Department of Administration
Purchasing Division
2019 Washington Street East
Post Office Box 50130
Charleston, WV 25305-0130

# State of West Virginia
# Purchase Order

**Order Date:** 08-20-2024

CORRECT ORDER NUMBER MUST APPEAR ON ALL PACKAGES, INVOICES, AND SHIPPING PAPERS. QUESTIONS CONCERNING THIS ORDER SHOULD BE DIRECTED TO THE DEPARTMENT CONTACT.

| | | | |
|---|---|---|---|
| **Order Number:** | CPO 0313 0313 DEP2500000004 1 | **Procurement Folder:** | 1289039 |
| **Document Name:** | EOI - TMDL SEEPS | **Reason for Modification:** | |
| **Document Description:** | EOI - TMDL SEEPS | | |
| **Procurement Type:** | Central Purchase Order | | |
| **Buyer Name:** | Joseph E Hager III | | |
| **Telephone:** | (304) 558-2306 | | |
| **Email:** | joseph.e.hageriii@wv.gov | | |
| **Shipping Method:** | Best Way | **Effective Start Date:** | |
| **Free on Board:** | FOB Dest, Freight Prepaid | **Effective End Date:** | |

## VENDOR

**Vendor Customer Code:** 000000232671
TETRA TECH INC
1538 KANAWHA BLVD E STE 110

CHARLESTON WV 25311
US
**Vendor Contact Phone:** 304-414-0054 **Extension:** 103

**Discount Details:**

| | Discount Allowed | Discount Percentage | Discount Days |
|---|---|---|---|
| #1 | No | 0.0000 | 0 |
| #2 | Not Entered | | |
| #3 | Not Entered | | |
| #4 | Not Entered | | |

## DEPARTMENT CONTACT

**Requestor Name:** Jessica S Chambers
**Requestor Phone:** (304) 414-1140
**Requestor Email:** jessica.s.chambers@wv.gov

2025
FILE LOCATION _____

## INVOICE TO

ENVIRONMENTAL PROTECTION
DIV OF WASTE AND WATER MGT
601 57TH ST SE
CHARLESTON WV 25304
US

## SHIP TO

ENVIRONMENTAL PROTECTION
DIVISION OF WATER AND WASTE MGT
601 57TH ST SE
CHARLESTON WV 25304
US

8/22/24 GC

| | |
|---|---|
| **Total Order Amount:** | $343,950.00 |

Purchasing Division's File Copy

8.20.24

| PURCHASING DIVISION AUTHORIZATION | ATTORNEY GENERAL APPROVAL AS TO FORM | ENCUMBRANCE CERTIFICATION |
|---|---|---|
| DATE: 8/20/2024 | DATE: 8/28/2024 | DATE: 8.28.24 |
| ELECTRONIC SIGNATURE ON FILE | ELECTRONIC SIGNATURE ON FILE | ELECTRONIC SIGNATURE ON FILE |

**Extended Description:**

The vendor, Tetra Tech Inc., agrees to enter into this contract with the agency, The West Virginia Department of Environmental Protection, Division of Water and Waste Management, to provide professional engineering services to provide Total Maximum Daily Loads (TMDLs) for selected Elk River and Eastern Panhandle Streams (SEEPS), per the specifications, terms and conditions, and the vendors negotiated scope of work dated 6/28/2024, all incorporated herein by reference and made a part hereof.

| Line | Commodity Code | Quantity | Unit | Unit Price | Total Price |
|---|---|---|---|---|---|
| 1 | 81100000 | 0.00000 | | 0.000000 | 343950.00 |
| **Service From** | **Service To** | **Manufacturer** | | **Model No** | |
| | | | | | |

**Commodity Line Description:** Professional engineering services

**Extended Description:**
Provide Total Maximum Daily Loads (TMDLs) for Selected Elk River and Eastern Panhandle Streams (SEEPS)

WV-96
1/1/2019

# STATE OF WEST VIRGINIA
# ADDENDUM TO VENDOR'S STANDARD CONTRACTUAL FORMS

State Agency, Board, or Commission (the "State"): WV DEPT OF ENVIRONMENTAL PROTECTION

Vendor: TETRA TECH INC

Contract/Lease Number ("Contract"): CEOI DEP2400000009

Commodity/Service: SEEP TMDL DEVELOPMENT

The State and the Vendor are entering into the Contract identified above. The Vendor desires to incorporate one or more forms it created into the Contract. Vendor's form(s), however, include(s) one or more contractual terms and conditions that the State cannot or will not accept. In consideration for the State's incorporating Vendor's form(s) into the Contract, the Vendor enters into this Addendum which specifically eliminates or alters the legal enforceability of certain terms and conditions contained in Vendor's form(s). Therefore, on the date shown below each signature line, the parties agree to the following contractual terms and conditions in this Addendum are dominate over any competing terms made a part of the Contract:

1. **ORDER OF PRECEDENCE:** This Addendum modifies and supersedes anything contained on Vendor's form(s) whether or not they are submitted before or after the signing of this Addendum. IN THE EVENT OF ANY CONFLICT BETWEEN VENDOR'S FORM(S) AND THIS ADDENDUM, THIS ADDENDUM SHALL CONTROL.

2. **PAYMENT** – Payments for goods/services will be made in arrears only upon receipt of a proper invoice, detailing the goods/services provided or receipt of the goods/services, whichever is later. Notwithstanding the foregoing, payments for software licenses, subscriptions, or maintenance may be paid annually in advance.

   Any language imposing any interest or charges due to late payment is deleted.

3. **FISCAL YEAR FUNDING** – Performance of this Contract is contingent upon funds being appropriated by the WV Legislature or otherwise being available for this Contract. In the event funds are not appropriated or otherwise available, the Contract becomes of no effect and is null and void after June 30 of the current fiscal year. If that occurs, the State may notify the Vendor that an alternative source of funding has been obtained and thereby avoid the automatic termination. Non-appropriation or non-funding shall not be considered an event of default.

4. **RIGHT TO TERMINATE** – The State reserves the right to terminate this Contract upon thirty (30) days written notice to the Vendor. If this right is exercised, the State agrees to pay the Vendor only for all undisputed services rendered or goods received before the termination's effective date. All provisions are deleted that seek to require the State to (1) compensate Vendor, in whole or in part, for lost profit, (2) pay a termination fee, or (3) pay liquidated damages if the Contract is terminated early.

   Any language seeking to accelerate payments in the event of Contract termination, default, or non-funding is hereby deleted.

5. **DISPUTES** – Any language binding the State to any arbitration or to the decision of any arbitration board, commission, panel or other entity is deleted; as is any requirement to waive a jury trial.

   Any language requiring or permitting disputes under this Contract to be resolved in the courts of any state other than the State of West Virginia is deleted. All legal actions for damages brought by Vendor against the State shall be brought in the West Virginia Claims Commission. Other causes of action must be brought in the West Virginia court authorized by statute to exercise jurisdiction over it.

   Any language requiring the State to agree to, or be subject to, any form of equitable relief not authorized by the Constitution or laws of State of West Virginia is deleted.

6. **FEES OR COSTS:** Any language obligating the State to pay costs of collection, court costs, or attorney's fees, unless ordered by a court of competent jurisdiction is deleted.

7. **GOVERNING LAW** – Any language requiring the application of the law of any state other than the State of West Virginia in interpreting or enforcing the Contract is deleted. The Contract shall be governed by the laws of the State of West Virginia.

8. **RISK SHIFTING** – Any provision requiring the State to bear the costs of all or a majority of business/legal risks associated with this Contract, to indemnify the Vendor, or hold the Vendor or a third party harmless for any act or omission is hereby deleted.

9. **LIMITING LIABILITY** – Any language limiting the Vendor's liability for direct damages to person or property is deleted.

10. **TAXES** – Any provisions requiring the State to pay Federal, State or local taxes or file tax returns or reports on behalf of Vendor are deleted. The State will, upon request, provide a tax exempt certificate to confirm its tax exempt status.

11. **NO WAIVER** – Any provision requiring the State to waive any rights, claims or defenses is hereby deleted.

12. **STATUTE OF LIMITATIONS** – Any clauses limiting the time in which the State may bring suit against the Vendor or any other third party are deleted.

13. **ASSIGNMENT** – The Vendor agrees not to assign the Contract to any person or entity without the State's prior written consent, which will not be unreasonably delayed or denied. The State reserves the right to assign this Contract to another State agency, board or commission upon thirty (30) days written notice to the Vendor. These restrictions do not apply to the payments made by the State. Any assignment will not become effective and binding upon the State until the State is notified of the assignment, and the State and Vendor execute a change order to the Contract.

14. **RENEWAL** – Any language that seeks to automatically renew, modify, or extend the Contract beyond the initial term or automatically continue the Contract period from term to term is deleted. The Contract may be renewed or continued only upon mutual written agreement of the Parties.

15. **INSURANCE** – Any provision requiring the State to maintain any type of insurance for either its or the Vendor's benefit is deleted.

16. **RIGHT TO REPOSSESSION NOTICE** – Any provision for repossession of equipment without notice is hereby deleted. However, the State does recognize a right of repossession with notice.

17. **DELIVERY** – All deliveries under the Contract will be FOB destination unless the State expressly and knowingly agrees otherwise. Any contrary delivery terms are hereby deleted.

18. **CONFIDENTIALITY** – Any provisions regarding confidential treatment or non-disclosure of the terms and conditions of the Contract are hereby deleted. State contracts are public records under the West Virginia Freedom of Information Act ("FOIA") (W. Va. Code §29B-a-1, et seq.) and public procurement laws. This Contract and other public records may be disclosed without notice to the vendor at the State's sole discretion.

    Any provisions regarding confidentiality or non-disclosure related to contract performance are only effective to the extent they are consistent with FOIA and incorporated into the Contract through a separately approved and signed non-disclosure agreement.

19. **THIRD-PARTY SOFTWARE** – If this Contract contemplates or requires the use of third-party software, the vendor represents that none of the mandatory click-through, unsigned, or web-linked terms and conditions presented or required before using such third-party software conflict with any term of this Addendum or that is has the authority to modify such third-party software's terms and conditions to be subordinate to this Addendum. The Vendor shall indemnify and defend the State against all claims resulting from an assertion that such third-party terms and conditions are not in accord with, or subordinate to, this Addendum.

20. **AMENDMENTS** – The parties agree that all amendments, modifications, alterations or changes to the Contract shall be by mutual agreement, in writing, and signed by both parties. Any language to the contrary is deleted.

    Notwithstanding the foregoing, this Addendum can only be amended by (1) identifying the alterations to this form by using *Italics* to identify language being added and ~~strikethrough~~ for language being deleted (do not use track-changes) and (2) having the Office of the West Virginia Attorney General's authorized representative expressly agree to and knowingly approve those alterations.

| | |
|---|---|
| State: DOP | Vendor: Tetra Tech, Inc. |
| By: Jessica Chambers-Smith | By: |
| Printed Name: Jessica Chambers-Smith | Printed Name: Jon C. Ludwig |
| Title: Agent | Title: Director |
| Date: 8/13/24 | Date: 7/15/2024 |

## GENERAL TERMS AND CONDITIONS:

**1. CONTRACTUAL AGREEMENT:** Issuance of an Award Document signed by the Purchasing Division Director, or his designee, and approved as to form by the Attorney General's office constitutes acceptance by the State of this Contract made by and between the State of West Virginia and the Vendor. Vendor's signature on its bid, or on the Contract if the Contract is not the result of a bid solicitation, signifies Vendor's agreement to be bound by and accept the terms and conditions contained in this Contract.

**2. DEFINITIONS:** As used in this Solicitation/Contract, the following terms shall have the meanings attributed to them below. Additional definitions may be found in the specifications included with this Solicitation/Contract.

**2.1. "Agency"** or **"Agencies"** means the agency, board, commission, or other entity of the State of West Virginia that is identified on the first page of the Solicitation or any other public entity seeking to procure goods or services under this Contract.

**2.2. "Bid"** or **"Proposal"** means the vendors submitted response to this solicitation.

**2.3. "Contract"** means the binding agreement that is entered into between the State and the Vendor to provide the goods or services requested in the Solicitation.

**2.4. "Director"** means the Director of the West Virginia Department of Administration, Purchasing Division.

**2.5. "Purchasing Division"** means the West Virginia Department of Administration, Purchasing Division.

**2.6. "Award Document"** means the document signed by the Agency and the Purchasing Division, and approved as to form by the Attorney General, that identifies the Vendor as the contract holder.

**2.7. "Solicitation"** means the official notice of an opportunity to supply the State with goods or services that is published by the Purchasing Division.

**2.8. "State"** means the State of West Virginia and/or any of its agencies, commissions, boards, etc. as context requires.

**2.9. "Vendor"** or **"Vendors"** means any entity submitting a bid in response to the Solicitation, the entity that has been selected as the lowest responsible bidder, or the entity that has been awarded the Contract as context requires.

**3. CONTRACT TERM; RENEWAL; EXTENSION:** The term of this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below:

☐ **Term Contract**

**Initial Contract Term:** The Initial Contract Term will be for a period of _____ _____. The Initial Contract Term becomes effective on the effective start date listed on the first page of this Contract, identified as the State of West Virginia contract cover page containing the signatures of the Purchasing Division, Attorney General, and Encumbrance clerk (or another page identified as _____), and the Initial Contract Term ends on the effective end date also shown on the first page of this Contract.

**Renewal Term:** This Contract may be renewed upon the mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any request for renewal should be delivered to the Agency and then submitted to the Purchasing Division thirty (30) days prior to the expiration date of the initial contract term or appropriate renewal term. A Contract renewal shall be in accordance with the terms and conditions of the original contract. Unless otherwise specified below, renewal of this Contract is limited to _____ successive one (1) year periods or multiple renewal periods of less than one year, provided that the multiple renewal periods do not exceed the total number of months available in all renewal years combined. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's office (Attorney General approval is as to form only)

☐ **Alternate Renewal Term** – This contract may be renewed for _____ successive _____ year periods or shorter periods provided that they do not exceed the total number of months contained in all available renewals. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's office (Attorney General approval is as to form only)

**Delivery Order Limitations:** In the event that this contract permits delivery orders, a delivery order may only be issued during the time this Contract is in effect. Any delivery order issued within one year of the expiration of this Contract shall be effective for one year from the date the delivery order is issued. No delivery order may be extended beyond one year after this Contract has expired.

☑ **Fixed Period Contract:** This Contract becomes effective upon Vendor's receipt of the notice to proceed and must be completed within Seven Hundred Thirty (730) days.

