



THE

Valley

DARBY CREEK VALLEY ASSOCIATION

The President's Pen

By Jaclyn Rhoads



A Greener PA Budget



The Darby Creek will get a boost this year thanks to the passage of the Pennsylvania state budget which includes funding for the program formerly called Growing Greener, as well as the new Clean Streams Fund program. Collectively, these two programs will invest \$696 million

from the American Rescue Plan to protect and restore Pennsylvania's waterways.

The former Growing Greener program (SB 525 and HB 2020)- now called the State Parks and Outdoor Recreation Program- will reinvigorate a popular, bipartisan conservation program that was established in 1999 under Governor Tom Ridge and approved in public referenda in 2005. This program benefits the state through flood protections and stream improvements, abandoned mine cleanups, farmland preservation, and park and recreation opportunities. These funds benefit all communities across the Commonwealth, not only through the environmental benefits but also through supporting small businesses and jobs, increasing tax revenues, and improving the well-being of people and communities.

The Clean Streams Fund (SB 832 and HB 1901) will create Pennsylvania's first program dedicated solely to water protection and improvements. This dedicated fund is sorely needed consid-

ering that more than one-third of Pennsylvania's 86,000 miles of streams, including Darby Creek, are so polluted that they are considered "impaired." The Clean Streams Fund will boost existing programs and establish new programs. These new programs include the Agricultural Conservation Assistance Program, which will help Pennsylvania farmers implement more conservation practices on their land, and the Municipal Stormwater Assistance Program, which will provide funding to municipalities to plan and implement practices that reduce stormwater runoff and improve local streams.

This is a great win in combination with investments and resources being dedicated by Delaware County. Cleaning up our waterways costs so much more than protecting and preventing pollution, so efforts to restore our waterways must be combined with greater protection measures in the future. Thank you for your continued support of our efforts to protect these waterways.



Stream-Watch a Huge Success!

by Alan Samel,
DCVA Board Member

The annual DCVA Stream Watch was Saturday, April 9th. It's hard to believe that we have been doing this for almost 20 years! This is a tribute to the legions of volunteers that have helped in the past and continue to help.

What a day! The stream was high and running fast. Really, it was too fast for sampling, but we did it anyway. Our day started at a cool 48°F and overcast and finished off at a comfortable 61°F...still overcast. Many thanks to the 12 brave and committed people who made this a success!



Manning the kick-net. Nora Schmidt, Derrick LaBrake, Tiffany Kung, Amanda Hills

This is always a great opportunity for us to get in the creek, take samples, work with the samplers, and see what is living in Darby Creek. On this day, we took samples from five locations on Darby Creek: Bartram Park in Darby, Darby Creek Road in Havertown (downstream from the Haverford Reserve), Skunk Hollow in Radnor, the Brandywine Preserve at Waterloo Mills in Easttown, and the Swedish Cabin in Upper Darby. What a great way to meet others and learn more about Darby Creek!!

The insects, worms, snails, and other aquatic macroinvertebrates ("bugs") we collect will provide a snapshot of the health of Darby Creek. Using the almost 20 years of data, a trend of the stream

health at each site has been determined. Each year we gather data and compare our water quality findings to data from previous years. It's a way of getting the big picture from a lot of very small bugs! But getting into the stream and collecting the bugs is only part of the stream watch program.

The next step will be to identify the bugs pulled from the stream at each site. The tolerance of each type of bug to stream impairment has been discovered through research-various types are tolerant, sensitive or facultative (can live in most any water quality). We count up the tolerant, sensitive and facultative types of organisms for a measure of the health of each site. The Insect Identification Workshop will be scheduled for this coming fall. Please check the DCVA web-site for more information as we get closer to this time.



DCVA Board of Directors member Nora Schmidt walking along Waterloo Mills checking out the landscape.



Stream Watch is for Ecologists of all ages!

