

# Watershed Agricultural Council ~ Forestry Program 2017 Urban/Rural Education Initiative Summary and Evaluation

*Prepared by Tyler Van Fleet, Watershed Educator, Watershed Agricultural Council*

*January 2018*

## **Background: Urban Rural Education Initiative in the NYC Watershed Region**

The roots of the WAC Forestry Program's education efforts can be found in a set of position statements and policy recommendations created in 1996 by the Watershed Forestry Task Force. The position statements and policy recommendation created by the Watershed Forestry Task Force are commonly called the Green Book. Between 1996 and 2010, the WAC Forestry Program used the Green Book to refine its education efforts into three primary categories: Landowner Education, Logger & Forester Training and Urban/Rural School Based Conservation Education.

The Green Book supports Urban/Rural School Based Conservation Education by recommending the following education priority: "Public relations, education and communication techniques to effectively reach private forest landowners, NYC dwellers and the downstate urban sector."

## **UREI's Four Complimentary Program Areas**

WAC's Urban/Rural Education Initiative (UREI) constitutes a comprehensive approach to reaching teachers and students in the rural and urban communities of the New York City Watershed. Learning goals include understanding: 1) watershed form and function 2) the New York City water supply system 3) how trees and forests filter and protect water quality, and 4) the past, present, and future human dimensions of the NYC Watershed. To address these learning goals, UREI comprises four complimentary program areas:

- 1) Watershed Forestry Institute for Teachers – A summer institute that immerses teachers in a hands-on exploration of the New York City Watershed, its forests and communities in order to inform, inspire and equip teachers to deliver watershed forestry education to their students.
- 2) Watershed Forestry Bus Tour Program – A competitive matching grant program that helps participants plan and pay for 4 different types of watershed forestry themed educational tours in the NYC Watershed.
- 3) Green Connections – A competitive matching grant program that supports year-long partnerships between upstate and downstate classrooms, which meaningfully connect students from New York City and the New York City watershed through personal communication and shared experiences with the world-famous NYC water supply system from forest to tap.
- 4) Watershed Forestry Education Community of Practice – We celebrate and support our network of educators by providing them with information, resources and ongoing trainings and social events. Through ongoing teacher investment, we yield long-term educational outcomes.

UREI Program Participation*			
Program	2017	2016	2015
Watershed Forestry Institute for Teachers	24 Teachers	26 Teachers	16 Teachers
Watershed Forestry Bus Tours	24 Tours <ul style="list-style-type: none"> <li>• 204 Adults</li> <li>• 1237 Students</li> </ul>	27 Tours <ul style="list-style-type: none"> <li>• 204 Adults</li> <li>• 1163 Students</li> </ul>	18 Tours <ul style="list-style-type: none"> <li>• 102 Adults</li> <li>• 953 Students</li> </ul>
Green Connections	11 Teachers 175 Students	6 Teachers 78 Students	7 Teachers 152 Students
Watershed Forestry Education Community of Practice Events	248 Educators	141 Teachers	122 Teachers
Total	476 Adults 1,412 Students 1,888 Total	377 Adults 1,241 Students 1,618 Total	265 Adults 1,105 Students 1,370 Total

*\* Note: Some individuals participate in more than one program (for example, a WFIT teacher may also attend a Community of Practice event), and may, therefore, be counted more than once above.*



## 1. Watershed Forestry Institute for Teachers

The Watershed Forestry Institute for Teachers (WFIT) is a 5-day, 4-night professional development educational program that immerses teachers in a hands-on study of New York City Watershed forestry. The mission of WFIT is to provide educators with the knowledge, inspiration and practices necessary to explore with their students the connection between forests and water quality, especially in the context of the NYC Water Supply System. Topics include water quality science, forest ecology and stewardship, sustainable development, engineering, New York history and community engagement. Participation in the WFIT is a pre-requisite for applying to WAC's Green Connections program.

WFIT 2017 was held at the Taconic Outdoor Education Center from 7/24-7/29 and targeted 6-12<sup>th</sup> grade formal and non-formal educators. Twenty four teachers attended this year's program. The Teacher Assistance Program (TAP) continued for its second year to further support participants' creative implementation of watershed forestry education in their teaching. There is more information on TAP below.

<b>WFIT Summary Statistics</b>			
	<b>2017</b>	<b>2016</b>	<b>2015</b>
Teacher Participation	24 Total <ul style="list-style-type: none"> <li>• 19 NYC</li> <li>• 0 East of Hudson</li> <li>• 5 West of Hudson</li> </ul>	26 Total <ul style="list-style-type: none"> <li>• 20 NYC</li> <li>• 2 East of Hudson</li> <li>• 4 West of Hudson</li> </ul>	16 Total <ul style="list-style-type: none"> <li>• 8 NYC</li> <li>• 5 East of Hudson</li> <li>• 3 West of Hudson</li> </ul>
Number of partners engaged	11	15	10
Number of sites visited	4	6	6
Number of Professional Development hours earned	42 hours <ul style="list-style-type: none"> <li>• 24.5 CTLE credit hours</li> </ul>	51	53
Number of 2017 WFITeer TAP applications approved as of 12/31/17	1	3	N/A

### **Promotion**

- Updated flier for distribution on website and in-person.
- Updated WFIT website with current event details and application. See table below for comparison of website visitation for 2016 & 2017.

<b>WFIT Webpage Summary Statistics*</b>		
	<b>Oct 17-Dec 31, 2017</b>	<b>Oct 17-Dec 31, 2016</b>
WFIT webpage views	135	83
Average time on page	3m 07s	5m 03s
Top 5 referrals	google - 70 direct - 47 wac enews - 4 outlook.live - 4 duckduckgo - 3	google - 44 direct - 26 watershededucators - 43 bing - 3 nysbmpguidelines - 3

\*Note: Only comparing 10-week period because WAC website analytics were lost for most of 2017

- 7 Reservoir e-newsletters w/ WFIT promotion sent from 11/29/16 to 5/1/17. Example below:



WFITeers enjoy the sunset over Duck Pond at the Taconic Outdoor Education Center in Cold Spring, NY.

## The Reservoir

Offerings & Inspiration for Watershed Forestry Educators

May 1, 2017

## TRAINING



## Watershed Forestry Institute for Teachers

Sunday, July 23- Thursday, July 27, 2017  
(Applications due May 5)

Apply by this Friday, May 5th at 5pm to attend the WFIT. Spend 5 days exploring the NYC Watershed and discovering how forests, people, and engineering work together to supply safe, clean water for over 9 million New Yorkers. The Watershed Forestry Institute for Teachers (WFIT) is FREE for 6-12th grade teachers and non-formal educators from the NYC Watershed and New York City. Participants earn over 40 Professional Development hours, practice over 20 hands-on activities, and get trained in the Project Learning Tree and Project WET curricula. Check out the [flier](#). Applications can be downloaded [here](#) and are due by Friday, May 5th at 5pm.

## CONTACT

Contact Tyler Van Fleet, Watershed Educator, at [education@nycwatershed.org](mailto:education@nycwatershed.org) or 914-962-6355 x21

Visit our [Teacher Resources Webpage](#) for great educational resources related to watershed forestry and the NYC water supply system.

- Promoted WFIT via email to targeted audiences:
  - Round 27 & 28 Bus Tour applicants who were denied funding.
  - Round 27 & 28 Bus Tour grantees who have not attended WFIT.
  - 2014-2016 WFIT participants were asked to promote it among colleagues.
- Continued recruitment w/ boosted Facebook posts to EOH and WOH teachers. Yielded 0 additional applications.
- Promoted WFIT in-person at Community of Practice events described in Section 4 of report below.
- Partners asked to promote WFIT via their own networks (e-newsletters, blogs, events, etc.)
  - West of Hudson
    - Catskills Watershed Corporation Public Education Action Group
    - Delaware-Chenago-Madison-Otsego BOCES
    - Sullivan County Community College Earth Day event for schools
    - Hanford Mills Museum
    - NYC-DEP employee communications
    - ESPRIT – Earth Science teachers listserv
  - East of Hudson
    - Green Chimneys
    - Teatown Lake Reservation
    - Putnam Northern Westchester BOCES
    - Hudson Valley Regional Envirothon
    - Westchester-Bronx BOCES
    - Cary Institute for Ecosystem Studies
    - Teaching the Hudson Valley
    - Children’s Environmental Literacy Foundation
  - NYC
    - NYC-DEP Education Department
    - NYC-H2O (paid advertising through their network, see below for copy)
    - Green Point ECO-SCHOOLS



- Staten Island Parks Department
- Explorable Places
- Urban Advantage (NYC)
- NY Botanical Garden
- Science Council of NYC

Watershed Agricultural Council

## Watershed Forestry Institute for Teachers

July 23 - 27, Cold Spring, NY  
Applications due Friday, May 5

Explore the NYC Watershed and the forests, engineering, and community partnerships that comprise one of the world's largest surface water supply systems. Investigate how healthy forests filter and protect your water quality at our FREE 5-day overnight training for 6-12th grade teachers and non-formal educators.

*"It's like summer camp for adults,"* where you'll stay in cabins, visit drinking water reservoirs, logging sites, and environmental education centers, get trained in the Project Learning Tree and Project WET curricula, practice dozens of hands-on activities, learn from a variety of experts, and join a vibrant community of practice.

WFIT 2017 is held at the Taconic Outdoor Education Center in Cold Spring, NY and is hosted by the Watershed Agricultural Council.

**Applications are due Friday, May 5th by 5pm.**

For more info contact Tyler Van Fleet at [education@nycwatershed.org](mailto:education@nycwatershed.org).

