A Structured Evaluation Framework for Community-Based Stormwater Infrastructure:

The Clean Water Partnership Case

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Degree Program: Master of Liberal Arts in Sustainability

Course: ENVR E-599a

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Date: May 2026

Harvard Extension School
HARVARD DIVISION OF CONTINUING EDUCATION

1 EXECUTIVE SUMMARY

This report evaluates the Clean Water Partnership (CWP) as an integrated stormwater infrastructure program that combines environmental compliance with economic inclusion and workforce development. Implemented as a Community Based Public Private Partnership between Prince George's County and Corvias Infrastructure Solutions, the program operates under a 30 year contractual structure to deliver, maintain, and optimize stormwater assets while generating measurable community benefits.

From an environmental perspective, the program has delivered 428 projects, installed over 300 best management practices, and restored nearly 5,000 impervious surface acres. These outcomes support compliance with Municipal Separate Storm Sewer System requirements and contribute to improved water quality and flood risk reduction across the County. The integration of long term maintenance ensures these benefits are sustained over time.

Economically, the program delivers strong local impact. Approximately 77 percent of contract value, representing over $270 million, has been directed to minority and county-based businesses, with overall local spending approaching 80 percent. This is supported by a financing strategy leveraging State Revolving Fund loans and grants to reduce long term costs while maintaining program scale. To strengthen evaluation, this report restructures an IMPLAN-based economic model using actual program expenditure data aligned with target classes. This approach improves impact estimation and establishes a reusable tool that can be updated over time to track performance and applied to future programs.

Social and workforce outcomes are a core component of the program. More than 50 percent of labor hours are performed by County residents, and the mentor–protégé program has supported 80 participants across eight cohorts, resulting in approximately $60 million in contract awards. Participants have demonstrated measurable increases in bonding capacity, access to credit, and business expansion, indicating sustained improvements in contractor capability.

Benchmarking against comparable programs highlights the distinctiveness of the CWP model. While peer programs address regulatory compliance, funding, or supplier inclusion independently, the CWP integrates these elements within a single structure, linking infrastructure delivery directly to economic and social outcomes.

Despite these strengths, the analysis identifies a key limitation in the current evaluation approach, where impact measurement is concentrated on participation and allocation metrics, with limited tracking of long term business growth and workforce advancement. To address this, the report advances three recommendations. First, establish a standardized impact measurement framework aligned with target classes to quantify downstream economic outcomes, including business growth, workforce expansion, and access to capital. Second, strengthen and formalize the mentor–protégé program as a core program asset by standardizing performance tracking and linking participation to future contracting opportunities. Third, institutionalize the IMPLAN-based evaluation approach as a reusable analytical tool by maintaining updated input structures based on actual procurement data, enabling continuous performance tracking and supporting evaluation of future programs implemented by Corvias Infrastructure Solutions.

Implementation of these recommendations can be achieved through integration with existing program structures and ongoing data collection efforts. For the impact measurement framework, a defined set of key performance indicators aligned with target classes should be established and incorporated into contractor reporting requirements, supported by a centralized database linked to procurement data. As part of this work, a survey has already been developed in coordination with the mentor–protégé program team to track outcomes of existing graduates, providing a foundation for longitudinal data collection on business growth, workforce expansion, and access to capital. This effort can be expanded into a recurring data collection process, complemented by standardized pre- and post-participation metrics for mentorship cohorts. In parallel, the IMPLAN model should be institutionalized through a standardized mapping of expenditures to economic sectors and updated on a regular basis using actual program data, allowing it to function as a repeatable tool for both ongoing performance tracking and evaluation of future programs implemented by Corvias Infrastructure Solutions.

Together, these actions shift the program from strong performance reporting toward a scalable and transferable model, improving decision-making, strengthening accountability, and supporting replication in other jurisdictions.

1.1 ACKNOWLEDGMENTS

- **To Sri Vedachalam**, executive sponsor of the project, thank you for your support and guidance in shaping the direction of the work and identifying ways to generate meaningful and useful outputs.

- **To Michael Burke and Roland Jones**, thank you for your continued support, for always making the time to clarify information, and for contributing valuable ideas and context while keeping the social goals of the project clearly in focus.

- **To the entire CIS team**, thank you for the opportunity to be part of this effort, for your openness, and for allowing me to support and contribute to the growth of such an impactful project.
- **To the Harvard consulting capstone team**, Neil, Raeda, and Meredith, thank you for your precise guidance, strong support, and valuable mentorship throughout the project.

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3 CLIENT BACKGROUND

3.1 CORVIAS INFRASTRUCTURE SOLUTIONS

Corvias Infrastructure Solutions (CIS) is an environmental and climate infrastructure company focused on addressing complex water management challenges through community centered solutions. The organization was founded by Corvias in 2013 in response to the widespread need for more effective approaches to aging and inadequate stormwater infrastructure. Its origins trace back to a pilot partnership with Prince George's County, Maryland, which evolved into a nationally recognized model for community based stormwater management that integrates environmental restoration with economic development and local workforce participation. Since its founding, CIS has expanded its scope to deliver large scale water infrastructure programs designed to accelerate project delivery while generating social and economic benefits in the communities where projects are implemented. In 2023 the organization was established as an independent company to further focus on its core services and strengthen its role as a provider of environmental and climate infrastructure solutions that address water risks while promoting broader social outcomes.

3.2 COMMUNITY BASED PUBLIC PRIVATE PARTNERSHIP (CBP3)

A Community Based Public Private Partnership (CBP3) is an alternative infrastructure delivery model designed to address complex environmental challenges by integrating public oversight with private sector efficiency and community engagement. The model was first implemented at scale through the Clean Water Partnership in Prince George's County, Maryland, where it was used to accelerate stormwater management retrofits while simultaneously advancing local economic development goals. Under a CBP3 structure, a public entity partners with a private concessionaire that is responsible for program delivery, including design, construction, maintenance, and compliance. Unlike traditional procurement models, CBP3 contracts are performance based and emphasize long term outcomes rather than individual project completion, allowing for adaptive management and more efficient use of public funds (Prince George's County Department of the Environment, 2017)

While CBP3 shares structural similarities with traditional Public Private Partnership (P3) models, it differs significantly in scope, objectives, and implementation. Conventional P3 arrangements are typically designed around the financing and delivery of large, discrete infrastructure assets, with performance measured primarily in terms of cost, schedule, and asset functionality. In contrast, CBP3 operates as a programmatic delivery model, managing a portfolio of distributed projects that evolve over time in response to regulatory requirements and watershed conditions. Rather than relying on private financing or revenue generation, CBP3 programs are generally supported by public funding mechanisms and prioritize cost efficiency and long term performance. Most importantly, CBP3 explicitly incorporates social and economic objectives, including local hiring, minority business participation, and workforce development, as core performance criteria rather than ancillary benefits. This distinction positions CBP3 as a more adaptive and community focused model for delivering environmental infrastructure at scale.(US EPA, 2015)

A defining feature of CBP3 projects is their explicit integration of social and economic objectives alongside environmental performance. These programs often include requirements for local hiring, workforce development, and participation of minority and disadvantaged business enterprises, ensuring that infrastructure investment contributes to broader community benefits. In the case of the Clean Water Partnership, the model has demonstrated the ability to deliver large scale green infrastructure projects while creating jobs and building local capacity in the environmental services sector. This integrated approach aligns with sustainability principles by linking water quality improvements and regulatory compliance with economic inclusion and community resilience (US EPA, 2015). As a result, CBP3 has emerged as a replicable framework for municipalities seeking to address stormwater challenges in a manner that is both cost effective and socially inclusive.

3.3 THE CLEAN WATER PARTNERSHIP (CWP) IN PRINCE GEORGE'S COUNTY

The Clean Water Partnership (CWP) in Prince George's County, Maryland, is one of the most prominent examples of a Community Based Public Private Partnership applied to stormwater management in the United States. Launched in 2015, the program was established to help the County meet its federal regulatory requirements under the Municipal Separate Storm Sewer System permit while accelerating the implementation of stormwater retrofit projects. Through a long term partnership with Corvias, the program was designed to deliver large scale green infrastructure solutions that reduce nutrient and sediment pollution entering the Chesapeake Bay. By bundling projects under a single programmatic structure, the CWP enabled faster deployment, standardized design approaches, and more efficient use of public funding compared to traditional project by project procurement methods (Prince George's County Department of the Environment, 2017).

A distinguishing characteristic of the Clean Water Partnership is its integrated focus on environmental outcomes and socio-economic impact. The program includes formal requirements for local workforce participation and minority business enterprise involvement, creating pathways for small and disadvantaged businesses to engage in infrastructure delivery. In addition to improving water quality through practices such as bioretention systems, permeable pavements, and urban retrofits, the CWP has contributed to job creation and workforce development within the County. This dual emphasis on environmental compliance and community benefit has positioned the program as a national model for sustainable infrastructure delivery, demonstrating how regulatory drivers can be leveraged to produce broader economic and social value (Corvias Infrastructure Solutions (CIS), n.d.).

4 PROJECT PURPOSE AND SCOPE

This report explores the development of a structured evaluation approach to assess the financial, environmental, and social performance of the Clean Water Partnership in Prince George's County, Maryland. The purpose of this work is to support Corvias Infrastructure Solutions (CIS) in strengthening how project outcomes may be measured, communicated, and considered in future decision making.

The scope of the project includes a review of available financial data to characterize investment and expenditure patterns, along with an examination of methods that can be used to estimate the economic value of environmental and social outcomes. These outcomes may include improvements in stormwater management, workforce participation, and local economic inclusion. Both quantitative indicators and qualitative dimensions are considered to provide a broader perspective on project performance, recognizing potential data limitations.

Where feasible, the analysis contributes toward a return on investment style assessment of the Clean Water Partnership. The report also outlines methodological considerations and potential framework components that could support future evaluations. These elements are intended to be adaptable, allowing CIS to further refine and expand the approach for application across similar community-based infrastructure projects.

Figure 1: CWP base structure, Provided by CIS

5 THEORETICAL CONTEXT AND ANALYTICAL LENS

This study applies an integrated theoretical lens to contextualize the evaluation of the Clean Water Partnership (CWP), positioning the program at the intersection of environmental performance, economic inclusion, and institutional innovation. Rather than serving as a standalone analytical framework, this perspective supports the interpretation of program outcomes and informs the development of recommendations. The lens draws from four complementary bodies of literature: the United Nations Sustainable Development Goals, the United States Environmental Protection Agency's green infrastructure and Community Based Public Private Partnership (CBP3) models, global sustainability reporting standards, and academic research on multi benefit infrastructure systems. (O. US EPA, 2021)

At the global level, this perspective is informed by United Nations Sustainable Development Goal 6, which emphasizes clean water and sanitation. In particular, Targets 6.3, 6.5, and 6.b are relevant to stormwater programs, addressing water quality improvement, integrated water management, and community participation. At the national level, guidance from the U.S. Environmental Protection Agency on green infrastructure and CBP3 delivery models provides a practical foundation. Green infrastructure promotes decentralized stormwater management through systems such as bioretention and permeable pavements, while the CBP3 model expands this approach by integrating workforce development, local business participation, and long term maintenance into program delivery. Together, these concepts frame stormwater infrastructure as a platform for delivering environmental, economic, and social outcomes.(United Nations, 2015)

To structure the interpretation of impacts, the analysis is also informed by principles from the Global Reporting Initiative, particularly the concept of materiality, which prioritizes the most significant environmental, economic, and social impacts. In the context of the CWP, these include water quality outcomes, regulatory compliance, participation of target class contractors, workforce development through mentorship programs, and long term asset performance.(GRI, 2022)

This perspective is further supported by academic literature on multi benefit infrastructure and inclusive economic development, which highlights the potential for infrastructure systems to generate combined environmental and socioeconomic value. These studies support the interpretation of the Clean Water Partnership not only as a compliance driven program, but as a model for integrated infrastructure delivery (Benedict et al., 2006; Hammer et al., 2011).

Within this report, this theoretical lens provides context for the analysis presented in subsequent sections, including benchmarking, economic modeling, and stakeholder evaluation. It supports the identification of key impact areas and informs the development of the recommendations but does not function as a standalone evaluation tool.

5.1 INTEGRATION WITH BENCHMARKING, IMPLAN MODELING, AND WORKFORCE EVALUATION

The theoretical framework outlined above directly informs the methodological approach of this study by establishing clear linkages between conceptual impact dimensions and measurable program outcomes. Specifically, the integration of benchmarking, IMPLAN modeling, and workforce evaluation enables the translation of sustainability principles into quantifiable indicators that can be used to assess program performance and compare it against peer initiatives.

Benchmarking serves as the first layer of this integration by positioning the Clean Water Partnership within a broader landscape of comparable programs, including CBP3 implementations and mentor protégé models. Through this process, key structural elements such as local participation requirements, minority business inclusion, and workforce development strategies are systematically compared. The theoretical framework provides the criteria for comparison, particularly through its emphasis on economic inclusion and community participation as defined under SDG 6.b and CBP3 guidance. Benchmarking therefore allows the identification of best practices and performance gaps, while also contextualizing CWP outcomes relative to similar programs that may prioritize different aspects of sustainability.

The second layer involves the application of IMPLAN economic modeling to quantify the economic impacts associated with program expenditures. Within the framework, IMPLAN functions as the primary tool for translating spending across defined target classes into measurable economic outputs, including direct, indirect, and induced effects. By aligning IMPLAN sector allocations with the target classes such as County Based Businesses and Minority Business Enterprises, the model captures how procurement strategies influence local economic activity. This approach is consistent with the materiality principle, as it focuses on impacts that are both significant and attributable to program design. However, the framework also highlights a limitation of standard input output models, which typically do not capture qualitative or longitudinal effects such as business capacity growth or mentorship outcomes.(IMPLAN Group LLC, 2024)

To address this gap, workforce evaluation and mentorship impact assessment are incorporated as a complementary analytical component. These elements extend beyond traditional economic metrics by capturing changes in firm capability, employment stability, and access to future contracting opportunities. Data collection efforts, including surveys of program participants and graduates, provide the empirical basis for evaluating these outcomes. Within the theoretical framework, this aligns with both the social dimension of sustainability and the emphasis on inclusive economic development found in CBP3 literature. Workforce evaluation therefore acts as a bridge between quantitative economic modeling and qualitative program impacts, enabling a more comprehensive assessment.

