

2022 Annual Summary Report

Pennsylvania Dirt, Gravel, and Low Volume Road Maintenance Program



Before

After

INSIDE:

- **DGLVR Spending Update**
- **Stream Crossing Documents and Training**

May 2023

Photo: Brady's Lake Road, Tobyhanna Township, Monroe County. This project utilized five new shallow cross pipes with broad based dips, 1,300 tons of fill, and six new turnouts to eliminate concentrated flow discharging directly to the stream. Additionally, the project utilized 800 feet of underdrain to prevent subsurface water from saturating the roadway.



What is the DGLVR Program?

Pennsylvania's Dirt, Gravel, and Low Volume Road Maintenance (DGLVR) Program provides education, technical assistance, and grant funding to local public-road-owning entities throughout the state. Initially funded in 1997 at \$4 million annually, the Program was expanded in 2014 to dedicate \$20 million to unpaved roads and \$8 million to paved low volume roads (LVRs) traveled by fewer than 500 vehicles per day. The Program's goal is to implement Environmentally Sensitive Maintenance Practices aimed at reducing the environmental impacts of public roads while reducing long-term maintenance costs. The PA State Conservation Commission (SCC) administers the program at the state level and allocates funding to conservation districts in 65 counties throughout Pennsylvania. Owners of public roads apply for grants at their local county conservation district, and work with them to complete projects. The Penn State Center for Dirt and Gravel Road Studies (Center) provides education, outreach, and technical assistance for the Program. More information is available at: www.dirtandgravelroads.org.

New for 2022: Stream Crossing Replacement Documents

The Program and Center developed a new policy, standard, and technical manual for stream crossing replacements funded by the DGLVR Program that became effective in July of 2022. This new methodology builds on the US Forest Service's "Stream Simulation" protocol and similar efforts across the US. This new approach installs larger structures and strives for continuity of the stream through the road, meaning that stream features such as slope, composition, and channel shape are similar upstream, downstream, and through the structure. This comprehensive approach is driven by stream function instead of just hydraulics and creates long-term benefits to both the environment and the road (less erosion and washouts). (Documents available at <https://dirtandgravel.psu.edu/general-resources/stream-crossing-replacements/>):

New for 2022: Stream Crossing Replacement Trainings

To support the new documents described above, a 6-part (~24-hour) training course with a combination of remote and in-person field sessions was developed and presented regionally around the state. Attendees surveyed the existing conditions of a stream crossing, reviewed options for replacement, reviewed sample engineering plans, and discussed implementing projects under the new design and installation standard. 50 of PA's 67 participating conservation districts sent staff through the stream crossing certification training in 2022. Additional trainings are scheduled for 2023 for a variety of audiences.

Impacts in PA Beyond the DGLVR Program

The new documents and trainings above are part of a growing comprehensive effort to improve stream crossing replacements in Pennsylvania. Development of these documents was led by SCC and PSU Center for Dirt and Gravel Road Studies and involved collaboration with: US Forest Service, PA Department of Environmental Protection, PA Fish and Boat Commission, PA Department of Conservation and Natural Resources, PA conservation districts, various private entities, and more. Several other state agencies are already looking to use these documents as models to improve their stream crossing replacements.



This double pipe on Dwight's Road in McKean County was prone to clogging. The new structure was designed for stream continuity through the road.

Center staff talks with conservation districts at a training in Indiana County.

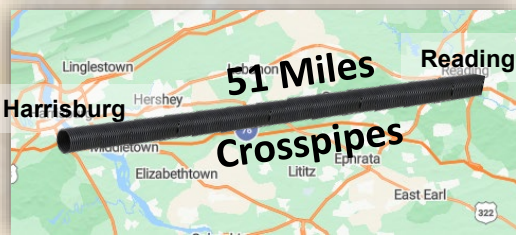
5-Year Program Deliverables Summary (2018-2022)

This is a sample of some of the most common practices installed. For more information: www.dirtandgravelroads.org