Apply here

NYC H2O  
(646) 926-0368  
[info@nych2o.org](mailto:info@nych2o.org)  
[nych2o.org](http://nych2o.org)

### Outcomes

- Received 35 applications. Accepted 30 teachers into the program, 6 teachers cancelled for 24 total teachers participating.
  - 16 formal educators, 8 non-formal educators.
  - 19 from NYC, 0 from East of Hudson, 5 from West of Hudson.
    - Achieved less balanced participation from teachers across the different NYC Watershed regions than desired. The goal of WFIT is to achieve mixed participation from across the regions. See trend since 2014 below:

Where are WFIT participants from?				
WFIT Year	WOH Teachers	EOH Teachers	NYC Teachers	Total Teachers
2014	0 (0%)	2 (8%)	22 (92%)	24
2015	3 (19%)	5 (31%)	8 (50%)	16
2016	4 (15%)	2 (8%)	20 (77%)	26
2017	5 (21%)	0 (0%)	16 (79%)	24

- Each teacher completed 42 hours of professional development, during which they:
  - Trained in 2 curricula: Project Learning Tree K-8 Guide and Project WET;
  - Practiced 28 lessons and activities;
  - Visited 5 sites, 4 of which are Bus Tour destinations: Taconic Outdoor Education Center, Ward Pound Ridge Reservation, Green Chimneys Clearpool Campus and Model Forest, NYC-DEP Timber Harvest site, and Croton Gorge Park (not a Bus Tour destination);
  - Engaged with 11 partners: NYC-DEP, US Forest Service, Taconic Outdoor Education Center, Ward Pound Ridge Reservation Trailside Museum, Trout Unlimited/Trout in the Classroom, Green Chimneys Clearpool Campus and Model Forest, Friends of the Old Croton Aqueduct, Forest-All Consulting & Saw Milling, HikeNY, Catskills Watershed Corporation, Ryder Farm.
  - Crafted Action Plans: Each teacher developed and presented a written Action Plan that to describe how they plan to incorporate WFIT content into their 2016/17 teaching. This was the first year written Action Plan worksheets were developed and piloted. After the program, each teacher received an email with a copy of their scanned Action Plan and relevant resources to help them achieve it. [See Appendix A: WFIT 2017 Action Plan Worksheet]
  - With the assistance of NYS Project Learning Tree leadership at the DEC, WAC is now able to award NYS CTLE (Continuing Teacher and Leader Education) credits for WFIT participation. 2017 WFIT participants are eligible to earn 24.5 CTLE credit hours.
- The Teacher Assistance Program (TAP) continued for WFIT 2017 to offer additional funding to help teachers implement their Action Plans and offer an alternative next step for advancing watershed forestry education practices other than Bus Tours or Green Connections. These TAP practices are documented and shared among the Community of Practice to further encourage watershed forestry education among peer educators.
  - As of 12/31/17, 1 TAP application was received and approved for funding. Funded projects include:

<b>Teacher Assistance Program (TAP) Funded Projects as of 12/31/16</b>			
<b>Teacher</b>	<b>Affiliation</b>	<b>Amount</b>	<b>Watershed Forestry Education Practice</b>
David Turan	Michael Kudish Natural History Preserve	\$ 496.71	Fantastic Flora Find, Leaf Pack Aquatic Invertebrates, and Supporting the use of Catskills: A Sense of Place for summer camp programming.

**Evaluation**

- See WFIT 2017 Evaluation Summary [Appendix B] for summary of WFIT outcomes, insights and recommendations for modifications. Evaluation data sources include: Written summative evaluations by WFIT participants, review of Action Plans, and debrief discussions with S. Cox and intern, George Johnson, during and after WFIT.

## ***Program Development***

- Incorporated WFIT 2016 participant feedback into WFIT 2017 design:
  - KEPT: Most top-rated activities for overall value.
  - MODIFIED some activities based on feedback.
  - ADDED: 1. Visit to NYC-DEP logging site 2. Provided 2 additional hours for reflection and exploration of Taconic Outdoor Education Center site.
- Addressed proposed Directions Forward from 2016:
  - Continue to expand and innovate WFIT promotion. In 2017, expanded and diversified recruitment efforts and received 35 applications, accepted 33 into program, of whom 24 teachers completed the WFIT.
  - Forego some less critical fieldtrip stops and presentations to create more time in the schedule for reflection and exploration. In 2017, reduced number of field trip destinations and provided 2 more hours of reflection time compared to 2016.
  - Small group evening debrief and daily evaluation meetings: Created and facilitated 3 evening debrief groups – 6-8<sup>th</sup> grade, 9-12<sup>th</sup> grade, and non-formal educators. Facilitators lead reflections on the day using different debriefing activities, journaling and discussions. Short daily written evaluations were also completed at this time, which reduced the amount of time needed for the final summative evaluation on the last day. Small groups helped build relationships among peers in a more intimate setting and allowed more opportunity for each person to speak and be heard.
  - Continue to actively recruit Green Connections participants at the WFIT. Continued to offer optional information session with Green Connections Coordinator and a past participant. 6 teachers attended the session and one new Green Connections partnership was formed for the 2017/18 school year. Several high school teachers expressed interest in a “lite” version of Green Connections that they could participate in.
  - Teacher Assistance Program: Continue to offer TAP funding.
- Other changes made in 2017:
  - Provided written Action Plan worksheet to guide planning process. Collected Plans and scanned and returned them to teachers with project-specific resources.
  - Visited NYC-DEP logging job in the West Branch Reservoir basin. Awesome to see BMPs at Model forest and then compare with BMPs on real logging job.

## ***Directions Forward***

- Continue to expand and innovate WFIT promotional efforts. Try direct mailings/e-mailings to upstate schools with a new focus on East of Hudson schools, since participation was nil this year. Great mix of non-formal and formal educators this year, so continue to accept maximum 25% non-formal participants each year.
- Provide more time for reflection and exploration: Plan to add several hours onto last day of program to allow for more structured reflection time throughout the program. Will print reflection questions on mailing labels for teachers to stick in notebooks and then provide time alone in the woods to sit, reflect, and write.

- Continue to actively recruit Green Connections participants at WFIT. 2018 targets 4-8<sup>th</sup> grade teachers, so prime Green Connections audience. Continue to introduce WAC program offerings at beginning of WFIT and provide optional information session for interested teachers.
- Teacher Assistance Program: Participation in the program has stayed relatively low (for 2017 WFIT, 1 funded application out of ~15 eligible teachers [because 9 indicated they want to apply for Bus Tour funding, which would take the place of TAP funding]). Consider using some of these funds as seed money for upstate/downstate partnerships that experiment with what a Green Connections “Lite” might look like.
- Maintain fewer fieldtrip stops and speakers for better pacing of each day and to allow for more reflection time. Consider having only 1 formal presentation by DEP rep and instead have them meet us at a fieldtrip site.
- Continue w/ small group evening debriefs and short daily written evaluations to help build peer-to-peer connections and reduce time spent on final summative evaluation.



## 2. Watershed Forestry Bus Tour Program

The Watershed Forestry Bus Tour Program funds groups that want to experience their water supply system in person. Any organization, community group, or 4-12th grade classroom in municipalities wholly or partially within the East and West of Hudson Watersheds or the 5 boroughs of NYC is eligible to apply for up to \$3,000 in funding to participate in one of 4 Bus Tour Options. Student groups younger than 4th grade may be considered for funding if specific watershed and forestry learning outcomes are part of the proposed tour. Partial grant funding is often awarded and is intended primarily to help pay for the transportation costs associated with a Bus Tour. Two rounds of grant funding are awarded each year with application deadlines in early January and early August.



For the purposes of this report, 2017 data refers to Bus Tours that were completed (final checks issued) in 2017. 2014- 2016 data is presented in the table below for easy comparison. The 2017 cohort of completed bus tours were approved across several funding rounds (25-29), while funding rounds 28 and 29 were administered in 2017.

<b>2014-2017 Watershed Forestry Bus Tour Summary Statistics</b>				
<b>Bus Tour Statistics</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>
Number of Completed Bus Tours (Final Checks Issued)	Total: 24 <ul style="list-style-type: none"> <li>• 11 Overnight Tours</li> <li>• 13 Day Tours</li> </ul>	Total: 27 <ul style="list-style-type: none"> <li>• 6 Overnight Tours</li> <li>• 21 Day Tours</li> </ul>	Total: 18 <ul style="list-style-type: none"> <li>• 5 Overnight Tours</li> <li>• 13 Day Tours</li> </ul>	Total: 16 <ul style="list-style-type: none"> <li>• 11 Overnight Tours</li> <li>• 5 Day Tours</li> </ul>
Title 1 Schools	16 Schools	19 Schools	13 Schools	7 Schools
Participation	Total Participants: 1441 <ul style="list-style-type: none"> <li>• 1237 Students</li> <li>• 24 Teacher Grantees</li> <li>• 180 Adult Chaperones</li> </ul>	Total Participants: 1372 <ul style="list-style-type: none"> <li>• 1163 Students</li> <li>• 27 Teacher Grantees</li> <li>• 177 Adult Chaperones</li> </ul>	Total Participants: 1073* <ul style="list-style-type: none"> <li>• 953 Students</li> <li>• 18 Teacher Grantees</li> <li>• 102 Adults Chaperones</li> </ul>	Total Participants: 1364* <ul style="list-style-type: none"> <li>• 1194 Students</li> <li>• 170 Adults (Teachers + Chaperones)</li> </ul>
Total Applications Rec'd	34 Applications	31 Applications	49 Applications	40 Applications
Total Awards Granted	\$45,981.00	\$38,050.00	\$34,195.00	\$41,320.00
Final Awards Paid	\$42,640.00	\$35,148.82	\$31,759.02	\$40,537.50
Average Grant Amount	\$1,776.67	\$1,301.81	\$1,776.86	\$2,533.59
Matching Funds Contributed	\$191,059.77	\$120,041.85	\$103,072.60	\$227,554.00
Average Grant Duration (days btw approval date & final check issued)	258 Days	237 Days	258 Days	245 Days
East of Hudson Destinations	Total: 15 <ul style="list-style-type: none"> <li>• 1 Clearpool</li> <li>• 6 TIC/Ward Pound Ridge</li> <li>• 3 T4T/Hilltop Hanover</li> <li>• 4 Taconic Outdoor Ed Ctr</li> <li>• 1 Teatown Lake Reservation</li> </ul>	Total: 24 <ul style="list-style-type: none"> <li>• 7 Clearpool</li> <li>• 5 TIC/Ward Pound Ridge</li> <li>• 6 T4T/Hilltop Hanover</li> <li>• 5 Taconic Outdoor Ed Ctr</li> <li>• 1 Teatown Lake Reservation</li> </ul>	Total: 13 <ul style="list-style-type: none"> <li>• 5 TIC/ Ward Pound Ridge</li> <li>• 4 T4T/Hilltop Hanover</li> <li>• 2 Clearpool</li> <li>• 2 Taconic Outdoor Ed Ctr</li> </ul>	Total: 6 <ul style="list-style-type: none"> <li>• 3 Clearpool</li> <li>• 2 Ward Pound Ridge/TIC</li> <li>• 1 Taconic Outdoor Ed Ctr</li> </ul>
West of Hudson Destinations	Total: 9 <ul style="list-style-type: none"> <li>• 9 Frost Valley</li> </ul>	Total: 3 <ul style="list-style-type: none"> <li>• 2 Ashokan Center</li> <li>• 1 Frost Valley</li> </ul>	Total: 5 <ul style="list-style-type: none"> <li>• 1 Ashokan Center</li> <li>• 4 Frost Valley</li> </ul>	Total: 10 <ul style="list-style-type: none"> <li>• 5 Ashokan Center</li> <li>• 5 Frost Valley</li> </ul>
Reservoir Visits	Total: 23 <ul style="list-style-type: none"> <li>• 14 Cross River Reservoir</li> <li>• 9 Neversink Reservoir</li> </ul>	Total: 27 <ul style="list-style-type: none"> <li>• 23 Cross River Reservoir</li> <li>• 2 Ashokan Reservoir</li> <li>• 1 New Croton Reservoir</li> </ul>	Total: 12 <ul style="list-style-type: none"> <li>• 7 Cross River Reservoir</li> <li>• 4 Neversink Reservoir</li> <li>• 1 Ashokan Reservoir</li> </ul>	Total: 5 <ul style="list-style-type: none"> <li>• 0 Cross River Res</li> <li>• 2 Neversink Reservoir</li> <li>• 3 Ashokan Reservoir</li> </ul>

			<ul style="list-style-type: none"> <li>1 Neversink Reservoir</li> </ul>	
Model Forest Visits	Total: 10 <ul style="list-style-type: none"> <li>1 Clearpool Model Forest</li> <li>9 Frost Valley Model Forest</li> </ul>	Total: 8 <ul style="list-style-type: none"> <li>7 Clearpool Model Forest</li> <li>1 Frost Valley Model Forest</li> </ul>	Total: 5 <ul style="list-style-type: none"> <li>4 Frost Valley Model Forest</li> <li>1 Clearpool Model Forest</li> </ul>	Total: 1 <ul style="list-style-type: none"> <li>1 Frost Valley Model Forest</li> </ul>

\* These numbers are estimates b/c only planned participant numbers (not actual) were recorded prior to 2016.