The integration of these three components results in a multi layered evaluation approach. Benchmarking establishes external context and comparative performance. IMPLAN quantifies economic impacts associated with spending. Workforce evaluation captures longer term and non market outcomes that are not reflected in financial models. Together, they operationalize the theoretical framework by linking high level sustainability concepts to specific, measurable indicators.(IMPLAN Group LLC, 2024; Miller & Blair, 2009)

From this integration, a key recommendation emerges. Future program evaluation efforts should formalize a hybrid assessment model that combines input output economic analysis with structured data collection on workforce and supplier development outcomes. This includes standardizing the classification of expenditures across target classes for IMPLAN modeling, while simultaneously implementing longitudinal tracking mechanisms for mentorship participants and local businesses. By doing so, programs like the Clean Water Partnership can more accurately capture the full spectrum of their impacts, strengthening both internal decision making and external reporting.

5.2 STAKEHOLDER ANALYSIS

Stormwater infrastructure programs such as the Clean Water Partnership operate within a multi stakeholder environment where regulatory compliance, infrastructure delivery, and community level impacts intersect. Consistent with the materiality framework defined by the Global Reporting Initiative, stakeholders are defined as entities or groups that are affected by, or can affect, program outcomes (Global Reporting Initiative, 2021). The Clean Water Partnership, structured as a Community Based Public Private Partnership, involves coordination between Corvias Infrastructure Solutions, Prince George's County, and regulatory oversight from the U.S. Environmental Protection Agency and the Maryland Department of the Environment.

The program is implemented through a 30 year contractual structure (2015 to 2045) that integrates planning, design, construction, and long term maintenance through Master Program and Maintenance Agreements, aligning stakeholder incentives with both delivery performance and lifecycle asset outcomes (Prince George's County Department of the Environment, 2025). Performance based components, including local utilization and resident workforce participation, are embedded within this structure, reinforcing the link between infrastructure delivery and economic inclusion.

To clarify roles, interests, and measurable impacts, stakeholders are summarized in **Error! Reference source not found.**.

Table 1: CWP Stakeholder summary table

Stakeholder Group	Key Entities	Role in Program	Primary Interests	Measurable Outcomes / Metrics
Public Sector and Regulators	Prince George's County; U.S. Environmental Protection Agency; Maryland Department of the Environment	Program oversight, funding allocation, MS4 and NPDES compliance enforcement	Water quality improvement, regulatory compliance, cost control	Impervious surface restoration (4,948 acres), BMPs installed (371), consent decree compliance
Program Delivery Partner	Corvias Infrastructure Solutions (CIS)	Program management under CBP3, design, construction, and long term maintenance	Efficient delivery, lifecycle performance, contractual compliance	428 projects delivered, 500+ assets under maintenance, schedule and budget performance
Local Businesses and Target Class Contractors	County-Based Businesses, Minority Business Enterprises, local subcontractors (200+ firms)	Project execution, participation in economic inclusion strategy	Access to contracts, business growth, reduced barriers to entry	77% of procurement to MBE and county businesses, approximately $273M awarded, ~80% local spend
Workforce and Mentor–Protégé Participants	County residents; mentor–protégé firms	Labor provision, workforce development, contractor capacity building	Employment, skill development, firm expansion	50%+ resident labor participation, 8 cohorts, 80 participants, $60M in awards, increased bonding and credit
Community and Institutional Stakeholders	Local residents; schools; community organizations	Beneficiaries of environmental and social outcomes; engagement and education	Flood reduction, quality of life, equitable benefits	Projects across all districts, programs in 60+ schools, reduced flooding and improved water quality

This stakeholder matrix operationalizes the theoretical framework by linking each stakeholder group to specific impact categories and measurable indicators. Environmental performance is primarily driven by regulatory stakeholders and implemented through program delivery, with outcomes tracked through impervious surface restoration, best management practice installation, and compliance with MS4 permit requirements. Economic impacts are concentrated within local businesses and target class contractors and are supported by structured procurement outcomes, including approximately 77 percent of contract value directed to minority and county based businesses. Social impacts are realized through workforce participation and mentorship outcomes, including over 50 percent resident labor participation and documented increases in firm capacity through the mentor–protégé program. (Clean water partnership, 2025)

The integration of these metrics demonstrates that stakeholder roles within the Clean Water Partnership are not only defined by function, but also by measurable contribution to program outcomes. At the same time, the matrix highlights a remaining gap in longitudinal tracking, particularly in relation to long term business growth and workforce advancement. This reinforces the need for expanded data collection and supports the recommendation to formalize impact measurement across target classes and mentorship participants.

5.3 SUSTAINABILITY CONTEXT

Stormwater infrastructure plays an important role in sustainable urban water management because it protects water quality, reduces flood risk, and supports climate resilience in growing cities. As urbanization increases, natural land surfaces that once absorbed rainfall are replaced with impervious surfaces such as roads, rooftops, and parking areas. This change significantly increases runoff volumes and speeds, allowing pollutants including nutrients, sediments, heavy metals, and hydrocarbons to be transported into rivers, lakes, and coastal waters (O. US EPA, 2021).Effective stormwater infrastructure helps capture, convey, and treat this runoff, reducing environmental degradation while protecting downstream ecosystems and drinking water sources. In addition, climate change is increasing the frequency and intensity of extreme precipitation events in many regions, which places additional stress on existing drainage systems and increases flood risks (Intergovernmental Panel on Climate Change (IPCC), 2022). Modern stormwater strategies increasingly integrate green infrastructure approaches such as bioswales, infiltration systems, and constructed wetlands that restore natural hydrologic processes while improving urban livability and ecosystem services (United States Environmental Protection Agency, 2005). For these reasons, stormwater infrastructure is widely recognized as a key component of sustainable urban development, linking environmental protection, climate adaptation, and community resilience.

5.3.1 MS4 REGULATORY COMPLIANCE

The National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit program is a key regulatory mechanism in the United States for controlling stormwater pollution from urban areas. Established under the Clean Water Act, the NPDES program requires municipalities to obtain permits for discharges from their storm sewer systems to waters of the United States. MS4 permits specifically apply to publicly owned drainage systems such as streets, gutters, and storm drains, and are designed to reduce the discharge of pollutants including nutrients, sediments, pathogens, and metals carried by stormwater runoff. Permit holders are required to develop and implement stormwater management programs that include best management practices, public education, illicit discharge detection, construction and post construction controls, and pollution prevention measures(R. 06 US EPA, 2016).

Compliance with MS4 permits has become increasingly complex as regulatory standards have tightened, particularly in regions affected by impaired water bodies such as the Chesapeake Bay watershed. Municipalities must not only demonstrate implementation of management practices but also achieve measurable reductions in pollutant loads, often requiring large scale retrofits of existing infrastructure. This has driven the adoption of more integrated and programmatic approaches to stormwater management, including green infrastructure and alternative delivery models such as CBP3. The regulatory framework therefore serves as both a compliance requirement and a catalyst for innovation in urban water management, linking environmental protection goals with infrastructure investment, long term planning, and sustainability outcomes (R. 03 US EPA, 2014; R. 06 US EPA, 2016).

Prince George’s County is located within the Chesapeake Bay watershed, one of the most environmentally sensitive and heavily regulated water systems in the United States. The Chesapeake Bay has been designated as an impaired water body under the Clean Water Act and is subject to a Total Maximum Daily Load (TMDL), which establishes limits on the amount of pollutants that can enter the system while still meeting water quality standards. Within this context, stormwater runoff from urban areas represents a significant source of nutrient and sediment pollution, particularly nitrogen, phosphorus, and suspended solids, which contribute to eutrophication and degradation of aquatic ecosystems.

As a result, MS4 compliance in Maryland carries heightened regulatory significance, requiring municipalities such as Prince George’s County to achieve measurable reductions in pollutant loads through impervious surface restoration and implementation of stormwater control measures. These requirements extend beyond procedural compliance and demand quantifiable environmental outcomes aligned with Chesapeake Bay restoration targets. The scale and urgency of these obligations have driven the need for more coordinated and programmatic approaches to infrastructure delivery, positioning initiatives such as the Clean Water Partnership as key mechanisms for meeting regulatory requirements while addressing broader environmental challenges in the watershed (R. 03 US EPA, 2014).

5.3.2 STORMWATER PORTFOLIOS AND WATERSHED-SCALE OUTCOMES

Stormwater infrastructure projects are engineered interventions distributed across the built environment to achieve three primary technical objectives: hydrologic control, pollutant load reduction, and sustained asset performance over time. Hydrologic control focuses on reducing runoff volume and attenuating peak discharge, while pollutant load reduction targets the removal of sediments, nutrients, metals, and organic contaminants transported by stormwater. Long term performance emphasizes maintaining infiltration capacity, storage volume, and conveyance functionality through proper operation and maintenance. Within the regulatory context of Municipal Separate Storm Sewer Systems (MS4s), these objectives are driven by requirements under the National Pollutant Discharge Elimination System (NPDES), which mandates that municipalities implement stormwater management programs to reduce pollutant discharges to receiving waters (O. US EPA, 2015).

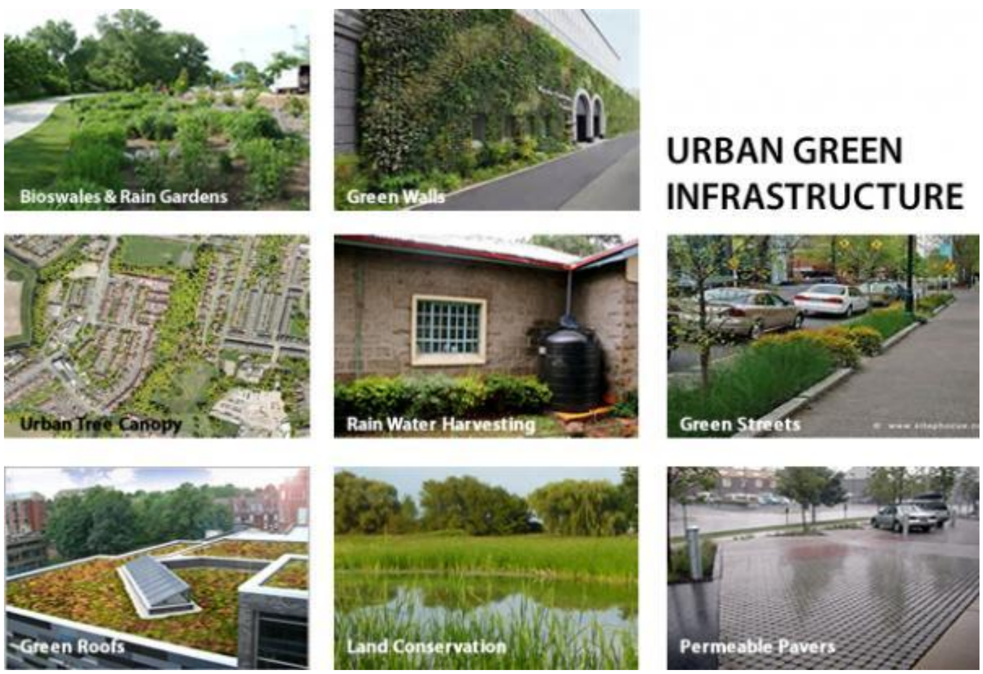

Figure 2: Urban Green Infrastructure projects provided by CIS

Stormwater infrastructure is typically delivered as a distributed portfolio rather than a centralized system due to the spatially fragmented nature of urban runoff and retrofit opportunities. Individual stormwater control measures (SCMs) are designed to treat relatively small drainage areas and must therefore be replicated across a jurisdiction to achieve watershed scale outcomes. For example, bioretention systems are commonly sized to manage runoff from approximately 0.25 to 1 acre of drainage area, requiring multiple installations to address larger catchments (United States Environmental Protection Agency, 1999). As a result, program level performance is evaluated through aggregated metrics such as total acres treated, number and type of SCMs installed, and estimated pollutant load reductions. This portfolio approach also requires coordinated operation and maintenance planning, as distributed assets are subject to gradual performance decline through clogging, sediment accumulation, and vegetation loss if not properly maintained. The Clean Water Partnership framework explicitly reflects this model by emphasizing programmatic delivery, aggregation of projects for efficiency, and integrated lifecycle management to maximize environmental and economic outcomes(Clean water partnership, 2025).

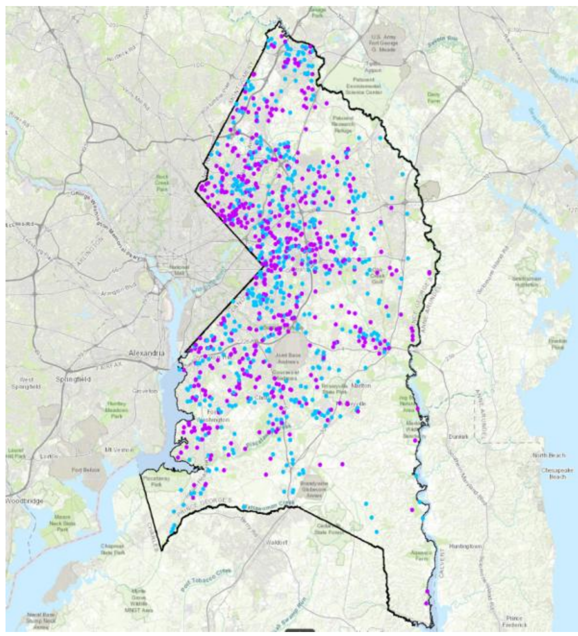

Figure 3: Map of project delivered by the program in Prince George County provide by CIS

Bioretention systems represent a commonly applied stormwater control measure within distributed stormwater programs and are widely used within the Clean Water Partnership project portfolio. These systems are engineered soil and vegetation-based installations designed to capture, store, and treat runoff from impervious surfaces. Typical designs include multiple functional layers such as a surface ponding zone, mulch layer, engineered soil media, sand bed, and an underlying drainage or infiltration system. These components work together to reduce flow velocity, promote infiltration, and facilitate pollutant removal through filtration, adsorption, microbial degradation, and plant uptake (United States Environmental Protection Agency, 1999). Reported pollutant removal efficiencies include approximately 70 to 83 percent for total phosphorus, 93 to 98 percent for metals such as copper, zinc, and lead, and up to 90 percent for total suspended solids and associated pollutants. However, performance is highly dependent on maintenance, including periodic vegetation management, mulch replacement every two to three years, and eventual media replacement as pollutant accumulation affects system function.(United States Environmental Protection Agency, 1999)

Permeable pavement systems provide an alternative stormwater control approach by integrating infiltration and storage directly into transportation and parking infrastructure. These systems include porous asphalt, pervious concrete, and permeable interlocking concrete pavement, all of which allow stormwater to pass through the surface into underlying aggregate layers that store and gradually infiltrate or release runoff. The subsurface structure, including bedding, base, and subbase layers, functions as a temporary reservoir, with storage capacity determined by layer thickness and void space within the aggregate media (United States Environmental Protection Agency, 2021). Permeable pavements are particularly valuable in dense urban environments where space constraints limit the feasibility of traditional green infrastructure. Reported pollutant removal rates include 91 to 99 percent for total suspended solids and substantial removal of metals and nutrients depending on system design and soil conditions (United States Environmental Protection Agency, 2021). The primary limitation of permeable pavement systems is clogging due to fine sediment accumulation, which necessitates periodic maintenance such as vacuum sweeping to preserve infiltration capacity. When properly maintained, these systems can maintain high infiltration rates and exhibit lifespans comparable to or exceeding conventional pavement systems, with porous asphalt exceeding 30 years and pervious concrete lasting 20 to 40 years (United States Environmental Protection Agency, 2021).