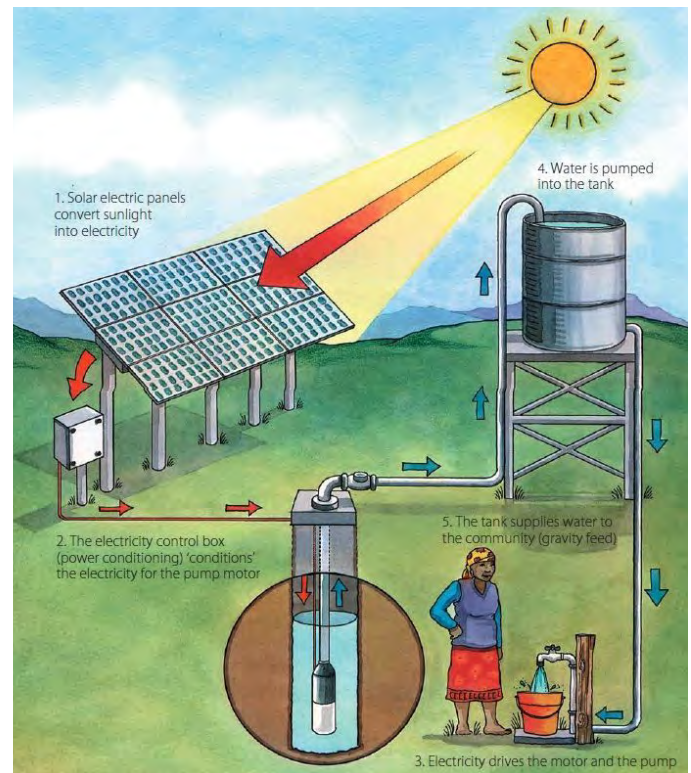
Solar Water Pumping

by Carl Dupoldt,
DCVA Board Member

Here in the Darby Creek watershed, and throughout most of the United States, we have access to inexpensive clean water. Millions of people around the world live with limited access to water. In many communities, ground water is extracted through electric water pumps, which use diesel fuel. However, these systems not only require costly, regular servicing and the purchasing of fuel, they emit carbon dioxide which pollutes the atmosphere.

Solar Water Pumping, or photovoltaic water pumping (PVP), provides an alternative. After years of research and technological advances, it has proven to be operationally, financially, and environmentally sustainable. In recent years, the cost of solar technology has dropped tremendously. Prices for the solar panels used in these systems have dropped up to 80%. In addition, these panels last around 25 years, requiring little maintenance throughout this time.

Many communities around the world have limited access to water. To reach deep groundwater reserves, diesel generated electricity is used in rural villages to power electric water pumps despite its high maintenance and diesel fuel requirements. Solar photovoltaic pumping systems offer a financially and environmentally sustainable source of power and can significantly reduce the cost of water extraction for rural communities.



My Internship Experience with DCVA

by Jason Delgott

Hello everyone, my name is Jason Delgott, and I am one of the Watershed Ambassadors for DCVA this summer. I am an upcoming junior at Penn State University studying Environmental Resource Management, so when I found out about this position it really sparked my interest and provided me with an immense opportunity to expand my knowledge about water management.

At Darby Creek Valley Association I studied water management through creating rain gardens and rain barrels to help control runoff in Haverford Township. I also was able to perform water sampling for Willistown Conservation Trust, run DCVA Young Naturalist Groups, run a Girl Scout stream study, and keep up with reforestation efforts to repair riparian zones.

One of the most involved aspects of being a Watershed Ambassador was assisting in developing rain gardens. The importance of this is to mitigate runoff affecting the water quality of our streams. I never realized how much work is involved in making rain gardens such as the re-piping of downspouts and the creation of low ground for the water to collect in. The planting of

native species into the rain garden also gave me a new outlook on native flowers. As someone who isn't big into gardening it was interesting to see all the different types of native plant species.

I also really enjoyed working with the children in the Young Naturalist Group and the Girls Scouts. Both groups looked through streams to find aquatic insects and identify the species. In the Girl Scout program, we used kick nets to help in our search which was a tool that I never used before and found very fun and effective. At the Young Naturalist event we went through leaf bags that were left in Ithan Creek for 3 weeks. In the bags we were able to get all sorts of aquatic insects that we were able to identify using identification sheets.

I am grateful to have had the opportunity to work with the DCVA team. The real world experience that I gained from this internship will complement my learning in the Environmental Resource Management program at Penn State.

Springing Back into Programming for Young Naturalists

by Aurora Dizel,
DCVA Administrative and Operations Manager

After a break in programs over the winter, it was really exciting to kick off our Young Naturalist programming again in March 2022. We teamed up with Ranger Gary and the Delco Anglers to learn about our native brook trout and help stock them in locations throughout the Ridley Creek State Park. Understanding how fish breathe dissolved oxygen through their gills was an easy concept to grasp when we had to hustle put them in buckets and get them into the stream as quickly as possible so they could breathe! It was a wonderful morning making connections to the fish in our streams and how we can make the streams healthier for them to live in (and ultimately a healthier catch for someone later!).

On another beautiful morning in April a curious group of young naturalists gathered at the Haverford Reserve to learn about the life cycle of dragonflies, search for aquatic bugs, and discover how they tell a story about water quality. We found abundant mayflies in the stream, and were even lucky enough to spot a barred owl and a few snakes along the way!



Springing Back into Programming for Young Naturalists



In addition to our public programs, we are also happy to do private programs for scout or school groups. Recently we had homeschooling students that attend Cupola Academy spend the morning with us learning about water pollution and its impact on aquatic species. They worked in groups using kick nets to gather macroinvertebrate samples and assess the water quality of our site by sorting their finds and identifying them. The students found two different types of mayflies, caddisflies, crane flies, and more (with one lucky group finding a salamander in their sample!). Many thanks to Amrit Gluck of Perfectly Paired Photography for capturing beautiful photos of our morning!

Please check dcva.org/events for upcoming Young Naturalist programs, or reach out to Aurora at admin@dcva.org to inquire about private programs for your group. The Young Naturalists Program is recommended for ages 5-10. Younger children with an attentive parent may also attend. Events are shared in the monthly DCVA e-newsletter, on the website dcva.org/events and social media (Facebook and Instagram). Sign ups are on the website.



