



DEPARTMENT OF  
**ECOLOGY**  
State of Washington

**IAA No. C1900011**

**INTERAGENCY AGREEMENT (IAA)**

**BETWEEN**

**THE STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY**

**AND**

**WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES**

**THIS INTERAGENCY AGREEMENT** ("Agreement" or "IAA") is made and entered into by and between the state of Washington, Department of Ecology, hereinafter referred to as "ECOLOGY," and the Washington State Department of Natural Resources hereinafter referred to as the "DNR" and "CONTRACTOR," pursuant to the authority granted by Chapter 39.34 RCW.

**THE PURPOSE OF THIS AGREEMENT** is for DNR to quantify stormwater mitigation values associated with individual trees.

**WHEREAS**, ECOLOGY has legal authority (RCW 90.48 and WAC 173-220) and DNR has legal authority (RCW 90.48) that allows each party to undertake the actions in this agreement.

**THEREFORE, IT IS MUTUALLY AGREED THAT:**

**1) SCOPE OF WORK**

DNR shall furnish the necessary personnel, equipment, material and/or service(s) and otherwise do all things necessary for or incidental to the performance of the work set forth in Appendix A, Statement of Work and Budget, attached hereto and incorporated herein.

**2) PERIOD OF PERFORMANCE**

The period of performance of this IAA shall commence on **August 20, 2018**, and be completed by **December 15, 2021**, unless terminated sooner as provided herein. Amendments extending the period of performance, if any, shall be at the sole discretion of ECOLOGY.

**3) COMPENSATION**

Compensation for the work provided in accordance with this IAA has been established under the terms of RCW 39.34.130 and RCW 39.26.180(3). This is a performance-based agreement, in which payment is based on the successful completion of expected deliverables.

The source of funds for this IAA is **General Fund/ Private-Local account for Stormwater Action Monitoring.**

The parties have determined that the cost of accomplishing the work identified herein will not exceed \$379,495, including any indirect charges. Payment for satisfactory performance of the work shall not exceed this amount unless the parties mutually agree via an amendment to a higher amount. Compensation for services shall be based on the terms and tasks set forth in Appendix A, Statement of Work and Budget. ECOLOGY will not make payment until it has reviewed and accepted the completed work.

#### **4) BILLING AND PAYMENT PROCEDURE**

Payment requests shall be submitted on state form, Invoice Voucher A19-1A. Invoices shall describe and document to ECOLOGY's satisfaction a description of the work performed, the progress of the work, and related costs. Each invoice voucher shall reference the Agreement (IAA) number and clearly identify those items that relate to performance under this Agreement as outlined in the "Budget Detail by Task" table located in Appendix A. Payment will be made within thirty (30) days of submission of a properly completed invoice (form A19-1A) with supportive documentation. All expenses invoiced shall be supported with copies of invoices paid.

Send invoices to:

<p><b>State of Washington</b> <b>Department of Ecology</b> <b>Attn: Keunyea Song</b> <b>P.O. Box 47600</b> <b>Olympia, WA 98504-7600</b></p>
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Payment requests shall submitted on a quarterly basis. Upon expiration of this Agreement, any claim for payment not already made shall be submitted to ECOLOGY within 30 days after the expiration date or the end of the fiscal year, whichever is earlier.

Payment will be issued through Washington State's Department of Enterprise Services Statewide Payee Desk. To receive payment you must be registered as a state-wide vendor. To register submit a state-wide vendor registration form and an IRS W-9 form at website, <http://www.des.wa.gov/services/ContractingPurchasing/Business/VendorPay/Pages/default.aspx>. If you have questions about the vendor registration process you can contact DES at the Payee Help Desk at (360) 407-8180 or email [payeehelpdesk@watech.wa.gov](mailto:payeehelpdesk@watech.wa.gov).

#### **5) ALTERATIONS AND AMENDMENTS**

This Agreement may be amended by mutual agreement of the parties. Such amendments shall not be binding unless they are in writing and signed by personnel authorized to bind each of the parties.

#### **6) ASSIGNMENT**

The work to be provided under this Agreement, and any claim arising thereunder, is not assignable or delegable by either party in whole or in part, without the express prior written consent of the other party, which consent shall not be unreasonably withheld.

#### **7) ASSURANCES**

Parties to this Agreement agree that all activity pursuant to this agreement will be in accordance with all the applicable current federal, state, and local laws, rules, and regulations.

