD FOR PEACE DEVELOPMENT ASSISTANCE PROGRAM (DAP)	1,511,030	1,511,030	N	Food for the Hungry	FH-GMT-21G-008	330,647	1,511,030
17	207	O*NET 98-01	EMPLOYMENT SERVICE/WAGNER-PEYSER FUNDED ACTIVITIES	7,157,648	7,157,648	N	Natl Ctr for O*NET Dev.	O*NET 98-01	-	7,157,648
11	307	COVID-19_ED22HQD3070079	COVID-19 - Economic Adjustment Assistance	1,068,932	1,068,932	Y			94,073	1,068,932
10	608	RTI FFE 337105001	Food for Education	610,870	610,870	N	Mercy Corps	RTI FFE 337105001	-	610,870
11	U01	AMA 0307 0307 DEV220000009 3	WV0ED TA Gen CA	25,248	25,248	N	WV Dept of Econ Dev	AMA 0307 0307 DEV220000009 3	-	25,248
66	U01	Agreement effective 8/1/2022-1	HEI QA Ebelst Rich Study	43,776	43,776	N	Health Effects Inst	Agreement effective 8/1/2022-1	-	43,776
81	135	DE-AR0001717	Advanced Research Projects Agency - Energy	881,358	881,358	Y			-	35,680
84	055	COVID-19_84.3055_At risk-1	COVID-19 - Education Research, Development and Dissemination	N/A	N/A	N	TX Texas Education Agency	At risk-1	-	20,934
84	U01	BSA-23094	OSEP SWIFT	89,427	89,427	N	KUCR	BSA-23094	-	89,427
84	425D	COVID-19_84.425D_231037	COVID-19, EDUCATION STABILIZATION FUND	N/A	N/A	N	MD Dept of Education	231037	-	140,860
84	425D	COVID-19_84.425D_231431	COVID-19, EDUCATION STABILIZATION FUND	N/A	N/A	N	MD Dept of Education	231431	-	212,363
93	110	2018/00035_2019100419	Maternal and Child Health Federal Consolidated Programs	N/A	N/A	N	Zero to Three	2018/00035_2019100419	-	143,998
		National Harm Reduction Technical Assistance and Syringe Services								
93	488	1 NUS2P9910232-01-00	Program (SSP) Monitoring and Evaluation Funding Opportunity	683,210	683,210	Y			69,790	683,210
97	U03	70RSAT207PIA00002	Project Package 10	268,985	268,985	Y			-	268,985
98	001	COVID-19_Agreement effective 1/25/21	COVID-19 - USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	N	PATH	Agreement effective 1/25/21	-	(3,893)
98	001	620-A-00-10-00001-00	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			-	(3,445)
98	001	7200AA19CA00007	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			-	574
98	001	AID-0018-A-11-00048	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			-	1,693
98	001	AID-0AA-A-15-00051	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			-	6,692
98	001	AID-617-A-12-00002	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y	Palladium Group	AID-0AA-A-15-00051	-	15,521
98	001	72062119 CA00001	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y	Jane Goodall Institute	72062119 CA00001	918	17,345
98	001	5744	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	N	Task Force for Global Hlt	5744	-	31,497
98	001	72036720CA00001	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			-	43,260
98	001	AID-492-A-13-00011	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			-	45,573
98	001	89915-11297	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	N	Cornell University	89915-11297	-	81,238
98	001	217805-RTI-01	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	N	Palladium Group	217805-RTI-01	-	151,957
98	001	72026823CA00001	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			-	174,789
98	001	193900.312455.01	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	N	Mississippi State Univ	193900.312455.01	-	184,651
98	001	AID-520-A-17-00001-RTI	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	N	World Vision - USA	AID-520-A-17-00001-RTI	-	194,479
98	001	72049223CA00001	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			-	249,894
98	001	56-0686338	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	N	FHI 360	56-0686338	-	565,400
98	001	72062118CA00007	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			477,503	722,897
98	001	AID-486-I-14-00001	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			-	879,147