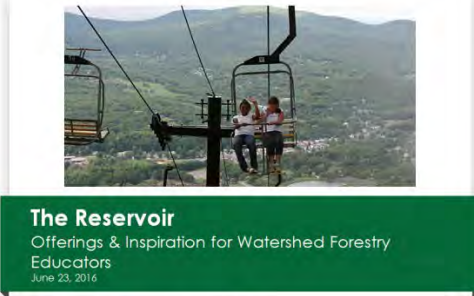
### Promotion

- Developed new flier for distribution on website and in-person.
- Updated Bus Tour webpage with current information and application.

Bus Tour Webpage Summary Statistics*		
	Oct 17-Dec 31, 2017	Oct 17-Dec 31, 2016
Bus Tour webpage views	243	251
Average time on page	3m 35s	3m 27s
Top 5 referrals	direct - 145 google - 66 nyc.gov - 16 watershededucators - 10 com.google.android.gm - 3	direct - 105 google - 51 nyc.gov - 32 bing - 9 cwconline - 9

\*Note: Only comparing 10-week period because WAC website analytics were lost for most of 2017

- E-bursts sent: Round 26: 1/2; Round 27: 6/23; [Shown Below], 7/5, 7/19 and 8/2; Round 28: 11/21, 12/20.



**The Reservoir**  
Offerings & Inspiration for Watershed Forestry Educators  
June 23, 2016

[Funding](#) | [Trainings](#) | [Events](#) | [Resources](#) | [Contact](#)

**FUNDING**

**Watershed Forestry Bus Tour Program**  
Applications due Friday, August 5, 2016 by 5pm

Apply now for a Watershed Forestry Bus Tour grant to experience first-hand the New York City Watershed, drinking water supply system, and the special role forests play in protecting our water quality. Grants help pay for transportation to environmental education centers, Trout in the Classroom trout releases, Trees for Tribes tree plantings, and adult professional development tours. [Visit the website](#) to download an application today.

**Green Connections**

Past WFIT teachers are encouraged to apply for the Green Connections Option of the Watershed Forestry Bus Tour Program! Through a year-long upstate/downstate classroom partnership, students connect with the rural and urban environments and communities of the NYC Watershed. Student buddies write letters, investigate the science and history of the NYC Watershed, conduct a stewardship project to improve their local environment, and go on 2 shared bus tours to explore opposite ends of the water supply system in New York City and the upstate Watershed. [Visit the website](#) to download an application today.

**Project Learning Tree's GreenWorks Grants**  
Now Accepting Grant Proposals for up to \$1,000

Have you attended at Project Learning Tree (PLT) training, including WAC's Watershed Forestry Institute for Teachers or one-day trainings? If so, then you're eligible to apply for a [PLT GreenWorks grant](#) for up to \$1,000. Grants are awarded to schools and youth organizations for environmental service-learning projects that link classroom learning to the real world. Students implement an action project they help design to green their school or to improve an aspect of their neighborhood's environment. For more information and to apply, [click here](#).

**TRAININGS**

**Scaffolding Students' Explanatory Writing about Science Content**  
American Museum of Natural History PD for Grade 6-8 Teachers

In this two-day workshop (July 21 & 22 or July 26 & 27), participants will use two Museum exhibitions, The Secret World Inside You and Dinosaurs Among Us, to discover how viewing videos, interacting with models, and reading texts helps build middle school students' knowledge about new science content. Participants will utilize strategies and scaffolds that will enable them to demonstrate what they have learned in a culminating CCSS-aligned explanatory writing task. This workshop will be packed with practical tools that teachers can take back to their classrooms and apply to any science content. [Click here](#) for more info.

**EVENTS**

**Request a Visit from "Rivers On the Go!" Mobile Exhibit**  
Available for schools and orgs in the South Bronx area

Do you teach about NYC's river ecosystems? Request a visit from The Bronx Children's Museum's "Rivers On the Go!" exhibit for the 2016/17 school year. This multi-sensory interactive exhibit is inside a mobile bus that will come right to your school or non-profit organization in the South Bronx area. "Rivers On the Go!" showcases a diorama of the Harlem and Bronx Rivers and highlights the High Bridge. If you are interested in scheduling a visit, please contact the Program Manager, [Nicole Wallace](#).

**New Exhibit Open: Dynamic H2O**

Children's Museum of Manhattan exhibit open now through September

This summer, cool off AND brush up on how NYC gets its drinking water at the Children's Museum of Manhattan's outdoor water exhibit called Dynamic H2O. Hands-on interactives and cool, colorful graphics dive into NYC's water supply system, which delivers about 1.1 billion gallons per day to 8.5 million New Yorkers, and whose world-class drinking water travels downhill from upstate watersheds extending more than 125 miles from the city in what is widely considered an engineering marvel. [Check out this 30-sec video of the exhibit.](#)

**Arm of the Sea Theater**  
Free Summer Performances throughout the NYC Region

Come experience one of the Arm of the Sea's many FREE live theater and puppetry performances happening this summer in NYC, the Hudson Valley and the Catskills. Three different shows are being performed throughout the region that explore the science, history, and artistry of river ecology, fishing and the NYC water supply system. Check out their [website](#) and preview their stupendous artistry in this [2-min video](#).

**RESOURCES**

**MyWoodlot.com**  
A New Online Tool to Help You Discover and Enjoy the Woods!

Love to visit parks? Hike in the woods? Connect with nature? [MyWoodlot.com](#) is a new, free website for people who own woodlands or simply enjoy spending time in the woods. MyWoodlot starts with 10 broad interests like Nature, Recreation, and Water Quality that are broken down into goals and activities. Every activity includes links to how-to information to help you complete it. Our goal is to help people connect more deeply with woods so they'll take an active role in caring for them. To get started, visit [MyWoodlot.com](#).

**CONTACT**

Contact Tyler Van Fleet, Watershed Educator, at [educators@nywatershed.org](mailto:educators@nywatershed.org) or 914-962-5436 x21

Visit our [Teacher Resources Webpage](#) for great educational resources related to watershed forestry and the NYC water supply system.

- Promoted Bus Tour program at Community of Practice events listed in Section 4 below.

### ***Outcomes***

- Round 28: Received 14 applications for \$27,785.00 total requested funding. On 2/3/17, approved 10 Bus Tours for \$14,000 (50% of total requested funding).
  - 3 Environmental Ed Center tours
  - 6 Trout Release tours
  - 1 Trees for Tribes tours
- Round 29: Received 20 applications for \$43,596.47 total requested funding. On 9/14/17, approved 12 Bus Tours for \$24,600 (56% of total requested funding). Also co-funded with CWC 5 overnight bus tours to Frost Valley for a total of 17 bus tours for \$36,625.00.
  - 12 Environmental Ed Center tours
  - 2 Trout Release tours
  - 3 Trees for Tribes tours
- Conducted 27 orientation meetings with Round 28, 29 and CWC co-funded grantees. To manage time more efficiently, started conducting orientation meetings with repeat grantees via email and phone and offered to use school visits to teach classroom lessons. Continued to conduct in-person orientation meetings with all new grantees.
- Maintained high number of reservoir and Model Forest visits on Bus Tours. In 2017, 96% of Bus Tours visited a reservoir and 42% visited a Model Forest.
- Conducted pre-tour classroom visits with 8 Bus Tour participants:
  - 1/25: Taught 32 6-8th graders in the Young Naturalist Club at Mark Twain Intermediary School for the Gifted and Talented in preparation for 4/19 Trees for Tribes Bus Tour.
  - 3/20: Taught 62 7th graders at St. Clare School about tree biology and watershed forestry in preparation for 4/25 Trout in the Classroom Bus Tour.
  - 5/1: Taught 120 7th & 8th graders at PSMS 29 The Melrose School in Bronx, NY about tree biology and watershed forestry in preparation for 5/16 T4T Bus Tour.
  - 10/11: Taught 4 classes of 6<sup>th</sup> graders at MS324 before 10/25 tour to Frost Valley.
  - 10/12: Taught 2 classes of 6<sup>th</sup> graders at Bronx Community Charter School before 11/1 tour to Frost Valley.
  - 10/24: Taught 4 classes of 4&5th graders at The Earth School before 11/1 tour to Frost Valley.
  - 12/1: Taught 5 classes of 7<sup>th</sup> graders at Lower Manhattan Community Middle School before 12/14 tour to Frost Valley.
  - 12/4&5: Taught 2 after school groups at Rocking the Boat before 2/9 tour to Frost Valley.
- Communicate Bus Tour impacts to Forestry Committee
  - Continued to highlight Bus Tour success stories in Forestry Program Committee reports and meetings.

### ***Evaluation***

- Continue to analyze historical application data [See Appendix C: Bus Tour Application & Funding Trends: 2003-2017] to better understand program popularity over time. In general, the number of

applications received per round has varied widely over the years while the number of grantees has stayed fairly consistent. Application and grantee trends will continue to be tracked to discover possible long term trends.

- Collected, analyzed and summarized grantee pre- and post-surveys. All survey responses are presented in the tables below. Specific, actionable feedback elements are in **bold** for easier reference.
- Discussion of Pre-Survey results (response data provided in the tables below):
  - Consolidated Pre-survey questions (as compared to 2016) in order to focus on identifying specific needs/concerns of grantees about A. the program requirements and B. the logistics of their bus tour at the outset of the grant process. I was able to respond immediately to the issues raised in the survey responses.
  - Feedback on the Application Process is positive overall. Four of the 9 metrics in the first table below received more positive scores than in 2016, 2 stayed the same, and 3 went down.
  - Lowest levels of satisfaction remain related to value of getting letter of support from an administrator (77%) and ease of creating a realistic budget (79%). Obtaining written administrative support is essential for ensuring that a proposed bus tour can actually be executed, so it will be retained as part of the application process.
  - We continue to tweak application language re budgeting and provide additional planning/budgeting tools such as Bus Tour Guides and a Sample Application with a completed budget table for reference.
  - Grantee questions highlight some of the inherent challenges of trip planning – from scheduling and administrative approval to concerns about generating interest among students to go on trip that teacher has spent so much time/energy planning.
  - Things to consider for the future: One teacher recommended we post our list of available bus companies on the website so applicants can contact them more easily for quotes.