Together, these examples illustrate how distributed stormwater infrastructure functions as a coordinated system of smaller interventions that collectively achieve regulatory compliance and watershed scale environmental outcomes. Within the Clean Water Partnership, this approach is implemented through a programmatic delivery model that aggregates projects across the County to meet impervious surface restoration targets and MS4 requirements. By organizing individual stormwater control measures into a managed portfolio, the program is able to optimize site selection, standardize design and maintenance practices, and align environmental performance with economic and workforce objectives. This integration enables the CWP to translate site level interventions into measurable program level outcomes, supporting both regulatory compliance and long term sustainability goals.

6 PROGRAM ANALYSIS

6.1 CLEAN WATER PARTNERSHIP MODEL

The Clean Water Partnership introduces several structural and operational elements that distinguish it from traditional stormwater infrastructure delivery programs, which are typically fragmented, project based, and limited to design bid build procurement. At its core, the program is intentionally designed to deliver multiple overlapping outcomes, including regulatory compliance, environmental restoration, socioeconomic development, and implementation efficiency, rather than focusing solely on infrastructure construction. This integrated approach allows the program to simultaneously address NPDES MS4 permit requirements, localized flooding, and public safety concerns while embedding performance metrics tied to community engagement and contractor participation. In contrast to conventional programs, where success is measured primarily by project completion, the Clean Water Partnership evaluates performance across a broader set of criteria, including local workforce utilization, contractor inclusion, budget adherence, and schedule performance (Clean water partnership, 2025).

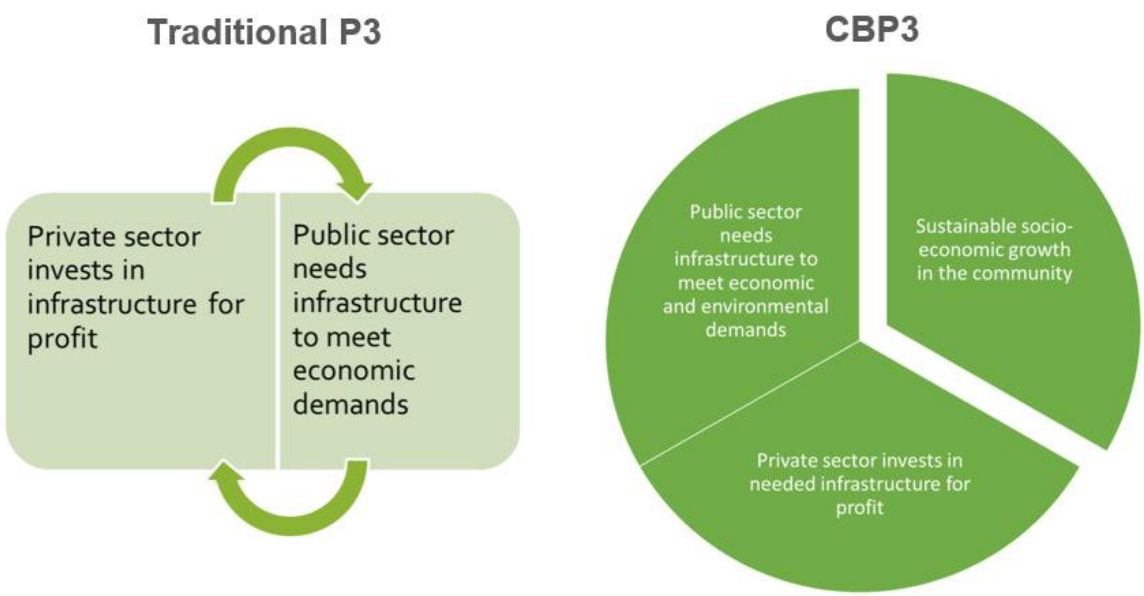

Figure 4: Community Based Public Private Partnerships (CBP3) Structure, provided by CIS

Another key differentiator is the program’s delivery model, which operates under a long term, programmatic contract structure that integrates planning, design, construction, and maintenance within a single framework. The contractual arrangement includes both a Master Program Agreement and a Master Maintenance Agreement, enabling lifecycle management of stormwater assets and transferring long term performance risk away from the public entity. This contrasts with traditional delivery models where maintenance is often deferred or managed separately, leading to inefficiencies and asset degradation over time. Additionally, the program incorporates mechanisms such as performance based management fees and contractor “quick pay,” which improve accountability and cash flow across the supply chain, particularly benefiting smaller and local firms(Clean water partnership, 2025).

The Clean Water Partnership also places a strong emphasis on market transformation and capacity building within the local economy. The program includes structured initiatives such as mentor protégé training, workforce development, and reduced barriers to entry for disadvantaged businesses, which are not typically embedded in conventional infrastructure programs. As a result, a significant portion of program expenditures is directed toward county based and minority owned businesses, while a large share of labor hours is performed by local residents. This deliberate alignment of infrastructure investment with economic development objectives enables the program to function not only as a compliance mechanism but also as a platform for long term community resilience and industry growth (Clean water partnership, 2025).

These structural and operational elements are reflected in measurable program outcomes achieved over the first decade of implementation. The Clean Water Partnership has delivered 428 stormwater restoration projects, including a range of asset types such as ponds, stream restorations, and installations across schools and community sites, resulting in the installation of 371 best management practices and the restoration of approximately 4,948 impervious surface acres. In parallel, the program maintains over 500 stormwater assets under long term management, reinforcing its lifecycle approach to infrastructure delivery. Total program expenditures have reached approximately $387 million, with $273 million, or 77 percent, directed to minority and county-based businesses, and overall local spending consistently approaching 80 percent. Workforce outcomes further reflect this integration, with more than 50 percent of labor hours performed by County residents and eight mentor–protégé cohorts generating approximately $60 million in competitive contract awards. From a financial perspective, the program has leveraged approximately $229 million in State Revolving Fund loans and $9 million in loan forgiveness grants, reducing long term borrowing costs relative to traditional bond financing. Together, these results demonstrate how the Clean Water Partnership translates its programmatic structure into measurable environmental, economic, and operational performance. (Clean water partnership, 2025)

6.1.1 TARGET CLASSES

In the context of the Clean Water Partnership and the broader CBP3 framework, target classes for suppliers and contractors are defined to ensure that project expenditures directly contribute to local economic development and equitable participation. These classifications are embedded within procurement and contracting requirements so that a significant portion of project funding is directed toward businesses that are based in, or meaningfully connected to, Prince George’s County. This approach aligns with the core CBP3 objective of linking infrastructure delivery with socio economic uplift, ensuring that compliance driven investments under programs such as NPDES MS4 also generate measurable community benefits (Prince George’s County, 2015; U.S. Environmental Protection Agency, 2021; Corvias Infrastructure Solutions, 2023).

Local designations represent the highest priority for allocation of project funds, as they directly support the County’s economic base and workforce. County Based Businesses (CBB) are firms physically located and operating within Prince George’s County, forming the foundation of local participation. Within this group, additional classifications refine equity and scale objectives. County Based Minority Business Enterprises (CBMBE) identify minority owned firms within the County, while County Based Small Businesses (CBSB) and County Based Small Minority Business Enterprises (CBSMBE) emphasize inclusion of smaller firms that may otherwise face barriers to entry in large infrastructure programs. These categories are typically prioritized in procurement scoring and subcontracting requirements, ensuring that a meaningful share of design, construction, and maintenance work is retained locally and supports disadvantaged business growth.

Table 2: Target class group table

Target Class	Definition	Geographic Scope	Program Priority	Purpose in Program
County-Based Business (CBB)	Businesses physically located and operating within Prince George’s County	Local	High	Retain project expenditures within the County and strengthen the local economic base
County-Based Minority Business Enterprise (CBMBE)	Minority-owned businesses located within the County	Local	High	Promote equity and increase minority participation in local contracting
County-Based Small Business (CBSB)	Small businesses based in Prince George’s County	Local	High	Support growth of smaller firms and reduce barriers to entry
County-Based Small Minority Business Enterprise (CBSMBE)	Small, minority-owned businesses located within the County	Local	High	Target intersection of size and equity to maximize inclusive economic impact
County-Located Business (CLB)	Businesses with a physical presence in the County but not fully classified as County-Based	Local/Regional	Medium	Provide additional local capacity and operational flexibility

Minority Business Enterprise (MBE)	Certified minority-owned businesses not necessarily located within the County	Regional/National	Supporting	Expand diversity in contracting and supplement technical and delivery capacity

Beyond their role in procurement and contracting, these target class designations provide a structured basis for analyzing how program expenditures translate into economic outcomes. By defining the geographic and organizational characteristics of participating firms, the target classes enable a more precise understanding of how funds are distributed across local and non-local entities. This distinction is particularly relevant for economic impact modeling, where expenditures can be mapped to industry sectors and geographic boundaries to estimate direct, indirect, and induced effects. In this context, the target class framework serves as a critical bridge between program design and quantitative evaluation, supporting subsequent analysis of economic performance and reinforcing the importance of structured data collection aligned with these classifications.

Non local classifications expand the pool of qualified vendors while still maintaining alignment with broader inclusion goals. Minority Business Enterprises (MBE) include certified minority owned firms that may not be located within the County but contribute to diversity in contracting. County Located Businesses (CLB) refer to firms that maintain a physical presence in the County but may not meet all criteria to be considered fully County Based. These categories provide flexibility in project delivery while preserving the program's commitment to inclusive economic participation. In practice, funding allocation strategies under the Clean Water Partnership are structured to prioritize local designations first, with non local categories serving as supplemental capacity to ensure technical performance, schedule adherence, and regulatory compliance (Prince George's County Department of the Environment, 2017).

6.2 MENTOR PROTEGEE' PROGRAM OVERVIEW

The Corvias Infrastructure Solutions Mentor Protégé Program (MPP) is a structured capacity-building initiative designed to support the development of local firms participating in stormwater management and green infrastructure projects. Within the Clean Water Partnership framework, the program functions as a complementary mechanism to traditional procurement approaches by addressing structural and operational barriers that often limit the ability of small and minority-owned businesses to compete in public infrastructure delivery.

At its core, the program combines technical training with business development support. Participating firms are provided with a formal training curriculum that covers both project-specific and organizational competencies. Technical modules include topics such as blueprint reading, cost estimating, and best management practices for stormwater systems, while business-oriented components address leadership, strategic planning, scheduling, and business development. This dual focus reflects the recognition that successful participation in infrastructure projects requires not only technical capability but also internal organizational readiness.(Corvias Infrastructure Solutions, n.d.)

Beyond formal training, the program incorporates a range of supportive services tailored to the needs of participating firms. These services are informed by an initial assessment that identifies specific gaps and constraints, allowing for targeted interventions. Support mechanisms include ongoing business coaching, assistance with bonding and capital access, exposure to procurement opportunities, and facilitation of relationships with general contractors and public stakeholders. Additional support in areas such as bookkeeping, human resources, and information technology further contributes to strengthening internal business functions.(Corvias Infrastructure Solutions, n.d.)

A distinguishing feature of the program is the integration of applied learning through project-based opportunities. The Mentor Protégé Pilot Project allows participating firms to engage directly in the procurement and construction process, competing for and executing real project scopes within a structured and supportive environment. This approach reduces the risks typically associated with entering new markets while enabling firms to translate training into practice. Through this model, the program seeks to bridge the gap between theoretical preparation and actual project delivery.

These program elements are supported by measurable outcomes observed across participating firms. Since its implementation, the Mentor–Protégé Program has supported eight cohorts comprising approximately 80 participants, with enrollment periods ranging from six months to one year. Among these, 28 protégé firms have collectively secured approximately $60 million in contract awards, including opportunities beyond the immediate program scope. Participating firms have reported significant improvements in financial and operational capacity, including increases of 100 percent or more in bonding capacity and over 50 percent growth in available lines of credit. Additional outcomes include expansion into new lines of business, acquisition of equipment necessary for project delivery, and increased participation in regional contracting markets. The program has also evolved to include targeted initiatives such as the Emerging Landscapers Program, introduced in 2020, and contributes to the development of a long-term maintenance workforce aligned with the 30-year lifecycle of the Clean Water Partnership. Through these results, the program demonstrates its role in translating structured training and support into tangible improvements in firm capability and market access. (Clean water partnership, 2025)

Figure 5: Community integration into the program, provided by CIS

The following testimonies provide firm-level perspectives on how these program elements translate into operational, technical, and strategic outcomes. While individual experiences vary, they collectively illustrate the mechanisms through which the Mentor Protégé Program may influence business growth, market access, and participation in stormwater infrastructure delivery.