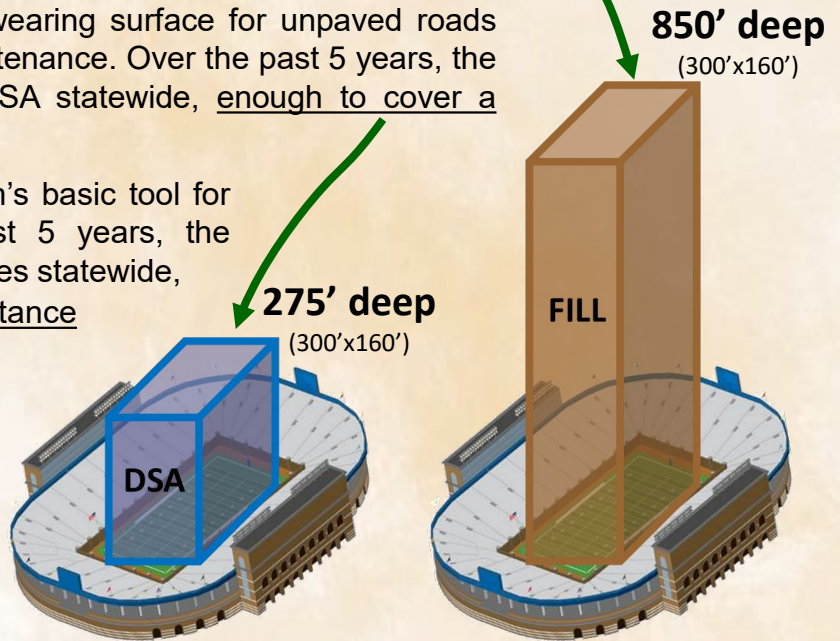
Road Fill: Filling an entrenched or sunken road is often the only way to achieve drainage improvements and provide cover for new pipes. Over the past 5 years, the Program has placed 2.1 million tons of road fill statewide, enough to cover a football field 850' deep.

DSA: "Driving Surface Aggregate" is a wearing surface for unpaved roads that resists erosion and requires low maintenance. Over the past 5 years, the Program has placed 700,000 tons of DSA statewide, enough to cover a football field 275' deep.

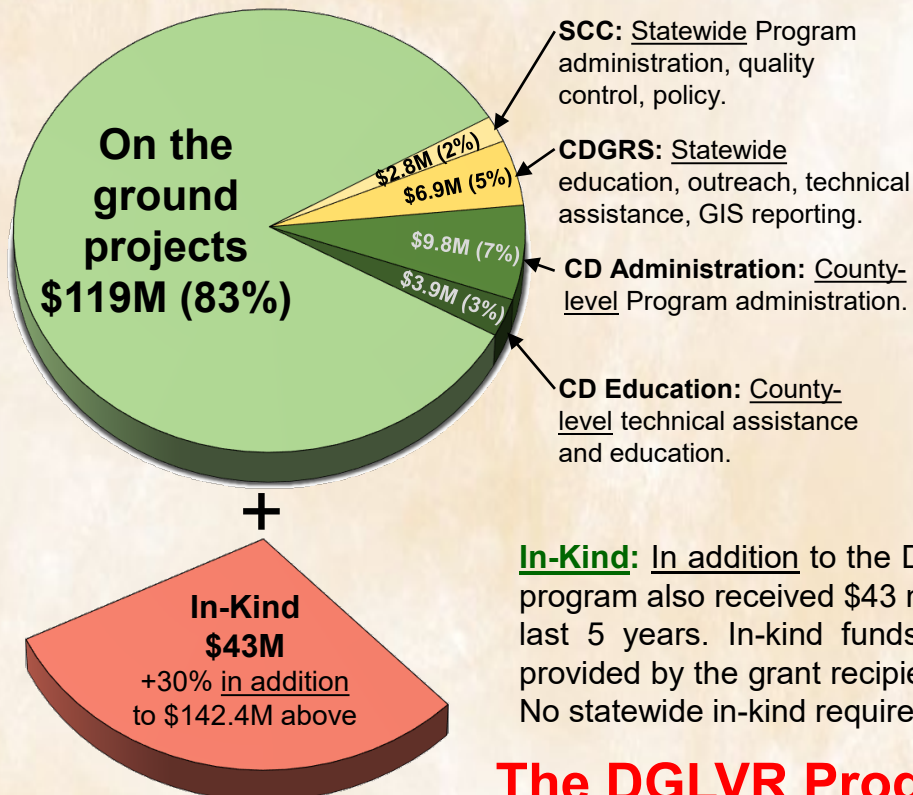
Crosspipes: Crosspipes are the Program's basic tool for improving road drainage. Over the past 5 years, the Program has installed over 4,000 crosspipes statewide, enough to stretch over 50 miles, or the distance from Harrisburg to Reading.