Climate Change/global Warming Threatens Centuries Old Icon

by George Ambrose,
DCVA Board Member



The Lower Swedish Cabin on Creek Road along Darby Creek in Upper Darby is 28 years short of being 400 years old! Pretty remarkable, yes? Unfortunately, the advent of global climate change has resulted in more frequent, and more severe storms. These have altered the flow of the creek resulting in silt/debris islands that deflect water flow and erode the creek bank where it had not before. But this man-made problem has several potential man-made solutions.

There are three reasons why it this historic cabin (pictured on the DCVA logo) has lasted this long, with so little alteration. First, is the fact that it was built by Finns (who were citizens of Sweden in the 17th century). They had hundreds of years of experience building log cabins, especially ones located near moving water. The building is well-anchored on existing boulders in the ground, which is why it was built where it is.

Second, the property is located on a relatively small piece of land, at the base of a steep hill and close to a creek that floods periodically. It was not a place attractive to subsequent builders especially those cashing in on the Philadelphia suburban housing boom of the 1920s.

Third, the cabin was occupied until the mid-1960s. Most of the occupants throughout its history were tenants, not

owners. They were not allowed to make major alterations. The largest change was the addition of the "East Pen" and this was done within five years of its original construction. Later, it was an English landowner's property (George Wood) who never lived there, but allowed the addition of windows, a floored upper story and stairs. Next, it was owned by the mills on Darby Creek and housed worker tenants. Finally, in the 1940s it was purchased by Upper Darby Township. It served first as a Girl Scout camp for a decade, and then housed Township-chosen caretaker tenants.



Folks at creek ; Cabin on the left

Mother Nature had an impact as well. The adjacent land has eroded into the creek making it wider and shallower. This made flooding more frequent. Accumulating debris has altered creek flow and caused streambank erosion in new places. One is directly in front of the Cabin.

In the 36 years since the Swedish Cabin was fully restored, the distance from the cabin to the creek has been reduced by at least six feet. This encroachment of stormwater has flooded inside the cabin several times-- most notably in Hurricane Floyd in 1999 and again in Hurricane Isaias in 2020. So what can be done? I met in January of this year with representatives of several Upper Darby Township and non-governmental organizations at the Cabin to see the scope of the problem and suggest solutions.

Climate Change/global Warming Threatens Centuries Old Icon

One temporary solution was to use rebar to anchor used Christmas trees to the creek bank where it has eroded. The intention of this method of bank restoration is that when storm water passes over the trees, stones and soil will collect there, rebuilding the bank. The second phase of restoration would be to insert "live stakes" into the barrier and nearby shoreline to which would sprout into new trees and further stabilize the bank.



Trees (note blue re-bar)

This project would benefit from dedicated funding, and volunteer labor. Large THANK YOUS go out to the following for developing and implementing the initial stage of this important project:

Barbarann Keffer - Mayor, Upper Darby Twp.; Stephen Lockard- Tree Tenders of Upper Darby; Jamie Anderson - E. Delaware County Stormwater Collaborative; Bob Scott - Friends of the Swedish Cabin; Karen Wilwol - Del. County Conservation District; Faith Zerbe - Delaware Riverkeepers; Joe Martin - Upper Darby Township (whose crew did the work); and apologies to anyone I inadvertently missed.



Erosion upstream



Jamie Anderson facing the camera

Environmental and Economic Benefits of Open Spaces

by Tim Denny,
DCVA Board Member

The following excerpt is from a study conducted in April 2022, for the Delaware County Planning Department, on the economic and environmental impact of the former Haverford State Hospital, now named Andy Lewis Community Park at Haverford Reserve.



Introduction

In 2007, DCVA was directly involved in acquiring a grant from the National Fish and Wildlife Foundation to do an ecological inventory of the open space at the property. Tim Denny, a DCVA Board member and retired assistant township manager and director of Parks and Recreation for Haverford Township, was responsible for coordinating the development of the open space and community facilities. In 2013, Haverford Township was awarded the prestigious Green Park Award by Pennsylvania Department of Conservation and Natural Resources for their environmental stewardship at the site.

Andy Lewis Community Park was owned and operated by the Commonwealth of Pennsylvania as the former Haverford State Hospital from 1962 to 1998. Haverford Township acquired the property from the state in 2002 at a cost of \$3.5 million. Today, Andy Lewis Community Park stands as a model for other communities in demonstrating how green space and parks generate a significant "Return on Environment" to the community in both environmental and cost benefits.

Andy Lewis Community Park is estimated to provide an annual recreation value of \$249,600 directly to households within a half mile of the park. The value of protected recreational open space is estimated by the amount an average consumer would be willing to pay for a recreational service if the service were not publicly available. The diverse outdoor recreation facilities include five miles of trails, lighted sports facilities, all-inclusive Freedom Playground, a dog park, a disc golf course, and nature areas. Trails and greenways create healthy recreation and transportation opportunities by connecting the community with safe places to walk, cycle and use other forms of non-motorized transportation. The park also hosts the Community Recreation and Environmental Center (CREC) a 35,000 square foot, geo-thermal powered facility built on the spot where a coal-power plant once stood. The CREC offers a state-of-the-art fitness facility, gymnasium, walking track, community room, environmental lab, classrooms and many community recreation opportunities.