### **8) CONFORMANCE**

If any provision of this Agreement violates any statute or rule of law of the state of Washington, it is considered modified to conform to that statute or rule of law.

### **9) DISPUTES**

Parties to this Agreement shall employ every effort to resolve a dispute themselves without resorting to litigation. In the event that a dispute arises under this Agreement that cannot be resolved among the parties, it shall be determined by a Dispute Board in the following manner. Each party to this Agreement shall appoint one member to the Dispute Board. The members so appointed shall jointly appoint an additional member to the Dispute Board. The Dispute Board shall review the facts, agreement terms, and applicable statutes and rules, and then make a determination of the dispute. The determination of the Dispute Board shall be final and binding on the parties hereto, unless restricted by law. The cost of resolution will be borne by each party paying its own cost. As an alternative to this process, if state agencies, either of the parties may request intervention by the Governor, as provided by RCW 43.17.330, in which event the Governor's process will control. The parties may mutually agree to a different dispute resolution process.

### **10) FUNDING AVAILABILITY**

ECOLOGYS ability to make payments is contingent on availability of funding. In the event funding from state, federal, or other sources is withdrawn, reduced, or limited in any way after the effective date and prior to completion or expiration date of this Agreement, ECOLOGY, at its sole discretion, may elect to terminate the Agreement, in whole or part, for convenience or to renegotiate the Agreement subject to new funding limitations and conditions. ECOLOGY may also elect to suspend performance of the Agreement until ECOLOGY determines the funding insufficiency is resolved. ECOLOGY may exercise any of these options with no notification restrictions, although ECOLOGY will make a reasonable attempt to provide notice.

In the event of termination or suspension, ECOLOGY will reimburse eligible costs incurred by the DNR through the effective date of termination or suspension. Reimbursed costs must be agreed to by ECOLOGY and the DNR. In no event shall ECOLOGY's reimbursement exceed ECOLOGY's total responsibility under the agreement and any amendments.

### **11) GOVERNING LAW AND VENUE**

This Agreement is entered into pursuant to and under the authority granted by the laws of the state of Washington and any applicable federal laws. The provisions of this Agreement shall be construed to conform to those laws. This Agreement shall be construed and interpreted in accordance with the laws of the state of Washington, and the venue of any action brought hereunder shall be in the Superior Court for Thurston County.

### **12) INDEPENDENT CAPACITY**

The employees or agents of each party who are engaged in the performance of this Agreement shall continue to be employees or agents of that party and shall not be considered for any purpose to be employees or agents of the other party.

### **13) ORDER OF PRECEDENCE**

In the event of an inconsistency in the terms of this Agreement, or between its terms and any applicable statute or rule, the inconsistency shall be resolved by giving precedence in the following order:

- a. Applicable federal and state of Washington statutes, regulations, and rules.
- b. Mutually agreed upon written amendments to this Agreement.

- c. This Agreement, number C1900011.
- d. Appendix A, Statement of Work and Budget.

#### **14) RECORDS MAINTENANCE**

The parties to this Agreement shall each maintain books, records, documents and other evidence that sufficiently and properly reflect all direct and indirect costs expended by either party in the performance of the service(s) described herein. These records shall be subject to inspection, review or audit by personnel of both parties, other personnel duly authorized by either party, the Office of the State Auditor, and federal officials so authorized by law. All books, records, documents, and other material relevant to this Agreement will be retained for six years after expiration of this Agreement and the Office of the State Auditor, federal auditors, and any persons duly authorized by the parties shall have full access and the right to examine any of these materials during this period.

Records and other documents, in any medium, furnished by one party to this Agreement to the other party, will remain the property of the furnishing party, unless otherwise agreed. The receiving party will not disclose or make available this material to any third parties without first giving notice to the furnishing party and giving it a reasonable opportunity to respond. Each party will utilize reasonable security procedures and protections to assure that records and documents provided by the other party are not erroneously disclosed to third parties subject to state public disclosure laws.

#### **15) RESPONSIBILITIES OF THE PARTIES**

Each party of this Agreement hereby assumes responsibility for claims and/or damages to persons and/or property resulting from any act or omissions on the part of itself, its employees, its officers, and its agents. Neither party will be considered the agent of the other party to this Agreement.