~31 miles of new pipe, and 20 miles were replaced



5-Year Program Spending Summary (2018-2022)



SCC: Statewide Program administration, quality control, policy.

CDGRS: Statewide education, outreach, technical assistance, GIS reporting.

CD Administration: County-level Program administration.

CD Education: County-level technical assistance and education.

Spending: After 2% for statewide administration (SCC) and 5% for statewide education (CDGRS), 93% of Program funding is allocated to conservation districts. Districts are allowed to utilize up to 10% of their allocation for administration, and 10% for education. Current administrative spending is at 7% and education spending is at 3% over the last 5 years, with the remainder of CD allocations going towards projects.

In-Kind: In addition to the DGLVR funding distribution above, the program also received \$43 million of in-kind contributions over the last 5 years. In-kind funds are additional goods and services provided by the grant recipient at no cost to the DGLVR Program. No statewide in-kind requirement exists.

The DGLVR Program puts \$1.15 on the ground for every \$1 of funding (115%).

(including in-kind and administration / education at all levels)

Note: the graphs here show ~\$142.4M spent, which is slightly different from the \$140 allocated over a 5-year period (\$28M x 5). This is not an error, but a result of funding being allocated on a fiscal year basis but reported by calendar year.

Frequent Issues Addressed by the Program



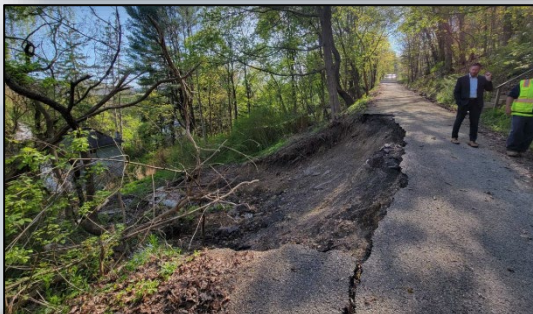
Direct Drainage to Streams:

The “simplified” purpose of the DGLVR Program since its inception in 1997 is to “keep the mud out of the streams”. Unfortunately, road ditches often wash soil and road material directly to streams that lie at low points of the landscape. The Program implements a wide variety of practices to break up concentrated water runoff, spread it out, encourage it to soak into the ground, and keep road sediment out of the stream.



Springs and Seeps:

Pennsylvania is blessed with a plentiful supply of groundwater. Unfortunately, this groundwater often creates problems on both paved and unpaved roads by saturating and weakening the road base and surface. Practices such as underdrains and French mattresses can be used to intercept this subsurface water before it impacts the road.



Landslides:

Slides can be a common problem, especially on steep slopes. They are frequently caused by poor soils and oversaturation of the road base. Left unaddressed, slides can lead to unsafe conditions, road failures, or road closures. Fixes for slides vary greatly in scope and cost, but can include retaining walls, base excavation and rebuilding with geotextile fabric, sheet piling, or installation of soil nails or screws.



Undersized Stream Pipes:

Stream pipes and bridges are often undersized to save on initial construction costs. Unfortunately, this often results in additional long term maintenance costs, along with a host of other environmental issues, over the life of the structure. Since 2015, the Program has limited stream crossing replacements to undersized crossings and has implemented policy to guide new structure installation. See page 3 inside for more details.



Inadequate Road Base and Shape

Road material is expensive, and often unpaved or low traffic paved roads are neglected in favor of resurfacing higher traffic routes. Practices such as adding competent road base material, raising the road profile, French mattresses, underdrains, and Driving Surface Aggregate (DSA) can be used to make the road the high point so water drains off of it while supporting the weight of traffic.