Pre-Tour Survey Responses: APPLICATION PROCESS	% Level of Agreement with Statement		
	2017	2016	2015
The application was easy for me to understand.	88%	91%	89%
I had adequate prior knowledge of watershed forestry to easily complete the application.	91%	87%	83%
I was able to find relevant information about watershed forestry to easily complete the application.	91%	88%	84%
Creating a realistic budget for my bus tour was easy for me to complete.	79%	83%	78%
The application process required a reasonable amount of time and effort to complete.	85%	85%	81%
The process of completing the application helped me think through and plan the NYC watershed learning experience for my students/participants.	93%	90%	84%
Getting a letter of support from my administrator resulted in a helpful discussion about my bus tour plans.	77%	78%	76%
I received adequate support from the Bus Tour Program during my application process.	93%	86%	90%

Rate your experience engaging with Bus Tour Program staff during your application process.	99%	99%	100%
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**What questions do you have about the program requirements?**

n/a
<i>Now, I picked forestry and wetland ecology for the program and I am wondering if they are good choices or not. I figured we can deliver watershed info easily when we are at the reservoir, and I should pick programs that are not universally available in the school neighborhood.</i>
<i>I would like to have all of our students visit the reservoir and be involved in the trout release in one day.</i>
<i>None at the moment! :)</i>
<i>At this time I do not have any questions.</i>
n/a
<i>I am fully aware of the program requirements.</i>
<i>The tour i want students to participate in is offered during limited times of the year. It has being very difficult to get the Principal to approve on suggested dates so far. I am concern there might be no dates available if we don't book it soon. Can the venue be changed or the type of event switch at the location originally selected if the event is sold out? I am getting really concerned about this. Please advise. Thank you.</i>
<i>I think I understand all the program requirements.</i>
<i>No questions. Thanks!</i>
<i>Is the forestry bus tour always aligned with a trout release?</i>
n/a
<i>None at this time.</i>
<i>None,,, Tyler Van Fleet visited with me and explained the entire process clearly.</i>
none
n/a
<i>Everything was explained quite clearly.</i>
<i>They were answered at our meeting with Tyler.</i>
<i>Do we need a NYCDOE letter of liability every year? All NYC schools should be the same.</i>
<i>None-- Tyler was very clear in our meeting</i>
<i>None, We participated last year so I am very clear on all requirements</i>
<i>I am excited that my students will be actually experiencing part of the process by which New York City obtains quality drinking water.</i>

**What questions or needs do you have regarding your upcoming Watershed Forestry Bus Tour?**

n/a
<b>Does the student work have to reflect pre, on-site, and/or after visit activities?</b>
<i>I am quite clear about the upcoming watershed forestry bus tour.</i>
<i>None at the moment! :)</i>
<i>We <b>just need to figure out dates</b> that work for the school as well as Hilltop Hanover. Other than that, I have no questions at this time.</i>
n/a
<i>At this point, I do not have any questions.</i>
<i>Please see question above.</i>
<i>Needs - <b>get connected with a teacher</b> that has done Operation Explore with the TOEC before to discuss logistics, ideas, etc. - review existing and self-made curriculums regarding water and watersheds to ensure alignment and incorporate newly learned activities and experiences - <b>identify appropriate parent chaperones and train for attendance</b> - <b>figure out criteria for allowing students to participate</b> and what (academically or behaviorally) would be cause for exclusion - <b>contingency plan in case of emergency/bad weather</b> Questions - <b>departure time for bus</b> - can this be later to accommodate arrival at TOEC at 2:00 PM without additional trip to farm? - what are some <b>other potential sources of funding</b> to help defray costs of trip (already applied for Target Field Trip Grant (\$700) and Donor's Choose of \$2,000) - <b>how do I actually book the bus?</b> - <b>does a member of administration</b></i>



<i>need to be with us on the trip?</i>
<i>Need directions for the driver.</i>
<i>I have no concerns because we are familiar with this tour.</i>
<i>n/a</i>
<i>None at this time.</i>
<i>None... Tyler Van Fleet visited with me and explained the procedures and reviewed the schedule for the day.</i>
<i>none</i>
<i>n/a</i>
<i>n/a</i>
<i>They were answered at our meeting with Tyler.</i>
<i>Tyler Van Fleet walks me through all necessary steps.</i>
<b>Scheduling a date</b>
<i>None, We participated last year so I am very clear on all requirements</i>
<i>I am concerned that I may have a challenge to maintain the interest of my students until next year. I feel that it is doable, though.</i>

<b>Additional Comments: Please let us know what else is on your mind.</b>
<i>I am so excited for the bus tour this spring and super grateful my school has received this opportunity!</i>
<i>I am very excited to be bringing my students to the watershed to plant trees for a third consecutive year.</i>
<i>I am very excited again to participate in this tour, and I fully enjoy the addition of the stop at the Cross River Reservoir.</i>
<i>I like to thank Tyler for all the support in the process. Thank you, WAC for offering these Science enriching opportunities to students.</i>
<i>As this is the first time I've planned an overnight school trip, any and all advice regarding planning, things to think about or anticipate would be helpful.</i>
<i>All is fine.</i>
<i>I just want to thank you for giving our students at St. Clare School such a amazing opportunity. I find that Trout in The Classroom is a great teaching tool as it connects to so many science concepts ... and being able to take the trout release trip only serves to magnify and enhance the learning. It is one of the best field experiences I have ever given my students - thanks to you.</i>
<i>Tyler was a wonderful representative for your organization! I look forward to working with her for years to come!</i>
<i>None, We participated last year so I am very clear on all requirements</i>
<i>Tyler sent me tons of resources so I will be making use of them. She is also readily and willingly available to provide information. <b>Any proven ideas on how to whip up, advertise and maintain interest among city students?</b> I have my own, but when its time for the bus tour, I want to be able to choose who will be going. I don't want to have to beg students to go. Any ideas are welcome. iris clarke</i>
<i>I am so excited for the bus tour this spring and super grateful my school has received this opportunity!</i>

- Discussion of Post-Tour Survey results related to the Planning Process (response data provided in tables below):
  - Higher levels of satisfaction across all aspects of the Planning Process in 2017 compared to 2016. Bus Tour Guides were developed to ease this process and they seem to have helped alleviate some of the challenges of bus tour planning.
  - Continue to see very high levels of satisfaction with support provided by Bus Tour program staff.
  - Positive feedback highlights:
    - Grantees feel the planning process is clear and streamlined and they received ample support at every step along the way.
    - Eliminating liability insurance paperwork is appreciated.

- Constructive criticism highlights:
  - Very little constructive criticism. One applicant expressed desire to apply earlier in the year and, in fact, teachers can apply up to 1 calendar year before their desired trip.

Post-Survey Responses: Planning Process	% Level of Agreement with Statement		
	2017	2016	2015
The process of making my bus tour arrangements was easy for me.	96%	78%	87%
Making the arrangements for my bus tour required a reasonable amount of time and effort to complete.	92%	79%	89%
I received adequate support from the Bus Tour Program during the process of planning of my bus tour.	98%	97%	94%
Rate your experience engaging with Bus Tour Program staff during your bus tour planning process.	100%	99%	97%

How can we improve the Bus Tour planning process?
<i>Tyler was very supportive at all "stages" of the bus tour process.</i>
<i>I thought the planning process was easy!</i>
<i>It is already organized very well. <b>Would be helpful if we could start the grant application earlier in the year.</b></i>
<i>Tyler was fantastic and so helpful, I don't have any suggestions here.</i>
<i>I can't think of anything to make this process easier.</i>
<i>Nothing to suggest - Tyler was amazingly supportive and working with the TOEC was excellent as well. I highly recommend this combination of Watershed Bus Tour with the OpEx Program.</i>
<i>The Watershed Forestry Bus Tour process was extremely clear. I was supported throughout by Tyler Van Fleet and Lillit Genovesi (from TIC) for the 2017 grant as well as in the past. They are a dynamic team..</i>
<i>N/A</i>
<i>Nothing was unclear. It's just that staff at my school dragged their feet a bit.</i>
<i>Very smooth process.</i>
<i>Everything was clear before we went on the bus tour! Tyler was incredibly helpful in supplying materials for us to educate the students before the trip, and was very communicative about the logistics of the bus tour.</i>
<i>none</i>
<i>Tyler Van Fleet met with me to explain the process and procedures. She made the planning relatively easy.</i>
<i>I think the process is successful and enables teachers to prepare for their tours with step-by-step support and guidance.</i>
<i>Assist with securing a date for a trout release.</i>
<i>You're doing a great job. I love how you provided directions (often bus drivers don't know where they're going or whether they can take certain routes or not).</i>
<i>You already did, this year, by streamlining the paperwork and omitting the liability portion for each school within NYC.</i>
<i>It was all clear to us and we don't have any ideas to improve the bus tour!</i>
<i>There is nothing I would improve. The process is pretty streamlined.</i>

- Discussion of Post-Survey results related to the Execution Process (response data provided in tables below):
  - Higher levels of satisfaction in 2017 than in 2016 related to all but 1 aspect of the execution process. Bus Tour Guides, trip itineraries, maps and frequent cell phone communication on the day of the trip are effectively supporting grantees.

- Continue to see very high levels of satisfaction with support provided by Bus Tour program staff.
- Constructive criticism highlights include:
  - Environmental Education Center staff not consistently prepared to work with city students who are excited, nervous and unfamiliar with learning in the outdoor environment.
  - Desire for students to use waders and help collect macroinvertebrates.
  - More detailed scheduling/grouping information from TOEC.
  - Have student sketch reservoir and dam to help focus observations of site.

Post-Tour Survey Responses: Execution Process	% Level of Agreement with Statement		
	2017	2016	2015
Executing my bus tour was easy for me.	94%	80%	84%
Executing my bus tour required a reasonable amount of time and effort.	91%	85%	88%
The education staff at my bus tour destination was well organized.	98%	96%	93%
The education staff at my bus tour destination was knowledgeable about watershed forestry.	100%	95%	93%
I was satisfied with how the education staff at my bus tour destination connected with my students.	97%	96%	91%
I received adequate support from the Bus Tour Program during the execution of my bus tour.	99%	98%	93%
Rate your experience engaging with Bus Tour Program staff during the execution of your bus tour.	99%	100%	97%

How can we improve the Bus Tour execution experience?
<i>This is a suggestion not for WAC but for TOEC, <b>Provide program outline before trip.</b> We had divided the students in groups but upon arrival we had to regroup because teams would be going to different locations around the park and we needed to keep some kids together with the nurse who came along to attend any medical need (epi pens, etc.).</i>
<i>Although help was always available, I have been doing this trip for 21 years so help was not necessary.</i>
<i>Nothing - it was a really great experience and couldn't have been better. Tyler was and continues to be amazingly supportive.</i>
<i>One thing that stands out is the level of preparedness by Frost Valley staff in working with low income inner city students. For many of them, this experience is very new and different from what they are used to. It can be hard to ask students to be silent and focused for an extended period of time when so much stimuli is new to them. <b>Some staff seemed better prepared and welcoming to the excitement of our students while others were not. I know the mission of the bus tour program is to help share these experiences with students who might not be able to have them. I think it is something that Frost Valley and all other outdoor education centers who usually cater to a more middle, upper class, and white population could consider working on.</b></i>
<i>Not applicable.</i>
<i>N/A</i>
<i>Keep doing what you're doing.</i>
<i>not sure</i>
<i>Perhaps next year the students could use waders and assist in the collection of macroinvertebrates (we used to do it years ago).</i>
<i>It would maybe be a good activity to <b>have students sketch the reservoir</b> when they are there to help them immerse themselves in the surroundings. Many students were able to use their five senses to fully take in their surroundings but some are not able to do that without an activity.</i>
<i>None</i>
<i>There is nothing I would improve.</i>