6.2.1 PARTICIPANT TESTIMONIES

To complement the program overview, a set of participant testimonies is included to provide firm-level perspectives on the Mentor Protégé Program. These accounts are based on interviews conducted with program participants by the Mentor–Protégé Program team at Corvias Infrastructure Solutions and were provided for use in this analysis. They offer insight into how the program's training, supportive services, and project-based opportunities are experienced in practice.

The testimonies represent firms operating across different segments of the stormwater and construction industry, including utility installation, landscaping and maintenance, and site development. While each firm enters the program with distinct capabilities and growth trajectories, their experiences collectively highlight common themes such as access to work, development of internal business functions, technical skill expansion, and integration into the broader Clean Water Partnership network.

These qualitative insights are not intended to serve as standalone evidence of program outcomes but rather to contextualize and support the broader evaluation framework. They provide additional detail on the mechanisms through which the program may influence firm performance and help identify variables that can be further examined through quantitative analysis.

6.2.1.1 PARTICIPANT TESTIMONY: CLINTON SEWER EXPERTS

One illustrative example of the Mentor Protégé Program's role in supporting firm development is provided by Clinton Sewer Experts, a contractor specializing in storm drain installation and related utility work. Prior to entering the program, the company operated at a relatively small scale, with a limited administrative structure and a single field crew. Participation in the program coincided with both increased access to project opportunities and internal operational development.

Through the Clean Water Partnership, the firm gained exposure to a consistent pipeline of stormwater infrastructure projects. Beyond access to work, the program supported the company in navigating participation requirements, including compliance expectations, documentation standards, and procurement processes that are often barriers for smaller firms entering public infrastructure markets. This facilitated a more effective transition from smaller, isolated contracts to participation in a coordinated county-wide program.

A key area of impact identified in the testimony is business operations. The program contributed to the development of internal capabilities in accounting practices, cost estimation, and financial planning. These elements are critical for sustaining growth but are often underdeveloped in smaller construction firms. Improved understanding of how to structure bids and manage project finances enabled the company to better position itself within competitive procurement environments.

The testimony also highlights an increased alignment between day-to-day construction activities and broader environmental objectives. Through program participation, the firm developed a more detailed understanding of stormwater management approaches, including the implementation of bioretention systems and permeable pavement applications. This exposure contributed to a clearer connection between project execution and watershed-level outcomes, reinforcing both technical knowledge and project purpose.

In terms of measurable growth, the company reports expansion from a small team consisting of approximately three administrative staff and one field crew to a structure supporting four field crews. While multiple factors may contribute to this change, the testimony attributes a significant portion of this growth to the continuity of work and opportunities generated through the Clean Water Partnership. In addition, the firm emphasizes the importance of ongoing support provided through the Mentor Protégé

Program, including continued engagement and guidance from program staff, particularly in follow-up and relationship management.

Additional context on the company's services and positioning within the regional market is available through its official website: https://www.clintonsewerexpert.com/

6.2.1.2 PARTICIPANT TESTIMONY: TCG PROPERTY CARE

A second example highlighting the role of the Mentor Protégé Program is provided by TCG Property Care, a commercial contractor specializing in landscaping and green infrastructure maintenance across the Washington, DC metropolitan area. The company's core services include bioretention maintenance, permeable pavement systems, green roofs, and broader landscape construction and installation, positioning it at the intersection of traditional landscaping and stormwater infrastructure delivery.

According to the owner's testimony, participation in the Mentor Protégé Program under the Clean Water Partnership represented a more effective and practical experience than previous training or support programs. A key distinguishing feature was the program's emphasis on applied learning. Structured coursework in areas such as accounting and project management was directly connected to real project execution, allowing the firm to translate knowledge into operational improvements.

The testimony places significant emphasis on the value of network integration. Participation in the program facilitated interaction not only with mentors but also with other cohort members and program graduates. This environment enabled the development of professional relationships that supported knowledge exchange, identification of partnership opportunities, and potential expansion of service offerings. These network effects represent an important mechanism through which smaller firms can access opportunities that would otherwise remain out of reach.

The most critical factor identified in the testimony is the program's ability to provide direct access to project work. Set-aside opportunities within the Clean Water Partnership allowed the firm to apply newly developed skills in a controlled environment, reducing the risk typically associated with entering larger or more complex projects. This structure enabled the company to build confidence and demonstrate capability, creating a pathway toward participation in increasingly larger scopes of work.

As a result, the firm describes a transition in its service profile, moving from a primary focus on landscaping toward the provision of stormwater infrastructure services. This shift reflects both technical capability development and a change in business positioning. The support provided during early project participation was identified as particularly important in establishing a repeatable model for execution, reinforcing the firm's ability to pursue similar opportunities in the future.

Additional information on the company's services, clients, and capabilities is available through its official website: http://www.tcgpropertycare.com

6.2.1.3 PARTICIPANT TESTIMONY: CELSUE CONSTRUCTION SERVICES, INC.

A third example illustrating the impact of the Mentor Protégé Program is provided by CelSue Construction Services, Inc., a woman-owned construction firm specializing in site work across Maryland, Washington, DC, and Northern Virginia. The company's capabilities include excavation, paving, utility installation, and stormwater management, supported by in-house professional engineering and electrical expertise.

According to the owner's testimony, the design of the Mentor Protégé Program was particularly effective in addressing foundational business needs while also supporting technical and strategic growth. The program provided structured exposure to a wide range of topics, including accounting, human resources, regulatory compliance, sediment control practices, and industry representation. This breadth of content reflects a comprehensive approach to firm development, extending beyond technical training into organizational capacity building.

A key feature emphasized in the testimony is the diversity of participating firms and the opportunity to engage directly with industry stakeholders involved in the Clean Water Partnership. Interaction with both peer companies and experienced professionals created an environment for knowledge exchange and practical learning. The ability to engage with engineers and other subject matter experts involved in project delivery was identified as a valuable component of the program.

The testimony also highlights an increased understanding of the broader environmental objectives associated with stormwater infrastructure, particularly in relation to watershed restoration efforts such as the protection of the Chesapeake Bay. This included exposure to evolving design and management approaches, such as a shift toward infiltration-based systems rather than traditional pond-based solutions. This perspective contributed to a stronger alignment between the company's services and regional environmental priorities.

From an operational standpoint, the company describes a transition in project scope and technical engagement. While previously focused on activities such as parking lot retrofits, participation in the program supported entry into more complex project types, including stream restoration and green infrastructure construction. The firm also expanded its role within the project ecosystem, supporting larger contractors while developing the capability to execute specialized stormwater practices such as bioretention systems and sand filters.

Overall, the testimony suggests that the program contributed to both technical diversification and a broader integration into the stormwater infrastructure market. These changes reflect a combination of skill development, network access, and exposure to new project opportunities.

Additional information on the company's services and capabilities is available through its official website: http://www.celsue.com

6.2.2 LEARNINGS FROM PARTICIPANT TESTIMONIES

The participant testimonies consistently point to a set of core program elements that contribute to firm development within the Mentor Protégé Program. While the specific outcomes vary by firm, the experiences converge around a few key mechanisms, particularly access to project opportunities, applied learning through real project execution, and the strengthening of internal business and technical capabilities.

A recurring theme across all testimonies is the importance of structured access to projects within the Clean Water Partnership. These opportunities allow firms to apply newly acquired skills in a controlled environment, reducing entry barriers and supporting progression toward larger and more complex scopes of work. In parallel, participants emphasize the role of practical training and ongoing mentorship in reinforcing both technical knowledge and business operations.

To support integration with the broader evaluation framework, these qualitative insights can be translated into a set of comparable variables. Table 3 summarizes the most relevant indicators identified across the testimonies, focusing on those that can be consistently observed and, where possible, quantified or categorized for further analysis.

Table 3: Key Indicators Derived from Participant Testimonies

Category	Indicator	Type	Description
Workforce Growth	Number of crews or employees	Quantitative	Change in workforce size before and after program participation
Project Access	Participation in CWP projects	Binary	Whether the firm gained access to Clean Water Partnership project work
Project Scaling	Project scope progression	Categorical	Transition from smaller or limited scopes to larger and more complex projects

Applied Learning	Participation in pilot or set-aside projects	Binary	Engagement in structured project opportunities designed for program participants
Business Capability	Functional areas improved	Count	Number of internal business functions strengthened such as accounting, estimating, or HR
Technical Capability	New service areas adopted	Count	Number of additional stormwater or green infrastructure practices implemented
Network Integration	Industry and peer engagement	Categorical	Level of interaction with mentors, cohort members, and industry stakeholders
Program Support	Ongoing mentorship	Binary	Presence of continued guidance and follow-up support during and after project execution
Market Position	Service diversification	Categorical	Shift from single-service to multi-service or expanded technical offerings

This set of indicators provides a structured bridge between qualitative testimony and quantitative evaluation. While not all variables may be directly measurable with available data, they establish a consistent framework for assessing how the Mentor Protégé Program influences firm growth, capability development, and participation in stormwater infrastructure delivery.

6.3 IMPLAN MODELING ECONOMIC CONTEXT

Economic impact analysis using IMPLAN was previously applied to the Clean Water Partnership during the early planning stage of the program. In 2015, Corvias Solutions tasked the Regional Economic Studies Institute (RESI) at Towson University with preparing an economic and fiscal impact report for Corvias' planned stormwater retrofit activities in Prince George's County. The purpose of that study was to estimate the potential economic and fiscal effects of the Stormwater Retrofit Program over a thirty-year period, using projected spending assumptions available before full program implementation (Irani & Grimm, 2015).

The RESI study was based on a planned $100 million stormwater retrofit initiative. The original assumptions included a three-year construction period, followed by long-term operations and an optional reinvestment phase over the remainder of the thirty-year term. The analysis distinguished between total spending and local spending within Prince George's County, assuming that 50 percent of construction activity would occur locally, while all operations and optional reinvestment activity would remain within the County (Irani & Grimm, 2015)

IMPLAN was used in the RESI study because it allows project spending to be translated into broader economic activity through input-output modeling. Within this method, direct effects represent the immediate activity generated by project expenditures, indirect effects capture supply chain activity, and induced effects reflect household spending supported by wages. This structure made it possible for RESI to estimate not only the direct effect of construction and operations, but also the broader economic activity expected to occur as program funds moved through the regional economy (Irani & Grimm, 2015).

For the purposes of this report, the RESI study provides important context because it shows how economic impact modeling was originally used to estimate the potential value of the Clean Water Partnership before the program matured. However, the original model was built on projected assumptions, including spending levels, local participation rates, and optional reinvestment scenarios that do not fully reflect how the program evolved in practice. Therefore, the RESI study should be understood as a baseline planning analysis rather than a current measurement of achieved program performance (Irani & Grimm, 2015).

This distinction is important for the present evaluation. The Clean Water Partnership now has actual program data, including realized expenditures, documented procurement allocations, local business participation, workforce participation, and mentor–protégé outcomes. These data create an opportunity to compare the original assumptions with observed program performance and to update the economic analysis using inputs that reflect actual implementation. In this report, the RESI study is therefore used as a reference point for understanding the original economic modeling approach and for identifying how updated inputs could improve future evaluation of the program and similar initiatives led by Corvias Infrastructure Solutions.

6.3.1 IMPLAN MODEL INPUTS AND OUTPUTS (RESI STUDY)

The IMPLAN analysis conducted by the Regional Economic Studies Institute (RESI) was based on projected expenditure inputs provided by Corvias during the planning phase of the Prince George’s County Stormwater Retrofit Program. The study, commissioned by Corvias Solutions, used these inputs to estimate economic and fiscal impacts over a thirty-year period, prior to full program implementation (Irani & Grimm, 2015).

The model inputs were defined using a simplified representation of the program structure, organized around a construction phase followed by long-term operations. These inputs were not derived from observed program data but from planning-stage assumptions regarding total expenditures, duration, and the distribution of spending between local and non-local activity. A key component of the model was the allocation of expenditures within Prince

George’s County, as this directly influences the magnitude of local economic impacts estimated through IMPLAN.(IMPLAN Group LLC, 2024)

The primary inputs used in the RESI analysis are summarized in Table 4.

Table 4: IMPLAN Model Inputs Used in RESI Study (Base Case)

Input Category	Description	Value / Assumption	Notes
Program Duration	Total analysis period	30 years	Assumed program horizon
Construction Phase Duration	Initial capital phase	3 years	Estimated during planning stage
Construction Expenditure	Total construction spending	$100 million	Provided by Corvias for modeling
Local Construction Spending	Portion of construction within Prince George’s County	50% ($50 million)	Remaining assumed non-local
Operations Phase Start	Beginning of O&M activities	Year 4	Immediately after construction
Annual Operations Expenditure	Recurring annual spending	$3.0 million per year	Assumed fully local
Local Operations Spending	Geographic allocation of O&M	100% local	Key assumption in model
Spending Allocation Structure	Distribution of expenditures across phases	Construction + Operations	Simplified program structure
Data Source for Inputs	Basis for expenditure assumptions	Corvias planning data (2014)	Pre-implementation estimates

These inputs reflect the assumptions used at the time of the study and were intended to represent expected program conditions rather than actual implementation. The definition of phases, expenditure levels, and local participation rates was based on projected activity prior to the establishment and maturation of the Clean Water Partnership. While additional reinvestment scenarios were evaluated in the RESI study, these were exploratory and not representative of the program structure ultimately implemented.

Based on these inputs, IMPLAN generated estimates of economic and fiscal outputs, including employment, total output, wages, and tax revenues. These outputs were calculated for both total activity and the portion attributable to local spending within Prince George’s County, reflecting the importance of geographic allocation in determining economic impact (Irani & Grimm, 2015).

With more than ten years of program implementation now completed, the Clean Water Partnership provides a substantially more robust dataset than was available at the time of the RESI study. Actual expenditures, procurement allocations across target classes, workforce participation, and mentor–protégé outcomes can now be used to replace the original assumptions applied in the model. This creates an opportunity to update the IMPLAN inputs using observed program data, improving the accuracy of economic impact estimates and allowing the analysis to reflect how funds have been distributed in practice rather than how they were initially projected.