☐ **Fixed Period Contract with Renewals:** This Contract becomes effective upon Vendor's receipt of the notice to proceed and part of the Contract more fully described in the attached specifications must be completed within _____ days. Upon completion of the work covered by the preceding sentence, the vendor agrees that:

☐ the contract will continue for _____ years;

☐ the contract may be renewed for _____ successive _____ year periods or shorter periods provided that they do not exceed the total number of months contained in all available renewals. Automatic renewal of this Contract is prohibited. Renewals must be approved by the Vendor, Agency, Purchasing Division and Attorney General's Office (Attorney General approval is as to form only).

☐ **One-Time Purchase:** The term of this Contract shall run from the issuance of the Award Document until all of the goods contracted for have been delivered, but in no event will this Contract extend for more than one fiscal year.

☐ **Construction/Project Oversight:** This Contract becomes effective on the effective start date listed on the first page of this Contract, identified as the State of West Virginia contract cover page containing the signatures of the Purchasing Division, Attorney General, and Encumbrance clerk (or another page identified as _____), and continues until the project for which the vendor is providing oversight is complete.

☐ **Other:** Contract Term specified in _____

**4. AUTHORITY TO PROCEED:** Vendor is authorized to begin performance of this contract on the date of encumbrance listed on the front page of the Award Document unless either the box for "Fixed Period Contract" or "Fixed Period Contract with Renewals" has been checked in Section 3 above. If either "Fixed Period Contract" or "Fixed Period Contract with Renewals" has been checked, Vendor must not begin work until it receives a separate notice to proceed from the State. The notice to proceed will then be incorporated into the Contract via change order to memorialize the official date that work commenced.

**5. QUANTITIES:** The quantities required under this Contract shall be determined in accordance with the category that has been identified as applicable to this Contract below.

☐ **Open End Contract:** Quantities listed in this Solicitation/Award Document are approximations only, based on estimates supplied by the Agency. It is understood and agreed that the Contract shall cover the quantities actually ordered for delivery during the term of the Contract, whether more or less than the quantities shown.

☐ **Service:** The scope of the service to be provided will be more clearly defined in the specifications included herewith.

☑ **Combined Service and Goods:** The scope of the service and deliverable goods to be provided will be more clearly defined in the specifications included herewith.

☐ **One-Time Purchase:** This Contract is for the purchase of a set quantity of goods that are identified in the specifications included herewith. Once those items have been delivered, no additional goods may be procured under this Contract without an appropriate change order approved by the Vendor, Agency, Purchasing Division, and Attorney General's office.

☐ **Construction:** This Contract is for construction activity more fully defined in the specifications.

**6. EMERGENCY PURCHASES:** The Purchasing Division Director may authorize the Agency to purchase goods or services in the open market that Vendor would otherwise provide under this Contract if those goods or services are for immediate or expedited delivery in an emergency. Emergencies shall include, but are not limited to, delays in transportation or an unanticipated increase in the volume of work. An emergency purchase in the open market, approved by the Purchasing Division Director, shall not constitute of breach of this Contract and shall not entitle the Vendor to any form of compensation or damages. This provision does not excuse the State from fulfilling its obligations under a One-Time Purchase contract.

**7. REQUIRED DOCUMENTS:** All of the items checked in this section must be provided to the Purchasing Division by the Vendor as specified:

☐ **LICENSE(S) / CERTIFICATIONS / PERMITS:** In addition to anything required under the Section of the General Terms and Conditions entitled Licensing, the apparent successful Vendor shall furnish proof of the following licenses, certifications, and/or permits upon request and in a form acceptable to the State. The request may be prior to or after contract award at the State's sole discretion.

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The apparent successful Vendor shall also furnish proof of any additional licenses or certifications contained in the specifications regardless of whether or not that requirement is listed above.

**8. INSURANCE:** The apparent successful Vendor shall furnish proof of the insurance identified by a checkmark below prior to Contract award. The insurance coverages identified below must be maintained throughout the life of this contract. Thirty (30) days prior to the expiration of the insurance policies, Vendor shall provide the Agency with proof that the insurance mandated herein has been continued. Vendor must also provide Agency with immediate notice of any changes in its insurance policies, including but not limited to, policy cancelation, policy reduction, or change in insurers. The apparent successful Vendor shall also furnish proof of any additional insurance requirements contained in the specifications prior to Contract award regardless of whether that insurance requirement is listed in this section.

Vendor must maintain:

☑ **Commercial General Liability Insurance** in at least an amount of: One Million ($1,000,000.00) per occurrence.

☐ **Automobile Liability Insurance** in at least an amount of: _____ per occurrence.

☑ **Professional/Malpractice/Errors and Omission Insurance** in at least an amount of: One Million ($1,000,000.00) per occurrence. Notwithstanding the forgoing, Vendor's are not required to list the State as an additional insured for this type of policy.

☐ **Commercial Crime and Third Party Fidelity Insurance** in an amount of: _____ per occurrence.

☐ **Cyber Liability Insurance** in an amount of: _____ per occurrence.

☐ **Builders Risk Insurance** in an amount equal to 100% of the amount of the Contract.

☐ **Pollution Insurance** in an amount of: _____ per occurrence.

☐ **Aircraft Liability** in an amount of: _____ per occurrence.

☐

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**9. WORKERS' COMPENSATION INSURANCE:** Vendor shall comply with laws relating to workers compensation, shall maintain workers' compensation insurance when required, and shall furnish proof of workers' compensation insurance upon request.

**10. VENUE:** All legal actions for damages brought by Vendor against the State shall be brought in the West Virginia Claims Commission. Other causes of action must be brought in the West Virginia court authorized by statute to exercise jurisdiction over it.

**11. LIQUIDATED DAMAGES:** This clause shall in no way be considered exclusive and shall not limit the State or Agency's right to pursue any other available remedy. Vendor shall pay liquidated damages in the amount specified below or as described in the specifications:

☐ _____ for _____.

☐ Liquidated Damages Contained in the Specifications.

☐ Liquidated Damages Are Not Included in this Contract.

**12. ACCEPTANCE:** Vendor's signature on its bid, or on the certification and signature page, constitutes an offer to the State that cannot be unilaterally withdrawn, signifies that the product or service proposed by vendor meets the mandatory requirements contained in the Solicitation for that product or service, unless otherwise indicated, and signifies acceptance of the terms and conditions contained in the Solicitation unless otherwise indicated.

**13. PRICING:** The pricing set forth herein is firm for the life of the Contract, unless specified elsewhere within this Solicitation/Contract by the State. A Vendor's inclusion of price adjustment provisions in its bid, without an express authorization from the State in the Solicitation to do so, may result in bid disqualification. Notwithstanding the foregoing, Vendor must extend any publicly advertised sale price to the State and invoice at the lower of the contract price or the publicly advertised sale price.

**14. PAYMENT IN ARREARS:** Payments for goods/services will be made in arrears only upon receipt of a proper invoice, detailing the goods/services provided or receipt of the goods/services, whichever is later. Notwithstanding the foregoing, payments for software maintenance, licenses, or subscriptions may be paid annually in advance.

**15. PAYMENT METHODS:** Vendor must accept payment by electronic funds transfer and P-Card. (The State of West Virginia's Purchasing Card program, administered under contract by a banking institution, processes payment for goods and services through state designated credit cards.)

**16. TAXES:** The Vendor shall pay any applicable sales, use, personal property or any other taxes arising out of this Contract and the transactions contemplated thereby. The State of West Virginia is exempt from federal and state taxes and will not pay or reimburse such taxes.

**17. ADDITIONAL FEES:** Vendor is not permitted to charge additional fees or assess additional charges that were not either expressly provided for in the solicitation published by the State of West Virginia, included in the Contract, or included in the unit price or lump sum bid amount that Vendor is required by the solicitation to provide. Including such fees or charges as notes to the solicitation may result in rejection of vendor's bid. Requesting such fees or charges be paid after the contract has been awarded may result in cancellation of the contract.

**18. FUNDING:** This Contract shall continue for the term stated herein, contingent upon funds being appropriated by the Legislature or otherwise being made available. In the event funds are not appropriated or otherwise made available, this Contract becomes void and of no effect beginning on July 1 of the fiscal year for which funding has not been appropriated or otherwise made available. If that occurs, the State may notify the Vendor that an alternative source of funding has been obtained and thereby avoid the automatic termination. Non-appropriation or non-funding shall not be considered an event of default.

**19. CANCELLATION:** The Purchasing Division Director reserves the right to cancel this Contract immediately upon written notice to the vendor if the materials or workmanship supplied do not conform to the specifications contained in the Contract. The Purchasing Division Director may also cancel any purchase or Contract upon 30 days written notice to the Vendor in accordance with West Virginia Code of State Rules § 148-1-5.2.b.

**20. TIME:** Time is of the essence regarding all matters of time and performance in this Contract.

**21. APPLICABLE LAW:** This Contract is governed by and interpreted under West Virginia law without giving effect to its choice of law principles. Any information provided in specification manuals, or any other source, verbal or written, which contradicts or violates the West Virginia Constitution, West Virginia Code, or West Virginia Code of State Rules is void and of no effect.

**22. COMPLIANCE WITH LAWS:** Vendor shall comply with all applicable federal, state, and local laws, regulations and ordinances. By submitting a bid, Vendor acknowledges that it has reviewed, understands, and will comply with all applicable laws, regulations, and ordinances.

> **SUBCONTRACTOR COMPLIANCE:** Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to comply with all applicable laws, regulations, and ordinances. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.

**23. ARBITRATION:** Any references made to arbitration contained in this Contract, Vendor's bid, or in any American Institute of Architects documents pertaining to this Contract are hereby deleted, void, and of no effect.

**24. MODIFICATIONS:** This writing is the parties' final expression of intent. Notwithstanding anything contained in this Contract to the contrary no modification of this Contract shall be binding without mutual written consent of the Agency, and the Vendor, with approval of the Purchasing Division and the Attorney General's office (Attorney General approval is as to form only). Any change to existing contracts that adds work or changes contract cost, and were not included in the original contract, must be approved by the Purchasing Division and the Attorney General's Office (as to form) prior to the implementation of the change or commencement of work affected by the change.

**25. WAIVER:** The failure of either party to insist upon a strict performance of any of the terms or provision of this Contract, or to exercise any option, right, or remedy herein contained, shall not be construed as a waiver or a relinquishment for the future of such term, provision, option, right, or remedy, but the same shall continue in full force and effect. Any waiver must be expressly stated in writing and signed by the waiving party.

**26. SUBSEQUENT FORMS:** The terms and conditions contained in this Contract shall supersede any and all subsequent terms and conditions which may appear on any form documents submitted by Vendor to the Agency or Purchasing Division such as price lists, order forms, invoices, sales agreements, or maintenance agreements, and includes internet websites or other electronic documents. Acceptance or use of Vendor's forms does not constitute acceptance of the terms and conditions contained thereon.

**27. ASSIGNMENT:** Neither this Contract nor any monies due, or to become due hereunder, may be assigned by the Vendor without the express written consent of the Agency, the Purchasing Division, the Attorney General's office (as to form only), and any other government agency or office that may be required to approve such assignments.

**28. WARRANTY:** The Vendor expressly warrants that the goods and/or services covered by this Contract will: (a) conform to the specifications, drawings, samples, or other description furnished or specified by the Agency; (b) be merchantable and fit for the purpose intended; and (c) be free from defect in material and workmanship.

**29. STATE EMPLOYEES:** State employees are not permitted to utilize this Contract for personal use and the Vendor is prohibited from permitting or facilitating the same.

**30. PRIVACY, SECURITY, AND CONFIDENTIALITY:** The Vendor agrees that it will not disclose to anyone, directly or indirectly, any such personally identifiable information or other confidential information gained from the Agency, unless the individual who is the subject of the information consents to the disclosure in writing or the disclosure is made pursuant to the Agency's policies, procedures, and rules. Vendor further agrees to comply with the Confidentiality Policies and Information Security Accountability Requirements, set forth in www.state.wv.us/admin/purchase/privacy.

**31. YOUR SUBMISSION IS A PUBLIC DOCUMENT:** Vendor's entire response to the Solicitation and the resulting Contract are public documents. As public documents, they will be disclosed to the public following the bid/proposal opening or award of the contract, as required by the competitive bidding laws of West Virginia Code §§ 5A-3-1 et seq., 5-22-1 et seq., and 5G-1-1 et seq. and the Freedom of Information Act West Virginia Code §§ 29B-1-1 et seq.

DO NOT SUBMIT MATERIAL YOU CONSIDER TO BE CONFIDENTIAL, A TRADE SECRET, OR OTHERWISE NOT SUBJECT TO PUBLIC DISCLOSURE.

Submission of any bid, proposal, or other document to the Purchasing Division constitutes your explicit consent to the subsequent public disclosure of the bid, proposal, or document. The Purchasing Division will disclose any document labeled "confidential," "proprietary," "trade secret," "private," or labeled with any other claim against public disclosure of the documents, to include any "trade secrets" as defined by West Virginia Code § 47-22-1 et seq. All submissions are subject to public disclosure without notice.

**32. LICENSING:** In accordance with West Virginia Code of State Rules § 148-1-6.1.e, Vendor must be licensed and in good standing in accordance with any and all state and local laws and requirements by any state or local agency of West Virginia, including, but not limited to, the West Virginia Secretary of State's Office, the West Virginia Tax Department, West Virginia Insurance Commission, or any other state agency or political subdivision. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Upon request, the Vendor must provide all necessary releases to obtain information to enable the Purchasing Division Director or the Agency to verify that the Vendor is licensed and in good standing with the above entities.

**SUBCONTRACTOR COMPLIANCE:** Vendor shall notify all subcontractors providing commodities or services related to this Contract that as subcontractors, they too are required to be licensed, in good standing, and up-to-date on all state and local obligations as described in this section. Obligations related to political subdivisions may include, but are not limited to, business licensing, business and occupation taxes, inspection compliance, permitting, etc. Notification under this provision must occur prior to the performance of any work under the contract by the subcontractor.

**33. ANTITRUST:** In submitting a bid to, signing a contract with, or accepting a Award Document from any agency of the State of West Virginia, the Vendor agrees to convey, sell, assign, or transfer to the State of West Virginia all rights, title, and interest in and to all causes of action it may now or hereafter acquire under the antitrust laws of the United States and the State of West Virginia for price fixing and/or unreasonable restraints of trade relating to the particular commodities or services purchased or acquired by the State of West Virginia. Such assignment shall be made and become effective at the time the purchasing agency tenders the initial payment to Vendor.

**34. VENDOR NON-CONFLICT:** Neither Vendor nor its representatives are permitted to have any interest, nor shall they acquire any interest, direct or indirect, which would compromise the performance of its services hereunder. Any such interests shall be promptly presented in detail to the Agency.