### Bus Company Satisfaction Data

Bus Company	Level of Satisfaction: 1= Very dissatisfied 2= Dissatisfied, 3= Satisfied, 4= Very satisfied	Comments
N/A	N/A	<i>My AP dealt with this. I did not.</i>
Peter Pan	1	<i>Driver got lost twice on the way back to Queens - He was given directions of how to get there. Bus equipment was not working well -dvd player and microphone/speaker.</i>
Royal Coach Lines	3	<i>I have worked with them before. It was an ok experience. I did not communicate the full itinerary with them before the trip so there was some confusion on the day of the trip about where we were going and what the cost of the trip was.</i>
Academy Express LLC	3	<i>This was the only company approved by the NTC Department of Education.</i>
L & M	3	<i>The driver on our way to the trip was not great. He did not know the directions and kept asking me for directions. The driving coming home was excellent and prepared.</i>
Academy	3	<i>The only problem was that he didn't know how to put the coordinates into the GPS. Since the reservoir didn't have a street number there was a little confusion on directions but we figured it out.</i>
School Bus	4	<i>N/a</i>
COACH USA	4	<i>This is the second year that I used the bus company. It was a good experience. They were on time and knew their way</i>
Academy	4	<i>Our driver was friendly and easy going. He didn't mind the schedule change, and we appreciated that.</i>
Academy	4	<i>Wonderful! They were on time and the buses were clean and comfortable.</i>
Monsey Tours	4	<i>The bus driver was very cooperative with our stop at the Reservoir, and the length of time needed at Stony Kill Farm. Both drivers coming and going were very personable. They did not rush us at any point of the trip.</i>
Monsey Tours	4	<i>Bus arrived on time at all locations. Bus driver followed directions and was safe and courteous on all road ways, even checking to make sure the bus would be able to cross a particular section of road prior to the reservoir that had a posted weight limit. Bus was clean. Cost was reasonable and bus company did not charge extra for a last minute modification that added a little bit of extra time to the first day of the tour.</i>
Monsey Tours	4	<i>The driver was very polite and flexible. They were always on time.</i>
Coach USA	4	<i>We have used Coach USA the past two years and they have been reliable and professional throughout the entire paperwork process as well as the drivers on the trip.</i>
Happy Trails	4	<i>The drivers were extremely professional, conscientious and friendly. They arrived early in the morning and were prepared with GPS navigation and got us to Clearpool using the best route possible.</i>
Suburban Trails, Inc.	4	<i>The driver was really nice, well prepared, very professional. I didn't have any dealings with the company itself. That was entirely handled by staff at my school.</i>
Academy	4	<i>The buses were clean and bathrooms were well stocked and working well. Buses were on time and bus drivers were communicative. Working TV's on the first bus and we had some difficulty with the TV on the second bus.</i>
Suburban Transit (AKA CoachUSA)	4	<i>Booking the trip was easy. They worked around our flexible schedule. The driver was extremely courteous and competent. Due to traffic, they were 20 minutes late picking us up. Next time I would give them an earlier departure time to ensure they were on-time.</i>

- Discussion of Post-Survey results related to the Close-out process (response data provided in tables below):
  - Higher levels of satisfaction in 2017 than in 2016 related to all aspects of closing out the grant.
  - Strong levels of satisfaction with level of support from Bus Tour program staff. WAC describes close-out requirements in grant contract, Orientation Meeting discussions, and in a post-tour letter sent to all participants.
  - Positive feedback highlights include:
    - Process described as easy and straightforward by some grantees.
  - Constructive criticism highlights include:
    - A few grantees requested an up-front description of paperwork requirements, which is already provided in multiple formats, including in the application, contract, in-person meeting, grantee requirements checklist, and close-out letter.
    - Request clarification of what are acceptable student work examples.
    - Request to broadening accepted documentation of proof of payment and create digital portal for submitting paperwork.
  - Suggestions for how to support environmental education at schools include:
    - Keep offering trainings, workshops, resources on website, and sending out email notifications
    - Conduct/facilitate more in-class visits from experts
    - Provide more funding, materials and resources.
    - Develop stronger connections with Physics

Post-Survey Responses: Close-out Process	% Level of Agreement with Statement		
	2017	2016	2015
Gathering the required documents to close-out the grant was easy for me.	90%	78%	71%
Selecting examples of student work related to the bus tour adequately conveys my students' learning.	88%	87%	84%
Closing out the grant required a reasonable amount of time and effort.	87%	84%	76%
I received adequate support from the Bus Tour Program while closing out my grant.	97%	89%	88%
Rate your experience engaging with Bus Tour Program staff during the close-out of your bus tour.	100%	96%	93%

How can we improve the grant close-out process?
<i>Peter Pan and TOEC did not provide a \$00.00 balance statement, I had to call and request it from both institutions. I wish a picture of the mailed check would be enough proof.</i>
<i>I thought it was very easy and straight forward.</i>
<i>Provide what's going to be needed prior to the trip happening.</i>
<i>I am not computer savvy so digitally supplying student work is always more difficult for me; otherwise, the process is simple.</i>
<i>Although I am still working on the close-out process (gathering paid receipts and/or signed purchase orders) I anticipate that it will not</i>



<i>be too difficult to do and I know that Tyler will support me in whatever I need to get the grant closed out.</i>
<i>The staff was excellent and offered assistance. On my end, I do feel it would be helpful if there were an online template to enter student photos, samples of their work and even receipts and the staff in-kind time form. That would make the process faster and easier.</i>
<i>By notifying the coordinator early in the process of what is required for the close-out which will allow the teacher more time to prepare for the process early on.</i>
<i>Keep it the same.</i>
<i>not sure. This survey is long.</i>
<i>Be explicit by what you mean when you say "student work" related to the bus tour.</i>
<i>none</i>
<i>There is nothing I would improve.</i>

**Did your bus tour lead to unexpected activities, projects or conversations among your students and/or community? If so, please describe.**

<i>Yes, students voted on a name for our group, Guardians of the Watershed. That led to a writing activity of what it means to be a guardian and a flag/shield contest to select a symbol for the team. Students used what they have learned about water and the watershed in their entries to the DEP Art and Poetry contest (10 students participated)</i>
<i>The Watershed Forestry Bus Tour led to some interesting discussion about renewable energy and what we can try to implement at our school.</i>
<i>With our school located to the East River, students were able to make a connection with the plankton that they saw and also the trout that they released.</i>
<i>After leaving the trip many students wanted to know what more they could do. This led to some great conversations about next steps.</i>
<i>Students found the experience to be very rewarding as it allowed them to finally see where their water comes from! Students created a large art project using their reflections from the trip to Frost Valley and the visit to the reservoir.</i>
<i>We created posters around the school to encourage water conservation. Our entries for the DEP Art &amp; Poetry Contest are also used to inform the school community about the importance of our water supply.</i>
<i>Student projects following the tour focused mostly on conserving water and looking for ways to do this on an individual basis. The tour itself, particularly our stay at TOEC and the focus during meals on ORT (food and liquid waste from meals) definitely stuck with students.</i>
<i>Students wanted to find macroinvertebrates in the Bronx River in order to determine the health of the river.</i>

**What was your favorite part of the Watershed Forestry Bus Tour? What memory or image sticks with you from your experience?**

<i>The trip, for 99% of the students it was the first time in a coach bus, north of NYC and visiting a reservoir. Students finding macro-organisms in the lake, their faces lit up every time they found an organism. Joy, pride, success.... for them and myself. I have to include the letters to the "people of the villages" as a personal everlasting memory. Their letters warmth my heart to the point of tears. Educating beyond the academics is a goal of mine, their letters showed a civic awareness, a social compromise and human awareness.</i>
<i>The image that will stick with me during our watershed forestry bus tour was when the whole group did the gravity activity by the reservoir and when they were looking at the ecology of a lake on the property of Frost Valley. During the ecology activity, it was raining steadily and the students were having a great time nevertheless!</i>
<i>The release of the trout and the visit to the Cross river reservoir.</i>
<i>I was so happy to see my students do hands on work to make a difference. I was pleasantly surprised with our wrap up activity which really showed how much each student had learned over the course of the day.</i>
<i>I enjoyed stopping at the reservoir and trying to picture the town that once stood there. We were all fascinated by the fact that so many people had to be displaced to make our drinking water system a reality.</i>
<i>Seeing the joy on the student's faces when they make a new discovery, or see something we have been learning about in class.</i>
<i>The immensity of the Cross River Dam will always stick with me, particularly the view from the dam wall which shows the level of water behind the wall and after. The entire tour was amazing - our visit to the Reservoir, activities at Stony Kill Farm (one of which focused on watersheds and had both a huge model of a watershed, great maps of the watershed and the plastic watershed model)</i>

and spending three days at the TOEC where we learned as we walked through forests and participated in activities ranging from team building to outdoor skills. I am so excited to make this a regular event for the 7th grade class at our school and I can't understate the impact it had on the students that attended.

The water ecology was very popular with our group this year. They loved finding organisms with such ease and the immediate feedback it gave in determining the health of a body of water.

All of it! The children enjoyed the tour very much as well as the pre and post trip activities that lead to authentic hands-on learning. On the trip, the children seemed to enjoy planting trees the most after the trout release. However the hike and water testing, tour of the dam, games and macroinvertebrates studies were also engaging. Perhaps the favorite activity at school was trying to learn how to design 3D models of the watershed.

Visiting the reservoir.

Seeing the Cross Reservoir for the first time. It was pretty impressive, especially seeing the spillway. It was also pretty impressive for students to realize that the entire reservoir only holds 10 days' worth of water for NYC.

Allowing students to have that experience and seeing them learn!

My students loved the experience of getting out into nature and seeing a new part of their state while also learning about trees and our watershed.

The actual trout release, however, all of the activities created a complete experience. Interpretive walks, tree plantings, macro invertebrate sampling, and invasive species removal really helps connect my students with their watershed.

Going to the Neversink reservoir and being told facts about the reservoir like how many gallons of water it has.

EVERYTHING!

My favorite part was the tour of the Cross River reservoir and Dam because I never did that before.

Other than the trout release, the students really enjoyed the activity at the reservoir. They were fascinated to see the actual water that we drink there in the reservoir. The Cross River and the reservoir were extremely picturesque.

The students have developed a sense of responsibility for environmental stewardship. They also have gained a deep appreciation of water and the entire New York City watershed system as well as the forests that help preserved its integrity. They see the interconnections between upstate and downstate and understand that we rely on each other and must work together to maintain clean drinking water for all.

It gives them an opportunity to experience the watershed area and make connections to the importance of that area in our everyday lives.