#### **16) RIGHTS IN DATA**

Unless otherwise provided, data which originates from this Agreement shall be "work made for hire" as defined by the United States Copyright Act, Title 17 U.S.C. section 101 and shall be owned by state of Washington, ECOLOGY. Data shall include, but not be limited to, reports, documents, pamphlets, advertisements, books magazines, surveys, studies, computer programs, films, tapes, and/or sound reproductions. Ownership includes the right to copyright, patent, register, and the ability to transfer these rights.

#### **17) SEVERABILITY**

If any provision of this Agreement or any provision of any document incorporated by reference shall be held invalid, such invalidity shall not affect the other provisions of this Agreement which can be given effect without the invalid provision, if such remainder conforms to the requirements of applicable law and the fundamental purpose of this Agreement, and to this end the provisions of this Agreement are declared to be severable.

#### **18) SUBCONTRACTORS**

DNR agrees to take complete responsibility for all actions of any Subcontractor used under this Agreement for the performance. When federal funding is involved there will be additional subcontractor requirements and reporting.

Prior to performance, all subcontractor who will be performing services under this Agreement must be identified, including their name, the nature of services to be performed, address, telephone, WA State Department of Revenue Registration Tax number (UBI), federal tax identification number (TIN), and anticipated dollar value of each subcontract. Provide such information to ECOLOGY's Agreement manager.

#### **19) TERMINATION FOR CAUSE**

If for any cause, either party does not fulfill in a timely and proper manner its obligations under this Agreement, or if either party violates any of these terms and conditions, the aggrieved party will give the other party written notice of such failure or violation. The responsible party will be given the opportunity to correct the violation or failure within fifteen (15) business days. If failure or violation is not corrected, this Agreement may be terminated immediately by written notice of the aggrieved party to the other.

**20) TERMINATION FOR CONVENIENCE**

Either party may terminate this Agreement without cause upon thirty (30) calendar day prior written notification to the other party. If this Agreement is so terminated, the parties shall be liable only for performance rendered or costs incurred in accordance with the terms of this Agreement prior to the effective date of termination.

**21) WAIVER**

A failure by either party to exercise its rights under this Agreement shall not preclude that party from subsequent exercise of such rights and shall not constitute a waiver of any other rights under this Agreement unless stated to be such in a written amendment to this Agreement signed by an authorized representative of the parties.

**22) AGREEMENT MANAGEMENT**

The representative for each of the parties shall be responsible for and shall be the contact person for all communications, notifications, and billings questions regarding the performance of this Agreement. The parties agree that if there is a change in representatives that they will promptly notify the other party in writing of such change, such changes do not need an amendment.

The ECOLOGY Representative is:	The DNR Representative is:
Name: Keunyea Song Address: 300 Desmond Dr. SE (FedEx) P.O.Box 47600 (USPS) Olympia, WA 98504-7600 Phone: 360-407-6158 Email: Keunyea.Song@ecy.wa.gov	Name: Linden Lampman Address: 1111 Washington St SE PO BOX 47037 Olympia, WA 98504-7037 Phone: 360-902-1703 Email: <a href="mailto:linden.lampman@dnr.wa.gov">linden.lampman@dnr.wa.gov</a>

**23) ALL WRITINGS CONTAINED HEREIN**

This Agreement contains all the terms and conditions agreed upon by the parties. No other understandings, oral or otherwise, regarding the subject matter of this Agreement shall be deemed to exist or to bind any of the parties hereto.

The signatories to this Agreement represent that they have the authority to bind their respective organizations to this Agreement.

IN WITNESS WHEREOF, the parties below, having read this Agreement in its entirety, including all attachments, do agree in each and every particular as indicated by their below signatures.

**State of Washington  
Department of Ecology**

By: Polly Zehm 8/22/18  
Signature Date

Print Name: Polly Zehm

Title: Deputy Director

**State of Washington  
Department of Natural Resources**

By: George L. Geissler 8/10/18  
Signature Date

Print Name: George L. Geissler

Title: State Forester and Deputy  
Supervisor for Wildfire

Approved as to form only:  
Office of Attorney General

APPENDIX A  
STATEMENT OF WORK AND BUDGET

**Project Title: The effectiveness of trees in mitigating stormwater runoff in Western Washington**

**Project Background**

Urban trees in parks, natural areas, street-side, and on private lands combined with other green stormwater control elements provide excellent opportunities to mitigate the effects of stormwater runoff in the Puget Sound. While the runoff mitigation potential of forest or large tree stands is well known, there is still the need to quantify stormwater mitigation values associated with individual trees.