**35. VENDOR RELATIONSHIP:** The relationship of the Vendor to the State shall be that of an independent contractor and no principal-agent relationship or employer-employee relationship is contemplated or created by this Contract. The Vendor as an independent contractor is solely liable for the acts and omissions of its employees and agents. Vendor shall be responsible for selecting, supervising, and compensating any and all individuals employed pursuant to the terms of this Solicitation and resulting contract. Neither the Vendor, nor any employees or subcontractors of the Vendor, shall be deemed to be employees of the State for any purpose whatsoever. Vendor shall be exclusively responsible for payment of employees and contractors for all wages and salaries, taxes, withholding payments, penalties, fees, fringe benefits, professional liability insurance premiums, contributions to insurance and pension, or other deferred compensation plans, including but not limited to, Workers' Compensation and Social Security obligations, licensing fees, etc. and the filing of all necessary documents, forms, and returns pertinent to all of the foregoing.

Vendor shall hold harmless the State, and shall provide the State and Agency with a defense against any and all claims including, but not limited to, the foregoing payments, withholdings, contributions, taxes, Social Security taxes, and employer income tax returns.

**36. INDEMNIFICATION:** The Vendor agrees to indemnify, defend, and hold harmless the State and the Agency, their officers, and employees from and against: (1) Any claims or losses for services rendered by any subcontractor, person, or firm performing or supplying services, materials, or supplies in connection with the performance of the Contract; (2) Any claims or losses resulting to any person or entity injured or damaged by the Vendor, its officers, employees, or subcontractors by the publication, translation, reproduction, delivery, performance, use, or disposition of any data used under the Contract in a manner not authorized by the Contract, or by Federal or State statutes or regulations; and (3) Any failure of the Vendor, its officers, employees, or subcontractors to observe State and Federal laws including, but not limited to, labor and wage and hour laws.

**37. NO DEBT CERTIFICATION:** In accordance with West Virginia Code §§ 5A-3-10a and 5-22-1(i), the State is prohibited from awarding a contract to any bidder that owes a debt to the State or a political subdivision of the State. By submitting a bid, or entering into a contract with the State, Vendor is affirming that (1) for construction contracts, the Vendor is not in default on any monetary obligation owed to the state or a political subdivision of the state, and (2) for all other contracts, neither the Vendor nor any related party owe a debt as defined above, and neither the Vendor nor any related party are in employer default as defined in the statute cited above unless the debt or employer default is permitted under the statute.

**38. CONFLICT OF INTEREST:** Vendor, its officers or members or employees, shall not presently have or acquire an interest, direct or indirect, which would conflict with or compromise the performance of its obligations hereunder. Vendor shall periodically inquire of its officers, members and employees to ensure that a conflict of interest does not arise. Any conflict of interest discovered shall be promptly presented in detail to the Agency.

**39. REPORTS:** Vendor shall provide the Agency and/or the Purchasing Division with the following reports identified by a checked box below:

☐ Such reports as the Agency and/or the Purchasing Division may request. Requested reports may include, but are not limited to, quantities purchased, agencies utilizing the contract, total contract expenditures by agency, etc.

☐ Quarterly reports detailing the total quantity of purchases in units and dollars, along with a listing of purchases by agency. Quarterly reports should be delivered to the Purchasing Division via email at purchasing.division@wv.gov.

**40. BACKGROUND CHECK:** In accordance with W. Va. Code § 15-2D-3, the State reserves the right to prohibit a service provider's employees from accessing sensitive or critical information or to be present at the Capitol complex based upon results addressed from a criminal background check. Service providers should contact the West Virginia Division of Protective Services by phone at (304) 558-9911 for more information.

**41. PREFERENCE FOR USE OF DOMESTIC STEEL PRODUCTS:** Except when authorized by the Director of the Purchasing Division pursuant to W. Va. Code § 5A-3-56, no contractor may use or supply steel products for a State Contract Project other than those steel products made in the United States. A contractor who uses steel products in violation of this section may be subject to civil penalties pursuant to W. Va. Code § 5A-3-56. As used in this section:

a. "State Contract Project" means any erection or construction of, or any addition to, alteration of or other improvement to any building or structure, including, but not limited to, roads or highways, or the installation of any heating or cooling or ventilating plants or other equipment, or the supply of and materials for such projects, pursuant to a contract with the State of West Virginia for which bids were solicited on or after June 6, 2001.

b. "Steel Products" means products rolled, formed, shaped, drawn, extruded, forged, cast, fabricated or otherwise similarly processed, or processed by a combination of two or more or such operations, from steel made by the open heath, basic oxygen, electric furnace, Bessemer or other steel making process.

c. The Purchasing Division Director may, in writing, authorize the use of foreign steel products if:

    1. The cost for each contract item used does not exceed one tenth of one percent (.1%) of the total contract cost or two thousand five hundred dollars ($2,500.00), whichever is greater. For the purposes of this section, the cost is the value of the steel product as delivered to the project; or

    2. The Director of the Purchasing Division determines that specified steel materials are not produced in the United States in sufficient quantity or otherwise are not reasonably available to meet contract requirements.

**42. PREFERENCE FOR USE OF DOMESTIC ALUMINUM, GLASS, AND STEEL:** In Accordance with W. Va. Code § 5-19-1 et seq., and W. Va. CSR § 148-10-1 et seq., for every contract or subcontract, subject to the limitations contained herein, for the construction, reconstruction, alteration, repair, improvement or maintenance of public works or for the purchase of any item of machinery or equipment to be used at sites of public works, only domestic aluminum, glass or steel products shall be supplied unless the spending officer determines, in writing, after the receipt of offers or bids, (1) that the cost of domestic aluminum, glass or steel products is unreasonable or inconsistent with the public interest of the State of West Virginia, (2) that domestic aluminum, glass or steel products are not produced in sufficient quantities to meet the contract requirements, or (3) the available domestic aluminum, glass, or steel do not meet the contract specifications. This provision only applies to public works contracts awarded in an amount more than fifty thousand dollars ($50,000) or public works contracts that require more than ten thousand pounds of steel products.

The cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than twenty percent (20%) of the bid or offered price for foreign made aluminum, glass, or steel products. If the domestic aluminum, glass or steel products to be supplied or produced in a "substantial labor surplus area", as defined by the United States Department of Labor, the cost of domestic aluminum, glass, or steel products may be unreasonable if the cost is more than thirty percent (30%) of the bid or offered price for foreign made aluminum, glass, or steel products. This preference shall be applied to an item of machinery or equipment, as indicated above, when the item is a single unit of equipment or machinery manufactured primarily of aluminum, glass or steel, is part of a public works contract and has the sole purpose or of being a permanent part of a single public works project. This provision does not apply to equipment or machinery purchased by a spending unit for use by that spending unit and not as part of a single public works project.

All bids and offers including domestic aluminum, glass or steel products that exceed bid or offer prices including foreign aluminum, glass or steel products after application of the preferences provided in this provision may be reduced to a price equal to or lower than the lowest bid or offer price for foreign aluminum, glass or steel products plus the applicable preference. If the reduced bid or offer prices are made in writing and supersede the prior bid or offer prices, all bids or offers, including the reduced bid or offer prices, will be reevaluated in accordance with this rule.

**43. INTERESTED PARTY SUPPLEMENTAL DISCLOSURE:** W. Va. Code § 6D-1-2 requires that for contracts with an actual or estimated value of at least $1 million, the Vendor must submit to the Agency a disclosure of interested parties prior to beginning work under this Contract. Additionally, the Vendor must submit a supplemental disclosure of interested parties reflecting any new or differing interested parties to the contract, which were not included in the original pre-work interested party disclosure, within 30 days following the completion or termination of the contract. A copy of that form is included with this solicitation or can be obtained from the WV Ethics Commission. This requirement does not apply to publicly traded companies listed on a national or international stock exchange. A more detailed definition of interested parties can be obtained from the form referenced above.

**44. PROHIBITION AGAINST USED OR REFURBISHED:** Unless expressly permitted in the solicitation published by the State, Vendor must provide new, unused commodities, and is prohibited from supplying used or refurbished commodities, in fulfilling its responsibilities under this Contract.

**45. VOID CONTRACT CLAUSES:** This Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law.

**46. ISRAEL BOYCOTT:** Bidder understands and agrees that, pursuant to W. Va. Code § 5A-3-63, it is prohibited from engaging in a boycott of Israel during the term of this contract.

## ADDITIONAL TERMS AND CONDITIONS
## (Architectural and Engineering Contracts Only)

**1. PLAN AND DRAWING DISTRIBUTION:** All plans and drawings must be completed and available for distribution at least five business days prior to a scheduled pre-bid meeting for the construction or other work related to the plans and drawings.

**2. PROJECT ADDENDA REQUIREMENTS:** The Architect/Engineer and/or Agency shall be required to abide by the following schedule in issuing construction project addenda. The Architect/Engineer shall prepare any addendum materials for which it is responsible, and a list of all vendors that have obtained drawings and specifications for the project. The Architect/Engineer shall then send a copy of the addendum materials and the list of vendors to the State Agency for which the contract is issued to allow the Agency to make any necessary modifications. The addendum and list shall then be forwarded to the Purchasing Division buyer by the Agency. The Purchasing Division buyer shall send the addendum to all interested vendors and, if necessary, extend the bid opening date. Any addendum should be received by the Purchasing Division at least fourteen (14) days prior to the bid opening date.

**3. PRE-BID MEETING RESPONSIBILITIES:** The Architect/Engineer shall be available to attend any pre-bid meeting for the construction or other work resulting from the plans, drawings, or specifications prepared by the Architect/Engineer.

**4. AIA DOCUMENTS:** All construction contracts that will be completed in conjunction with architectural services procured under Chapter 5G of the West Virginia Code will be governed by the attached AIA documents, as amended by the Supplementary Conditions for the State of West Virginia, in addition to the terms and conditions contained herein. The terms and conditions of this document shall prevail over anything contained in the AIA Documents or the Supplementary Conditions.

**5. GREEN BUILDINGS MINIMUM ENERGY STANDARDS:** In accordance with West Virginia Code § 22-29-4, all new building construction projects of public agencies that have not entered the schematic design phase prior to July 1, 2012, or any building construction project receiving state grant funds and appropriations, including public schools, that have not entered the schematic design phase prior to July1, 2012, shall be designed and constructed complying with the ICC International Energy Conservation Code, adopted by the State Fire Commission, and the ANSI/ASHRAE/IESNA Standard 90.1-2007: Provided, That if any construction project has a commitment of federal funds to pay for a portion of such project, this provision shall only apply to the extent such standards are consistent with the federal standards.

**DESIGNATED CONTACT:** Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

(Printed Name and Title) John Beckman, Project Manager

(Address) 1538 Kanawha Blvd E., Suite 110, Charleston, WV 25311

(Phone Number) / (Fax Number) Phone 681-313-4276 / Fax 703-385-6007

(email address) john.beckman@tetratech.com

**CERTIFICATION AND SIGNATURE:** By signing below, or submitting documentation through *wv*OASIS, I certify that: I have reviewed this Solicitation/Contract in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation/Contract for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that this bid or offer was made without prior understanding, agreement, or connection with any entity submitting a bid or offer for the same material, supplies, equipment or services; that this bid or offer is in all respects fair and without collusion or fraud; that this Contract is accepted or entered into without any prior understanding, agreement, or connection to any other entity that could be considered a violation of law; that I am authorized by the Vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on Vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

*By signing below, I further certify that I understand this Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law; and that pursuant to W. Va. Code 5A-3-63, the entity entering into this contract is prohibited from engaging in a boycott against Israel.*

Tetra Tech, Inc.

(Company)

(Signature of Authorized Representative)

Jon C. Ludwig, Director October 12, 2023

(Printed Name and Title of Authorized Representative) (Date)

Phone 703-385-1973 Fax 703-385-6007

(Phone Number) (Fax Number)

jon.ludwig@tetratech.com

(Email Address)

# EXPRESSION OF INTEREST

TMDL development for selected Elk River watershed and Eastern Panhandle area streams

## SECTION THREE: PROJECT SPECIFICATIONS

1. **Background:** The West Virginia Department of Environmental Protection, Division of Water and Waste Management (DWWM) is responsible for the protection, restoration, and enhancement of the State's waters, and for Total Maximum Daily Load (TMDL) development in West Virginia. Section 303(d) of the Federal Clean Water Act and the U.S. Environmental Protection Agency's (EPA) Water Quality Planning and Management Regulations (40 CFR Part 130) require states to identify waters not meeting state water quality standards and to develop TMDLs for these waters. A TMDL establishes the maximum allowable pollutant loading for a stream to meet the applicable standard, allocates that load among pollutant contributors, and provides a basis for taking actions needed to restore water quality.

   WVDEP is committed to implementing a TMDL development process that reflects the requirements of TMDL regulations, provides for the achievement of water quality standards, and ensures that adequate stakeholder participation is achieved in the process.
   TMDLs are AUID-specific and may involve any parameter for which numeric or narrative water quality criterion exists. TMDLs may be needed for any pollutant for which a numeric water quality criterion is established, or for other pollutants determined to be causative stressors of biological impairment. TMDL development may or may not be requested for biologically impaired waters.

   The WVDEP generally develops TMDLs in concert with a geographically-based approach to water resource management in West Virginia known as the Watershed Management Framework. Adherence to the framework ensures efficient and systematic accomplishment of statewide TMDL development. As such, each TMDL to be developed will correspond to specific geographical areas, within which impaired waters will be geographically nested into TMDL subwatersheds. According to the Watershed Framework, pre-TMDL monitoring was to occur in watershed grouping B. For this reason, Elk River and Stony River of the North Branch Potomac River were selected. WAB deviated from the Watershed Management Framework in 2022-2023 to address Back Creek (in watershed framework Group A) that had not been studied extensively before. Also off of the anticipated schedule, monitoring for select streams in the Potomac Direct Drains (Group C) and Shenandoah Jefferson (Group A) watersheds was carried out in 2021-2022. Back Creek, along with these selected streams in the Potomac Direct Drain and Shenandoah Jefferson watersheds, are being combined with the Elk River streams in this TMDL project to allow for potential efficiency in modeling and public engagement in the Eastern Panhandle. The details for this TMDL development project will be accomplished through a specific work directive to the selected Vendor.

   Prior to vendor involvement, the WVDEP will perform rigorous pre-TMDL monitoring at

strategic locations in impaired or potentially impaired waters. Actual monitoring locations will vary based on the drainage pattern of studied watersheds. Station locations will attempt to characterize the extent of impairment. For impairments related to numeric water quality criteria, monthly monitoring will generally be performed for twelve months. Biological monitoring will also be conducted at selected stations to characterize stream health and assess general habitat conditions. Source tracking information will augment pre-TMDL water quality monitoring and biological assessment through the identification and characterization of pollutant sources. The WVDEP will compile the stream monitoring and source tracking information and provide it to the Vendor. The WVDEP will review the results of the pre-TMDL monitoring effort, determine impaired water bodies requiring TMDLs and incorporate this information into the work directive for the TMDL project. WVDEP **may also request** the Vendor to evaluate model results at delineated subwatershed pour points and, in coordination with WVDEP, present TMDLs for any modeled stream for which the modeling demonstrates nonattainment with applicable water quality criteria.