Healthcare and Workplace Savings associated with the Andy Lewis Community Park within one-half mile Mile of the Park

Research shows that physically active people typically enjoy a variety of health benefits including lower incidence of cardiovascular diseases, diabetes, depression, certain cancers, and obesity. The physical activity results in aggregated health care costs of almost \$2 million a year in avoided medical costs, workers compensation costs, and costs related to lost productivity. The activity of park visitors translates to lower insurance costs and higher productivity. Because the park draws users from both within and outside the township, the avoided healthcare related costs are conservative estimates, with likely values even higher.



Environmental and Economic Benefits of Open Spaces

Environmental Benefits

Climate change has emerged as one of the most pressing environmental, social, economic and health challenges of the 21st century. While it is a global issue, its impacts are felt most intensely at the local level. Parks reduce harmful carbon pollution that is driving climate change; they protect people and infrastructure from increasingly severe storms, flooding, heat waves and droughts. While parks inherently provide climate and health benefits, Andy Lewis Community Park was designed to ensure the provision of such benefits. The annual environmental benefits derived from the Andy Lewis Community Park is \$74,700.

This benefit is also crucial due to the extensive transportation network in the surrounding area. Trees and vegetation in parks can help reduce air pollution both by directly removing pollutants and by reducing air temperatures. As much as 6,270 pounds of air pollutants are estimated to be removed annually by the 169 acres of protected open space. Carbon Storage and Sequestration has an estimated lifetime cost saving of \$504,900 in carbon storage along with annual savings of \$16,000 in carbon sequestration.

Table 1. Estimated Annual Air Pollution Removal Benefits from Protected Open Space Associated with Andy Lewis Community Park

Pollutant	Air Pollution Lbs removed from air	Cost Savings
O3 Ozone	3,800 lbs.	\$7,200
PM-10 Particle Matter-10*	1,200 lbs.	\$7,200
NO2 Nitrogen dioxide	700 lbs.	\$7,200
CO Carbon monoxide	70 lbs.	\$7,200
SO2 Sulfur dioxide	500 lbs.	\$7,200
TOTAL	6,720 lbs.	\$10,800

*PM-10 is particulate matter 10 microns and smaller, these air pollutants are inhalable

Source: i-Tree (2021), Multi-Resolution Land Characteristics Land Cover (2019), Delaware County (2021), Econsult Solutions, Inc. (2021)

Estimated Amounts of Annual Carbon Sequestration and Lifetime Carbon Storage

Carbon Storage 3,000 tons x \$171/ton \$504,900 Cost Savings
 Carbon Sequestration 100 tons x \$171/ton \$16,000 Cost Savings

Conclusion

Recognized regionally and statewide as an award-winning sustainable facility, the 169-acre park has surpassed its goals of conservation of open space and natural resources, providing a strong sense of community, and recreation opportunities for people of all ages year-round. Andy Lewis Community Park demonstrates that investment in open space produces valuable returns in economic, social, health and environmental benefits now as well as for generations to come.



Note from the Editor: The entire eight page report entitled "Return on the Environment, the Economic Impact of Protected Open Space in Delaware County, Pennsylvania" can be viewed at: <https://www.delcopa.gov/planning/greenspace/GreenSpaceROE.html#:~:text=Economic%20Activity%20impact,million%20in%20annual%20economic%20impact>. Tim's article and the entire report contain information that municipal boards and commissions throughout southeastern Pennsylvania will find valuable as they consider their own open space plans.

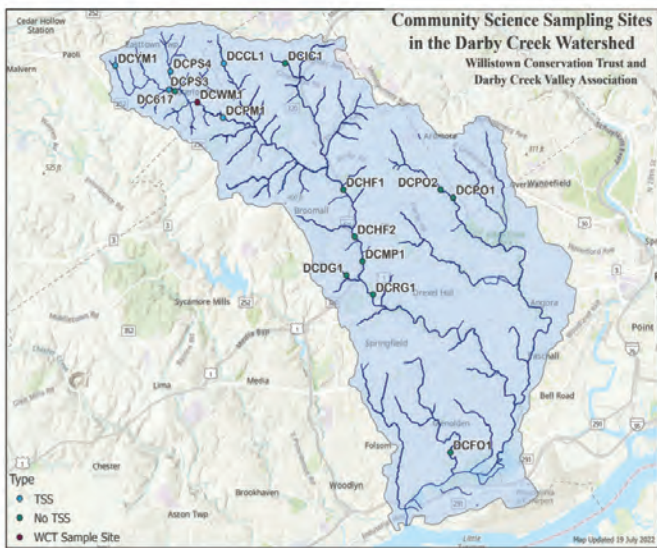
Darby Creek Community Science Monitoring Program Update

by Lauren McGrath,
DCVA Board Member,

Director of the Watershed Program at Willistown Conservation Trust

The Willistown Conservation Trust's Watershed Protection Program and Darby Creek Valley Association (DCVA) have been working together in the Darby Creek Watershed with a team of dedicated volunteers to learn more about the health of Darby Creek. The Darby Creek Community Science Monitoring Program kicked off in March of 2021 with two sample locations and has grown to 15 sites throughout the watershed!

Map 1. Community Science Monitoring Locations throughout Darby Creek. All green and blue locations are being actively monitored by volunteers every month. The red site is monitored by Willistown Conservation Trust's Watershed Protection Team. Total Suspended Solids (TSS) are sampled at five locations at the top of the watershed.