98	001	72067518CA00001	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			-	92,772
98	001	AID-278-A-15-00003	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			-	46,427
98	001	RTI-NAW/RI-334145002	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	N	Mercy Corps	RTI-NAW/RI-334145002	647,028	1,757,308
98	001	COVID-19_72068521CA00006	COVID-19 - USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			1,206,604	1,839,019
98	U06	AID-0AA-C-15-00125	RDAP IV Year 4	2,176,008	2,176,008	Y			-	2,176,008
98	001	AID-685-A-16-00006	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			508,364	2,180,829
98	001	72052223CA00001	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			211,196	2,185,030
98	U59	72062320D00013	FTF Rwanda KWA	3,045,449	3,045,449	Y			-	3,045,449
98	001	72011420CA00001	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			909,446	3,121,793
98	U72	72069622C00001	FTF Hanga Akazi	3,144,256	3,144,256	Y			-	3,144,256
98	001	75520122C0002	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			372,585	3,378,518
98	001	37710.001	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	N	JSI Research & Training	37710.001	81,627	3,782,676
98	U69	72061522C00001	Grants Under Contract	4,642,208	4,642,208	Y			-	4,642,208
98	001	72044220CA00002	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			1,053,212	4,644,523
98	001	COVID-19_72049218CA00009	COVID-19 - USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			251,592	5,050,008
98	001	72068821CA00004	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			957,933	5,252,211
98	U24	AID-615-C-14-00007	Tusome—Early Grade Reading Program in Kenya	5,258,103	5,258,103	Y			-	5,258,103
98	001	72052022CA00001	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			2,214,366	5,551,955
98	001	72061720CA00007	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			865,599	5,710,821
98	001	72049220CA00005	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			1,439,555	6,048,844
98	001	72071519CA00004	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			805,993	6,049,143
98	001	72067523CA00001	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			378,626	6,229,143
98	U71	72068522C00009	Project Implementation	6,463,351	6,463,351	Y			-	6,463,351
98	001	72049218CA00009	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			928,980	6,668,017
98	U76	72066323C00003	FAST Implementation	6,908,618	6,908,618	Y			-	6,908,618
98	U38	720-674-18-D-00004 720-674-19-F-00004	East Africa TO2	17,348,562	17,348,562	Y			-	8,157,818
98	001	AID-615-A-17-00006	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			4,195,092	8,486,699
98	U38	720-674-18-D-00004 720-674-19-F-00005	Power Africa Off-grid Pro	17,348,562	17,348,562	Y			-	9,190,744
98	001	72049219CA00005	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			1,770,006	9,235,960
98	001	72068522CA00001	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			1,980,428	9,260,240
98	001	72068521CA00006	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			7,261,307	13,950,672
98	001	7200AA18CA00040	USAID Foreign Assistance for Programs Overseas	167,943,954	167,943,954	Y			13,576,164	48,875,659
98	U08	AID-0AA-I-14-00015 AID-621-TO-15-00004	TANZANIA PROTECT	(85,342)	(85,342)	Y			-	(85,342)
98	U03	AID-669-C-17-00003	LREAD Local Sub Mgmt	(34,468)	(34,468)	Y			-	(34,468)
98	U78	AID-294-C-17-00006	WB EGRA	(3,001)	(3,001)	Y			-	(3,001)
98	U30	AID-0AA-I-14-00005	HCTM TO 38 Ext Prd	(2,148)	(2,148)	Y			-	(2,148)
98	U46	AID-0AA-I-15-00039 72062018F00003	Nigeria E WASH	(1,375)	(1,375)	Y			-	(1,375)
98	U01	AID-486-I-16-00001 AID-486-TO-16-00003	Wildlife Asia	6	6	Y			-	6
98	U31	AID-0AA-I-14-00044 AID-612-TO-15-00001	MERIT Imp Reading Instruc	3,223,850	3,223,850	Y			-	371
98	U49	AID-486-I-15-00001 72048620F00001	SUFIA TO Rev level	2,090,939	2,090,939	Y			-	1,675