6.3.2 IMPLAN MODEL OUTPUTS AND APPLICATION

The IMPLAN analysis conducted in the RESI study produced a set of economic and fiscal outputs derived from the expenditure inputs described in the previous section. These outputs represent the measurable economic activity associated with program spending and provide a structured way to evaluate how infrastructure investments translate into broader economic effects.

The primary economic outputs generated by the model include employment, total economic output, and wages. Employment is reported as an average annual value and reflects the number of jobs supported by program activity across both construction and operations. Total economic output represents the overall value of economic activity generated within the modeled region, including direct project spending as well as supply chain and household effects. Wages capture the total labor income associated with this activity, providing an indication of how program expenditures translate into earnings within the local economy. In addition to these economic indicators, the model also produces fiscal outputs, including state and local tax revenues derived from income, property, sales, and other economic activity.

These outputs are calculated for both total program activity and the portion attributable to local spending within Prince George's County. This distinction is critical, as it allows for the evaluation of how much of the economic impact is retained within the local economy versus distributed more broadly. As a result, the model provides a mechanism to assess not only the scale of economic activity generated, but also the effectiveness of procurement and participation strategies in achieving local economic development objectives.

The usefulness of these outputs is directly linked to the quality and accuracy of the input data. In the original RESI study, outputs were generated using projected expenditure assumptions. However, with the availability of actual program data from the Clean Water Partnership, including realized expenditures and documented participation outcomes, the same model structure can be used to generate updated outputs that reflect observed conditions. This enables a transition from estimated impacts to measured performance.

In this context, IMPLAN serves as a practical evaluation tool that can be applied to ongoing program monitoring, periodic performance updates, and the assessment of similar infrastructure initiatives. By updating model inputs with current data, the outputs can provide consistent metrics for comparing program performance over time, informing decision-making, and supporting the design and evaluation of future programs implemented under similar delivery models.(IMPLAN Group LLC, 2024)

The ability to generate meaningful outputs from the IMPLAN model is directly dependent on the availability of consistent and structured input data. While the Clean Water Partnership has achieved significant economic and workforce outcomes, the current evaluation approach is primarily based on aggregated program metrics rather than detailed, standardized tracking of how expenditures are distributed across target classes, workforce categories, and supplier types. As a result, the full economic impact of the program, particularly in terms of local value retention and business growth, is not systematically quantified. This gap highlights the need for a more formalized data collection and measurement approach, where program inputs are aligned with economic modeling requirements. Addressing this limitation enables the use of tools such as IMPLAN not only for retrospective analysis, but as part of an ongoing evaluation process that supports performance tracking, program optimization, and the development of future initiatives.

7 BENCHMARKING APPROACH AND COMPARISON FRAMEWORK

To evaluate the effectiveness and scalability of the Clean Water Partnership (CWP) model, a benchmarking analysis was conducted against a set of comparable infrastructure and supplier development programs across the United States. The selected programs were chosen based on their relevance to three core dimensions of the CWP: (1) delivery of distributed stormwater or environmental infrastructure at scale, (2) integration of regulatory or policy drivers such as consent decrees or MS4 compliance, and (3) inclusion of structured mechanisms for local economic participation, including supplier diversity, workforce development, and mentor–protégé initiatives. This approach allows for a comparative assessment not only of infrastructure outcomes, but also of how different programs translate capital investment into broader sustainability and socioeconomic benefits.

The benchmarking framework focuses on four key elements. First, the infrastructure delivery model, including whether projects are implemented through traditional procurement or integrated, programmatic approaches. Second, the extent to which programs incorporate lifecycle considerations such as long term maintenance and performance accountability. Third, the structure and rigor of supplier inclusion mechanisms, including the use of defined target classes, local hiring requirements, and small business participation goals. Finally, the presence and maturity of mentorship or capacity building programs, with particular attention to whether these initiatives include measurable outcomes such as firm growth, contract retention, or workforce expansion. Together, these elements provide a basis for identifying best practices and gaps in the CWP model, particularly in relation to measuring and scaling economic and sustainability impacts.

7.1 METROPOLITAN SEWER DISTRICT OF GREATER CINCINNATI – PROJECT GROUNDWORK

Project Groundwork, implemented by the Metropolitan Sewer District of Greater Cincinnati, represents a large scale green infrastructure program developed in response to federal consent decree requirements to reduce combined sewer overflows. Similar to the CWP, the program deploys a distributed portfolio of stormwater control measures, including bioswales, rain gardens, and infiltration systems, across urban neighborhoods. The program emphasizes watershed scale outcomes achieved through aggregation of site level projects, aligning with the distributed infrastructure model used in Prince George's County. However, while Project Groundwork includes workforce development partnerships and local hiring initiatives, its supplier engagement framework is less formally structured than the CWP's defined target class system. This makes it a useful comparison for understanding how regulatory drivers can support large scale implementation, but with less emphasis on formalized economic inclusion metrics (Metropolitan Sewer District of Greater Cincinnati, n.d.).

7.1.1 REGULATORY COMPLIANCE AND INFRASTRUCTURE DELIVERY COMPARISON

Project Groundwork, implemented by the Metropolitan Sewer District of Greater Cincinnati, provides a strong benchmark for evaluating the Clean Water Partnership in terms of regulatory compliance and large scale infrastructure delivery. Both programs are rooted in federal water quality mandates, with Cincinnati operating under a consent decree to reduce combined sewer overflows, while the Clean Water Partnership directly supports Municipal Separate Storm Sewer System (MS4) permit compliance in Prince George's County. In both cases, regulatory pressure serves as the primary catalyst for investment in distributed stormwater infrastructure, reinforcing the role of these programs as compliance driven rather than purely voluntary environmental initiatives.

However, the structure through which each program delivers infrastructure reveals a key distinction. Project Groundwork deploys a wide portfolio of green infrastructure practices, including bioswales, rain gardens, and infiltration systems, across priority sewer sheds to meet volume reduction targets. While similar in technical composition to the Clean Water Partnership, its implementation follows a more conventional public utility model, where projects are planned and executed through successive capital improvement phases. In contrast, the Clean Water Partnership consolidates delivery under a long term public private partnership framework, enabling programmatic deployment across 428 projects and more than 2,000 best management practices. This aggregation allows for continuous implementation and adaptive scaling, rather than discrete project cycles.

The difference in delivery model has implications for both efficiency and outcome tracking. The Clean Water Partnership's 30 year contract structure supports integrated planning, financing, and maintenance, aligning capital deployment with lifecycle performance requirements. This is further reinforced by the inclusion of a Master Maintenance Agreement covering over 500 stormwater assets, ensuring that regulatory compliance is sustained over time. By comparison, while Project Groundwork achieves significant progress toward consent decree requirements, its more fragmented implementation approach limits the degree to which lifecycle integration and program level optimization can be achieved.

While Project Groundwork operates at a comparable order of magnitude, as part of a multi billion dollar consent decree program implemented over several decades, publicly reported metrics are primarily structured around compliance progress rather than program level indicators such as local economic participation, workforce outcomes, or aggregated best management practice counts. In contrast, the Clean Water Partnership consolidates these dimensions into a unified reporting framework, enabling clearer linkage between infrastructure delivery, regulatory compliance, and broader sustainability impacts. This level of programmatic cohesion offers a replicable model for jurisdictions seeking to align regulatory compliance with long term infrastructure planning, particularly under MS4 permit structures where distributed controls must be implemented at scale.

7.2 DC WATER – CLEAN RIVERS PROJECT AND GREEN INFRASTRUCTURE PROGRAMS

DC Water's Clean Rivers Project combines gray and green infrastructure to meet federal regulatory requirements for water quality improvement in the District of Columbia. The program includes distributed green infrastructure retrofits such as permeable pavements and bioretention systems, similar in technical scope to the CWP. A key point of comparison is the District's Certified Business Enterprise program, which establishes requirements for local business participation in public contracts. While this framework promotes inclusion of local and minority owned firms, it operates primarily as a procurement requirement rather than an integrated capacity building model. Compared to the CWP, the program demonstrates strong policy driven inclusion but less emphasis on long term supplier development and mentorship outcomes (DC Water, n.d.)

7.2.1 PROCUREMENT INCLUSION AND PROGRAM OUTCOMES COMPARISON

DC Water's Clean Rivers Project provides a relevant benchmark for evaluating the Clean Water Partnership in terms of procurement driven inclusion and regulatory compliance. Similar to the CWP, the program is implemented under a federal consent decree aimed at reducing combined sewer overflows and improving water quality. The District has incorporated distributed green infrastructure elements, including permeable pavements and bioretention systems, which align technically with the types of best management practices deployed under the Clean Water Partnership.

A key point of comparison lies in how each program integrates local economic participation into its delivery model. DC Water's inclusion framework is guided by the District's Certified Business Enterprise program, which typically establishes participation goals on the order of approximately 35 percent of contract value for local certified firms. These targets ensure baseline inclusion across projects but are implemented at the contract level and primarily tracked as compliance metrics. While this structure promotes participation of local and minority owned businesses, it does not inherently provide mechanisms for long term capacity building or performance tracking beyond contract fulfillment.

In contrast, the Clean Water Partnership embeds economic inclusion directly within its programmatic structure, combining procurement targets with a formalized mentor–protégé system and workforce participation requirements. As reflected in program outcomes, the CWP has directed approximately 77 percent of contract value to minority and county based businesses and achieved over 50 percent resident labor participation, while also supporting measurable business growth through its mentorship cohorts. These outcomes extend beyond procurement compliance, linking infrastructure investment to sustained local economic development.

This distinction highlights a fundamental difference between policy driven inclusion and outcome driven program design. While DC Water establishes clear participation thresholds through procurement requirements, the Clean Water Partnership consolidates participation, workforce, and business development metrics into a unified performance framework. This integrated approach provides greater transparency into the broader sustainability and economic impacts of infrastructure investment, offering a more comprehensive model for aligning regulatory compliance with community level benefits.

7.3 LOS ANGELES COUNTY – SAFE CLEAN WATER PROGRAM

The Safe Clean Water Program in Los Angeles County is a watershed scale stormwater initiative funded through a dedicated parcel tax and designed to increase stormwater capture, improve water quality, and enhance community resilience. The program delivers a wide range of distributed infrastructure projects, including regional capture facilities and green infrastructure retrofits. A distinguishing feature is its emphasis on community investment, including funding for local organizations and workforce development initiatives. While the program incorporates equity considerations and local participation goals, it does not include a formalized mentor–protégé structure comparable to the CWP. As a result, it provides a benchmark for large scale funding and community engagement, but highlights a gap in structured supplier capacity building (Los Angeles County Public Works, n.d.).

7.3.1 FUNDING STRUCTURE AND COMMUNITY INVESTMENT COMPARISON

The Safe Clean Water Program in Los Angeles County provides a valuable benchmark for comparing large scale funding mechanisms and community investment strategies within stormwater infrastructure programs. Similar to the Clean Water Partnership, the program was developed to address regulatory water quality requirements while expanding stormwater capture and reuse through distributed infrastructure. However, the primary distinction lies in how each program structures and deploys its financial resources.

The Safe Clean Water Program is funded through a dedicated parcel tax, generating a stable and significant revenue stream to support watershed scale investments across Los Angeles County. This model enables the implementation of both regional and distributed stormwater projects, including green streets, infiltration systems, and multi benefit capture facilities. A key feature of the program is its allocation of funds toward community based organizations and local projects, with an emphasis on equity, public engagement, and environmental justice. This creates a broad platform for community participation and localized benefits, particularly in underserved areas(Los Angeles County Public Works, n.d.).

In contrast, the Clean Water Partnership leverages a combination of Stormwater Enterprise Fund revenues and State Revolving Fund loans to finance its activities, achieving over $229 million in low cost financing and additional loan forgiveness grants. This financing structure is closely tied to a long term public private partnership model, enabling not only capital deployment but also integrated maintenance and performance accountability over a 30 year period.

Comparable quantitative metrics between the two programs are limited by differences in reporting structures, but the contrast in financial deployment is clear. While the Safe Clean Water Program emphasizes broad distribution of funds across jurisdictions and community groups, it does not consistently report aggregated outcomes related to local business utilization, workforce participation, or supplier development. In contrast, the Clean Water Partnership reports that approximately 80 percent of expenditures are directed toward county based and local businesses, alongside structured workforce and mentorship outcomes . This distinction reflects a shift from funding allocation as a mechanism for equity toward a more structured, performance driven model of economic inclusion.

Overall, the comparison highlights two complementary approaches to large scale stormwater investment. The Safe Clean Water Program demonstrates the effectiveness of dedicated funding streams in enabling regional scale infrastructure and community engagement, while the Clean Water Partnership illustrates how financial structuring and program integration can translate investment into measurable economic and sustainability outcomes.

7.4 PORT AUTHORITY OF NEW YORK AND NEW JERSEY – MENTOR–PROTÉGÉ PROGRAM

The Port Authority of New York and New Jersey operates a formal mentor–protégé program designed to increase the participation of minority and women owned business enterprises in large infrastructure projects. The program pairs smaller firms with experienced prime contractors, providing technical assistance, financial guidance, and access to contracting opportunities. Unlike the CWP, where mentorship is embedded within a broader infrastructure program, the Port Authority model includes more explicit tracking of firm development outcomes, such as increased bonding capacity, access to credit, and successful contract awards. This makes it a strong benchmark for evaluating how mentorship programs can be structured to generate measurable business growth and long term competitiveness (Port Authority of New York and New Jersey, n.d.).

7.4.1 MENTOR–PROTÉGÉ STRUCTURE AND MEASURABLE OUTCOMES COMPARISON

The Port Authority of New York and New Jersey Mentor–Protégé Program provides a strong benchmark for evaluating the Clean Water Partnership's approach to contractor development and capacity building. Unlike infrastructure focused comparisons, this case allows for a direct assessment of how structured mentorship programs can translate into measurable economic outcomes for participating firms.

The Port Authority program is designed to increase the competitiveness of minority and women owned business enterprises by pairing them with experienced prime contractors and providing structured technical and managerial assistance (Port Authority of New York and New Jersey, n.d.). Through this relationship, protégés receive targeted support in areas such as project management, estimating, financial planning, bonding capacity, and regulatory compliance. A defining feature of the program is its emphasis on formal performance tracking, including metrics related to firm growth, access to capital, and successful participation in larger contracts.