Over the TMDL development period the Vendor shall furnish the necessary labor, supervision and resources necessary to develop USEPA approved TMDLs for impaired waters as specified by the WVDEP. The labor, supervision and resources to be provided under this contract shall be for certain aspects of TMDL development including, but not limited to, data compilation and formatting, model selection, model development and calibration, allocation scenario development, implementation guidance development for non-point sources, report development, public meeting support, response to USEPA and public comments, and technology transfer/training.

As described in detail in the following section, the vendor will provide necessary services in accordance with established deadlines. Work under this contract is anticipated to begin on March 1, 2024 with the project to be finalized by February 28, 2026.

2. **Project and Goals**: The project goals and objectives are listed below. The overarching goal of the project is to provide technical services of watershed modeling to support the development of USEPA approvable TMDLs for selected Elk River watershed and Eastern Panhandle area streams.

   The vendor shall demonstrate a capacity to complete the project goals by describing: company resources and experience, including the types of environmental services performed relating to the proposed project; length of time in business; project management plan for quality, cost control measures, and punctual deliverable production; location of primary office; and electronic resources available for direct attention to this project. The vendor must provide a detailed description of technical proficiency and necessary resources to accomplish described TMDLs within established timeframes. If the vendor intends to subcontract work,

similar information must be provided for the subcontractor.

The vendor must demonstrate an understanding of the TMDL program, through a description of a methodology to accomplish project goals and the following objectives:

### 2.1 Data Development

It shall be the vendor's responsibility to gather and assemble all relevant data as specified by the WVDEP to support the model setup and development, with details to be determined for each type of TMDL. The WVDEP shall generate recent and comprehensive water quality monitoring data for impaired waters and provide it to the vendor. The WVDEP will compile pollutant source information throughout the contract period. The vendor must be capable of data manipulations in Microsoft® Access, Microsoft Excel (or equivalent), and in ArcView shapefile formats in order to facilitate usage of WVDEP's current databases.

#### 2.1.1 Subwatershed Delineation

In this project, the project watershed will be subdivided into "TMDL watersheds". Further subdivision of the watersheds will be scaled to the extent and size of the impaired stream segments such that only one impaired stream AUID is contained in an individual subwatershed. The location of pre-TMDL monitoring stations shall also be considered. Subwatershed delineation will be structured as to conserve pollutants from upstream watersheds to downstream (receiving) watersheds and will adhere to topographic boundaries. WVDEP will provide a preliminary subwatershed delineation of the project watersheds that will contain ArcView® shapefiles. The project will be developed in ArcView® 10.1 or more recent version to be determined at the kick-off meeting. The Vendor will confirm and verify these subwatersheds and make any needed edits up until the final subwatershed deliverable is approved. The Vendor will number the subwatersheds and notate the downstream connectivity.

#### 2.1.2 NPDES Permit Summary Report

It is very important that all permitted point sources be correctly located and represented in the model in order to develop accurate TMDLs. The vendor shall provide an NPDES permit data summary report for the project watershed. This permit summary report will identify and characterize the NDPES data associated with permitted point sources in the watershed. The permit summary report will contain two parts: mining-related permit summary spreadsheets and non-mining related permit summary spreadsheets (in Microsoft® Excel filterable formats or equivalent). These summaries will be submitted to WVDEP electronically via CD or email or file sharing.

#### 2.1.3 Pollutant Source Summary

The vendor shall provide a pollutant source report containing an ArcView® project that spatially represents the potential sources of stream impairments in the watershed. The project will contain a unique layer for each impairment type (metals, bacteria, or others). Within each view, shapefiles will be presented that represent potential point and nonpoint pollutant sources, watershed physiographic data, and the monitoring data required for modeling. The shapefiles will be represented with appropriate symbols in the view legend and physical and observed details will be presented in the attribute table associated with each shapefile. A descriptive document (or legend) will also be submitted with the pollutant source report that explains in detail the contents of each project, view, and shapefile.

### 2.2 Select Watershed Model

The vendor must use the Load Simulation Program in C++/Mining Data Analysis System (LSPC/MDAS), or an equivalent, modeling system to develop WVDEP TMDLs for streams that are in violation of West Virginia water quality standards. The vendor shall use nonproprietary models, model codes, and tools (i.e., those in the public domain for TMDL development). In addition, the vendor shall also provide technical transfer of all models, model codes, tools, and relevant data to WVDEP personnel without restriction to distribution. The modeling and data management process must provide the following:

- Simulation of watershed hydrology using hourly local meteorological data.
- Simultaneous modeling of numerous (500+) subwatersheds.
- Simulation of relevant pollutant source loading and in-stream response under a range of flow conditions for existing, baseline, and TMDL scenarios. The model must calibrate for existing conditions, but be able to be modified to allow for baseline and allocation scenarios.
- Evaluations of compliance with all water quality criteria, considering exposure duration and exceedance frequency components.
- Representation of loading processes for both point and nonpoint sources as either precipitation driven or constant discharge, as appropriate.
- Representation of atmospheric deposition.
- Representation of pollutant build-up/washoff rates for various landuse categories.
- Representation of pollutants transferred from upstream watersheds to receiving (downstream) watersheds in a conservative manner.
- Incorporation of a graphical interface that supports GIS functions.
- Representation of in-stream dissolved metals stemming from total metal source inputs, atmospheric acid deposition and watershed buffering capacity, prescription of total metal allocations that result in compliance with dissolved metal water quality criteria, and distinction of allocations for atmospheric and land-based sources.

- Representation of pollutants causing dissolved oxygen impairment, including nutrients and BOD.
- Presentation of allocations in an acceptable manner (usable by WVDEP) through a post-processing system that provides waste load allocations (WLAs) to individual point sources and load allocations (LA) to categories of non-point sources; and
- Storage of all geographic, modeling, and point source permit data in a Microsoft® Access or equivalent database and text file formats to provide for efficient manipulation of data.

### 2.3 Quality Assurance Project Plans (QAPP)

The vendor shall prepare a modeling QAPP taking into consideration *Guidance for Quality Assurance Project Plans for Water Quality Modeling Projects* (EPA QA/G – 5M) (https://www.epa.gov/quality/guidance-quality-assurance-project-plans-modeling-epa-qag-5m). The contractor will work with WVDEP to determine which elements of the QAPP should be included.

### 2.4 Model Calibration

#### 2.4.1 Hydrology Calibration

The vendor shall perform a calibration of the utilized model(s) with respect to hydrological prediction and provide a report showing the results. The hydrology calibration shall involve the comparison of model results with in-stream flow measurements at selected locations and subsequent adjustment of the hydrologic parameters. The calibration period will be based on the availability of weather and flow data collected during the same time period. WVDEP instream monitoring data will be collected approximately within a 12-month period. The model hydrology calibration must entail the following:

- Incorporation of in-stream flow data from USGS and/or National Weather Service flow gaging stations throughout the watershed. In watersheds without USGS or NWS flow gaging stations, the hydrology calibration will be performed on a nearby watershed with similar characteristics and well-documented land uses to assure scientific validity of the process.
- Ability to account for critical flow conditions into the future, ability to modify weather files to represent extreme precipitation, drought, and temperature conditions.
- Fine scale calibration will be supplemented by instantaneous flow measurements from pre-TMDL monitoring to accurately capture the hydrologic variation between dominant landuses and discharges.
- Utilization of hydrologic data selected with respect to the following criteria:
  - Completeness of the weather data available for the selected period,
  - Adequacy of low-flow and high-flow years,

- Consistency of selected period with key model inputs.

- Achievement of the overall goals of the calibration (to decrease the error between the simulated and observed flows, generally achieving an error rate no more 20%) in the following order:
  - Maintenance of annual water balance,
  - Representation of seasonal and monthly flow volumes,
  - Representation of base-flow conditions,
  - Representation of storm events.
- Report presentation electronically via email or file sharing containing worksheets that represent the observed and modeled data, graphs and tables designed to assess the goodness-of-fit, and a statistical analysis of the calibration.

### 2.4.2 Water Quality Calibration

The vendor shall perform a water quality calibration for all pollutants of concern at multiple locations throughout the watershed to assure scientific validity of the process by representing dominant land uses and discharges.

WVDEP instream monitoring data will be collected approximately within a 12-month period. The water quality calibration will consist of executing the watershed model, comparing time series water quality output with available water quality observation data, and adjusting water quality parameters within a reasonable range. In-stream concentrations from the model are to be compared directly with observed data. The objective is to best simulate observed concentrations at low flow, mean flow, and storm peaks at representative water quality monitoring stations.

The water quality calibration shall be presented electronically and contain worksheets that represent the observed and modeled output data, graphs and tables designed to assess the goodness-of-fit, and a statistical analysis of the calibration.

## 2.5 Biological Stressor Identification

Stressor identification will be accomplished by a weight-of-evidence/best professional judgment approach that incorporates evaluation of field narratives and available information on water chemistry, habitat, and biological assemblages. The vendor will build upon the stressor identification methodologies and threshold criteria developed in previous TMDL projects. The vendor will support the use of the biological information, particularly statistical diagnostic resources developed in concert with DEP biologists. This biological information will be used in the stressor identification processes to increase the effectiveness of the identification of significant biological stressors. Typical stressors include pH/metals toxicity, sedimentation, organic enrichment, and ionic stress; however, additional stressors may be encountered and will require diagnosis via stressor identification processes, including statistical modeling. The use of developed and tested

diagnostic resources (e.g., statistical models) to enhance biological stressor identification, including stressor identification diagrams which correlate likely stressors to trends evidenced in biological communities will be necessary. The vendor shall have experience with statistical model(s) which assign probabilities for likely stressors impacting biological assemblages based on genus and/or species-level taxonomy.

**2.6 Sediment/Metals Relationships**

TMDLs relative to numeric water quality criteria for iron will require the control of iron loading from sediment-producing sources. Biological stress due to sedimentation may be resolved by attainment of total iron water quality criteria. As such, the vendor will be required to examine potential sediment/iron (TSS-to-Fe) relationships at the subwatershed scale and document/quantify areas where positive correlations exist.

**2.7 Allocations**

The vendor and WVDEP will collaborate on an overall allocation strategy from which wasteload and load allocations shall be developed. The vendor will provide wasteload allocations (WLAs) to individual point sources and load allocations (LAs) to specific categories of non-point sources. These allocations will be provided electronically with filterable spreadsheets. The allocations will include a margin of safety, seasonality considerations, analysis of background conditions, and future growth allocations. Also, the selected vendor should be able to represent hydrology in such a way to predict higher and lower flows to account for future changes in precipitation and discharge, if requested by the WVDEP. Generally, the allocations must be reasonable, and the prescribed reductions cannot be more stringent than the background conditions. Allocation scenarios should be consistent with the Chesapeake Bay TMDL and Watershed Improvement Plan.

**2.8 ArcGIS Viewer Project**

The vendor will provide Draft and Final ArcGIS Viewer Projects that allows for the exploration of spatial relationships among the source assessment data. The projects will be developed in ArcView® 10.1 or newer software as will be specified in the work directive.

**2.9 Public and Technical Report Development**

The Vendor shall demonstrate their ability to prepare public and technical documents. The WVDEP and vendor will cooperate in the development of a report format and schedule for delivery. Prior to submission of all internal draft reports, the vendor will perform an in-house, thorough technical review for accuracy of content, general grammatical correctness, and graphical representation.

WVDEP is committed to implementing a TMDL development process that reflects the

requirements of TMDL regulations, provides for the achievement of water quality standards, and ensures that adequate stakeholder participation is achieved in the process. To aid in the interpretation of the TMDL, all documentation will provide the stream name, the WV stream code, the NHD (National Hydrography Dataset) code, and the AUID (Assessment Unit Identification) when presenting stream specific data.

The vendor should demonstrate an ability to provide technical report appendices and allocation sheets that allow the general public to understand existing impairments and the corrective actions necessary to restore water quality. Information should also be presented in formats that maximize the usefulness of the TMDL to agencies and programs responsible for implementation. The vendor will create concise guidance materials to support the implementation of the TMDL by non-point programs. Specifically, the guidance will summarize baseline conditions, including assumptions pertaining to pollutant source contributions, to allow implementers preparing a watershed-based plan to more easily:

- Identify causes and sources of impairment,
- Focus efforts to refine source characterization in instances where assumptions were made in the TMDL development,
- Interpret baseline loads and prepare a strategy to achieve the operable load allocations,
- Identify critical/priority implementation areas.

Depending upon the pollutant and impairment, implementation guidance may include the development of an Advanced Restoration Plan (ARP). An ARP is a type of adaptive management document that is used with or instead of a watershed-based plan to engage point and non-point contributors and plan for restoration. An ARP may be used in unique, specific scenarios when appropriate.

**2.10 Status Report and Other Meetings:**

The Vendor should demonstrate an ability to control costs while attending required meetings. The Vendor and WVDEP will hold regular project status meetings. The meetings will be conducted by conference call or in-person at WVDEP headquarters. In discussion/solving of complex issues, the vendor will be required to come to WVDEP headquarters or call or conduct online video conferences (at least once per month). The Vendor will support at least one public meeting.

3. **Qualifications, Experience, and Past Performance:** Vendors should provide information regarding its employees, such as staff qualifications and experience in completing similar projects; references; copies of any staff certifications or degrees applicable to this project; proposed staffing plan; descriptions of past projects completed entailing the location of the project, project manager name and contact information, type of project, and the project goals

and objectives and how they were met.

4. **Oral Presentation/Interviews**: The Agency will conduct individual interviews with the three vendors that are determined to be the most qualified to provide the required service. During oral presentations/interviews, vendors may not alter or add to their submitted proposal, but only clarify information already submitted. A description of the materials and information to be presented is provided below:

   **4.1 Materials and Information Required at Oral Presentation/Interviews:**

   The format for the interviews will be a 30-60-minute PowerPoint presentation consisting, at a minimum, of the following:

   - TMDL development methodology relating to the proposed project,
   - Corporate/personnel experience as it relates to the proposed project,
   - Proposed project management plan to include meeting deliverable deadlines,
   - Key personnel available for the proposed work,
   - Proposed subcontractors,
   - Product quality control, and
   - Project cost control.

TETRA TECH

Jon C. Ludwig
Water – Mid-Atlantic Regional Manager

June 28, 2024

Mr. Nick Murray
Program Manager, TMDL Section
West Virginia Department of Environmental Protection
Division of Water Resources
601 57th Street
Charleston, WV 25304

Subject: CEOI 0313 DEP2400000009 SEEPS TMDL Development

Dear Mr. Murray:

Attached for your review and approval is the proposed cost for CEOI 0313 DEP2400000009 Total Maximum Daily Loads (TMDLs) for Selected Elk River and Eastern Panhandle Streams (SEEPS). We have calculated costs based on the June 14 Work Directive and the May 31 meeting with you and others to discuss the scope and direction of this effort.