RESEARCH TRIANGLE INSTITUTE

SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS  
FOR THE YEAR ENDED SEPTEMBER 30, 2023

Federal Assistance Listing Number	Additional Award Identification	Federal Program Name	Cluster Name	Federal Program Total	Cluster Total	Direct Award	Name of Passthrough Entity	Identifying Number Assigned by the Pass-through Entity	Amount Passed Through to Subrecipients	Amount Expended
98 U21	AID-519-C-14-00004	El Salvador HEP	N/A	\$ 2,879	\$ --	Y			\$	\$ 2,879
98 U02	AID-521-C-14-00001	Haïri LEVE	N/A	16,486	--	Y				16,486
98 U65	21778-RTI-IDIQ-001 21778-RTI-IDIQ-001-TO-002	RIHSA TO 2	N/A	278,269	--	N	Palladium Group	21778-RTI-IDIQ-001 21778-RTI-IDIQ-001-TO-002		19,117
98 U05	AID-696-C-14-00002	RWANDA PSDAG	N/A	26,928	--	Y				26,928
98 U49	AID-486-I-15-00001 72048220F00001	Burma TO Rev level	N/A	2,090,939	--	Y				88,417
98 U74	7200AA22D00016 72066323F00002	CR WASH CLIN 1	N/A	122,216	--	Y				122,216
98 U31	AID-OAA-I-14-00044 72044218R00007	ACL Management and Ops	N/A	3,223,850	--	Y				129,464
98 U65	21778-RTI-IDIQ-001 21778-RTI-IDIQ-001-TO-003	RIHSA TO 3	N/A	278,269	--	Y				259,152
98 U77	72067423C00003	EECA Technical	N/A	403,262	--	Y				403,262
98 U66	6994-21-C-02. CCCC-21-C-02-TO1	Esho Shikhi TO 1	N/A	475,772	--	N	Winrock Intl	6994-21-C-02. CCCC-21-C-02-TO1		475,772
98 U73	47QRAD21DU101	ILOA Buy In	N/A	1,897,578	--	Y				1,897,578
98 U49	AID-486-I-15-00001 72048618F00004	Field Office	N/A	2,090,939	--	Y				2,000,847
98 U54	7200AA19D00028 72051722F00001	Caribbean ESR	N/A	22,311,937	--	Y				2,055,658
98 001	72066923C00003	USAID Foreign Assistance for Programs Overseas	N/A	167,943,954	--	Y				2,167,001
98 U67	72052322C00004	Mexico Net-Zero Mgmt	N/A	2,216,637	--	Y				2,216,637
98 U75	72038322C00001	OPR Maldives Mgmt	N/A	2,252,264	--	Y				2,252,264
98 U68	72061122C00004	Construction	N/A	2,647,285	--	Y				2,647,285
98 U31	AID-OAA-I-14-00044 AID-OAA-TO-16-00017	All Children Reading-Asia	N/A	3,223,850	--	Y				3,094,015
98 U70	72066921C00007	TEST Inclusive Ed Rollup	N/A	4,574,062	--	Y				4,574,062
98 U50	72011519C00004	Kyrgyz assess and evals	N/A	4,636,226	--	Y				4,636,226
98 U54	7200AA19D00028 7200AA21F00012	C4G Base Period	N/A	22,311,937	--	Y				5,829,872
98 U57	72062121C00001	Technical Assistance	N/A	6,168,158	--	Y				6,168,158
98 U55	72044221C00002	IPÉA Accurals	N/A	6,372,072	--	Y				6,372,072
98 U54	7200AA19D00028 72049221F00002	Energy Secure Philippines	N/A	22,311,937	--	Y				6,667,271
98 U54	7200AA19D00028 72038621F00002	SAREP	N/A	22,311,937	--	Y				7,759,136
98 U58	72062121M00001	Jifunze Uelewe	N/A	11,513,443	--	Y				11,513,443
98 U56	72049221C00001	PEP CLIN 1	N/A	12,091,476	--	Y				12,091,476
<b>TOTAL EXPENDITURES OF FEDERAL AWARDS</b>									<b>\$ 74,735,463</b>	<b>\$ 933,791,203</b>