At each site throughout the watershed, trained volunteers collect important water quality data, including water temperature, salt levels, pH, and conductivity. Conductivity is a measure of how well electricity travels through water. Pure water is a poor conductor and has a low conductivity. High conductivity reflects the presence of ions in the water, often from salts, such as sodium chloride, and from calcium, magnesium, and other cations and anions, such as nitrogen and phosphorus-based nutrients. Conductivity is often used

as an indicator for the impact of human activities on the waterways, with higher levels indicating a more heavily impacted stream, but it does not indicate which compounds are entering waterways. Volunteers pair the conductivity measurements with testing for salt each month, which has provided some insight into why conductivity may be higher or lower. Increased salt levels from salting roads in winter have been shown in streams in our area, even in seasons other than winter.



Water Chemistry Testing Equipment - Photo: Dan Beniker

At five locations at the top of the watershed, volunteers are also collecting water samples which are tested for sediment. Though the transport of sediment is a natural process in streams and rivers, excess or sudden movement of sediment can harm aquatic organisms. When sediment is deposited on stream beds in excess, it can cover crucial streambed habitat. In the water column, suspended solids absorb sunlight, heating up the water and limiting the ability of aquatic plants and algae to photosynthesize. total suspended solids (TSS) analysis helps understand erosion and sediment movement in waterways, and finding where sediment is moving from can help to identify areas for restoration, like planting streamside trees to help secure the banks and slow the rate of erosion.

Darby Creek Community Science Monitoring Program Update

The long-term goal of this project is to use the information collected from Darby Creek to advise restoration decisions, like choosing the most effective location to improve riparian buffers or the best place to install a rain garden to slow down stormwater entering the stream. Detailed monitoring data will help to identify pollution sources and areas of the landscape that pose a risk to watershed health and integrity. Cultivating a stronger understanding of the waterway takes time and effort, but we are already learning valuable lessons about the health of Darby Creek.



Photo: Aurora Dize!

Data collected since March 2021 shows that water temperatures are elevated in the winter and spring, and conductivity is closely related to salt at most sites throughout the watershed. However, only two of the 15 sites currently being sampled have over one year of data, so keep an eye out for another update with more information.

This whole-watershed approach continues to provide opportunities to learn about how the waterway changes as it moves downstream, and highlights challenges that local communities face such as flooding, thermal pollution, freshwater salinization, and erosion and sediment problems. This data will provide a foundation to begin to address those issues. Our waterways are a valuable part of our environment and are a reflection of the health of the entire landscape – the more we understand how they are being impacted by human activity (and protected by highly valuable forests and wetlands), the more effective we can be at preserving and restoring them.



Photo: Deirdre Gordon

38th Annual Watershed Wide Cleanup a Success

by Aurora Dizel,
DCVA Administrative and Operations Manager

Since its founding in 1984, the Darby Creek Valley Association has been a force for making a positive impact in and around the watershed's 123 linear miles of streams. This year was no different as almost 600 volunteers gathered across 40 sites throughout the month of April to pick up nearly 17,000 pounds of trash and debris from our waterways. We welcomed back clean up captains who have been volunteering for decades.



We were also thrilled to bring on brand new captains and cleanup sites this year as well. We never stop being inspired by the volunteers that join us each year - this work is driven by the many dedicated, thoughtful, caring members of the Darby Creek watershed community and we are so grateful! DCVA is also indebted to community leaders, partners and sponsors - by working together we made our communities safer, cleaner, more beautiful, and more hospitable to wildlife.



38th Annual Watershed Wide Cleanup a Success

In addition to too many plastic bags, plastic bottles, food wrappers, and disposable masks to count some of the interesting items picked up this year were:

- Vacuum cleaner
- Many car parts
- Rug remnants
- Wood and metal fencing
- Mattress springs
- Many metal poles
- Child and adult bikes
- Water heater
- Sliding board
- Shopping carts
- Flower pots
- Full bottle of carpet cleaner
- Sports balls /equipment
- Large hose
- Tires
- Concrete-filled bucket
- Large plastic banner



Studies in the US show that de-icing the roads can reduce winter collisions by as much as 88% (1), however, use of road salt has tripled over the last 50 years in the United States (2). There are other ways to keep roads passable and safe.

How Road Salt Works. - The most common de-icer is rock salt, which is sodium chloride (NaCl). Of all of the NaCl used in the United States, about 43% of it is used for de-icing (3). Table salt is NaCl that is purified for human consumption. NaCl turns the snow and ice into saltwater which has a lower freezing point than freshwater. Salt application works best on busy roads where the traffic crushes and distributes the salt (4). Rock salt is most commonly used mostly because it is relatively inexpensive and the crystals are large and stay in place better on the road. Magnesium chloride is considered more toxic to aquatic life. Calcium chloride is effective at very low temperatures, but it is five times as expensive as NaCl.

Disadvantages of Rock Salt. The down side of rock salt includes that it can bounce off the road and be lost (1). It can also contain contaminants that enter ground water (5). Further, the American Automobile Association reports roughly \$3 billion dollars in salt damage to cars in the US annually. The harm to bridges, roads, and buildings ranges between \$14 and \$19 billion dollars in the US each year (1).