On the bus ride up to Ward Pound Ridge, students are shocked by what they see looking out the window. They are recent immigrants and most of them have only seen the concrete jungle of New York City. Some students from Bangladesh mentioned how their forests are completely green, whereas forests here have more color, like browns and grays. Other students mentioned how they want to live out here in the suburbs. They also come away from the experience understanding more about their water supply and how it is important to protect it. I also really like seeing students looking at the macroinvertebrates and not being totally grossed out. They recognized that bugs can be cool.

They would have never done anything like that before. This was an amazing opportunity for them, especially since some have never left the Bronx before.

My students loved the trip. They said that they found it to be beautiful and that they learned a lot about the process of growing trees and their importance to watersheds.

We released over 300 brown trout fingerlings, conducted macro-invertebrate surveys, and participated in an interpretive nature walk. The release site, Ward Pound Ridge, directly feeds the Cross River Reservoir which is part of the NYC Water Supply System, the unique source of unfiltered water from the CATSKILLS that provide NYC with blue ribbon water. A culminating tour of the Cross Creek Reservoir Dam rounded off the day perfectly. Through these activities, my students gained an understanding of the importance of clean water and biodiversity to a healthy forest riparian ecosystem.

The students were incredibly excited to get off the bus at the Neversink reservoir. For many of them, this was their first time seeing a large body of water in real life. Smelling the fresh air and seeing the vastness of the reservoir was a memorable experience for our students, and they were able to relate their pre-trip knowledge to the new real life experience in a meaningful way. Students had an incredible time at Frost Valley that they will never forget. In particular, students loved the water ecology activity at the pond there where they collected animals from the pond and identified them. Additionally, students loved canoeing and being on the lake. Many students were inspired to continue exploring the outdoors and learning about their natural surroundings.

The students loved going to the reservoir and seeing where their water comes from

The students loved the trip. The value is in the experience of being out of the city and experiencing what it is like to be in nature and how nature benefits us. Most of my students had never been to upstate NY and did not know that is where our tap water comes from. The experience has impacted their lives because now they have a greater understanding and appreciation of how we are connected

with the environment.

We do a unit entitled, "Populations and Ecosystems". This trip brings those lessons to life. We discuss using dichotomous keys to identify organisms; we discuss the gentle balance of ecosystems; and the underlying theme... how humans mess with the ecosystems. The trip and related lessons (ex. how roots help clean the river) brings this to life!

**What are some ways we can we support environmental education efforts at your school or organization?**

*I appreciate the e mails announcing events in the city by other organizations or sponsored by WAC to enrich the watershed experience and knowledge. Keep it up!*

*Get every teacher to go to WFIT because it's AMAZING. Any workshops at schools would be beneficial to teachers.*

*Organize classes led by guest speakers for our students.*

*By continuing to provide this partnership we can continue to provide support into environmental education.*

*We would be happy to receive any information or updates regarding the watershed and information on possible future collaborations.*

*Provide more information about programs that are available to teachers for professional development.*

*WAC is amazingly supportive. The website has a ton of information, the training at the TOEC was invaluable and Tyler is a dynamic resource, always willing to help us.*

*I would love to have specialists and scientists in the field come and talk to my class.*

*The bus tour grant is a perfect fit for us so continuing this program and allowing us the opportunity to participate is a major win for our students. The tour gives real meaning to all the environmental lessons that are integrated. When the children return after graduating, they think they talk about most is the upstate trip when they released their trout. Many of my students eventually study environmental engineering or forestry in college or go on to be rangers, and I believe it is because of this program.*

*By providing relevant professional development or class workshop.*

*Figure out ways to tie this program to physics.*

*not sure*

*Just by offering more trips/funding for trips so that students can experience their local environment in NY State more.*

*The teachers would greatly appreciate being given more materials to use with students in the classroom as well as any trainings that are available for teachers to implement any of these topics.*

*In School workshops for the students*

*Books and pamphlets related to the ecosystems would be fabulous!*

**OPTIONAL: Here you may provide a testimonial describing your experiences as a participant in the Watershed Forestry Bus Tour Program and how it has impacted you personally and professionally. Your response may be used in future Watershed Forestry Bus Tour presentations and materials.**

*The highlight of this school year Science education was the awarding of the Watershed Forestry Bus Tour Program. This unique experience was a first in many ways for most of the students. The bus tour, the forest and, the experiments by the lake and in the woods gave students the opportunity to connect what we learned in class to real life experiences when they visited the Cross River Reservoir and Taconic Outdoor Education Center. There is a quote I always share with parents and colleagues "It takes a village to raise a Scientist." WAC and the WFBT are part of our village! Science education and Civics of nature conservation and watershed stewardship at its best!*

*My students and I have been fortunate enough to be a part of this program for three years. Over the course of three years our club has grown and one of the things we're most proud of is making a difference. On this trip students have an opportunity to make a difference by planting trees in areas which will lead to benefitting them. Students work to plant trees, but they learn about how critical the trees are to our ecosystem and water supply. This trip teaches students so much from the moment we step off the bus and leaves the bus ride home filled with more questions and discussion. This year students had an opportunity to also learn about soil testing which they were extremely interested in and had never experienced before. By far my favorite part of the trip was seeing students who have been in our club for three years visit the trees which they planted in previous years. It was a truly beautiful moment which highlighted just how much of a difference one person can make.*

*The Watershed Forestry Bus Tour Program has been a life-saver. Without the funding this program provides, our school would not have been able to finance our trip. Personally, I look forward to this trip every year, and I can honestly say it has been the highlight of my career. This past year alone, I have had 3 former students come back to the school to volunteer to be chaperones for the trip. They all said it was the trip they will remember for a lifetime. It changed their lives and made them who they are today. That means the world to me. Thank you for your many years of support!*

*The Watershed Forestry Bus Tour provides a shared experience for students seeing a healthy partnership between forests and water systems. It becomes a touchstone experience for many future lessons in all subject areas.*

## **Program Development**

- Addressed proposed Directions Forward from 2016:
  - Increase the number of classroom visits. Conducted classroom visits with 8 grantees in 2017, compared to 6 in 2016. Most visits involved teaching several classes of students.
  - Provide more detailed Bus Tour programming descriptions. Bus Tour guides for each bus tour option were posted on the website and distributed at orientation meetings. Descriptions of bus tour options were improved in the Bus Tour application to highlight reservoir visits and clarify what kind of programming WAC provides on Trees for Tribes and TIC tours. Feedback from grantees was very positive.
  - Reporting improvements: Post-survey now asks for final student and adult participant numbers as well as bus company feedback.
- Provided parent letter to teachers to be sent home with other field trip forms to provide background information about trip and suggestions for how parents can engage their children about their trip. [\[See Appendix D: Bus Tour Parent Letter\]](#)
- Continued co-funding partnership with the Catskills Watershed Corporation.
- Piloted a Bus Tour Activity Kit during Orientation Meetings, which is a packet of recommended activities for before and after a bus tour. Depending on the Bus Tour Option, specific activities are recommended.
- Continued to give out chaperone informational folders to engage and solicit feedback from adults participating in bus tours. Chaperone survey response rate is low: 11 surveys returned in 2017 (compared with 2 in 2016). Distribution of surveys is inconsistent. Below is a summary of results:

<b>2017 Chaperone Survey Results</b>	
<b>Responses received</b>	n = 11 (5 parents, 1 superintendent, 1 teacher, 1 para-professional, 1 sustainability coach, 1 student teacher, 1 spouse of teacher)
<b>Average response</b>	Instructors were prepared <b>4.7/5 (94%)</b> Educational programming was run efficiently <b>4.9/5 (98%)</b> Instructors were successful at engaging students <b>4.8/5 (96%)</b> Instructors were professional <b>4.8/5 (96%)</b> Programming content and delivery matched the learning level of the students <b>2.3/3 (77%)</b> My child's/student's participation in the bus tour is a valuable part of his or her education

	<p><b>4.6/5 (92%)</b> I have noticed a change in my child's/student's thinking/behavior as a result of the bus tour</p> <p><b>3.6/5 (72%)</b> I learned useful information during the bus tour</p> <p><b>4.3/5 (86%)</b> I took action as a result of the handouts provided to me at the end of the bus tour</p> <p><b>3.9/5 (78%)</b> My thinking or behavior has changed as a result of the bus tour</p> <p><b>3.7/5 (74%)</b></p>
<b>Describe what the instructors did well</b>	<p><i>They were personable with the kids, the kids liked them a lot.</i></p> <p><i>Instructor was very informative and knowledgeable</i></p> <p><i>They managed the kids well and had control of the group.</i></p> <p><i>Instructors also made it fun for the kids</i></p> <p><i>Took the time to answer every student's question.</i></p> <p><i>Gave the students many hands-on opportunities.</i></p> <p><i>Explained what the children were going to do.</i></p> <p><i>Keeping kids interested and involved</i></p> <p><i>Giving safety briefings to aide us on our way.</i></p> <p><i>Excellent rapport with the students.</i></p> <p><i>Kept the groups engaged.</i></p> <p><i>She had a positive energy and shared her own knowledge with students.</i></p> <p><i>Were knowledgeable about the watershed and wastewater treatment center</i></p> <p><i>Authentic learning experience</i></p> <p><i>The instructor did a good job of asking/answering students</i></p> <p><i>Trying to keep buddies together.</i></p> <p><i>Asked students a lot of questions</i></p> <p><i>Engagement</i></p> <p><i>Very pleasant and patient.</i></p> <p><i>Were engaging and informative.</i></p>
<b>Describe what the instructors could do better</b>	<p><i>One instructor spoke to me in a demeaning way. I was leaning on a rail outside (wooden) and all he had to do was explain not to lean. I felt his tone toward me was rude and unnecessary. Other than that, all was good.</i></p> <p><i>Perhaps have a handout with key vocabulary to help support ELLs</i></p> <p><i>Stronger facilitation with educators at the center</i></p> <p><i>The pace of the hike was sometimes too fast for the students.</i></p> <p><i>n/a they were wonderful!</i></p> <p><i>More enthusiasm</i></p> <p><i>Make name tags for all the children.</i></p> <p><i>I'm not a teacher. I really don't know</i></p>
<b>What changes have you observed in your child/student's thinking or behavior as a result of the bus tour?</b>	<p><i>During lunch, some students commented to me about not having ORT (food waste). It obviously impeded their lives and I am a lot more aware of all my waste!</i></p> <p><i>My child is conserving more water at home.</i></p> <p><i>My child is very excited about hiking on a mountain.</i></p> <p><i>Water use.</i></p> <p><i>Most students had never even been upstate or hiking - that experience alone was impactful.</i></p> <p><i>Watching water usage and is more aware of what poison ivy looks like.</i></p>
<b># of respondents who read each of the handouts</b>	<ol style="list-style-type: none"> <li>1. How much is your leaking toilet costing you? (10)</li> <li>2. Water use report card &amp; math quiz (9)</li> <li>3. Kids activity worksheet (9)</li> <li>4. Cease the grease bookmark (8)</li> <li>5. Pure Catskills Shopping Guide (8)</li> <li>6. NYC drainage areas map (8)</li> </ol>