(Concluded)

See Notes to the Schedule of Expenditures of Federal Awards

# RESEARCH TRIANGLE INSTITUTE

## NOTES TO THE SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS FOR THE YEAR ENDED SEPTEMBER 30, 2023

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### 1. BASIS OF PRESENTATION

The schedule of expenditures of federal awards (the "SEFA") includes the federal award activity of the Research Triangle Institute (the "Institute") under programs of the federal government for the year ended September 30, 2023. The information in the SEFA is presented in accordance with the requirements of Title 2 U.S. Code of Federal Regulations ("2 CFR") Part 200, *Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards* (Uniform Guidance). Because the SEFA presents only a selected portion of the operations of the Institute, it is not intended to and does not present the financial position, changes in net assets, or cash flows of the Institute.

Assistance listing numbers ("ALN numbers") are unique numbers assigned to identify Federal Assistance Listings, the publicly available listing of Federal assistance programs managed and administered by the General Services Administration, formerly known as the Catalog of Federal Domestic Assistance. As provided for in the Uniform Guidance, when no ALN number is assigned, the purpose of federal contracts from the same federal agency is assessed, and those made for the same purpose are combined and considered one program. Programs without an ALN number are presented with only the federal agency's two-digit prefix followed by the abbreviation "RD" for those programs in the research and development cluster or "U" (i.e. unknown) and sequentially numbered by federal agency in place of an ALN number. The Institute assigns sequential numbers on an annual basis unless a program had already been assigned a number on the SEFA in a prior year. The federal agency two-digit prefixes are as follows:

<b>Prefix</b>	<b>Federal Agency</b>
10	Department of Agriculture
11	Department of Commerce
12	Department of Defense
14	Department of Housing and Urban Development
15	Department of the Interior
16	Department of Justice
17	Department of Labor
19	Department of State
20	Department of Transportation
30	Equal Employment Opportunity Commission
43	National Aeronautics & Space Administration
45	National Endowment for the Arts & Humanities
47	National Science Foundation
64	Department of Veterans Affairs
66	Environmental Protection Agency
81	Department of Energy

# RESEARCH TRIANGLE INSTITUTE

## NOTES TO THE SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS (Continued) FOR THE YEAR ENDED SEPTEMBER 30, 2023

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Prefix	Federal Agency
84	Department of Education
85	Scholarship Foundations
93	Department of Health and Human Services
97	Department of Homeland Security
98	U.S. Agency for International Development
99	Miscellaneous

### 2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The SEFA has been prepared in accordance with the accrual basis of accounting and with accounting principles generally accepted in the United States of America, and is consistent with the preparation of the Institute's consolidated financial statements. Amounts reflected in the SEFA include only expenditures of federal awards whereas the corresponding amounts reported in the consolidated financial statements also include expenditures of federal fixed price contracts and nonfederal awards. Such expenditures are recognized following the applicable cost principles wherein certain types of expenditures are unallowable. Negative amounts shown on the SEFA represent adjustments or credits made in the normal course of business to amounts reported as expenditures in prior years.

An award is considered expended when the activity related to the award occurs. The activity generally pertains to events requiring compliance with laws, regulations, and the provisions of contract and grant agreements. Direct costs have been recognized on the accrual basis of accounting when costs are incurred. For time and materials contracts, expenditures are recognized as hours and costs are incurred based on negotiated rates. Fees on cost-plus contracts are recognized as costs are incurred and expenditures include a proportionate share of the fees earned.

