CASE STUDY

Virginia Department of Transportation

Minimizing Emergency Response Time, Pollution Control Risk and OPEX while Improving Performance and Water Quality

The Challenge

The Virginia Department of Transportation (VDOT) District Facility in Lynchburg, VA serves as a hub for truck and equipment storage, housing road paint, fuels, road salt, and brine. However, the facility poses environmental challenges due to the accumulation of pollutants, with drainage funneling into a stormwater pond situated at the site's lower perimeter, which then feeds into an unnamed tributary of Little Opossum Creek. Past incidents, such as fuel spills, highlight the potential risks associated with such operations, underscoring the importance of safeguarding downstream areas and ecology, a responsibility VDOT upholds as proactive stewards and upstream neighbors.

The Solution

In response to these challenges, Virginia Transportation Research Council (VTRC) identified Opti's continuous monitoring and adaptive control (CMAC) solution as a way to maximize asset performance and minimize risk. VTRC retrofitted an existing pond with Opti's platform, which includes a web-based dashboard to predictively monitor forecasts and automatically control nearly 10,000 cubic feet of storage volume in real-time, providing 12 hours of post-storm retention once dry weather is established. In addition to adaptive control, Opti's failsafe system provides manual valve control to extend the fullest flexibility for responding to emergency spills.

At a Glance

- Maximize Asset Performance
- Improve Water Quality

"[Emergency spill response] was a long, drawn-out process prior to the installation of the Opti system. Now, it's a matter of minutes."

Jim Johnson
VDOT - Lynchburg District Facilities Manager

VDOT

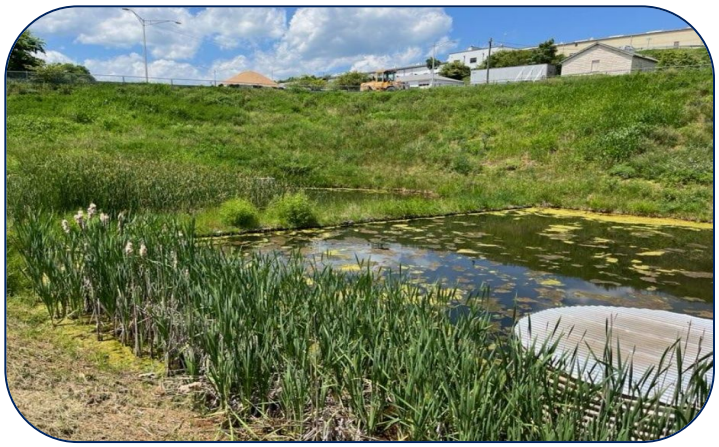
ECONOMICAL
Decreased OPEX
with proactive alerts

RESILIENT
Increased Capture
with forecast-based adaptive control

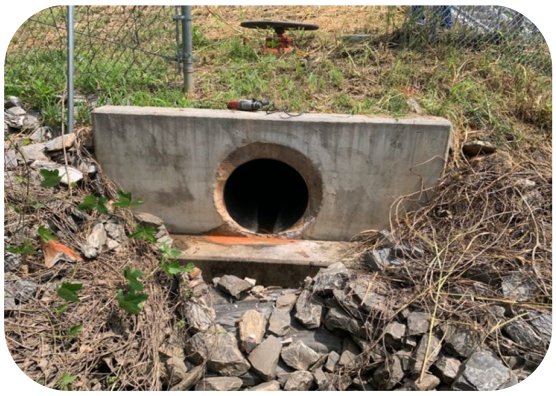
PEACE OF MIND
Reduced Emergency Response Time
in the event of a spill

Results

Prior to the Opti retrofit, the site operated passively, maintaining a permanent pool water elevation. In the event of a spill emergency, operations crews would be required to physically turn a slide gate at the retention pond with a reported response time of approximately 20–30 minutes. With Opti, the response time has been shortened to only 3 minutes and can be activated remotely and physically on site. An interview with Jim Johnston, Lynchburg District Facility Manager, highlighted the importance of the stormwater pond in environmental management, including praise for ease of access, real-time data availability, substantially quicker response time, and improved visibility and redundancy among stakeholders.

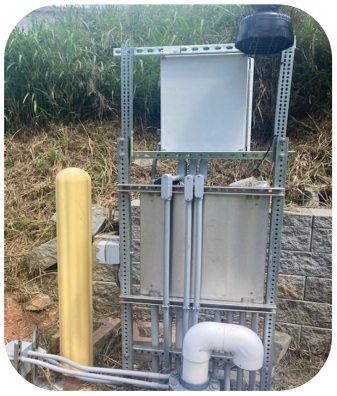


Completed Opti pond at VDOT District Facility - Lynchburg.



Passive outlet structure

Retrofit of adaptive outlet structure



CMAC control panel and monitoring station

Benefits

- Reduced risk of overflow and illicit discharge with automated controls
- Reduced operations and maintenance cost of manual valve adjustment and unnecessary inspections
- Increased operator safety and accessibility with remote control
- Real-time monitoring and alarms

Project Partners

VTRC Virginia Transportation Research Council

Bruce Howard Contracting, Inc.

APEX

About OptiRTC

Opti is the leading provider of digital adaptive stormwater control solutions. With over 300 deployments to date, Opti empowers customers and partners to address the impacts of climate change, aging infrastructure, urbanization, and water pollution, enabling them to secure the sustainability of our communities and natural resources Opti's cloud-based platform optimizes stormwater asset performance through instant actionable insights to provide economic savings, resilient solutions, and peace of mind. With our commitment to innovation, we are driving a resilient and brighter future for all.

Opti

CALL
+1 (844) 678–4782

EMAIL
sales@OptiRTC.com

VISIT
OptiRTC.com