As the nation's highway system grew, the amount of salt used increased. These days we expect to be able to get to work immediately after a storm. The salt concentration in freshwater systems correlates with the percent of impervious surface (roads, roofs) in an area. Salt is used to de-ice impervious surfaces runs into the surrounding bodies of water since it cannot be absorbed by soils covered with impervious surfaces. These collective increases in road salt use has caused measurable increases in the saltiness of rivers, lakes, ground water and wells across the country (6).

Road salt run-off can affect fish, frogs, and the aquatic insects on which fish and song birds feed. Laboratory experiments show that as the salt-intolerant organisms die off, the structure of the fish and insect community is changed in terms of abundance and diversity (5). A food web with missing pieces is like a spider web with missing strands-it may ultimately collapse.

Current Ways to Reduce Road Salt Use: An effective way to cut down on rock salt is to apply a brine solution (23.3% salt-water solution) to roads before a forecasted snow event. Brine spreading uses about 1/5th the amount of salt as spreading rock salt. Brine is usually sodium chloride although magnesium chloride and calcium chloride and even food production waste materials (see below) can be added. The blend can be adjusted for the type of storm. For example, colder weather requires more calcium chloride in the mix.

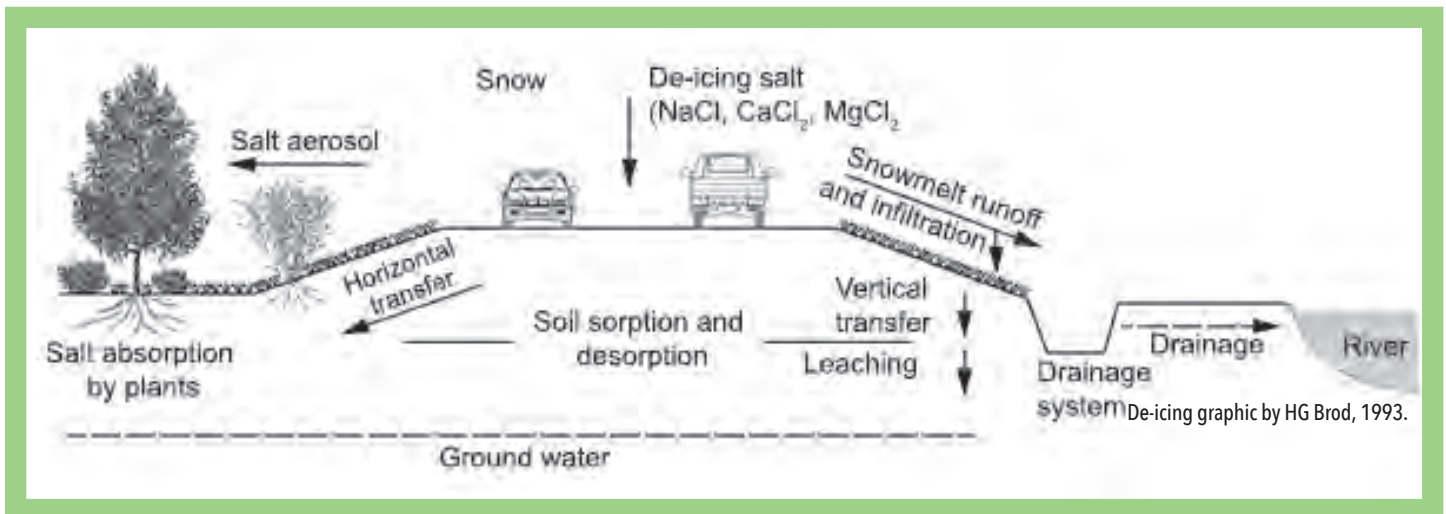
Brine is used by the Pennsylvania Department of Transportation under certain conditions. Brining is anti-icing as opposed to de-icing with rock salt. Brine adheres to the road and preventing snow and ice from binding to the road (4). Brine does not bounce or blow off the road as easily as salt crystals. The spreading of regular rock salt in the crystal form can follow it, but brine is adequate for some storms (4). What are the Disadvantages of Brine? Brine does not work on already wet roads or for storms that start with rain because it is washed away (1, 4). Brine works best if applied at temperatures above 25°F.

Any other Choices? Another choice is to use a 50/50 salt and sand mixture. Sand does not help to melt the snow or ice but increases traction, reducing the amount of road salt required. However, sand can wash into streams, which has the same effect as erosion-- it, increases turbidity (muddiness of the water) which blocks light from plants, chokes fish gills, and smothers fish eggs and the insects

ROCK SALT & BRINE: What's the Difference?

they eat.

Another choice is to add biodegradable, less corrosive substances like beet juice or sugar beet molasses (a byproduct of beet sugar refining), pickle brine, or whey to the salt solution. These organic materials aid in traction, and make the solution stickier so less salt is splashed off the roads and wasted. Municipalities in New Jersey and North Dakota have tried beet juice. Calgary, Alberta and Madison, Wisconsin use these organic products routinely (1, 7). All of these organic materials have disadvantages- they can be smelly and are expensive if they are not local industrial byproducts. Further, they can run off into creeks and add nutrients that can ultimately result in oxygen depletion of the water (8).