The total dollar amount bid for this work plan is **$343,950**

As requested in the June 14 Request for Quote, costs are broken out by task below.

| | |
|---|---|
| Task 1. Upper Elk River Iron and Fecal Coliform TMDL Development | $148.574.00 |
| Task 2. Fecal Coliform TMDL Development in Selected Streams in the Eastern Panhandle | $38,023.00 |
| Task 3. Sediment TMDL Development in Selected Streams in the Eastern Panhandle | $157,353.00 |
| **Total** | **$343,950.00** |

Please note that this cost proposal includes completion of all tasks described in the attached Work Directive to develop TMDLs in the SEEPS Watersheds to address impairments, outlined herein. This cost proposal includes the effort to comprehensively model the entire Back Creek and Upper Elk (above Sutton Lake) watersheds for fecal coliform, and the entire Upper Elk watershed for iron.

If you should have any questions about the cost proposal or approaches described above, please do not hesitate to contact me.

Sincerely,

Jon C. Ludwig
Water – Mid-Atlantic Regional Manager

Enclosures

cc: John Beckman, Le'An Parker

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**WORK DIRECTIVE**

**WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION**

## I. PROJECT DESCRIPTION

This work assignment is to develop new EPA-approvable TMDLs for the various impairments of 44 assessment units (AUs) spanning West Virginia Watershed Management Framework Hydrologic Groups A, B, and C in the Selected Elk and Eastern Panhandle Streams (SEEPS). This project will span the Upper Elk River watershed above the Sutton Dam (HUC8# 05050007), the Potomac Direct Drains HUC (02070004) and the Shenandoah-Jefferson HUC (02070007) both in the Eastern Panhandle of West Virginia. These AUs are in violation of numeric water quality criteria for Fecal Coliform (36), and Total Iron (9), and seven AUs have a biological stressor identified as Sedimentation (Attachment 1).

## II. PROJECT COMMENCEMENT & COMPLETION DATES

The period of performance of this project is from August 1, 2024-July 31, 2026.

## III. GENERAL REQUIREMENTS

During the development period for new TMDLs, Tetra Tech shall furnish the necessary labor (as required in Section IV), supervision, and resources to develop complete TMDLs for the impaired waters described in Attachment 1. Tetra Tech will collaborate with WVDEP in the period of performance to develop data, characterize sources, calibrate models, develop baseline and allocation conditions, and prepare public and technical reports. Finalization components will include public notice of the draft TMDL, receipt and consideration of public comments, and revision of draft document per WVDEP direction. WVDEP and Tetra Tech will cooperate in the preparation of a responsiveness summary that addresses public comments. Tetra Tech will also accomplish any revisions of draft documents as necessary for EPA approval. Section V provides details on deliverables and due dates.

## IV. WORK REQUIREMENTS

Tetra Tech will develop TMDLs for the impaired waters in the SEEPS project areas. The project will require comprehensive water quality assessment and hydrologic modeling and development of TMDLs for impaired waters that are approvable by the EPA. As described in detail in the following sections, Tetra Tech will provide the necessary services in accordance with established deadlines.

The three Tasks noted in this section have intentional redundancy in their descriptions due to different funding source requirements and the need to track and invoice the tasks independently. A Modeling QAPP is described for each task but only one comprehensive Modeling QAPP with all modeling procedures across the SEEPS project is required.

### Task 1.0 – Upper Elk River Iron and Fecal Coliform TMDL Development

**Data Development**
It shall be Tetra Tech's responsibility to gather and assemble all relevant data as specified by the WVDEP, with details to be determined for each type of TMDL. The WVDEP shall generate

recent and comprehensive water quality monitoring data for impaired waters and provide it to Tetra Tech. Tetra Tech must be capable of data manipulations in Microsoft® Access and ORACLE® formats in order to facilitate usage of WVDEP's current databases. The WVDEP will assist in the compilation of other available water quality data and pollutant source information as appropriate throughout the contract period. The data and sources necessary to fulfill TMDL development processes will be partitioned as follows:

Information supplied by WVDEP:

- Pre-TMDL water quality monitoring data and locations
- Source tracking data including, but not limited to timber harvest and burn area, extent of public and private centralized sewer systems, information on inadequate on-site sewage treatment and septic failure zones, extent of MS4 and CSO areas and information for magnitudes of CSO discharges, abandoned mine land disturbances and seep locations and discharge characterization data, agricultural site information, streambank characterization, and source photos
- Stream reach and impaired stream coverage
- Impairment assessments based on water quality monitoring data
- Permitted facility locations and NPDES permit information
- Released Mining Permit data
- Permitted facility Discharge Monitoring Report data
- Oil and gas well locations
- 911 structures
- Abandoned mining coverage and data
- Bond forfeiture data
- Cataloging Unit boundaries (HUC)
- Draft Subwatershed Boundaries

Information gathered by Tetra Tech:

- Meteorological station locations
- Rainfall
- Temperature
- Wind speed
- Dew point
- Humidity
- Cloud cover
- Soils surveys
- State Soil Geographic Database (STATSGO)
- Soil Survey Geographic Database (SSURGO)
- Pollutant atmospheric deposition data
- Landuse and land cover
- Historical Stream Flow Record (daily averages)
- Topographic maps (topo quads)
- Digital elevation maps (DEM)
- National Elevation Dataset (NED)
- Roads

**Subwatershed Delineation**

WVDEP will provide a draft subwatershed delineation to Tetra Tech for their review and revision to use in the TMDL development. The location of pre-TMDL monitoring stations were considered. WVDEP will provide Tetra Tech with a subwatershed delineation directory of the project watersheds that will contain ArcView® shapefiles with the impaired steams highlighted. The project will be developed in ArcView® 10.6 and at a minimum contain the following three layers:

- Impaired Assessment Unit Layer – Spatial coverage including an attribute table containing impaired assessment unit identifier (AUID), stream names, NHD stream code, WV stream code, trout water designation, and fields identifying each impairment.
- Stream Layer – Spatial coverage including an attribute table containing stream name, WV stream code, NHD stream code, and AUID.
- Draft Subwatershed Layer – Spatial coverage including an attribute table containing watershed name, GNIS ID, GNIS name, final stream name, WV stream code, WV NHD stream code, and AUID.

Tetra Tech will review the draft subwatershed delineation and provide feedback. Tetra Tech will verify that the subwatershed delineations are structured as to conserve pollutants from upstream watersheds to downstream (receiving) watersheds. Tetra Tech will revise and submit the Final Draft Subwatershed Layer attribute table to include watershed name, sub ID number, downstream sub ID number, area ($M^2$ & acres), final stream name, WV stream code, WV NHD stream code, and AUID stream code.

**NPDES Permit Summary Report**

It is very important that all permitted point sources be correctly located and represented in the model in order to develop accurate TMDLs. Tetra Tech shall provide an NPDES permit data summary report for the project watershed. This permit summary report will identify and characterize the NDPES data associated with permitted point sources in the watershed. The permit summary report will contain two parts: mining-related permit summary spreadsheets (in a Microsoft® Excel filterable format) and non-mining related permit summary spreadsheets (in a Microsoft® Excel filterable format). These summaries can be submitted to WVDEP electronically.

If applicable, mining permit data and the Division of Mining and Reclamation's (DMR) hydrologic protection unit GIS coverage (hpu.shp) will be provided to Tetra Tech from WVDEP's Environmental Resource Information System (ERIS) database. The hpu.shp GIS coverage will be used to determine the location of the mining-related NPDES permitted outlets. The ERIS database system will provide the effluent type, permit limits and discharge data for the permitted outlets. WVDEP will develop a comprehensive list of mining-related NPDES permitted outlets in the watershed, including permit number, permit type, outlet ID, outlet location (latitude and longitude), effluent type code, effluent limits, total and disturbed drainage area (for precipitation induced discharges), and continuous flow data (for pumped or constant discharges). This information will provide the basis for representing mining related discharge flows as either continuous flow or precipitation driven in the model. If scenarios exist where released mining permits cause or contribute to impairment, WVDEP will provide areas or flows for released outlets and pollutant concentrations obtained during source tracking studies. Released mining permits/outlets are considered non-point sources.

Non-mining point sources include, but are not necessarily limited to the following: discharges from publicly-owned treatment works (POTWs), POTW collection systems overflows, privately owned sewage treatment plant discharges, discharges from industrial wastewater treatment

facilities, and registrations under the Multi-sector Stormwater, Municipal Separate Storm Sewer System (MS4), and Construction Stormwater general permits. WVDEP's OWRNPDES GIS coverage will be used to determine the locations of the non-mining permitted sources and describe permit information such as discharge characteristics, permit limits, and discharge data, which will be obtained from WVDEP's ERIS database. These two datasets will be combined to generate the non-mining related permit summary list for each type of source and will provide the permit number, facility name, responsible party, permit type, outlet ID, outlet location (latitude and longitude), the watershed in which the outlet is located, outlet status (open/closed), the start and end dates for the outlet, and the parameters of interest for which limits are found (including flow, chemical concentrations and pH).

**Pollutant Source Summary**

Tetra Tech shall provide a pollutant source report submitted on a CD or electronically containing an ArcView® project that spatially represents the potential sources of stream impairments in the watershed. The project will contain a unique layer for each impairment type (metals, bacteria, or others). Within each view, shapefiles will be presented that represent potential point and nonpoint pollutant sources, watershed physiographic data, and the monitoring data required for modeling. The shapefiles will be represented with appropriate symbols in the view legend and physical and observed details will be presented in the attribute table associated with each shapefile. A descriptive document (or legend) will also be submitted with the pollutant source report that explains in detail the contents of each project, view, and shapefile. The ArcView® pollutant source report will include the following layers, where appropriate:

**Watershed Physiographic Data**

Subwatershed Delineations – Created by the subwatershed delineation process described in the above Subwatershed Delineation section. The attribute table will include the subwatershed ID number, AUID, stream name, stream code and next downstream reach.

Stream Reach – Spatial representation of all WVDEP digitized streams in the watershed

Impaired AUs – Spatial coverage of the subset of WVDEP's stream reach file identifying impaired AUs in the watershed. The attribute table will contain fields that indicate all pollutants for which each AU is impaired.

Roads – The extent of roads in project watersheds will be spatially represented through a combination of wvroads.shp, TIGER/line files from the U.S. Census Bureau (2011) and vendor-digitized unpaved roads found on topographical maps and aerial photos.

Towns – Spatial coverage including locations and names of towns and municipalities in the watershed.

Soils – Spatial soil classification incorporating USGS STATSGO information.

Landuse (USGS 2011 NLCD, or equivalent)

Structures – Spatial coverage based on information collected through the 911 initiatives. The point coverage includes all buildings and structures on a countywide basis to reflect development that has occurred after landuse data set was created.

**Monitoring Data**

WAB Stations – Spatial coverage to include locations of all WVDEP Watershed Assessment Branch (WAB) in-stream monitoring stations. The attribute table will include the station ID, stream name, stream code, and location coordinates.

WAB Samples – Spatial coverage to include locations of all WVDEP Watershed Assessment Branch (WAB) in-stream WAB samples. The attribute table will include the station ID, Sample ID, stream name, stream code, location coordinates, collection dates, and monitoring results.

Additional Monitoring Samples – Spatial coverage to include locations of all other water quality monitoring samples provided to WVDEP by permittees or other sources, if applicable. The attribute table will include the data provider, stream name, stream code, location coordinates, collection dates, and monitoring results.

Weather Stations – Spatial coverage to include locations of weather stations (including precipitation gages and surface airways stations) within and surrounding the watershed. The attribute table will include the station name and ID, period of record, elevation, and location.

USGS Gage Stations – Spatial coverage of USGS Gage Stations located within and surrounding the project watersheds. The attribute table will include the gage name and ID, period of record and location.

**Potential Point Sources**

DWWM NPDES Permits – Spatial coverage to include a summary of the non-mining permit limit information for NPDES permitted outlets. The attribute table will include the permit #, outlet #, effluent type, limits, and other relevant information.

Mining NPDES Permits – Spatial coverage to summarize mining permit limit information for NPDES permitted outlets. The attribute table will include the permit #, outlet #, effluent type, limits, and other relevant information.

Permitted Mining Areas – Spatial coverage displaying permitted area of mining operations.

Valley Fills – Spatial coverage displaying valley fills from mountaintop removal coal operations.

Bond Forfeiture Sites – Spatial coverage to include locations and status of bond forfeiture sites.

**Potential Nonpoint Sources**

AML Area – Spatial coverage displaying locations and areas of AML surface disturbances.

AML Highwall – Spatial coverage to include locations of AML highwalls.

AML Portals – Spatial coverage to include locations of AML portals.

Released Mining Permits – Spatial coverage to include location of released mining outlets.

Oil and Gas Wells – Spatial coverage to include locations and status of oil and gas well operations.

Marcellus Shale wells – Spatial coverage to include locations and status of the Marcellus Shell drilling operations.

Harvested Forest Info – Spatial coverage to include locations of forest harvest operations based upon information provided by the WV Division of Forestry. The attributes table will include registration number, start date, end date, landing areas, skid/haul road areas, and total logging areas.

Burned Forest Info – Spatial coverage to include locations of burned forest areas based upon information provided by the WV Division of Forestry. The attributes table will include the date of burn and the total area burned.

**Additional Information Generated by WVDEP Source Tracking**

AML Seeps – Spatial coverage to include sample locations taken during WVDEP source tracking efforts. The attributes table includes the site description and the analytical results for each sample.

AML Disturbances – Spatial coverage to include additional AML areas identified during WVDEP source tracking efforts. The attributes table will include the site description of each AML, associated PADS#, and other relevant information.

Stream bank evaluation – Information/guidance relative to riparian soil characteristics to assist in vendor's representation of stream bank erosion.

Sewered Areas – Spatial coverage that shows the boundaries of private and publicly owned centralized sewage collection systems.

Septic Zones – Spatial coverage that includes zones of septic system failure rates derived from hydrogeological characteristics within the watershed.

MS4 Permits – Spatial coverage that shows Municipal Separate Storm Sewer System boundaries.

Agricultural Sites – Spatial coverage showing evaluations of pasture intensity, runoff potential, and acres of riparian zone pasture compiled on a subwatershed basis.

**Modeling QAPP**

Tetra Tech will prepare a modeling QAPP taking into consideration Guidance for Quality Assurance Project Plans for Water Quality Modeling Projects (EPA QA/G – 5M) (https://www.epa.gov/quality/guidance-quality-assurance-project-plans-modeling-epa-qag-5m). Tetra Tech will work with WVDEP to determine which elements of the QAPP should be included.