The Clean Water Partnership incorporates a similar mentorship component but embeds it within its broader infrastructure delivery model. As reported in program outcomes, the CWP has implemented eight mentor–protégé cohorts with approximately 80 participants, resulting in over $60 million in contract awards to participating firms . Additional reported impacts include increases in bonding capacity, expanded lines of credit, and the establishment of new business lines among protégés . These results demonstrate that the program achieves outcomes comparable to more formalized mentorship frameworks, despite being integrated within a broader infrastructure program.

While publicly available data for the Port Authority program is generally reported at the cohort or case level rather than as aggregated program wide metrics, the program explicitly tracks improvements in bonding capacity, access to financing, and successful transition of firms into prime or larger subcontracting roles. These outcome categories closely align with those reported by the Clean Water Partnership, where participating firms have demonstrated measurable increases in bonding capacity, expanded lines of credit, and over $60 million in contract awards.

A key distinction between the two approaches lies in program structure and measurement rigor. The Port Authority's model operates as a standalone initiative with clearly defined entry requirements, evaluation criteria, and performance benchmarks. In contrast, the Clean Water Partnership integrates mentorship within its contractual and operational framework, linking contractor development directly to ongoing project delivery. While this integration enhances real world application and accelerates access to contracting opportunities, it may limit the standardization of performance tracking across cohorts.

Overall, both programs demonstrate the value of mentorship in expanding the capacity of small and disadvantaged businesses within infrastructure sectors. The Port Authority model highlights the benefits of formalized evaluation and structured progression, while the Clean Water Partnership illustrates how mentorship can be embedded within large scale infrastructure programs to generate immediate and measurable economic outcomes.

7.5 U.S. SMALL BUSINESS ADMINISTRATION – 8(A) MENTOR–PROTÉGÉ PROGRAM

The U.S. Small Business Administration's 8(a) Mentor–Protégé Program provides a national level framework for supporting small and disadvantaged businesses in federal contracting. The program facilitates joint ventures between small firms and established contractors, enabling knowledge transfer, capacity building, and access to larger projects. A key strength of this model is its emphasis on measurable outcomes, including revenue growth, contract awards, and successful graduation from the program. Compared to the CWP, the SBA program demonstrates a more mature approach to tracking the long term impacts of mentorship and supplier development. This provides a critical benchmark for informing recommendations related to performance measurement and impact evaluation within the Clean Water Partnership (United States Small Business Administration, 2025).

7.5.1 MENTOR–PROTÉGÉ PROGRAM AND SCALABLE OUTCOME COMPARISON

The U.S. Small Business Administration's 8(a) Mentor–Protégé Program provides a national level benchmark for evaluating structured approaches to small business development within infrastructure and public sector contracting. Unlike localized programs, the SBA model operates at a federal scale, supporting small and disadvantaged businesses across multiple industries through formalized mentorship relationships and joint venture mechanisms.

The program is designed to enhance the capacity of small businesses participating in the 8(a) Business Development Program by pairing them with more experienced firms that provide technical, managerial, and financial guidance. A defining feature of the SBA model is its formal regulatory structure, which establishes clear eligibility criteria, oversight mechanisms, and performance expectations. Mentor–protégé agreements must be approved by the SBA and are subject to defined evaluation processes, ensuring consistency and accountability across participants (United States Small Business Administration, 2025).

A key strength of the SBA program lies in its emphasis on measurable outcomes tied to federal contracting performance. Protégé firms are able to form joint ventures with their mentors, allowing them to compete for contracts that would otherwise be inaccessible due to size or capacity constraints. This structure directly links mentorship to revenue generation and contract acquisition, providing a clear pathway for business growth and long term competitiveness within federal markets.

The Clean Water Partnership demonstrates similar outcomes but through a decentralized and program integrated approach. As reported in program data, the CWP has facilitated over $60 million in contract awards to mentor–protégé participants across eight cohorts , alongside documented increases in bonding capacity, access to credit, and business expansion . Unlike the SBA model, where mentorship operates within a standardized federal framework, the CWP embeds these outcomes within a localized infrastructure delivery system, linking contractor development directly to ongoing project execution.

A key distinction between the two programs lies in scalability and standardization. The SBA model benefits from a uniform national structure that enables consistent tracking of participation and outcomes across regions and sectors. In contrast, the Clean Water Partnership operates as a place based model, achieving strong localized impacts but with less formal standardization in performance measurement. However, this localized integration allows the CWP to directly align mentorship outcomes with specific infrastructure investments and community level priorities, creating a more immediate connection between economic development and environmental implementation.

Overall, the SBA 8(a) Mentor–Protégé Program represents a highly structured and scalable model for business development, emphasizing formal oversight and measurable contracting outcomes. The Clean Water Partnership complements this approach by demonstrating how similar outcomes can be achieved within a localized, infrastructure driven framework, highlighting the potential for hybrid models that combine federal standardization with place based implementation.

7.6 CROSS-PROGRAM SYNTHESIS

Across the benchmarked programs, a clear distinction emerges between models that address individual components of infrastructure delivery and those that integrate multiple dimensions within a single structure. Most programs demonstrate strength in one or two areas, such as regulatory compliance, funding, or contractor development, but do not systematically connect these elements. This fragmentation limits the ability to translate infrastructure investment into consistent and measurable economic and social outcomes. In contrast, the Clean Water Partnership consolidates delivery, financing, maintenance, and economic inclusion within a unified programmatic structure, enabling direct linkage between capital deployment and broader performance metrics.

These distinctions are summarized in Table X to provide a structured comparison across benchmark programs.

Table X. Cross-Program Benchmarking Summary

Program	Delivery Model	Lifecycle Integration	Supplier Inclusion Structure	Mentorship / Capacity Building	Measurement of Outcomes
CWP (PGC)	Programmatic CBP3	Fully integrated (design to maintenance)	Structured target classes (CBB, CBMBE, etc.)	Embedded Mentor–Protégé Program	Aggregated metrics (spend, workforce, contracts)
Cincinnati (Project Groundwork)	Utility-led program	Partial	Informal / programmatic	Workforce partnerships	Compliance-focused
DC Water	Traditional + policy overlay	Limited integration	Formal procurement targets (CBE ~35%)	Limited structured mentorship	Contract-level tracking
LA County (Safe Clean Water)	Funding-driven distributed program	Partial	Equity-focused funding allocation	Community programs	Limited aggregation
Port Authority NY/NJ	Standalone program	N/A	M/WBE participation	Formal mentorship program	Strong firm-level tracking
SBA 8(a)	Federal program	N/A	National inclusion framework	Highly structured mentorship	Strong standardized metrics

The benchmarking analysis shows that while regulatory compliance and infrastructure delivery are consistently achieved across programs, the integration of economic inclusion and capacity building varies significantly. Programs such as Cincinnati's Project Groundwork and DC Water's Clean Rivers Project demonstrate strong alignment with regulatory drivers but rely primarily on traditional delivery models and procurement-based inclusion mechanisms. In these cases, outcomes are typically reported in terms of infrastructure performance and compliance with participation targets, with limited aggregation of broader economic impacts.

Programs such as the Safe Clean Water Program in Los Angeles County expand the scope of investment through dedicated funding mechanisms and emphasize community-level benefits, but similarly lack a unified structure for tracking supplier development and workforce outcomes. In contrast, the Port Authority of New York and New Jersey and the U.S. Small Business Administration's 8(a) Mentor–Protégé Program provide structured models for business capacity building, with formalized mentorship systems and defined performance indicators, yet operate largely independent of infrastructure delivery.

The Clean Water Partnership represents a hybrid model that integrates these dimensions within a single programmatic structure. By combining long-term infrastructure delivery, regulatory compliance, and embedded economic inclusion mechanisms, the program links capital investment directly to measurable outcomes in local business participation, workforce development, and contractor capacity growth. The availability of aggregated metrics, including contract awards, workforce participation, and business development outcomes, distinguishes the CWP from benchmark programs that either do not track these impacts or report them in a fragmented manner.

This comparison highlights that the primary differentiator of the Clean Water Partnership is not the presence of individual program elements, but the integration of these elements into a single delivery and evaluation structure. This integration provides a foundation for more comprehensive performance measurement and supports the scalability of the model to other jurisdictions seeking to align infrastructure investment with environmental and socioeconomic objectives.

8 RECOMMENDATIONS

8.1 RECOMMENDATION 1: ESTABLISH A LONGITUDINAL TRACKING SYSTEM FOR MENTOR–PROTÉGÉ OUTCOMES

A key opportunity to strengthen the long-term value of the Clean Water Partnership lies in the systematic tracking of firm-level outcomes associated with the Mentor–Protégé Program. While the program has demonstrated measurable success in contract awards, workforce participation, and contractor engagement, these outcomes are currently reported as aggregate metrics and do not capture how individual firms evolve over time. This limits the ability to quantify the full economic impact of the program and to demonstrate how infrastructure investment translates into sustained business growth.

The key performance indicators required for this tracking system are already defined through the survey instrument developed as part of this project, in conjunction with the mentor-protegee program team. These indicators include firm-level data such as revenue ranges, number of employees, access to capital, bonding capacity, and contract acquisition before and after participation in the program. The structure of the survey, organized across five core dimensions, is summarized in Figure X. While some of this information has been partially captured through program reporting, the survey provides a structured mechanism to standardize and reconfirm these data points across program graduates. The survey distributed as part of this project is intended to retrieve historical data from completed cohorts, establishing a baseline for firm-level outcomes.

Figure 6: Survey question categories for data allocations

However, to ensure long-term value, these same data points should not rely solely on retrospective collection. The program should incorporate these indicators into its ongoing operations, recording firm-level data during program participation and updating it periodically after graduation. This approach transitions the system from one-time data recovery to continuous performance tracking, enabling consistent longitudinal analysis across all cohorts.

From an economic perspective, this approach enables the program to move beyond participation metrics and toward measurable indicators of capacity building and local economic development. Tracking firm growth over multiple project cycles provides a clearer understanding of how targeted procurement strategies and mentorship interventions contribute to increased competitiveness, business stability, and long-term market participation. These outcomes represent the primary mechanism through which the Clean Water Partnership generates sustained economic value within Prince George's County.

In addition, the structured data generated through this system supports integration with broader economic analysis tools, including IMPLAN-based evaluations. Firm-level performance data can be used to validate assumptions related to workforce participation, local spending retention, and indirect economic effects, improving the accuracy of impact assessments over time.

To ensure usability for decision-makers, the outputs of this tracking system should be consolidated into concise summary formats that highlight key firm-level outcomes across cohorts. Rather than relying on raw survey responses, results should be aggregated into indicators such as average revenue growth, workforce expansion, bonding capacity changes, and contract retention rates. These summaries can be presented in tabular form or short annual reporting briefs, allowing stakeholders to quickly assess program performance and trends over time. The survey instrument, developed in collaboration with the Mentor–Protégé Program team (including Michael Burke and Anderson Morgan), is included in the Appendix, and aggregated results are accessible through the QR link provided below.

The tracking system should be implemented as a recurring data collection process, for example on an annual basis, to enable longitudinal analysis of firm performance. Survey responses should be collected for each participating firm and aggregated at the cohort level to allow comparison across program cycles. Responsibility for data collection and consolidation should be assigned within the program structure to ensure consistency and continuity over time.

8.1.1 IMPLEMENTATION PATHWAY FOR ROMMENDATION 1

Implementation of this recommendation can be achieved through a structured Management of Change approach focused on integrating data collection into existing program workflows with minimal disruption. The initial step is the deployment of the survey instrument developed as part of this project to Mentor–Protégé program graduates, allowing the program to retrieve baseline data on firm performance and establish a reference point for historical outcomes.

In parallel, the program should incorporate these same data points into its ongoing operations by embedding data collection within the Mentor–Protégé Program lifecycle. This includes capturing firm-level information at entry, updating it during participation, and maintaining periodic follow-up after graduation. By aligning survey-based data recovery with live program tracking, the program can ensure consistency between historical and future datasets.

Data collection should be conducted on a recurring basis, such as annually, to support longitudinal tracking. Responses and program data should be stored in a centralized format, allowing for aggregation and comparison across cohorts. Where possible, survey data should be complemented with existing program records, including contract awards and participation data, to improve completeness and reliability.

To support decision-making, collected data should be summarized into standardized reporting outputs, focusing on key indicators such as revenue growth, workforce expansion, bonding capacity, and contract progression. These summaries should be designed to provide clear and concise insights rather than detailed raw datasets, ensuring accessibility for program managers and stakeholders.

From an economic evaluation perspective, this dataset provides a direct input for validating and refining assumptions used in broader impact analyses, including IMPLAN-based modeling. Over time, the accumulation of firm-level data enables the program to quantify trends in business growth and workforce development, supporting both internal performance assessment and external reporting.

This phased approach, combining initial survey deployment with integration into ongoing program operations, ensures that the tracking system is both immediately actionable and sustainable over time.

8.2 RECOMMENDATION 2: STRUCTURE PROGRAM DATA TO ENABLE REPEATABLE ECONOMIC IMPACT MODELING

The Clean Water Partnership has demonstrated strong performance in local economic participation and contractor development; however, the current structure of program data limits the ability to translate these outcomes into consistent and repeatable economic impact evaluations. As shown in the IMPLAN analysis and the original RESI study, economic impacts are highly dependent on the quality and structure of input data. The initial model relied on projected assumptions regarding spending, local participation, and program phases, which do not reflect the actual implementation of the program.

To address this limitation, the program should formalize a structured data model that organizes financial, procurement, and participation data in a format directly compatible with IMPLAN input requirements. The objective is not to create a new analytical tool, but to enable the consistent reuse of the IMPLAN model by updating inputs with observed program data. This allows the program to transition from a one-time impact estimate to a repeatable evaluation tool that can be applied over time and across future projects.