The purpose of this work is to develop a rigorously derived hydrologic dataset that shows how stormwater is captured by existing common native evergreen and deciduous trees, based on the physio-climatic conditions of the Pacific Northwest. Residual forests and native trees provide stormwater mitigation as well as a host of other ecosystem services, however retention is generally the last option during development activities; trees are frequently removed and the on-site capacity to mitigate stormwater is lost. Information derived from this work will offer valuable insight on the hydrologic value of existing trees. A proper valuation of individual trees and the direct measurement of transpirative processes is a central tenet of this work.

The project objectives are: A) quantify annual transpiration rates for two species of evergreen trees, and two species of deciduous trees native to the PNW; and, B) quantify annual canopy interception rates for two species of evergreen trees, and two species of deciduous trees native to the PNW.

The study will be based on instrumenting a total of 21 individual trees at the Tacoma Recovery and Transfer Center (Landfill) facility and 36 at the Evergreen State College campus in Olympia. Each tree will be instrumented with sensors that measure interception, stemflow, transpiration, and localized soil moisture. When combined, data from these sensors will provide a complete view of how much rainfall is managed by an individual tree, or in simple terms, the rainfall that does NOT end up as stormwater runoff.

Tree species selection:

The tree species selected for this study will include common species native to the PNW, spanning several ecosystem types for which development or redevelopment is likely to occur. Species selection will be finalized during the QAPP, however, it is anticipated that two evergreen and two deciduous tree species will be measured. Candidate tree species include: Douglas fir, Western red cedar, Black cottonwood, Garry oak, Red alder, Big-leaf maple, Western hemlock, Grand fir.

**Task 1 – Project Administration (Total Cost=\$20,000)**

DNR will lead and administer the project. DNR will take the lead role in development and coordination of the Technical Advisory Committee (TAC) for this project. The TAC will advise

the project team on technical issues and concerns and will be derived of a multiple of specialist in both forestry and stormwater TAC will continue to meet as needed throughout the project with most meetings taking place during finalizing the QAPP and study design.

**Deliverables- Quarterly Reports:** Quarterly reports will include brief description of status of the contract tasks and decisions related to the tasks made during the calls, meetings and coordination with the advisory committees and communication with Ecology as appropriate. The quarterly report 5, 9 and 11 will include results and findings to date.

**Deliverable 1.1. Quarterly Report 1**

Target Dates: Dec, 2018

**Deliverable 1.2. Quarterly Report 2**

Target Dates: Mar, 2019

**Deliverable 1.3. Quarterly Report 3**

Target Dates: June, 2019

**Deliverable 1.4. Quarterly Report 4**

Target Dates: Sept, 2019

**Deliverable 1.5. Quarterly Report 5**

Target Dates: Dec, 2019

**Deliverable 1.6. Quarterly Report 6**

Target Dates: Mar, 2020

**Deliverable 1.7. Quarterly Report 7**

Target Dates: June, 2020

**Deliverable 1.8. Quarterly Report 8**

Target Dates: Sept, 2020

**Deliverable 1.9. Quarterly Report 9**

Target Dates: Dec, 2020

**Deliverable 1.10 Quarterly Report 10**

Target Dates: Mar, 2021

**Deliverable 1.11. Quarterly Report 11**

Target Dates: June, 2021

**Task 2 – Quality Assurance and Project Protocol (QAPP) development (Total Cost=\$9,443)**

Prepare a Quality Assurance Protocol Plan (QAPP) for approval by Dept. of Ecology.

A QAPP will be created before instruments are deployed or any measurements taken. The QAPP will list the number of sensors that will be deployed, plant species selection procedure, the type of data, how often data are collected, maintenance protocols for the system, how data will be managed, and lastly how data will be analyzed. Data collected will include sensor data, as well as tree metrics such as height, diameter and breast height (dbh), canopy area, and total leaf area. Additionally, the soils around the trees will also be classified. The QAPP will be reviewed by TAC. DNR will follow Ecology's *Guidelines for Preparing Quality Assurance Project Plans for Environmental Studies*, July 2004 (Ecology Publication No. 04-03-030)

**Deliverable 2.1 (\$4,443): Draft QAPP**

Target Date: September 2018



**Deliverable 2.2 (\$5,000): Final Approved QAPP**  
Target Date: October 2018

**Task 3 – Instrument purchase (Total Cost=\$180,889)**

DNR will purchase and own equipment and supplies necessary to complete 57 individual tree monitoring.