**TMDL Watershed Model**

Tetra Tech must use the Load Simulation Program in C$^{++}$/Mining Data Analysis System (LSPC/MDAS), or an equivalent, modeling system to develop WVDEP TMDLs for streams that are in violation of West Virginia water quality standards. Tetra Tech shall use nonproprietary

models, model codes, and tools (i.e., those in the public domain for TMDL development). In addition, Tetra Tech shall also provide adequate technical transfer of all models, model codes, tools, and relevant data to WVDEP personnel without restriction to distribution. The modeling and data management process must provide the following:

- Simulation of watershed hydrology using hourly local meteorological data
- Simultaneous modeling of numerous (500+) subwatersheds
- Simulation of relevant pollutant source loading and in-stream response under a range of flow conditions for existing, baseline, and TMDL scenarios. The model must calibrate for existing conditions, but be able to be modified to allow for baseline and allocation scenarios
- Evaluations of compliance with all water quality criteria, considering exposure duration and exceedance frequency components
- Representation of loading processes for both point and nonpoint sources as either precipitation driven or constant discharge, as appropriate
- Representation of atmospheric deposition
- Representation of pollutant build-up/washoff rates for various landuse categories
- Representation of pollutants transferred from upstream watersheds to receiving (downstream) watersheds in a conservative manner
- Incorporation of a graphical interface that supports GIS functions
- Representation of in-stream dissolved metals stemming from total metal source inputs, atmospheric acid deposition and watershed buffering capacity, prescription of total metal allocations that result in compliance with dissolved metal water quality criteria, and distinction of allocations for atmospheric and land-based sources
- Presentation of allocations in an acceptable manner (usable by WVDEP) through a post-processing system that provides waste load allocations (WLAs) to individual point sources and load allocations (LA) to categories of non-point sources
- Storage of all geographic, modeling, and point source permit data in a Microsoft® Access or equivalent database and text file formats to provide for efficient manipulation of data.

**TMDL Model Hydrology Calibration**

Tetra Tech shall perform a calibration of the utilized model with respect to hydrological prediction and provide a report showing the results. The hydrology calibration shall involve the comparison of model results with in-stream flow measurements at selected locations and subsequent adjustment of the hydrologic parameters. The calibration period will be based on the availability of weather and flow data collected during the same time period. WVDEP instream monitoring data was collected from the streams in the Upper Elk River watershed over the course of one year.

The model hydrology calibration must entail the following:

- Incorporation of in-stream flow data from USGS flow gaging stations throughout the watershed. In watersheds without USGS flow gaging stations, the hydrology calibration will be performed on a nearby watershed with similar characteristics and well-documented land uses. This calibration will be supplemented by instantaneous flow

measurements from pre-TMDL monitoring.

- Utilization of hydrologic data selected with respect to the following criteria:
  - Completeness of the weather data available for the selected period
  - Adequacy of low-flow and high-flow years
  - Consistency of selected period with key model inputs
- Achievement of the overall goals of the calibration (to decrease the error between the simulated and observed flows) in the following order:
  - Maintenance of annual water balance
  - Representation of seasonal and monthly flow volumes
  - Representation of base-flow conditions
  - Representation of storm events
  - Report presentation submitted on a CD or electronically containing worksheets that represent the observed and modeled data, graphs and tables designed to assess the goodness-of-fit, and a statistical analysis of the calibration. Calibration shall be performed on a reasonable number of subwatersheds to assure scientific validity of the process.

**TMDL Model Water Quality Calibration**

Tetra Tech shall perform a water quality calibration for all pollutants of concern at multiple locations throughout the watersheds. WVDEP instream monitoring data was collected from streams in the Upper Elk River watershed over the course of one year.

This calibration will consist of executing the watershed model, comparing time series water quality output with available water quality observation data, and adjusting water quality parameters within a reasonable range. In-stream concentrations from the model are to be compared directly with observed data. The objective is to best simulate observed concentrations at low flow, mean flow, and storm peaks at representative water quality monitoring stations.

The water quality calibration, along with a spreadsheet providing the modeled landuse and continuous discharge representations for each subwatershed, shall be submitted on a CD or electronically and contain worksheets that represent the observed and modeled output data, graphs and tables designed to assess the goodness-of-fit, and a statistical analysis of the calibration. Calibration shall be performed on a reasonable number of subwatersheds to assure scientific validity of the process.

**ArcGIS Viewer Project**

Tetra Tech will provide Draft and Final ArcGIS Viewer Projects that allow for the exploration of spatial relationships among the source assessment data. The projects will be developed in ArcView® 10.1 or newer software.

**TMDL Allocations**

Tetra Tech and WVDEP will collaborate on an overall fecal coliform allocation strategy from which wasteload and load allocations shall be developed. Tetra Tech will provide waste load allocations (WLAs) to individual point sources and load allocations (LAs) to specific categories of non-point sources. These allocations will be submitted on a CD or electronically with filterable spreadsheets. The allocations will include a margin of safety, seasonality considerations, analysis of background conditions, and future growth allocations, if requested by the WVDEP. Generally, the allocations must be reasonable, and the prescribed reductions

cannot be more stringent than the background conditions. Tetra Tech and WVDEP will select the target date for the finalization of an overall allocation strategy during the project kick-off meeting. WVDEP and vendor will cooperate as necessary to ensure that the strategy is finalized with ample time for the completion of the Preliminary Draft TMDL deliverable by its scheduled due date.

**TMDL Report Development**

The TMDL reports are to be submitted on a CD or electronically during this contract and shall be subject to the federal regulatory requirements for the development of an approvable TMDL as specified at 40 CFR 130, and any applicable EPA Region III guidance. Tetra Tech will be responsible for all document revisions at various points in the process, from draft stages until final document approval. WVDEP shall direct Tetra Tech to make report revisions when necessary.

WVDEP is committed to implementing a TMDL development process that reflects the requirements of TMDL regulations, provides for the achievement of water quality standards, and ensures that adequate stakeholder participation is achieved in the process. When the WVDEP lists waters not meeting state water quality standards as required by Section 303(d) of the Federal Clean Water Act, the streams have historically been coded using the WV streams code (i.e., ANCODE). To aid in the interpretation of the TMDL, all documentation will provide the WV streams code in addition to the NHD (National Hydrography Dataset) code when presenting stream specific data. In addition, WVDEP will be presenting future lists using AU identifiers derived from the NHD code. All deliverables will include the AUIDs.

The TMDL reports should allow the general public to understand existing impairments and the corrective actions necessary to restore water quality. Information should also be presented in formats that maximize the usefulness of the TMDL to agencies and programs responsible for implementation.

Tetra Tech will create guidance materials to support the implementation of the TMDL by non-point programs. Specifically, the guidance will summarize baseline conditions, including assumptions pertaining to pollutant source contributions, to allow implementers preparing a watershed-based plan to more easily:

- Identify causes and sources of impairment.
- Focus efforts to refine source characterization in instances where assumptions were made in the TMDL development.
- Interpret baseline loads and prepare a strategy to achieve the operable load allocations.
- Identify critical/priority implementation areas.

The WVDEP and vendor will cooperate in the development of a report format that meets those needs. Prior to submission of all internal draft reports, Tetra Tech will perform a thorough technical review for accuracy of content, general grammatical correctness, and graphical representation.

**Status Report and Other Meetings**

Tetra Tech and WVDEP will hold regular project status meetings. The meetings will be conducted by conference call or in-person at WVDEP headquarters. In discussion/solving of complex issues, Tetra Tech will be required to come to WVDEP headquarters or host a virtual meeting allowing for screen sharing. Additionally, Tetra Tech and WVDEP staff may tour the TMDL development project watershed. Watershed tours typically consist of one or two-day events.

**Public Participation Meetings**
Tetra Tech will support at least one public meeting at locations near the TMDL watershed(s) or virtually. The meetings will be arranged by the WVDEP. The final meeting will occur following the development of the draft TMDLs and notice of their availability for comment. During this meeting, WVDEP and Tetra Tech will provide a brief overview of the substantive components of the TMDLs and facilitate interaction between the stakeholders and the WVDEP. The purpose of the meeting is to educate the stakeholders so they can make informed comments on the draft TMDLs. At least three (3) working days prior to each meeting, Tetra Tech shall provide any proposed presentation material to the WVDEP for review.

**Response to Public Comment**
WVDEP and Tetra Tech will prepare a responsiveness summary document during the TMDL finalization step in the process. The responsiveness summary shall answer questions posed by stakeholders, identify revisions of the draft TMDL that resulted from stakeholder input, and explain decisions regarding public comments that did not result in revisions. WVDEP will address comments related to agency policy or procedures and Tetra Tech will address technical issues, as necessary. Additional revisions may be required by Tetra Tech regarding comments provided by USEPA during TMDL approval.

## Task 2.0 – Fecal Coliform TMDL Development in Selected Streams in the Eastern Panhandle

The Fecal Coliform component of the Eastern Panhandle project area must be tracked separately from the Sediment component; however it should be a part of the same draft and final report documents.

**Data Development**
It shall be Tetra Tech's responsibility to gather and assemble all relevant data as specified by the WVDEP, with details to be determined for each type of TMDL. The WVDEP shall generate recent and comprehensive water quality monitoring data for impaired waters and provide it to Tetra Tech. Tetra Tech must be capable of data manipulations in Microsoft® Access and ORACLE® formats in order to facilitate usage of WVDEP's current databases. The WVDEP will assist in the compilation of other available water quality data and pollutant source information as appropriate throughout the contract period. The data and sources necessary to fulfill TMDL development processes will be partitioned as follows:

Information supplied by WVDEP:

- Pre-TMDL water quality monitoring data and locations
- Source tracking data including, but not limited to timber harvest and burn area, extent of public and private centralized sewer systems, information on inadequate on-site sewage treatment and septic failure zones, extent of MS4 and CSO areas and information for magnitudes of CSO discharges, abandoned mine land disturbances and seep locations and discharge characterization data, agricultural site information, streambank characterization, and source photos
- Stream reach and impaired stream coverage
- Impairment assessments based on water quality monitoring data
- Permitted facility locations and NPDES permit information

- Released Mining Permit data
- Permitted facility Discharge Monitoring Report data
- Oil and gas well locations
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- Draft Subwatershed Boundaries

Information gathered by Tetra Tech:

- Meteorological station locations
- Rainfall
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- Wind speed
- Dew point
- Humidity
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- State Soil Geographic Database (STATSGO)
- Soil Survey Geographic Database (SSURGO)
- Pollutant atmospheric deposition data
- Landuse and land cover
- Historical Stream Flow Record (daily averages)
- Topographic maps (topo quads)
- Digital elevation maps (DEM)
- National Elevation Dataset (NED)
- Roads

**NPDES Permit Summary Report**

It is very important that all permitted point sources be correctly located and represented in the model in order to develop accurate TMDLs. Tetra Tech shall provide an NPDES permit data summary report for the project watershed. This permit summary report will identify and characterize the NDPES data associated with permitted point sources in the watershed. The permit summary report will contain two parts: mining-related permit summary spreadsheets (in a Microsoft® Excel filterable format) and non-mining related permit summary spreadsheets (in a Microsoft® Excel filterable format). These summaries can be submitted to WVDEP electronically.

If applicable, mining permit data and the Division of Mining and Reclamation's (DMR) hydrologic protection unit GIS coverage (hpu.shp) will be provided to Tetra Tech from WVDEP's Environmental Resource Information System (ERIS) database. The hpu.shp GIS coverage will be used to determine the location of the mining-related NPDES permitted outlets. The ERIS database system will provide the effluent type, permit limits and discharge data for the permitted outlets. WVDEP will develop a comprehensive list of mining-related NPDES permitted outlets in the watershed, including permit number, permit type, outlet ID, outlet location (latitude and longitude), effluent type code, effluent limits, total and disturbed drainage area (for precipitation induced discharges), and continuous flow data (for pumped or constant discharges). This information will provide the basis for representing mining related discharge flows as either

continuous flow or precipitation driven in the model. If scenarios exist where released mining permits cause or contribute to impairment, WVDEP will provide areas or flows for released outlets and pollutant concentrations obtained during source tracking studies. Released mining permits/outlets are considered non-point sources.

Non-mining point sources include, but are not necessarily limited to the following: discharges from publicly-owned treatment works (POTWs), POTW collection systems overflows, privately owned sewage treatment plant discharges, discharges from industrial wastewater treatment facilities, and registrations under the Multi-sector Stormwater, Municipal Separate Storm Sewer System (MS4), and Construction Stormwater general permits. WVDEP's OWRNPDES GIS coverage will be used to determine the locations of the non-mining permitted sources and describe permit information such as discharge characteristics, permit limits, and discharge data, which will be obtained from WVDEP's ERIS database. These two datasets will be combined to generate the non-mining related permit summary list for each type of source and will provide the permit number, facility name, responsible party, permit type, outlet ID, outlet location (latitude and longitude), the watershed in which the outlet is located, outlet status (open/closed), the start and end dates for the outlet, and the parameters of interest for which limits are found (including flow, chemical concentrations and pH).

**Pollutant Source Summary**
Tetra Tech shall provide a pollutant source report submitted on a CD or electronically containing an ArcView® project that spatially represents the potential sources of impairments in the watershed for Task 3. Fecal coliform sources should be included in 1 Pollutant Source Report for the Eastern Panhandle project area.

**Additional Information Generated by WVDEP Source Tracking**
Sewered Areas – Spatial coverage that shows the boundaries of private and publicly owned centralized sewage collection systems.

Septic Zones – Spatial coverage that includes zones of septic system failure rates derived from hydrogeological characteristics within the watershed.

**TMDL Watershed Model**
Tetra Tech must use the Load Simulation Program in C$^{++}$/Mining Data Analysis System (LSPC/MDAS), or an equivalent, modeling system to develop WVDEP TMDLs for streams that are in violation of West Virginia water quality standards. Tetra Tech shall use nonproprietary models, model codes, and tools (i.e., those in the public domain for TMDL development). In addition, Tetra Tech shall also provide adequate technical transfer of all models, model codes, tools, and relevant data to WVDEP personnel without restriction to distribution. The modeling and data management process must provide the following:

- Simulation of relevant pollutant source loading and in-stream response under a range of flow conditions for existing, baseline, and TMDL scenarios. The model must calibrate for existing conditions, but be able to be modified to allow for baseline and allocation scenarios
- Evaluations of compliance with all water quality criteria, considering exposure duration and exceedance frequency components
- Representation of loading processes for both point and nonpoint sources as either precipitation driven or constant discharge, as appropriate

- Representation of pollutant build-up/washoff rates for various landuse categories
- Representation of pollutants transferred from upstream watersheds to receiving (downstream) watersheds in a conservative manner
- Incorporation of a graphical interface that supports GIS functions
- Presentation of allocations in an acceptable manner (usable by WVDEP) through a post-processing system that provides waste load allocations (WLAs) to individual point sources and load allocations (LA) to categories of non-point sources
- Storage of all geographic, modeling, and point source permit data in a Microsoft® Access or equivalent database and text file formats to provide for efficient manipulation of data.