At a minimum, the data structure should include the following components:

1. Total program expenditures, separated by major categories such as construction and operations
2. Geographic allocation of spending, distinguishing between local (Prince George's County) and non-local expenditures
3. Allocation by target supplier class, including County-Based Businesses (CBB), County-Based Minority Business Enterprises (CBMBE), and related classifications
4. Contract structure and participation, including differentiation between prime contractors and subcontractors
5. Workforce linkage, connecting labor participation to contract execution and local employment

Organizing program data along these dimensions enables direct mapping to IMPLAN sectors and allows for accurate estimation of direct, indirect, and induced economic impacts. This structured approach also aligns with the target class framework described earlier in the report, linking financial flows to economic inclusion objectives.

From an economic perspective, this recommendation significantly enhances the program's ability to quantify its impact. Without structured inputs, economic outcomes remain dependent on assumptions and cannot be consistently updated or compared. With a standardized data structure, the program can measure how expenditures translate into local economic activity, assess the degree of value retention within the County, and evaluate the effectiveness of procurement strategies in driving economic inclusion. This provides a stronger basis for demonstrating program value to stakeholders and supports more informed decision-making.

In addition, this approach enables scalability. By standardizing how data is structured, the same model can be applied not only to the Clean Water Partnership over time, but also to new infrastructure programs developed by Corvias Infrastructure Solutions. This creates a consistent methodology for evaluating economic impacts across projects, improving comparability and supporting replication of the CBP3 model in other jurisdictions.

8.2.1 IMPLEMENTATION PATHWAY FOR RECOMMENDATION 2

Implementation of this recommendation requires the definition and integration of a standardized data structure across existing program systems, rather than the creation of new data collection mechanisms. A structured Management of Change approach should be used to align financial, procurement, and reporting processes with the requirements of economic modeling.

The first step is the definition of a data schema that captures all relevant inputs required for IMPLAN analysis. This includes standardizing how expenditures are categorized, how contractor participation is recorded, and how geographic allocation is assigned. These definitions should be applied consistently across all projects to ensure comparability over time.

The second step is the integration of this data structure into existing program workflows. Financial tracking systems should record expenditures according to defined categories, procurement systems should capture contractor classifications and participation levels, and reporting processes should consolidate these data into a unified dataset. This integration minimizes additional reporting burden while ensuring that required inputs are captured as part of normal program operations.

The third step is the mapping of structured data to IMPLAN inputs. This includes assigning appropriate industry sectors to expenditure categories and defining local versus non-local allocations based on contractor location and spending patterns. Once this mapping is established, the model can be updated by replacing input values without modifying its underlying structure.

An additional implementation consideration is access to the IMPLAN modeling platform and the resources required to maintain and update the model over time. The use of IMPLAN requires an annual software license, with an approximate cost of $9,800 per year. Based on available resources and program scale, two primary pathways can be considered for model management. The first option is to engage an external party, either by coordinating with the Regional Economic Studies Institute (RESI), which conducted the original analysis, or by contracting a third-party consultant that already maintains an active IMPLAN license. Under this approach, the model can be periodically updated by providing structured input data, minimizing internal resource requirements.

The second option is to develop internal capacity within Corvias Infrastructure Solutions by assigning responsibility for IMPLAN model stewardship to a dedicated resource. This approach would allow for more frequent updates, the development of a centralized database of program impacts, and direct application of the model across multiple partnerships. While this requires initial investment in licensing and training, it provides greater flexibility and long-term value, particularly as the number of programs increases.

In both cases, it is recommended that IMPLAN model management be coordinated centrally within Corvias Infrastructure Solutions, ensuring consistency in methodology and enabling the model to support both existing and future partnerships. The selection of the appropriate pathway should be based on cost, resource availability, and the anticipated frequency of model updates.

From a decision-making perspective, this approach enables the generation of consistent economic impact outputs, including employment, economic output, wages, and tax revenues, on a recurring basis. Program managers can use these outputs to track performance over time, evaluate the effectiveness of procurement strategies, and support planning for future projects. The ability to update the model with current data also allows for direct comparison between projected and actual outcomes, addressing a key limitation identified in the original RESI analysis.

Overall, this implementation approach transforms IMPLAN from a static analytical exercise into an operational tool that supports ongoing program evaluation, enhances transparency, and strengthens the economic case for the Clean Water Partnership and future CBP3 initiatives.

8.3 RECOMMENDATION 3: FORMALIZE AND SCALE PROGRESSION PATHWAYS FOR MENTOR–PROTÉGÉ FIRMS

The Clean Water Partnership Mentor–Protégé Program has demonstrated strong performance in developing contractor capacity, supporting workforce growth, and enabling firms to access new business opportunities. As reflected in program outcomes and participant testimonies, firms have successfully transitioned into larger and more complex project roles, expanded their operational capabilities, and secured contract awards beyond initial program participation. However, while these outcomes are evident, the progression of firms into higher levels of contract participation is not formally structured as a defined pathway within the program.

To strengthen and scale these outcomes, the program should formalize progression pathways that clearly define how firms advance from initial participation to higher levels of responsibility, including larger contracts and expanded market access. This does not require the creation of new program elements, but rather the structuring of existing practices into a transparent and repeatable system that outlines expected stages of growth and participation.

The program already demonstrates strong performance in allocating work to local and mentor–protégé firms, with existing procurement structures effectively supporting participation and contract awards. As such, the recommendation is not to modify the current allocation model, but to build on its success by introducing progression-based differentiation within existing allocations. This may include identifying project scopes or contract tiers that align with different stages of firm development, allowing firms to advance based on demonstrated capability and performance.

In addition, the program should more explicitly track and communicate its success in developing a transferable workforce and contractor base. Evidence from the program indicates that participating firms and personnel have expanded their capabilities beyond Prince George's County, contributing to projects in other jurisdictions and markets. Capturing and reporting these outcomes strengthens the case for the program as a model for workforce and industry development, extending its impact beyond individual projects.

From an economic perspective, formalizing progression pathways enhances the long-term value of the program by increasing the capacity of local firms to capture larger shares of infrastructure spending. This supports greater local retention of economic activity, strengthens the regional contractor base, and contributes to sustained job creation and business growth. These effects directly reinforce the economic outcomes captured through IMPLAN-based analysis, linking program structure to measurable regional impact.

Finally, the success of the Clean Water Partnership Mentor–Protégé Program provides a strong foundation for replication in future CBP3 initiatives. As new programs are developed by Corvias Infrastructure Solutions in other municipalities, the structured progression model can serve as a reference framework for integrating workforce development and contractor capacity building into program design. While individual program requirements may vary by jurisdiction, the demonstrated outcomes of the CWP MPP suggest that similar structures can deliver significant economic and social benefits. This report can therefore serve as a supporting document in discussions with public partners, highlighting the value of maintaining and replicating these program elements.

8.3.1 IMPLEMENTATION PATHWAY FOR RECOMMENDATION 3

Implementation of this recommendation should focus on formalizing existing practices into a clearly defined progression structure integrated within the Mentor–Protégé Program and procurement processes. A structured Management of Change approach can be used to document current practices, define progression stages, and align program stakeholders around a consistent framework.

The first step is the definition of progression tiers that reflect increasing levels of contractor capability and responsibility. These tiers should be based on existing program experience and may include stages such as initial program participation, pilot project execution, subcontractor roles on larger projects, and eventual qualification for prime contractor responsibilities. Defining these tiers provides a transparent pathway for firms and establishes clear expectations for advancement.

The second step is the identification of project scopes and contract opportunities that align with each progression tier. Rather than introducing new allocation requirements, the program should map existing workstreams to these tiers, ensuring that firms have access to appropriately scaled opportunities as they develop. This approach builds on the success of current procurement structures while introducing a more intentional progression mechanism.

The third step is the establishment of progression criteria based on measurable performance indicators. These may include successful project delivery, adherence to schedule and budget, workforce capacity, and demonstrated ability to manage larger or more complex scopes. Linking progression to performance ensures that advancement is merit-based and aligned with program objectives.

In parallel, the program should expand its tracking of post-program outcomes to capture how firms and workforce participants transition into new markets and jurisdictions. This includes documenting participation in projects outside Prince George’s County, growth in contract size, and expansion of service offerings. These data complement the firm-level tracking described in Recommendation 1 and provide additional evidence of long-term program impact.

From a decision-making perspective, this structured progression model provides greater visibility into how program investments translate into contractor development and market expansion. It enables program managers to identify bottlenecks, optimize allocation strategies, and ensure that mentorship efforts are effectively supporting long-term capacity building.

As Corvias Infrastructure Solutions develops new CBP3 programs, this structured approach can be incorporated into program design as a standard component. While specific requirements may vary across municipalities, maintaining a formal progression framework ensures that the economic and workforce development benefits observed in the Clean Water Partnership are preserved and replicated across future partnerships.

9 CONCLUSION

The Clean Water Partnership demonstrates that stormwater infrastructure programs can operate as integrated systems that deliver environmental compliance alongside measurable economic and workforce outcomes. Over its first decade, the program has achieved its MS4 objectives while exceeding initial expectations for local participation and contractor inclusion. With approximately 77 percent of contract value directed to minority and county-based businesses and overall local spending approaching 80 percent, the program reflects a level of economic localization that is not typically observed in conventional infrastructure delivery(Clean water partnership, 2025).These results suggest that updating the original IMPLAN analysis with actual program data would likely show stronger local economic retention and broader regional impact than initially estimated (Irani & Grimm, 2015).

A defining element of this performance is the integration of the Mentor–Protégé Program within the overall delivery structure. Rather than functioning as a separate initiative, contractor development is directly linked to project execution, allowing firms to translate training into sustained participation in infrastructure delivery. Documented outcomes, including contract awards, increased bonding capacity, and expanded business capabilities, indicate that the program is not only facilitating access, but also supporting long-term competitiveness (Clean water partnership, 2025). With consistent tracking of firm-level data, these outcomes can be more clearly quantified and used to support replication in future programs.

The IMPLAN modeling approach reinforces this potential by providing a mechanism to translate program activity into measurable economic outcomes. While the original RESI study relied on projected assumptions, the availability of actual expenditure, procurement, and participation data creates the opportunity to update the model using observed conditions (Irani & Grimm, 2015). This transition enables the model to function as a repeatable evaluation tool, supporting both ongoing performance tracking and comparative analysis across programs.

This capability becomes increasingly relevant as additional CBP3 programs are developed. A consistent data structure combined with a reusable modeling approach allows for direct comparison between programs, supporting the identification of effective design elements and informing future implementation strategies. In this context, economic impact analysis moves from a one-time estimate to a practical tool for program evaluation and optimization.

The analysis shows that the Clean Water Partnership already captures much of the information required to support this approach. The remaining gap lies in how data is structured and applied. The recommendations presented in this report address this by establishing longitudinal tracking of mentor–protégé outcomes, structuring program data for economic modeling, and formalizing progression pathways for participating firms. These actions strengthen the link between program inputs, observed outcomes, and measurable economic impact.

Taken together, the Clean Water Partnership can be understood as both a high-performing infrastructure program and a scalable model for integrated delivery. By formalizing its data and evaluation processes, the program can move beyond demonstrating strong results to consistently measuring and communicating its full impact. This positions Corvias Infrastructure Solutions to apply the same approach across future partnerships, supporting more informed decision-making and reinforcing the connection between infrastructure investment and community-level outcomes.

10 REFERENCES

Clean water partnership. (2025, October 23). *DEPARTMENT OF THE ENVIRONMENT TIEE COMMITTEE CLEAN WATER PARTNERHIP PRESENTATION*. TIEE COMMITTEE.

Corvias Infrastructure Solutions. (n.d.). *Mentor-Protégé Program*. Corvias Infrastructure Solutions. CIS. Retrieved May 4, 2026, from https://www.cisolutions.com/mentor-protege-program/

Corvias Infrastructure Solutions (CIS). (n.d.). *Who We Are*. Corvias Infrastructure Solutions. CIS Solutions. Retrieved April 8, 2026, from https://www.cisolutions.com/who-we-are/

DC Water. (n.d.). *Clean Rivers Project* [DC Water]. DC Water.

GRI. (2022). *GRI - Standards*. https://www.globalreporting.org/standards/

IMPLAN Group LLC. (2024, August 30). *IMPLAN's Validity and Methodology*. IMPLAN - Support. https://support.implan.com/hc/en-us/articles/28763413922459-Validity-of-IMPLAN

Intergovernmental Panel on Climate Change (IPCC). (2022). *Climate Change 2022: Impacts, Adaptation and Vulnerability*. https://doi.org/10.1017/9781009325844

Irani, D., & Grimm, J. (2015). *Economic and Fiscal Impact Analysis of the Prince George's County Stormwater Retrofit Program*. Regional Economic Studies Institute (RESI), Towson University.

Los Angeles County Public Works. (n.d.). *Safe Clean Water Program* [Los Angeles County Public Works]. Safe Clean Water LA.

Metropolitan Sewer District of Greater Cincinnati. (n.d.). *Project Groundwork* [Metropolitan Sewer District of Greater Cincinnati]. Metropolitan Sewer District of Greater Cincinnati. Retrieved https://msdgc.org

Miller, R. E., & Blair, P. D. (2009). *Input Output Analysis: Foundations and Extensions*. Cambridge University Press.