	<p>7. MyWoodlot flier (7)</p> <p>8. NYC Drinking water supply and quality report (7)</p> <p>9. NYC water supply system map (7)</p>
<b>Which handouts caused you to take action?</b>	<p><i>Used resources from last summer; used water use quiz previously; made a watershed with students</i></p> <p><i>I tested our home toilet for a leak with the kit provided.</i></p> <p><i>I used the leaking toilet packet</i></p> <p><i>Grease and leaking toilet</i></p> <p><i>The toilet leak test</i></p> <p><i>Leaking Toilet</i></p> <p><i>Toilet costs; water supply</i></p> <p><i>I liked the water supply system map</i></p> <p><i>NYC water supply system map and relevance of continued learning this spring 2016</i></p> <p><i>Cease the grease bookmark, water use report card</i></p>
<b>What types of materials would you have liked to receive at the end of the bus tour?</b>	<p><i>More information on future (possible) trips.</i></p> <p><i>Watershed map of NYC water for all kids.</i></p> <p><i>A kit for the children</i></p> <p><i>I think it was all well-covered.</i></p> <p><i>More information about shopping in the Catskills</i></p> <p><i>The students asked for an informational email that the instructor said she would share with the teacher.</i></p> <p><i>More student-friendly resources</i></p>
<b>What changes have occurred in your thinking or behavior as a result of the bus tour?</b>	<p><i>I am a lot more conscious and aware of the waste I have in my life and how I can cut down on waste.</i></p> <p><i>We as a household try to conserve water by not running water when brushing teeth.</i></p> <p><i>I'm a lot more careful about dumping oil in the kitchen sink. I also try to use less water when brushing. I try to take shorter showers.</i></p> <p><i>water use</i></p> <p><i>Paying more attention to water usage</i></p> <p><i>I did not know how much water NYC uses every day. I was wondering if the fire hydrants left running in the summertime uses fresh drinking water.</i></p> <p><i>Better understanding of the impact and decisions made within my local community and how it may have an effect on others with a larger ecosystem.</i></p> <p><i>I need to hike more</i></p>
<b>What was the most valuable part of this program?</b>	<p><i>The memories the children will have. The children loved it and learned a lot. The whole experience really did impact their lives.</i></p> <p><i>Most valuable part was when kids learned how water was cleaned then reused.</i></p> <p><i>Learning directly from the experts and being outdoors for most of the trip.</i></p> <p><i>The idea of getting 2 different schools together - a school kids that live near watersheds and those who use the water from the watersheds.</i></p> <p><i>The trout release offered a larger awareness of the NYC eco-system</i></p> <p><i>Tying together where we live with where the water ends up in a concrete manner.</i></p> <p><i>Seeing nature through the eyes of the students.</i></p> <p><i>It helps facilitate a more concrete understanding of where our water comes from and emphasizes water conservation.</i></p> <p><i>Student experience in a larger macro environment and the importance of decisions they make and how may affect others.</i></p> <p><i>Just being there. Seeing and experiencing the reservoir, having more facts about it, hiking to see other reservoirs.</i></p> <p><i>Visiting the reservoir and seeing where our water comes from.</i></p>
<b>How would you improve the program?</b>	<p><i>I thought overall the program was great and a success. There can always be improvements to anything, however, the children learned a lot and had a magnificent time so what else can I say. It was great!!!</i></p> <p><i>I am not sure. I thought the program was done just fine.</i></p> <p><i>Allow two guides instead of 1. There is way too much info to explain to the kids. Thank you!</i></p> <p><i>A little more prepared with the matching up of buddies in the beginning.</i></p> <p><i>It was awesome just as it is.</i></p>

*It's run very well. No improvements needed.  
I wonder if the production of an educational video would make the learning more accessible to all students. Our class was the only one of several 4th grade classes that got to go.  
Educators at center (can) be more professional and engaging especially for such tough crowd like middle school - they got a lot of energy!  
I'd love to visit the hatchery first to kick off the program and culminate with the reservoir and bus tour.*

### ***Directions Forward for Bus Tours***

- Provide more detailed information about what are acceptable student work examples. Include this information in Contract and Close-out Letter.
- Provide Parent Letter translated into Spanish.
- Post list of Bus Companies and Bus Tour Activity Kit on website so applicants can more easily get quotes for their grant budgeting and plan their pre and post tour teaching.
- Continue to distribute chaperone folders and collect feedback via survey.



### **3. Green Connections**

Green Connections is the most robust option of the Watershed Forestry Bus Tour Program. It is a year-long program available to 4-8th grade teachers who have attended the Watershed Forestry Institute for Teachers. Green Connections explores the environmental and cultural dimensions of the NYC watershed by supporting partnerships between upstate and downstate classrooms. Partner classrooms complete: 1) The 8-lesson Green Connections curriculum; 2) Three rounds of correspondence between student buddies; 3) Two joint Bus Tours, one to an upstate watershed location and one to NYC; and 4) a local stewardship project related to water, trees and/or forests.

In the fall of 2015, WAC subcontracted the role of Green Connections Coordinator to Kali Bird of HikeNY and the contract has been renewed annually since then. Summary Statistics for the 2016/17 school year are presented below.

2017 Green Connections Summary Statistics						
School	Trips	Teachers	Students	Grade	Grant Award	Final Cost
Windham Ashland Jewett Central School	Downstate: 5/5/17 • South Street Seaport Upstate: 6/9/17 • WAJCS, Batavia Kill, Windham Mountain	3	20	4	\$2,500.00	\$2,816.90
PS 376, Brooklyn		1	22	4	\$2,500.00	\$2,524.08
Stamford Central School	Downstate: 11/22/16 • PS 33, One World Trade, Highline	1	23	4	\$5,000.00	\$4,964.33
PS 33	Upstate: 5/19/17 • Mt. Utsayantha, Stamford CS, Maple Farm	2	26	4	N/A	N/A
RJK Middle School, Monticello, NY	Downstate: 6/1/17 • NY Botanical Garden, VanCortlandt Park	1	25	6	\$2,500.00	\$1,782.58
AmPark Neighborhood School, Bronx, NY	Upstate: 10/20/16 • Time & The Valleys Museum, Neversink Reservoir, RJK MS	1	16	5	\$2,500.00	\$1,668.81
Austin Road Elementary School, Mahopac, NY	Downstate: 11/18/16 • Highbridge, NY Botanical Garden, PS 214	1	23	5	\$2,500.00	\$950.00
PS 214 Lorraine Hansberry Academy, Bronx, NY	Upstate [PS 214 ONLY]: 4/1/17 • Cross River Reservoir, Clearpool	1	20	5	\$2,500.00	\$1,943.00
<b>TOTAL</b>		11	175	4-6	\$20,000.00	\$16,649.70

### Promotion

- 4 Reservoir e-bursts promoting Green Connections program sent on 6/7 [shown below], 6/26, 7/25 and 8/1.
- Promoted at Community of Practice events throughout the year.





## The Reservoir

Offerings & Inspiration for Watershed Forestry Educators

June 6, 2017

[Funding](#) | [Training](#) | [Events](#) | [Resources](#) | [Contact](#)

### FUNDING



#### Watershed Forestry Bus Tour Program

Applications due Friday, August 4, 5pm

Apply now for fieldtrip funding to the NYC Watershed next school year. Discover the world-famous NYC Watershed and water supply system first-hand! Check out the 4 [Watershed Forestry Bus Tour](#) options that explore where NYC's water comes from and how forests work to protect water quality. You can release trout, plant trees and learn at environmental education centers and all trips include a guided tour of a drinking water reservoir. Check out the [website](#) for more info and to download our updated application today.

#### WAC Green Connections Program

Applications due Friday, August 4, 5pm

From forests to faucets through friendship! WFIT graduates are invited to apply for WAC's Green Connections program, which supports year-long partnerships between upstate watershed and downstate NYC classrooms. Students become pen pal buddies, learn from a shared curriculum, go on 2 joint field trips, and complete a local stewardship project. Classroom partnerships receive up to \$5,000 combined to complete the program with additional funds available for Title 1 schools. [Click here](#) to request more information or contact Tyler Van Fleet at [education@nycwatershed.org](mailto:education@nycwatershed.org) or 914-962-6355 x21.



#### Toshiba America Foundation

Application deadline is October 1, 2017

The [Toshiba America Foundation](#) is accepting applications from grades K-12 school teachers doing innovative science or math project based learning. The foundation awards grants to public or private nonprofit schools in support of hands-on science or math education projects. The foundation strongly encourages projects planned and led by individual teachers or teams of teachers for their own classrooms. Grade K-5 grant requests for up to \$1,000 are due by Oct 1. Grade 6-12 grant requests for under \$5,000 are evaluated on a rolling basis while requests for more than \$5,000 are due November 1st.

### TRAINING



#### Chancellor's Day: Water Ways

Thursday, June 8, 9am-3pm at Museum of the City of New York

New York City's Department of Environmental Protection along with the Museum of the City of New York invites you to join us on Thursday, June 8, 9:00 am - 3:00 pm (NYC DOE Chancellor's Day) for a professional development workshop on [Water Ways](#). You will have the opportunity to explore the museum's newest exhibition, New York at its Core, and learn about the history of NYC's water supply and how it has impacted the city's growth through a series of tours, workshops, an outdoor scavenger hunt and interactive discussions. [Register here](#).

- Sent targeted emails to all past WFIT teachers who are still actively teaching. This yielded no new partnerships.
- Continued to promote Green Connections during 2017 WFIT by highlighting program at beginning of Institute, encouraging teachers to develop relationships with peers at WFIT that could evolve into GC partnerships, having Green Connections Coordinator and a longtime participant present at the training and offered an optional information session. This yielded one new partnership.

### Outcomes & Evaluation

- See the Green Connections Final Report [[Appendix E](#)] compiled by the Program Coordinator for a thorough description of outcomes, evaluation, draft strategic plan, and current program description.

### Program Development

- Addressed proposed Directions Forward from 2016/2017:
  - Stewardship Projects: The stewardship project piece of Green Connections was a new addition to the program in 2015/16 and a clearer framework has been developed so that teachers have more guidance for their stewardship projects, independently of whether they seek support from the Program Coordinator. A 'stock' stewardship project called Adopt A Tree was developed so that any class could do it, and instructions were included in the 2017-2018 Teacher Binder. This should decrease barriers for teachers who feel too

busy to coordinate with local programs or the Program Coordinator, but are uncertain of where to start.

- **Curriculum:** The curriculum continues to be updated and expanded to better achieve stated program goals, while allowing teachers flexibility so that they can best incorporate the lessons into their own curriculum. A new opening lesson adapted from Project Learning Tree called Environmental Exchange Box was developed to help build their own sense of place as a precursor to developing curiosity and appreciation for their buddies' social and natural environment. A new closing lesson involves reading a classic story about human environmental impacts and reflecting on their own learning and experiences as stewards throughout their Green Connections year. Greater focus was given to lessons about the function of forests as filters in the NYC watershed. Finally, lessons were re-organized to align with program learning objectives and in most cases, multiple lesson options are provided for each objective in order to give teachers greater flexibility in their instruction.
- **Pen-Pal Relationships:** More guidance was provided to teachers about how to guide student letter writing and the new opening lesson provides a rich framework for launching communications with a new friend. There's interest in using Skype and other virtual meeting programs to enhance student communication, however, the implementation continues to prove difficult for teachers given scheduling and tech constraints. Program leadership should continue to advance their own understanding of how to best support the development of these relationships and trial changes through time.
- **Field Trips:** A suite of engaging student icebreaker activities has been trialed for the students to do when they first meet each other. Starting the day at a school is an effective way to set an appropriate tone for the day that stresses respect, kindness, and academics.
- **Logistics:** WAC continues to pay for buses separately and directly. This has worked well.
- **Outreach:** A Green Connections website has been piloted for the 2017/18 school year where participating teachers can access program materials more easily and interested teachers, administrators, and parents can learn more about the Green Connections program, WAC, and the NYC drinking watershed and water supply system.