The accompanying consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America (GAAP). The consolidated financial statements include the accounts of the Institute and its wholly owned subsidiaries. All significant intercompany balances and transactions have been eliminated.

The preparation of the consolidated financial statements in accordance with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the dates of the consolidated financial statements. Actual results could differ from those estimates.

### 3. INDIRECT COST RATE

The Institute has elected not to use the 10-percent de minimis indirect cost rate allowed under the Uniform Guidance. Indirect costs are recovered from the federal government by applying a federally negotiated indirect cost rate or by allocating these costs among benefiting programs in accordance with a federally approved plan. Each program's share of indirect costs is recognized on the accompanying SEFA.

# RESEARCH TRIANGLE INSTITUTE

## NOTES TO THE SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS (Continued) FOR THE YEAR ENDED SEPTEMBER 30, 2023

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### 4. RELATIONSHIP TO FEDERAL FINANCIAL REPORTS

The regulations and guidelines governing the preparation of federal financial reports vary by federal agency and among programs administered by the same agency. Accordingly, the amounts reported in the federal financial reports do not necessarily agree with the amounts reported in the accompanying SEFA, which is prepared as explained in Notes 1 and 2 above.

### 5. SUBRECIPIENTS

The Institute must make case-by-case determinations whether each agreement it makes for the disbursement of federal program funds casts the party receiving the funds as a subrecipient or a contractor based on the Uniform Guidance definitions and management's judgement. The total amount identified as provided to subrecipients during the year ended September 30, 2023 was \$74.7 million.

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# RESEARCH TRIANGLE INSTITUTE

## SCHEDULE OF FINDINGS AND QUESTIONED COSTS FOR THE YEAR ENDED SEPTEMBER 30, 2023

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### Section I—Summary of Auditor’s Results

#### FINANCIAL STATEMENTS:

Type of report the auditor issued on whether the financial statements audited were prepared in accordance with GAAP: Unmodified

Internal control over financial reporting:

Material weakness(es) identified?  Yes  No

Significant deficiency(ies) identified?  Yes  None Reported

Noncompliance material to financial statements noted?  Yes  No

#### FEDERAL AWARDS:

Internal control over major federal programs:

Material weakness(es) identified?  Yes  No

Significant deficiency(ies) identified?  Yes  None Reported

Type of auditor’s report issued on compliance for major federal programs: Unmodified

Any audit findings disclosed that are required to be reported in accordance with 2 CFR §200.516(a)?  Yes  No

#### Identification of major federal programs:

ALN Number	Name of federal program, cluster, or contract
<b>Major Programs</b>	
98.001	USAID Foreign Assistance for Programs Overseas
98.U24	Tusome—Early Grade Reading Program in Kenya
98.U38	Power Africa Off-grid Program
98.U59	FTF Rwanda KWA
98.U69	Grants Under Contract - Western Kenya Sanitation
98.U71	Project Implementation FTF Senegal Dooleel Mbay
98.U72	FTF Hanga Akazi - Rwanda
98.U76	FAST Implementation - Ethiopia Transforming Ag

Dollar threshold used to distinguish between type A and type B programs: \$3,000,000

Auditee qualified as low-risk auditee?  Yes  No

# RESEARCH TRIANGLE INSTITUTE

## SCHEDULE OF FINDINGS AND QUESTIONED COSTS (Continued) FOR THE YEAR ENDED SEPTEMBER 30, 2023

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### Section II—Financial Statement Findings

None reported for the year ended September 30, 2023

### Section III—Federal Award Findings and Questioned Costs

None reported for the year ended September 30, 2023



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## **RESEARCH TRIANGLE INSTITUTE**

### **SUMMARY SCHEDULE OF PRIOR YEAR AUDIT FINDINGS FOR THE YEAR ENDED SEPTEMBER 30, 2023**

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The prior year audit's Schedule of Findings and Questioned Costs did not contain any findings; therefore, there are no items required to be reported in this section.