Yet another choice is to upgrade equipment so that salt is spread using only "closed loop systems" which allow operators to accurately release and monitor the exact amount of salt applied. Municipalities and states can lower speed limits during snow/ice events and make it mandatory to use snow tires during winter.

Solutions for the future: Solutions for the future include installing porous pavement that water runs through and thus requires less salt during a snowstorm. Porous pavement can be used in parking lots, for example. By allowing rain to run through, porous pavement also decreases runoff and erosion during warm weather months. Another idea for the future is solar panel roads that are warmed by the Sun so that the snow melts (9). Let's hope these new methods come into use soon!

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Girl Scouts in Upper Watershed Learn that Stream Animals Reveal Water Quality

by Kate Doms, DCVA Secretary

The westernmost portion of the Darby Creek watershed starts in Chester County in Easttown Township. On June 15, 2022 a Girl Scout troop from Beaumont Elementary School met DCVA Intern Jason Delgott and DCVA board member Kate Doms for a stream study in the first order tributary of the Darby Creek that runs along South Leopard Road in Easttown Township.

We started by disclosing to the scouts that stream macroinvertebrates such as mayflies, stoneflies, caddisflies, snails, and crayfish are bathed constantly in stream water, and thus they are a good indicator of stream health. These organisms bespeak year-round water quality, whereas a water sample taken on a single day and analyzed in a laboratory only reveals pollutants in the stream on the day the sample was taken. A study in which stream water quality is calculated on the basis of the presence and absence of organisms that are tolerant of or sensitive to stream impairment and those who can live in streams of a variety of water qualities, is called a biotic index. The girls performed a macroinvertebrate biotic index. Fish and photosynthetic organisms can alternatively be used.



In groups of four the girls did a 3-minute kick into kicknets. Each group had a small bucket with a piece of window screen bungee corded to the top of the bucket, like a drum head. They washed the organisms on the net into a second bucket and then poured cups of their organisms over the screen to sort them. They sorted the organisms in ice cube trays of water and used an identification key to identify them. The results from the four groups were combined. The simple biotic index that they calculated indicated that water quality was good. They were most excited about seeing minnows, a salamander, and tiny crayfish. The girls deserve a lot of credit for being so attentive because they had graduated from fourth grade earlier in the afternoon!

My Internship Experience with DCVA

by Marie Gazzillo

During my time as a DCVA Watershed Ambassador I gained valuable skills and was able to work with a variety of organizations spread across the Darby Creek watershed. I was first introduced to the Darby Creek Valley Association through one of my professors Kate Goddard. After taking a freshwater biology course my sophomore year at Ursinus College, I was fascinated with macroinvertebrates. Learning about the river continuum concept (RCC) really sparked my interest in how important freshwater streams and rivers are. The RCC, developed by Robin Vannote and others at the Stroud Water Research Center, describes the pattern of physical, chemical and biological changes from low order streams to higher order rivers as they flow to the ocean. Further, discovering the interconnectedness of freshwater and marine environments solidified my belief that the way for me to help to mitigate the current climate crisis is through starting locally – making freshwater ecosystems and urban communities more sustainable.

The two main goals of my time with DCVA were to: (1) complete a research pamphlet to help homeowners differentiate invasive and native plants and, (2) create and execute a kid-focused educational program focused on macroinvertebrates. In pursuit of the first goal, my research focused on Japanese knotweed and Brazilian elodea. Knotweed is a large bushy invasive that is extremely difficult to remove, due to its resilience against cutting and its aggressive growth habit. Brazilian elodea is a type of aquatic vegetation that grows very fast and forms dense mats in streams, lakes, and ponds. This plant is harmful because it can steal precious oxygen and nutrients from the other aquatic species, therefore; changing the community in a body of water and ultimately harming the wildlife of the area.

In addition to creating an informational pamphlet for homeowners I planned and executed a Stream Smart Scavenger hunt, which was a kid-focused educational program focused on teaching children about the critters living in freshwater streams and how they tell a story of water quality. I specifically chose to do my program in the lower watershed at Naylor's Run Park in Upper Darby, because historically our lower watershed tends to have a more impervious surface, more flooding, and more industrial pollution. Thus, performing a stream assessment Naylor's Run would be valuable. To spread the word of my event, I went around the neighborhood of Naylor's Run to hand out fliers to surrounding homes, apartment buildings, and recreation centers like the YMCA. I was pleased that two children participated in the program. The most rewarding part of my event was interacting

with parents and their children who were all interested to learn about the various types of underwater macroinvertebrates and what they looked like. The kids were very engaged-- they had no idea that there were critters living underwater in their backyards.

Other programs I had the opportunity to work with included the Haverford Rain Garden program, Darby Creek Citizen Science program, and Stream Smart House Calls led by Pennsylvania Environmental Council. I was also able to help the Tree Tenders at their new Tree nursery in Upper Darby. The Haverford Rain Garden program where I met Peter S. Puglionesi and the Upper Darby Rain Garden program where I met Jamie Anderson and Stephen Lockard showed me the impact of rain gardens in a suburban area can on decreasing the amount of storm water flowing into Darby Creek and its tributaries. My fellow intern Jason and I planted many native plants such as lobelia, helenium coreopsis, rudbeckia and more.