**Deliverable 3:** List of equipment/supplies ordered and procured by DNR in support of this study  
Target Date: December 2018

**Task 4 – Instrument installation and test (Total Cost=\$30,049)**

Sensors will be installed at both site locations with effort provided by all parties involved, including personnel from WSU, WA DNR, City of Tacoma, and The Evergreen State College (TESC). Dr. Duberstein (Clemson University) will make the first of two trips to install the sap-flux system at both locations.

**Deliverable 4.1.:** Email confirming successful installation of instruments with photos  
Target Date: February 2019

**Deliverable 4.2.:** Email confirming successful readings of instruments  
Target Date: March 2019

**Task 5 – Instrument Maintenance and Data Downloads (Total Cost=\$84,969)**

All sensors and datalogging systems will be checked on a weekly basis, and data downloaded on a bi-weekly basis.

**Deliverables 5:** quarterly status update; instrument maintenance and data downloads  
Target Date: Included in quarterly reports Task 1; beginning March 2019 – March 2021.

**Task 6 – Data Analysis, Quality Assurance and Quality Control (QA/QC) check, and Data delivered to ECY (Total Cost=\$31,599)**

Data will be analyzed using open source statistical and graphing software. DNR and subcontractor will evaluate quality assurance metrics and track quality control measures to ensure high quality data

**Deliverable 6:** Copy of data in Excel format  
Target Date: June, 2021

**Task 7 – Final Report (Total Cost=\$9,916)**

**Deliverable 7.1:** Electronic version of draft report to Ecology for comment  
Target Date: July, 2021

**Deliverable 7.2: Final Report**

Target Date: August 31, 2021

**Task 8 – Outreach/communication (Total Cost=\$750)**

**Deliverable 8.1:** Copy of presentation to share findings with Stormwater Managers and Stormwater work group.

Target Date: June, 2021

**Deliverable 8.2:** Electronic copy of Fact sheet draft

Target Date: October, 2021

**Schedule Detail by Task**

Calendar Year	2018		2019				2020				2021			
	Aug-Sep	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec
1. Project Administration														
Contract Agreements														
D.1.1-D.1.11 Quarterly reports														
2. QAPP														
D.2.1 Draft														
D.2.2 Final Approved														
3. Equipment Purchase														
D.3.1 Equipment/supplies ordered and procured														
4. Installation and testing of instrumentation														
D.4.1 Installation														
D.4.2 Test Data readings														
5. Maintenance and Data downloads														
D.5 Quarterly status updates														
6. Data analysis, QAQC, data upload														
D.6.1 Copy of Data to Ecology														
7. Final report														
D.7.1 Draft														
D.7.2 Final														
8. Outreach/Communication														
D.8.1 Presentation														
D.8.2. Fact sheet draft														

**Budget Detail by Task:**

*(Budget can be designed by task, for a monthly fee, or by a hourly rate. Monthly fee or Hourly rate, includes amounts to cover any and all charges including but not limited to salary, benefits, and indirect cost. No other charges or cost may be applied to this Agreement.)*

Item	Description	Amount
1	<b>Project Administration - DNR</b>	<b>\$20,000</b>
2	<b>Quality Assurance and Project Protocol (QAPP) development – Contractual; WSU, Clemson</b>	<b>\$9,443</b>
3	<b>Instrument purchase – equipment cost</b>	<b>\$180,889</b>
4	<b>Instrument installation – contractual; WSU, Clemson</b>	<b>\$30,049</b>
5	<b>Instrument Maintenance and Data Downloads – contractual; WSU, Clemson, TESC</b>	<b>\$84,969</b>
6	<b>Data Analysis, Quality Assurance and Quality Control (QA/QC) check, and Data Delivered to ECY – contractual; WSU, Clemson</b>	<b>\$31,599</b>
7	<b>Final Report - contractual; WSU, Clemson</b>	<b>\$9,916</b>
8	<b>Outreach/communication - contractual; WSU, Clemson</b>	<b>\$750</b>
9	<b>Indirect Charges (27 %) – IAA agreed upon rate</b>	<b>\$11,880</b>
	<b>Total Project Cost</b>	<b>\$379,495</b>