### ***Directions Forward for Green Connections***

- **Logistics:** The application process may need to begin much earlier so that teachers can plan their fall trips the semester prior. It is a hurdle for teachers to plan trips for October and November during October and November. Teachers have little time for thought for Green Connections during September, as this is an extremely busy month of year for them, with school starting, last-minute classroom rearrangements, staff meetings, parent-teacher conferences, etc.
- **Professional Development:** Program leadership should consider offering a Stream Health & Monitoring / Water Quality Science training for the teachers, as many suggested this as the area they would most appreciate additional training.
- **Outreach:** Continue to experiment and refine the pilot website. To better promote the program, school administrations should be contacted directly to inform them of the opportunity for their teachers to participate in bus tour programs, the WFIT, and Green Connections.
- **Growth:** Program funders indicated they would like for a version of "Green Connections Lite" to be developed so that the program can be inexpensively expanded to more schools. Creating a website is a significant first-step in providing a central location for not only interested teachers to reach out and learn more about Green Connections, but for program leadership to learn more about how many teachers may be interested. The website also allows for non-participating teachers to take



advantage of resources already created, which can be made freely available to them, such as the curriculum and guides for developing buddy relationships or a stewardship project.



#### **4. Watershed Forestry Education Community of Practice**

WAC actively engages, assists, and celebrates teachers across the NYC Watershed region in order to empower and motivate them to teach about NYC watershed forestry now and into the future. The goal is to maintain strong, positive relationships between teachers and program staff as well as among peer teachers. Strategies include:

- 1) Teacher Resources Webpage: Maintain webpage that includes high-quality resources and materials for teaching about NYC watershed forestry topics.
- 2) The Reservoir E-newsletter: Communicate program, funding, and resource opportunities to teachers via periodic e-bursts.
- 3) WAC Watershed Forestry Education Trainings: Organize and run trainings for a variety of target audiences, including school teachers, bus tour environmental education center education staff, and students.
- 4) Other Events & Partner Engagement Meetings: The Watershed Educator participates in meetings, workshops and trainings to meet teachers, engage partners, promote WAC's mission and UREI programs, and learn best practices from peers.

Teachers have a disproportionately large impact on the people and communities with which they interact. Not only does training and supporting teachers yield student learning outcomes, but this investment in teachers also results in greater awareness of NYC watershed forestry and stewardship among teachers' school and neighborhood communities.

<b>2017 Watershed Forestry Education Community of Practice Summary Statistics</b>		
	<b># Events/Sent</b>	<b>Reach</b>
The Reservoir E-newsletter	13	1000 recipients
WAC Watershed Forestry Education Trainings	13	248 attendees
Other Events & Partner Engagement Meetings	12	Many

### **Promotion**

- Teacher Resources webpage linked to from Bus Tour and Green Connections applications, Bus Tour webpage, all Reservoir e-bursts, and many email communications with Bus Tour participants and other teacher contacts.

### **Outcomes**

- Teacher resources webpage visitation:

<b>Teacher Resources Webpage Summary Statistics*</b>		
	<b>Oct 17-Dec 31, 2017</b>	<b>Oct 17-Dec 31, 2016</b>
Teacher Resources webpage views	267	228
Average time on page	4m 24s	3m 42s
Top 5 referrals	google - 204 direct - 50 ahrefs.com - 3 webmaila.juno.com - 2 mcny.org - 2	google - 168 direct - 45 bing - 7 facebook - 2 teachingthehudsonvalley - 2

\*Note: Only comparing 10-week period because WAC website analytics were lost for most of 2017

- The Reservoir e-newsletter
  - Over the year, the reach of The Reservoir e-newsletter grew slightly. Below are the statistics for the final 2017 newsletter sent on 12/19 with changes from the newsletter sent on 1/2 shown in parentheses:
    - Recipients (sent – bounces): 1000 (+72)
    - Emails opened: 221 (+0)
    - Emails clicked through: 36 (+3)
- Hosted 13 WAC Watershed Forestry Education Trainings:
  1. 2/8: Co-led with B. Murphy watershed forestry training with 8 Clearpool education staff members. Focused on winter tree ID, forest ecology, and inquiry-based outdoor education strategies.

2. 2/26: Led Maple Sugaring Social & Hike event for 20 teachers and family members at Teatown Lake Reservation, including private maple sugaring tour, refreshments and a discovery hike around Teatown Lake where we practiced 2 hands-on watershed forestry activities.
  3. 3/4: Led a NYC teacher training called Watershed Forestry in Paintings and Parklands at the Metropolitan Museum of Art and Central Park. Presenters included Margaret Newey from the Smith College Museum of Art and Ken Chaya from NYC-H2O. 6 teachers and S. Cox from the USFS attended the training. Teachers practiced “close looking” strategies with Catskill and NYC regional paintings in the MET and then applied their new skills to real landscapes and natural objects outdoors in Central Park. Close looking strategies develop observational and analytical skills and visual intelligence through group and individual exercises.
  4. 3/20: Taught 25 St. John’s College students (20 undergraduates, 5 graduate students) who are enrolled in a teaching course with the St. Clare School Bus Tour grantee. Discussed WAC, watershed forestry education, and modelled a Project Learning Tree activity.
  5. 3/30: Co-led 3.5-hour watershed forestry education training for 22 instructors at Frost Valley YMCA with K. Vonberg. Part of effort to annually train staff at all Bus Tour destination sites.
  6. 4/11: Hosted 5-hour watershed forestry education training for 7 instructors at Taconic Outdoor Education Center. Part of effort to annually train staff at all Bus Tour destination sites.
  7. 6/27: Co-led with K. Vonberg and G. Johnson a watershed forestry education training for 22 Camp Shankitunk/Lennox Model Forest counselors.
  8. 9/12: Co-led with NYC-DEP Education Dept. an all-day EOH Watershed Tour for 43 non-formal educators. Sites visited included the Cross River Reservoir, Clearpool Model Forest, Hilltop Hanover Farm, Croton Gorge Park, Old Croton Aqueduct underground weir, and Kensico Reservoir.
  9. 9/14: Led half-day training for 6 Teatown Lake Reservation education staff on NYC watershed forestry topics and teaching techniques. This training marks the completion of my annual goal of conducting at least 1 educator training at each Bus Tour destination site.
  10. 10/5: Led 2 1-hour workshops for 55 teachers total at the Trout in the Classroom Fall Conference in Hyde Park, NY. Workshop explored how forests clean water for trout and humans using a variety of hands-on activities and models.
  11. 10/27: Co-led *Measuring the Forest and Making Meaning in the Clearpool Model Forest* workshop with T. Pavlesich and K. Vonberg at NYSOEA (New York State Outdoor Education Association) annual conference at Green Chimneys Clearpool Campus. 5 teachers attended.
  12. 10/28: Led workshop called *Drink Your Trees: Connecting Students to the Forested Source of their Drinking Water* at NYSOEA annual conference. 4 teachers attended.
  13. 12/2: Presented on NYC Watershed and UREI programs and modeled hands-on teaching activities for 25 NYC middle school science teachers who are participating in the Urban Advantage program at the NY Botanical Garden. Program is watershed themed and run by former WFITeer. Received 1 WFIT application from this group already.
- Participated in 12 Other Events & Partner Engagement Meetings:
    1. 1/24: Attended student Green Infrastructure project presentations at Q300 The 30<sup>th</sup> Avenue School in Astoria, Queens. Teacher Betty Eck attended the 2016 WFIT.

2. 1/26: Lead outdoor watershed forestry activities for 26 4<sup>th</sup> graders from 2 Greenpoint Eco-School afterschool programs. The 2 teachers were 2016 WFITeers.
3. 1/30: Lead indoor/outdoor watershed forestry activities for 10 6-8<sup>th</sup> graders from MS 126 Green Point Eco-School afterschool program. Teacher was 2016 WFITeer.
4. 2/28: Hosted MS 126 fieldtrip to Cross River Reservoir and Clearpool. 2016 WFITeer organized trip and will use TAP funding to help pay for Clearpool programming costs.
5. 3/2: As part of Bus Tour to Frost Valley YMCA, sat on judges' panel for Columbia Secondary School's mock town hall debate about the construction of the WOH water supply system. Provided feedback and encouragement to students who represented different stakeholder perspectives and argued for compromise to meet everyone's needs equitably.
6. 4/26: Wrote exam and co-hosted Forestry Station with B. Murphy at Hudson Valley Regional Envirothon Competition. Met and promoted WAC programs, including WFIT, to more than 18 science teachers and environmental educators.
7. 5/26: Spoke with David Jacobs, Regional Science Coordinator and Science 21 Coordinator for Putnam Northern Westchester BOCES, about integrating hands-on activities and regional outdoor education resources into new 2nd grade science curriculum that is currently being developed based on new NYS Science Learning Standards. Will be advising curriculum development team over the summer and possibly into the future with other grade levels.
8. 6/7: Served as Judge at school-wide Science Fair at Lower Manhattan Community Middle School
9. 9/6: Was guest on John Reidl's Wellness Wednesday radio show on WIOX. I provided an overview of WAC's school-based programs and discussed the benefits of water and forest exploration for teachers and students alike.
10. 10/1: Recruited 10 volunteers to participate in DEP's Reservoir Cleanup Day at the Kensico Reservoir. 3 WFITeers attended (all of whom have come to the WFIT twice!) and they brought 6 student and 1 adult volunteer.
11. 12/12: Hosted WAC table at NYC Outdoors! Environmental Education Expo at NYU to promote education programs.
12. 12/20: Served as expert review panelist for student marketing campaigns for NYC tap water at Washington Heights Expeditionary High School (WHEELS). Students visit the NYC Watershed as part of their project research.

### ***Program Development***

- Addressed proposed Directions Forward from 2016:
  - Created featured content on Teacher Resources webpage called the "Essentials Kit" to succinctly communicate watershed forestry learning objectives.
  - Train education staff at all Bus Tour destination environmental education centers as least 1/year.
  - Hold at least 1 community of practice event in NYC, EOH, and WOH per year. NYC and EOH events were held. WOH events will be held in partnership with other orgs in 2018 (CWC, DEP, etc.)

## ***Directions Forward***

- Summarize all UREI program outreach efforts and get input from UREI Working Group on how to improve the synergy and outcomes of program recruitment efforts.
- Hold at least 1 community of practice event in NYC, EOH, and WOH per year. These may be events organized in partnership with other organizations, like CWC and STANYS (Science Teachers Association of NYS)
- Ensure WAC website analytics are being collected throughout the year so we have more complete data on outreach outcomes.