**ArcGIS Viewer Project**

Tetra Tech will provide Draft and Final ArcGIS Viewer Projects that allow for the exploration of spatial relationships among the source assessment data. The projects will be developed in ArcView® 10.1 or newer software.

**TMDL Allocations**

Tetra Tech and WVDEP will collaborate on an overall fecal coliform allocation strategy from which wasteload and load allocations shall be developed. Tetra Tech will provide waste load allocations (WLAs) to individual point sources and load allocations (LAs) to specific categories of non-point sources. These allocations will be submitted on a CD or electronically with filterable spreadsheets. The allocations will include a margin of safety, seasonality considerations, analysis of background conditions, and future growth allocations, if requested by the WVDEP. Generally, the allocations must be reasonable, and the prescribed reductions cannot be more stringent than the background conditions. Tetra Tech and WVDEP will select the target date for the finalization of an overall allocation strategy during the project kick-off meeting. WVDEP and vendor will cooperate as necessary to ensure that the strategy is finalized with ample time for the completion of the Preliminary Draft TMDL deliverable by its scheduled due date.

**TMDL Report Development**

The TMDL reports are to be submitted on a CD or electronically during this contract and shall be subject to the federal regulatory requirements for the development of an approvable TMDL as specified at 40 CFR 130, and any applicable EPA Region III guidance. Tetra Tech will be responsible for all document revisions at various points in the process, from draft stages until final document approval. WVDEP shall direct Tetra Tech to make report revisions when necessary.

WVDEP is committed to implementing a TMDL development process that reflects the requirements of TMDL regulations, provides for the achievement of water quality standards, and ensures that adequate stakeholder participation is achieved in the process. When the WVDEP lists waters not meeting state water quality standards as required by Section 303(d) of the Federal Clean Water Act, the streams have historically been coded using the WV streams code (i.e., ANCODE). To aid in the interpretation of the TMDL, all documentation will provide the WV streams code in addition to the NHD (National Hydrography Dataset) code when presenting stream specific data. In addition, WVDEP will be presenting future lists using AU identifiers derived from the NHD code. All deliverables will include the AUIDs.

The TMDL reports should allow the general public to understand existing impairments and the corrective actions necessary to restore water quality. Information should also be presented in

formats that maximize the usefulness of the TMDL to agencies and programs responsible for implementation.

Tetra Tech will create guidance materials to support the implementation of the TMDL by non-point programs. Specifically, the guidance will summarize baseline conditions, including assumptions pertaining to pollutant source contributions, to allow implementers preparing a watershed-based plan to more easily:

- Identify causes and sources of impairment.
- Focus efforts to refine source characterization in instances where assumptions were made in the TMDL development.
- Interpret baseline loads and prepare a strategy to achieve the operable load allocations.
- Identify critical/priority implementation areas.

The WVDEP and vendor will cooperate in the development of a report format that meets those needs. Prior to submission of all internal draft reports, Tetra Tech will perform a thorough technical review for accuracy of content, general grammatical correctness, and graphical representation.

**For ease of public engagement, the Fecal Coliform portion of the Eastern Panhandle project should be included within the Sediment TMDL project report.**

## Task 3.0 - Sediment TMDL Development in Selected Streams in the Eastern Panhandle

Given the contribution of nutrients and sediment to the Chesapeake Bay from the Eastern Panhandle, TMDL development to control sediment to address local impairment and biological stress will be prepared separately and should be tracked as isolated tasks.

### Data Development

It shall be Tetra Tech's responsibility to gather and assemble all relevant data as specified by the WVDEP, with details to be determined for each type of TMDL. The WVDEP shall generate recent and comprehensive water quality monitoring data for impaired waters and provide it to Tetra Tech. Tetra Tech must be capable of data manipulations in Microsoft® Access and ORACLE® formats in order to facilitate usage of WVDEP's current databases. The WVDEP will assist in the compilation of other available water quality data and pollutant source information as appropriate throughout the contract period. The data and sources necessary to fulfill TMDL development processes will be partitioned as follows:

Information supplied by WVDEP:

- Pre-TMDL water quality monitoring data and locations
- Source tracking data including, but not limited to timber harvest and burn area, extent of public and private centralized sewer systems, information on inadequate on-site sewage treatment and septic failure zones, extent of MS4 and CSO areas and information for magnitudes of CSO discharges, abandoned mine land disturbances and seep locations and discharge characterization data, agricultural site information, streambank characterization, and source photos
- Stream reach and impaired stream coverage

- Impairment assessments based on water quality monitoring data
- Permitted facility locations and NPDES permit information
- Released Mining Permit data
- Permitted facility Discharge Monitoring Report data
- Oil and gas well locations
- 911 structures
- Abandoned mining coverage and data
- Bond forfeiture data
- Cataloging Unit boundaries (HUC)
- Draft Subwatershed Boundaries

Information gathered by Tetra Tech:

- Meteorological station locations
- Rainfall
- Temperature
- Wind speed
- Dew point
- Humidity
- Cloud cover
- Soils surveys
- State Soil Geographic Database (STATSGO)
- Soil Survey Geographic Database (SSURGO)
- Pollutant atmospheric deposition data
- Landuse and land cover
- Historical Stream Flow Record (daily averages)
- Topographic maps (topo quads)
- Digital elevation maps (DEM)
- National Elevation Dataset (NED)
- Roads

**Subwatershed Delineation**

WVDEP will provide a draft subwatershed delineation to Tetra Tech for their review and revision to use in the TMDL development. The location of pre-TMDL monitoring stations were considered. WVDEP will provide Tetra Tech with a subwatershed delineation directory of the project watersheds that will contain ArcView® shapefiles with the impaired steams highlighted. The project will be developed in ArcView® 10.6 and at a minimum contain the following three layers:

- Impaired Assessment Unit Layer – Spatial coverage including an attribute table containing impaired assessment unit identifier (AUID), stream names, NHD stream code, WV stream code, trout water designation, and fields identifying each impairment.
- Stream Layer – Spatial coverage including an attribute table containing stream name, WV stream code, NHD stream code, and AUID.
- Draft Subwatershed Layer – Spatial coverage including an attribute table containing watershed name, GNIS ID, GNIS name, final stream name, WV stream code, WV NHD stream code, and AUID.

Tetra Tech will review the draft subwatershed delineation and provide feedback. Tetra Tech will verify that the subwatershed delineations are structured as to conserve pollutants from

upstream watersheds to downstream (receiving) watersheds. Tetra Tech will revise and submit the Final Draft Subwatershed Layer attribute table to include watershed name, sub ID number, downstream sub ID number, area ($M^2$ & acres), final stream name, WV stream code, WV NHD stream code, and AUID stream code.

**NPDES Permit Summary Report**

It is very important that all permitted point sources be correctly located and represented in the model in order to develop accurate TMDLs. Tetra Tech shall provide an NPDES permit data summary report for the project watershed. This permit summary report will identify and characterize the NDPES data associated with permitted point sources in the watershed. The permit summary report will contain two parts: mining-related permit summary spreadsheets (in a Microsoft® Excel filterable format) and non-mining related permit summary spreadsheets (in a Microsoft® Excel filterable format). These summaries can be submitted to WVDEP electronically.

If applicable, mining permit data and the Division of Mining and Reclamation's (DMR) hydrologic protection unit GIS coverage (hpu.shp) will be provided to Tetra Tech from WVDEP's Environmental Resource Information System (ERIS) database. The hpu.shp GIS coverage will be used to determine the location of the mining-related NPDES permitted outlets. The ERIS database system will provide the effluent type, permit limits and discharge data for the permitted outlets. WVDEP will develop a comprehensive list of mining-related NPDES permitted outlets in the watershed, including permit number, permit type, outlet ID, outlet location (latitude and longitude), effluent type code, effluent limits, total and disturbed drainage area (for precipitation induced discharges), and continuous flow data (for pumped or constant discharges). This information will provide the basis for representing mining related discharge flows as either continuous flow or precipitation driven in the model. If scenarios exist where released mining permits cause or contribute to impairment, WVDEP will provide areas or flows for released outlets and pollutant concentrations obtained during source tracking studies. Released mining permits/outlets are considered non-point sources.

Non-mining point sources include, but are not necessarily limited to the following: discharges from publicly-owned treatment works (POTWs), POTW collection systems overflows, privately owned sewage treatment plant discharges, discharges from industrial wastewater treatment facilities, and registrations under the Multi-sector Stormwater, Municipal Separate Storm Sewer System (MS4), and Construction Stormwater general permits. WVDEP's OWRNPDES GIS coverage will be used to determine the locations of the non-mining permitted sources and describe permit information such as discharge characteristics, permit limits, and discharge data, which will be obtained from WVDEP's ERIS database. These two datasets will be combined to generate the non-mining related permit summary list for each type of source and will provide the permit number, facility name, responsible party, permit type, outlet ID, outlet location (latitude and longitude), the watershed in which the outlet is located, outlet status (open/closed), the start and end dates for the outlet, and the parameters of interest for which limits are found (including flow, chemical concentrations and pH).

**Pollutant Source Summary**

Tetra Tech shall provide a pollutant source report submitted on a CD or electronically containing an ArcView® project that spatially represents the potential sources of stream impairments in the watershed. The project will contain a unique layer for each impairment type (metals, bacteria, or others). Within each view, shapefiles will be presented that represent potential point and nonpoint pollutant sources, watershed physiographic data, and the monitoring data required for modeling. The shapefiles will be represented with appropriate symbols in the view legend and

physical and observed details will be presented in the attribute table associated with each shapefile. A descriptive document (or legend) will also be submitted with the pollutant source report that explains in detail the contents of each project, view, and shapefile. The ArcView® pollutant source report will include the following layers, where appropriate:

**Watershed Physiographic Data**
Subwatershed Delineations – Created by the subwatershed delineation process described in the above Subwatershed Delineation section. The attribute table will include the subwatershed ID number, AUID, stream name, stream code and next downstream reach.

Stream Reach – Spatial representation of all WVDEP digitized streams in the watershed

Impaired AUs – Spatial coverage of the subset of WVDEP's stream reach file identifying impaired AUs in the watershed. The attribute table will contain fields that indicate all pollutants for which each AU is impaired.

Roads – The extent of roads in project watersheds will be spatially represented through a combination of wvroads.shp, TIGER/line files from the U.S. Census Bureau (2011) and vendor-digitized unpaved roads found on topographical maps and aerial photos.

Towns – Spatial coverage including locations and names of towns and municipalities in the watershed.

Soils – Spatial soil classification incorporating USGS STATSGO information.

Landuse (USGS 2011 NLCD, or equivalent)

Structures – Spatial coverage based on information collected through the 911 initiatives. The point coverage includes all buildings and structures on a countywide basis to reflect development that has occurred after landuse data set was created.

**Monitoring Data**
WAB Stations – Spatial coverage to include locations of all WVDEP Watershed Assessment Branch (WAB) in-stream monitoring stations. The attribute table will include the station ID, stream name, stream code, and location coordinates.

WAB Samples – Spatial coverage to include locations of all WVDEP Watershed Assessment Branch (WAB) in-stream WAB samples. The attribute table will include the station ID, Sample ID, stream name, stream code, location coordinates, collection dates, and monitoring results.

Additional Monitoring Samples – Spatial coverage to include locations of all other water quality monitoring samples provided to WVDEP by permittees or other sources, if applicable. The attribute table will include the data provider, stream name, stream code, location coordinates, collection dates, and monitoring results.

Weather Stations – Spatial coverage to include locations of weather stations (including precipitation gages and surface airways stations) within and surrounding the watershed. The attribute table will include the station name and ID, period of record, elevation, and location.

USGS Gage Stations – Spatial coverage of USGS Gage Stations located within and surrounding the project watersheds. The attribute table will include the gage name and ID, period of record and location.

**Potential Point Sources**
DWWM NPDES Permits – Spatial coverage to include a summary of the non-mining permit limit information for NPDES permitted outlets. The attribute table will include the permit #, outlet #, effluent type, limits, and other relevant information.

Mining NPDES Permits – Spatial coverage to summarize mining permit limit information for NPDES permitted outlets. The attribute table will include the permit #, outlet #, effluent type, limits, and other relevant information.

Permitted Mining Areas – Spatial coverage displaying permitted area of mining operations.

Valley Fills – Spatial coverage displaying valley fills from mountaintop removal coal operations.

Bond Forfeiture Sites – Spatial coverage to include locations and status of bond forfeiture sites.

**Potential Nonpoint Sources**
AML Area – Spatial coverage displaying locations and areas of AML surface disturbances.

AML Highwall – Spatial coverage to include locations of AML highwalls.

AML Portals – Spatial coverage to include locations of AML portals.

Released Mining Permits – Spatial coverage to include location of released mining outlets.

Oil and Gas Wells – Spatial coverage to include locations and status of oil and gas well operations.

Marcellus Shale wells – Spatial coverage to include locations and status of the Marcellus Shell drilling operations.

Harvested Forest Info – Spatial coverage to include locations of forest harvest operations based upon information provided by the WV Division of Forestry. The attributes table will include registration number, start date, end date, landing areas, skid/haul road areas, and total logging areas.

Burned Forest Info – Spatial coverage to include locations of burned forest areas based upon information provided by the WV Division of Forestry. The attributes table will include the date of burn and the total area burned.

**Additional Information Generated by WVDEP Source Tracking**
AML Seeps – Spatial coverage to include sample locations taken during WVDEP source

tracking efforts. The attributes table includes the site description and the analytical results for each sample.

AML Disturbances – Spatial coverage to include additional AML areas identified during WVDEP source tracking efforts. The attributes table will include the site description of each AML, associated PADS#, and other relevant information.

Stream bank evaluation – Information/guidance relative to riparian soil characteristics to assist in vendor's representation of stream bank erosion.

Sewered Areas – Spatial coverage that shows the boundaries of private and publicly owned centralized sewage collection systems.

Septic Zones – Spatial coverage that includes zones of septic system failure rates derived from hydrogeological characteristics within the watershed.

MS4 Permits – Spatial coverage that shows Municipal Separate Storm Sewer System boundaries.

Agricultural Sites – Spatial coverage showing evaluations of pasture intensity, runoff potential, and acres of riparian zone pasture compiled on a subwatershed basis.

**Modeling QAPP**

Tetra Tech will prepare a modeling QAPP taking into consideration Guidance for Quality Assurance Project Plans for Water Quality Modeling Projects (EPA QA/G – 5M) (https://www.epa.gov/quality/guidance-quality-assurance-project-plans-modeling-epa-qag-5m). Tetra Tech will work with WVDEP to determine which elements of the QAPP should be included.