The Darby Creek Community Science program focused on local volunteers doing monthly stream assessment checks on specific portions of the Darby Creek and its tributaries. Lauren McGrath Director of Watershed Protection Program at Willistown Conservation Trust, taught us how to collect important data about the state of our local streams, such as conductivity, pH, and chloride level. These assessments will be used to monitor long term changes in the watershed and provide background data to alert us if any harmful spills may occur.

The Stream Smart House Call programs lead by Diana Andrejcek and Jamie Anderson took me all around the watershed to visit homeowners and evaluate how they may be able to make their property more conducive to reducing storm water flooding, erosion, and to help decrease pollution. Lastly, I once again had the pleasure of working with Steve Lockard while planting and watering new seedlings into the Naylor's Run tree nursery and at Gillespie Park.

My time working for DCVA has been one of great education and has definitely clarified what my post-college career plans will involve. Everyone that I had the pleasure to work with was extremely kind and dedicated to helping the Darby Creek Watershed and its communities. I have learned great networking, marketing, and educational skills that have given me insight into how to run a thriving non-profit organization much like DCVA. Thank you to Aurora, Jason, and the rest of the board members for this experience.

Jaclyn Rhoads is the 2021 DCVA Ribbon of Green Award Winner

2022
DCVA
Bob Doherty
Ribbon of Green
Award Winner

Congratulations!



DCVA President Jaclyn Rhoads was awarded the 2022 Bob Doherty Ribbon of Green Award from DCVA. Jaclyn earned a Bachelor and Master Degrees in Environmental Science from Drexel University, a PhD in Environmental Policy from Drexel University and a Certificate in Executive Management of Non-Profit Organizations from the University of Pennsylvania. Jaclyn stands out for the incredible amount of positive environmental change she achieves as a volunteer while holding a fulltime job as assistant executive director of the Pinelands Preservation Alliance. She is President of the Darby Creek Valley Association (DCVA), President of the Friends of the Heinz Refuge (FOHR), and a hockey mom.

In 2005, Jaclyn founded the Delaware County Concerned Citizens for Environmental Change.

In 2017 Jaclyn was awarded the Environmental Advocate of the Year by the New Jersey Chapter of the National Association of Women Business Owners. Penn Future awarded her a Woman of the Delaware River Watershed Award in 2018.

Jaclyn has led DCVA as president for several years, and she continues to be president in 2022. For her very active environmental activities throughout the Darby Creek Watershed for many years, and especially during the COVID-19 pandemic, DCVA honored Jaclyn with the Bob Doherty Ribbon of Green Award for 2022.



JOIN THE DARBY CREEK VALLEY ASSOCIATION TODAY!

The Darby Creek Valley Association (DCVA) is dedicated to the protection and enhancement of all of the watershed's resources, including water, wildlife, historical sites, and the floodplains. The organizations immediate goals are to prevent all forms of pollution in the Darby Creek and its tributaries, to prohibit dumping and construction on the floodplain and to expand our educational programs for all residents within the watershed. It Also seeks to improve water quality and maintain a debris-free stream through clean-ups and public education. DCVA works to preserve historic properties, such as the Swedish Cabin and the Blue Bell Inn. The Association would like to set aside the more than 30 miles of valley for use as a greenway for all residents to enjoy. We need your support. Help us continue to protect the environment for ourselves and our children.

We invite you to fill in the form below, check member category, and mail form with your check to: Darby Creek Valley Association, PO Box 732, Drexel Hill, PA 19026 or join at www.dcva.org

Name: _____ Date: _____

Address: _____ City: _____ State: _____

Phone Number: _____ Email Address: _____

DCVA is a 501(c)(3) Non-Profit Organization – All Donations are tax deductible to the fullest extent of the law.

\$15 Senior/Student Membership

\$25 Friend Membership

\$50 Supporter Membership

\$100 Patron Membership

\$250 Protector Membership

\$500 Steward Membership

The Valley is the quarterly publication of the Darby Creek Valley Association. Send your articles to Kathryn Goddard Doms Editor kgoddard@ursinus.edu

Production management and design by Gerry Krieg and Carol Coster

CALENDAR

DCVA Board meetings:

Dates for board meeting will be posted on our website.

- Mushroom Walk & Talk at Don Guanella Woods. Saturday, September 10, 2022 10:00 AM
- Meet @ 600 Reed Rd, Broomal Register at DCVA.org
- DCVA's Annual Canoe/Kayak race at Ridley Marina. Sunday, September 25, 2022 12:30 PM
- 401 Swarthmore Ave, Ridley Park. Register at DCVA.org
- Tree Planting at Whitby Meadow with Audubon. Sunday, October 2, 2022 Time: TBD
- Meet @ the intersection of Whitby Ave. & Cobbs Creek Pkwy, Phila. Register at DCVA.org



Printed on Recycled Paper

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Quarterly Newsletter of the Darby Creek Valley Association



Darby Creek Valley Association
P.O. Box 732
Drexel Hill, PA 19026

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