**TMDL Watershed Model**

Tetra Tech must use the Load Simulation Program in C++/Mining Data Analysis System (LSPC/MDAS), or an equivalent, modeling system to develop WVDEP TMDLs for streams that are in violation of West Virginia water quality standards. Tetra Tech shall use nonproprietary models, model codes, and tools (i.e., those in the public domain for TMDL development). In addition, Tetra Tech shall also provide adequate technical transfer of all models, model codes, tools, and relevant data to WVDEP personnel without restriction to distribution. The modeling and data management process must provide the following:

- Simulation of watershed hydrology using hourly local meteorological data
- Simultaneous modeling of numerous (500+) subwatersheds
- Simulation of relevant pollutant source loading and in-stream response under a range of flow conditions for existing, baseline, and TMDL scenarios. The model must calibrate for existing conditions, but be able to be modified to allow for baseline and allocation scenarios
- Evaluations of compliance with all water quality criteria, considering exposure duration and exceedance frequency components
- Representation of loading processes for both point and nonpoint sources as either precipitation driven or constant discharge, as appropriate

- Representation of atmospheric deposition
- Representation of pollutant build-up/washoff rates for various landuse categories
- Representation of pollutants transferred from upstream watersheds to receiving (downstream) watersheds in a conservative manner
- Incorporation of a graphical interface that supports GIS functions
- Representation of in-stream dissolved metals stemming from total metal source inputs, atmospheric acid deposition and watershed buffering capacity, prescription of total metal allocations that result in compliance with dissolved metal water quality criteria, and distinction of allocations for atmospheric and land-based sources
- Presentation of allocations in an acceptable manner (usable by WVDEP) through a post-processing system that provides waste load allocations (WLAs) to individual point sources and load allocations (LA) to categories of non-point sources
- Storage of all geographic, modeling, and point source permit data in a Microsoft® Access or equivalent database and text file formats to provide for efficient manipulation of data.

**TMDL Model Hydrology Calibration**

Tetra Tech shall perform a calibration of the utilized model with respect to hydrological prediction and provide a report showing the results. The hydrology calibration shall involve the comparison of model results with in-stream flow measurements at selected locations and subsequent adjustment of the hydrologic parameters. The calibration period will be based on the availability of weather and flow data collected during the same time period. WVDEP instream monitoring data was collected from different streams in the Eastern Panhandle watersheds over the course of two years. WVDEP intends that Tetra Tech will perform Hydrology Calibration of the Eastern Panhandle areas once, which will subsequently be used for water quality modeling, both Fecal Coliform and Sediment.

The model hydrology calibration must entail the following:

- Incorporation of in-stream flow data from USGS flow gaging stations throughout the watershed. In watersheds without USGS flow gaging stations, the hydrology calibration will be performed on a nearby watershed with similar characteristics and well-documented land uses. This calibration will be supplemented by instantaneous flow measurements from pre-TMDL monitoring.
- Utilization of hydrologic data selected with respect to the following criteria:
  - Completeness of the weather data available for the selected period
  - Adequacy of low-flow and high-flow years
  - Consistency of selected period with key model inputs
- Achievement of the overall goals of the calibration (to decrease the error between the simulated and observed flows) in the following order:
  - Maintenance of annual water balance
  - Representation of seasonal and monthly flow volumes
  - Representation of base-flow conditions
  - Representation of storm events
  - Report presentation submitted on a CD or electronically containing worksheets that represent the observed and modeled data, graphs and tables designed to assess the goodness-of-fit, and a statistical analysis of the calibration.

Calibration shall be performed on a reasonable number of subwatersheds to assure scientific validity of the process.

**TMDL Model Water Quality Calibration**
Tetra Tech shall perform a water quality calibration for all pollutants of concern at multiple locations throughout the watersheds. WVDEP instream monitoring data was collected from different streams in the Eastern Panhandle watersheds over the course of two years.

This calibration will consist of executing the watershed model, comparing time series water quality output with available water quality observation data, and adjusting water quality parameters within a reasonable range. In-stream concentrations from the model are to be compared directly with observed data. The objective is to best simulate observed concentrations at low flow, mean flow, and storm peaks at representative water quality monitoring stations.

The water quality calibration, along with a spreadsheet providing the modeled landuse and continuous discharge representations for each subwatershed, shall be submitted on a CD or electronically and contain worksheets that represent the observed and modeled output data, graphs and tables designed to assess the goodness-of-fit, and a statistical analysis of the calibration. Calibration shall be performed on a reasonable number of subwatersheds to assure scientific validity of the process.

**ArcGIS Viewer Project**
Tetra Tech will provide Draft and Final ArcGIS Viewer Projects that allow for the exploration of spatial relationships among the source assessment data. The projects will be developed in ArcView® 10.1 or newer software.

**TMDL Allocations**
Tetra Tech and WVDEP will collaborate on an overall sediment allocation strategy from which wasteload and load allocations shall be developed. Tetra Tech will provide waste load allocations (WLAs) to individual point sources and load allocations (LAs) to specific categories of non-point sources. These allocations will be submitted on a CD or electronically with filterable spreadsheets. The allocations will include a margin of safety, seasonality considerations, analysis of background conditions, and future growth allocations, if requested by the WVDEP. Generally, the allocations must be reasonable, and the prescribed reductions cannot be more stringent than the background conditions. Tetra Tech and WVDEP will select the target date for the finalization of an overall allocation strategy during the project kick-off meeting. WVDEP and vendor will cooperate as necessary to ensure that the strategy is finalized with ample time for the completion of the Preliminary Draft TMDL deliverable by its scheduled due date.

**TMDL Report Development**
The TMDL reports are to be submitted on a CD or electronically during this contract and shall be subject to the federal regulatory requirements for the development of an approvable TMDL as specified at 40 CFR 130, and any applicable EPA Region III guidance. Tetra Tech will be responsible for all document revisions at various points in the process, from draft stages until final document approval. WVDEP shall direct Tetra Tech to make report revisions when necessary.

WVDEP is committed to implementing a TMDL development process that reflects the requirements of TMDL regulations, provides for the achievement of water quality standards, and

ensures that adequate stakeholder participation is achieved in the process. When the WVDEP lists waters not meeting state water quality standards as required by Section 303(d) of the Federal Clean Water Act, the streams have historically been coded using the WV streams code (i.e., ANCODE). To aid in the interpretation of the TMDL, all documentation will provide the WV streams code in addition to the NHD (National Hydrography Dataset) code when presenting stream specific data. In addition, WVDEP will be presenting future lists using AU identifiers derived from the NHD code. All deliverables will include the AUIDs.

The TMDL reports should allow the general public to understand existing impairments and the corrective actions necessary to restore water quality. Information should also be presented in formats that maximize the usefulness of the TMDL to agencies and programs responsible for implementation.

Tetra Tech will create guidance materials to support the implementation of the TMDL by non-point programs. Specifically, the guidance will summarize baseline conditions, including assumptions pertaining to pollutant source contributions, to allow implementers preparing a watershed-based plan to more easily:

- Identify causes and sources of impairment.
- Focus efforts to refine source characterization in instances where assumptions were made in the TMDL development.
- Interpret baseline loads and prepare a strategy to achieve the operable load allocations.
- Identify critical/priority implementation areas.

The WVDEP and vendor will cooperate in the development of a report format that meets those needs. Prior to submission of all internal draft reports, Tetra Tech will perform a thorough technical review for accuracy of content, general grammatical correctness, and graphical representation.

**Status Report and Other Meetings**

Tetra Tech and WVDEP will hold regular project status meetings. The meetings will be conducted by conference call or in-person at WVDEP headquarters. In discussion/solving of complex issues, Tetra Tech will be required to come to WVDEP headquarters or host a virtual meeting allowing for screen sharing. Additionally, Tetra Tech and WVDEP staff may tour the TMDL development project watershed. Watershed tours typically consist of one or two-day events.

**Public Participation Meetings**

Tetra Tech will support at least one public meeting at locations near the TMDL watershed(s) or virtually. The meetings will be arranged by the WVDEP. The final meeting will occur following the development of the draft TMDLs and notice of their availability for comment. During this meeting, WVDEP and Tetra Tech will provide a brief overview of the substantive components of the TMDLs and facilitate interaction between the stakeholders and the WVDEP. The purpose of the meeting is to educate the stakeholders so they can make informed comments on the draft TMDLs. At least three (3) working days prior to each meeting, Tetra Tech shall provide any proposed presentation material to the WVDEP for review.

**Response to Public Comment**

WVDEP and Tetra Tech will prepare a responsiveness summary document during the TMDL finalization step in the process. The responsiveness summary shall answer questions posed by

stakeholders, identify revisions of the draft TMDL that resulted from stakeholder input, and explain decisions regarding public comments that did not result in revisions. WVDEP will address comments related to agency policy or procedures and Tetra Tech will address technical issues, as necessary. Additional revisions may be required by Tetra Tech regarding comments provided by USEPA during TMDL approval.

## V. DELIVERABLES AND PROGRESS PAYMENT PLAN

Progress reports/deliverable(s) dates and associated payment amounts are shown in Tables 1 and 2. Each progress report must be accompanied by an invoice for Tasks 1 and 2 together, then Task 3 separately, and provided to WVDEP on or before the required due date. The progress reports must demonstrate that Tetra Tech has completed sufficient work to allow timely submission of future scheduled deliverables. If events out of Tetra Tech's control (i.e., water quality criteria changes, significant public comments, unanticipated policy issues, etc.) should occur resulting in a delay of Deliverables 24 and 25 beyond the period of performance, payment terms will be negotiated based on documented progress toward completion of the final deliverables. Only one modeling QAPP is required that can encompass both the Upper Elk River and Eastern Panhandle areas. WVDEP requests two separate reports, one for the Upper Elk watershed and one for the Eastern Panhandle streams.

**Table 1. Tasks 1 and 2**

| Item No. | Description | Progress Report/ Deliverable Due Date | Amount Authorized |
|---|---|---|---|
| 1a | Progress Report, Deliverable 1 for Tasks 1-2 | **10/01/24** | **$13,994.78** |
| 2a | Progress Report, Deliverables 2-3 | **12/02/24** | **$13,994.78** |
| 3a | Progress Report, Deliverables 5-6 | **2/03/25** | **$13,994.78** |
| 4a | Progress Report, Deliverables 8-9 | **4/01/25** | **$13,994.78** |
| 5a | Progress Report for Tasks 1-2 | **6/02/25** | **$13,994.78** |
| 6a | Progress Report, Deliverable 11 | **8/01/25** | **$13,994.78** |
| 7a | Progress Report, Deliverables 13-14 | **10/01/25** | **$13,994.78** |
| 8a | Progress Report, Deliverables 16-17 | **12/01/25** | **$13,994.78** |
| 9a | Progress Report for Tasks 1-2 | **2/02/26** | **$13,994.78** |
| 10a | Progress Report, Deliverables 19-20 | **4/01/26** | **$13,994.78** |
| 11a | Progress Report, Deliverable 22 due | **6/01/26** | **$13,994.78** |
| 12a | Progress Report, Deliverable 24 due | **8/03/26** | **$13,994.78** |
| 13a | EPA Approved Upper Elk River TMDL Report | **Upon Approval** | **$18,659.64** |

**Table 2. Task 3**

| Item No. | Description | Progress Report/ Deliverable Due Date | Amount Authorized |
|---|---|---|---|
| 1b | Progress Report, Deliverable 1 for Task 3 | 10/01/24 | $11,801.48 |
| 2b | Progress Report, Deliverable 4 | 12/02/24 | $11,801.48 |
| 3b | Progress Report, Deliverable 7 | 2/03/25 | $11,801.48 |
| 4b | Progress Report, Deliverable 10 | 4/01/25 | $11,801.48 |
| 5b | Progress Report for Task 3 | 6/02/25 | $11,801.48 |
| 6b | Progress Report, Deliverable 12 | 8/01/25 | $11,801.48 |
| 7b | Progress Report, Deliverable 15 | 10/01/25 | $11,801.48 |
| 8b | Progress Report, Deliverable 18 | 12/01/25 | $11,801.48 |
| 9b | Progress Report for Task 3 | 2/02/26 | $11,801.48 |
| 10b | Progress Report, Deliverable 21 | 4/01/26 | $11,801.48 |
| 11b | Progress Report, Deliverable 23 due | 6/01/26 | $11,801.48 |
| 12b | Progress Report, Deliverable 25 due | 8/03/26 | $11,801.48 |
| 13b | EPA Approved Eastern Panhandle TMDL Report | Upon Approval | $15,735.24 |

**Deliverable 1**

- Tasks 1-3, Modeling QAPP

**Deliverables 2-4**

- Task 1, Upper Elk River Final Subwatershed Delineation
- Task 2, Eastern Panhandle Fecal Final Subwatershed Delineation
- Task 3, Eastern Panhandle Sediment Final Subwatershed Delineation

**Deliverables 5-7**

- Task 1, Upper Elk River NPDES Permit Data and Summary Report
- Task 2, Eastern Panhandle Fecal NPDES Permit Data and Summary Report
- Task 3, Eastern Panhandle Sediment NPDES Permit Data and Summary Report

**Deliverables 8-10**

- Task 1, Upper Elk River Pollutant Source Report
- Task 2, Eastern Panhandle Fecal Pollutant Source Report
- Task 3, Eastern Panhandle Sediment Pollutant Source Report

**Deliverable 11-12**

- Task 1, Upper Elk River TMDL Hydrology Calibration
- Tasks 2-3, Eastern Panhandle Hydrology Calibration

**Deliverables 13-15**

- Task 1, Upper Elk River TMDL Modeled Landuse/Continuous Discharges Representations
- Task 2, Eastern Panhandle Fecal TMDL Modeled Landuse/Continuous Discharges Representations
- Task 3, Eastern Panhandle Sediment TMDL Modeled Landuse/Continuous Discharges Representations

**Deliverables 16-18**

- Task 1, Upper Elk River TMDL Water Quality Calibration
- Task 2, Eastern Panhandle Fecal TMDL Water Quality Calibration
- Task 3, Eastern Panhandle Sediment TMDL Water Quality Calibration

**Deliverables 19-21**

- Task 1, Upper Elk River TMDL Base Condition and Allocation Development
- Task 2, Eastern Panhandle Fecal TMDL Base Condition and Allocation Development
- Task 3, Eastern Panhandle Sediment TMDL Base Condition and Allocation Development

**Deliverables 22-23**

- Task 1, Preliminary Draft Upper Elk River TMDL Report
- Tasks 2-3, Preliminary Draft Eastern Panhandle TMDL Report

**Deliverables 24-25**

- Task 1, Draft Upper Elk River TMDL Report ready for public release
- Tasks 2-3, Draft Eastern Panhandle TMDL Report ready for public release