Port Authority of New York and New Jersey. (n.d.). *Mentor-Protégé Program*. Port Authority of New York and New Jersey. Port Authority of New York and New Jersey. Retrieved https://www.panynj.gov/port-authority/en/business-opportunities/supplier-diversity/mentor-protege-program.html

Prince George’s County Department of the Environment. (2017). *Clean Water Partnership*. Prince George’s County Government. Prince George’s County, Maryland. https://www.princegeorgescountymd.gov/departments-offices/environment/stormwater-management/clean-water-partnership

United Nations. (2015). *Transforming our world: The 2030 Agenda for Sustainable Development* (A/RES/70/1). United Nations. https://sdgs.un.org/2030agenda

United States Environmental Protection Agency. (1999). *Storm Water Technology Fact Sheet: Bioretention* (EPA 832-F-99-012). https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=200044BE.txt

United States Environmental Protection Agency. (2005). *National Management Measures to Control Nonpoint Source Pollution from Urban Areas* (EPA-841-B-05-004). United States Environmental Protection Agency, Office of Water. https://www.epa.gov/sites/default/files/2015-09/documents/urban_guidance_0.pdf

United States Environmental Protection Agency. (2021). NPDES: Stormwater Best Management Practice, Permeable Pavements. *Permeable Pavements, Stormwater Best Management Practice (BMP) Fact Sheet*. https://www.epa.gov/system/files/documents/2021-11/bmp-permeable-pavements.pdf

United States Small Business Administration. (2025, December 18). *SBA Mentor-Protégé Program*. United States Small Business Administration. U.S. Small Business Administration. https://www.sba.gov/federal-contracting/contracting-assistance-programs/sba-mentor-protege-program

US EPA. (2015, November 2). *Financing Green Infrastructure—Is a Community-Based Public-Private Partnerships (CBP3) Right for You?* [Overviews and Factsheets]. United States Environmental Protection Agency. https://www.epa.gov/G3/financing-green-infrastructure-community-based-public-private-partnerships-cbp3-right-you

US EPA, O. (2015). *Stormwater Discharges from Municipal Sources* [Overviews and Factsheets]. https://www.epa.gov/npdes/stormwater-discharges-municipal-sources

US EPA, O. (2021). *Community Based Public-Private Partnerships* [Overviews and Factsheets]. https://www.epa.gov/waterfinancecenter/community-based-public-private-partnerships

US EPA, R. 03. (2014, January 30). *Chesapeake Bay Total Maximum Daily Load (TMDL)* [Overviews and Factsheets]. (Chesapeake Bay). https://www.epa.gov/chesapeake-bay-tmdl

US EPA, R. 06. (2016, July 8). *Municipal Separate Storm Sewer System (MS4) Storm Water Management Program (SWMP)* [Other Policies and Guidance]. (Texas). https://www.epa.gov/tx/municipal-separate-storm-sewer-system-ms4-storm-water-management-program-swmp

11 APPENDICES

This report is supported by supplementary materials included in the appendices, which provide the underlying data sources, reference analyses, and tools used to develop the evaluation. These materials are not reproduced in full within the main body of the report but are critical for transparency, methodological clarity, and reproducibility of results.

11.1 APPENDIX A: TOWSON UNIVERSITY REGIONAL ECONOMIC STUDIES INSTITUTE STUDY

This appendix includes the economic impact study developed by the Regional Economic Studies Institute (RESI) at Towson University, which served as the original basis for the IMPLAN modeling approach applied to the Clean Water Partnership. The study provides the foundational methodology and scenario assumptions that were later adapted and restructured in this report using actual program data.

11.2 APPENDIX B: PRINCE GEORGE'S COUNTY DEPARTMENT OF THE ENVIRONMENT – TIEE COMMITTEE CLEAN WATER PARTNERSHIP PRESENTATION

This appendix contains the official Clean Water Partnership presentation prepared for the Department of the Environment TIEE Committee. The material, developed by Corvias Infrastructure Solutions and spearheaded by Roland Jones, provides program performance data, including environmental, economic, and workforce outcomes. This presentation served as a primary source for validated program metrics used throughout the analysis.

11.3 APPENDIX C: MENTOR–PROTÉGÉ PROGRAM SURVEY INSTRUMENT

This appendix includes the survey questionnaire developed to assess outcomes of firms participating in the mentor–protégé program. The survey was designed collaboratively with Michael Burke, consultant to Corvias Infrastructure Solutions and Director of the mentor–protégé program, and Anderson Morgan, a member of the Clean Water Partnership team. The instrument is intended to support longitudinal data collection on business growth, workforce development, and access to capital, forming a key component of the proposed impact measurement framework.

11.4 APPENDIX D: IMPLAN LICENSING CONTACT INFORMATION

This appendix provides contact information relevant to IMPLAN licensing and technical support, supporting the implementation of the economic impact modeling approach described in this report. Access to the IMPLAN platform is required to update and maintain the model using structured program data.

The contact provided corresponds to IMPLAN's academic and institutional support, and may be used to obtain information on licensing options, software capabilities, and implementation requirements. This information is included to support evaluation of potential pathways for model management, including external support or internal capacity development within Corvias Infrastructure Solutions.

Appendix A

TOWSON UNIVERSITY REGIONAL ECONOMIC STUDIES INSTITUTE STUDY

Economic and Fiscal Impact Analysis of the Prince George's County Stormwater Retrofit Program

Prepared for
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1.0 Executive Summary

1.1 Overview

Corvias Solutions (Corvias) tasked the Regional Economic Studies Institute (RESI) of Towson University with completing a report detailing the economic and fiscal impacts of Corvias' activities in Maryland regarding the Stormwater Retrofit Program in Prince George's County. The Stormwater Retrofit Program is a $100.0 million initiative spanning a thirty-year period.

1.2 Summary of Findings

Below are RESI's key findings in regard to the economic and fiscal impacts of Corvias' retrofit activities in Prince George's County. Local activity, spending within Prince George's County, includes 50 percent of total construction activity and all activity under the operations phase and the optional reinvestment phase.

Corvias plans to spend three years on construction for the Stormwater Retrofit Program totaling $100.0 million, $50.0 million of which will be local spending (spending within Prince George's County). Operations and optional reinvestment will begin in the fourth year; operating expenses will total $3.0 million annually, while optional reinvestment annual expenses will be $2.5 million annually, following the construction period for the remainder of the thirty-year term.[1]

Economic Impacts

- Corvias' stormwater retrofit activity will have a total economic impact of approximately 64 annual jobs, $269.3 million in total output, and $119.6 million in total wages during the thirty-year term.
- Local spending will have a total economic impact of approximately 55 annual jobs, $225.7 million in local output, and $103.2 million in local wages during the thirty-year term.
- The addition of a reinvestment account would add an additional 23 annual local jobs, $87.3 million in local output, and $33.0 million in local wages following the construction period for the remainder of the thirty-year term.
- Approximately 85 percent of total impacts will be local. With the addition of a reinvestment account, 90 percent of total impacts will be local.

[1] Corvias Solutions, "PGC data for Economic Impact v4," private correspondence, August 8, 2014.

Fiscal Impacts

- Stormwater retrofit activity will have a total fiscal impact of $14.6 million in total tax revenues—$9.0 million in state tax revenues and $5.6 million in local tax revenues—during the thirty-year term.[2]
- Local spending will have a fiscal impact of $12.4 million in tax revenues during the thirty-year term.
- The addition of reinvestment would add an additional $4.4 million in total tax revenues.

Alternative Spending Scenarios

There is room for the project scope to further increase, in which case the construction period expands, as do expenditures, substantially increasing impacts.

Scenario 3

A five-year construction period totaling $250.0 million, $125.0 million of which reflects local spending. Operations and optional reinvestment will begin in the sixth year, and will total $7.5 million annually and $6.25 million annually, respectively, following the construction period for the remainder of the thirty-year term.[3]

- The construction and operation phases of Corvias' stormwater retrofit activity in Prince George's county will support approximately 149 jobs annually and will generate nearly $625.7 million in output, $276.9 million in wages, and approximately $33.8 million in state and local tax revenues during the thirty-year term. Approximately 84 percent of the total impacts will be local impacts.
- The addition of $6.25 million in annual reinvestment would add approximately 52 annual local jobs, and more than $197.5 million in local output and nearly $74.7 million in local wages following the construction period for the remainder of the thirty-year term. With the addition of a reinvestment account approximately 88 percent of the total impacts will be local.

Scenario 4

A five-year construction period totaling $500.0 million, $250.0 million of which reflects local spending. Operations and optional reinvestment will begin in the sixth year, and will total $15.0 million annually and $12.5 million annually, respectively, following the construction period for the remainder of the thirty-year term.[4]

- The construction and operation phases of Corvias' stormwater retrofit activity in Prince George's county will support approximately 299 jobs annually and will generate $1.3 billion in output, $553.8 million in wages, and approximately $67.6 million in state and

[2] Total tax revenues refer to property, income, sales, payroll, and other tax revenues supported on the state and local levels. Only property and income tax occur at the local level. All other tax revenues result from state taxes only.
[3] Corvias Solutions, "PGC data for Economic Impact v4," private correspondence, August 8, 2014.
[4] Ibid.

local tax revenues during the thirty-year term. Approximately 84 percent of the total impacts will be local impacts.

- The addition of $12.5 million in annual reinvestment would add approximately 105 annual local jobs, and $395.1 million in local output and nearly $149.4 million in local wages following the construction period for the remainder of the thirty-year term. With the addition of a reinvestment account approximately 88 percent of the total impacts will be local.

2.0 Introduction

2.1 Project Objective

Corvias Solutions (Corvias) tasked the Regional Economic Studies Institute (RESI) of Towson University with completing a report detailing the economic and fiscal impacts of Corvias' activities in Maryland regarding the Stormwater Retrofit Program in Prince George's County. The Stormwater Retrofit Program is a $100.0 million initiative spanning a thirty-year period.

2.2 Stormwater Retrofit

In early 2014, the U.S. Environmental Protection Agency (EPA), the Maryland Department of Environment (MDE), and Prince George's County announced the implementation of the Prince George's County Urban Stormwater Retrofit Public-Private Partnership Demonstration Pilot:[5]

> A $100 million initiative to demonstrate how community-based, public-private partnerships can spur green infrastructure-driven stormwater controls, while creating thousands of local jobs and boosting economic growth.[6]

Initial plans include the retrofitting of 2,000 acres of impervious surfaces, with opportunities for expansion of the program over time.[7] The planned stormwater retrofit will result in a 50 percent reduction of nitrogen, 40 percent reduction of phosphorus, and an 80 percent reduction of sediment.[8]

3.0 Findings

Corvias plans to spend three years on construction for the Stormwater Retrofit Program totaling $100.0 million, $50.0 million of which will be local spending (spending within Prince George's County). Operations will begin in the fourth year; operating expenses will total $3.0 million annually, all of which will be local spending.[9] The impacts of Corvias' spending under this scenario are presented in Section 3.1 of this report.

RESI also investigated Corvias' potential impacts if the project scope were to be expanded. The impacts of Corvias' spending for these additional scenarios are presented in Sections 3.2 and 3.3 of this report.

[5] "EPA, MDE, Prince George's County Announce Public, Private Partnership Model to Accelerate Green Stormwater Controls and Support Local Job Creation," United State Environmental Protection Agency, January 10, 2014, accessed August 15, 2014,
http://yosemite.epa.gov/opa/admpress.nsf/0/C73E9DD8611D83AD85257C5C005CBD1B.
[6] Ibid.
[7] Ibid.
[8] Ibid.
[9] Corvias Solutions, "PGC data for Economic Impact v4," private correspondence, August 8, 2014.

3.1 Proposed Level of Spending

To determine the economic impact of Corvias' activity in Maryland, RESI used operation and construction expenditure data provided by Corvias. Expenditures and correlated impacts were broken into two phases: construction and operations. RESI defined these phases as follows:

- The **construction phase** includes building and/or installation of non-residential structures, such as stand-alone filtration systems, site-work and landscaping, and other construction.
- The **operations phase** primarily includes operational expenses such as labor and materials.

According to RESI's analysis, the construction and operation phases of Corvias' stormwater retrofit activity in Prince George's county will support approximately 64 jobs annually and will generate nearly $269.3 million in output, more than $119.6 million in wages, and approximately $14.6 million in state and local tax revenues during the thirty-year term of activity in Maryland. Since jobs are not cumulative, RESI used the average annual employment for each phase as well as the total for the thirty-year period, while wages, taxes, and output are cumulative variables.

A summary of the total economic impacts of Corvias' activities in Prince George's County can be found in Figure 1. Please refer to Appendix A for more information regarding the specific industry sectors analyzed using the IMPLAN model. For detailed impacts, please refer to Appendix B. Note that summed figures throughout the report may not add up exactly to totals due to rounding.

Figure 1: Total Economic Impacts of Stormwater Retrofit Activity

Impact Type	Construction	Operations	Total	Local
Jobs[10]	115.3	54.3	64.4	54.8
Output	$87,178,573	$182,121,760	$269,300,334	$225,711,047
Wages	$32,957,562	$86,686,994	$119,644,556	$103,165,776

Sources: IMPLAN, RESI

For a breakdown of impacts generated by activity at each phase, see Figures 2 through 4 below.

[10] Throughout the report, jobs are represented as an annual average. All other impacts are cumulative.

Figure 2: Average Annual Jobs Impacts of Stormwater Retrofit Activity

Phase	Direct	Indirect	Induced	Total
Construction	61.0	22.0	32.3	115.3
Operations	29.2	9.0	16.1	54.3
Annual Average	34.5	11.2	18.8	64.4
Local Annual Average	29.4	9.3	16.1	54.8

Sources: IMPLAN, RESI

Construction activity comprises the greatest jobs impacts. Jobs impacts primarily indicate those individuals who are directly employed through these activities.

Figure 3: Total Output Impacts of Stormwater Retrofit Activity

Phase	Direct	Indirect	Induced	Total
Construction	$48,978,647	$16,570,620	$21,629,306	$87,178,573
Operations	$99,661,968	$28,516,765	$53,943,028	$182,121,760
Total	$148,640,614	$45,087,386	$75,572,334	$269,300,334
Local	$124,151,291	$36,802,075	$64,757,681	$225,711,047

Sources: IMPLAN, RESI

Unlike jobs impacts, the operations phase comprises the vast majority of total output.

Figure 4: Total Wage Impacts of Stormwater Retrofit Activity

Phase	Direct	Indirect	Induced	Total
Construction	$19,573,755	$6,353,204	$7,030,603	$32,957,562
Operations	$57,608,599	$11,548,061	$17,530,334	$86,686,994
Total	$77,182,354	$17,901,265	$24,560,937	$119,644,556
Local	$67,395,477	$14,724,663	$21,045,635	$103,165,776

Sources: IMPLAN, RESI

The highest wage impacts will be generated during the operation phase.

State and local fiscal impacts generated by all stormwater retrofit activity in Prince George's County will total $14.6 million over the thirty-year term of activity. For a summary of the state and local fiscal impacts generated, see Figure 5.

Figure 5: Total Fiscal Impacts of Stormwater Retrofit Activity [11]

Impact Type	State Construction	State Operations	State Total	Local Construction	Local Operations	Local Total
Total Spending						
Property	$98,029	$192,030	$290,059	$811,900	$1,590,439	$2,402,339
Income	$1,299,352	$3,425,870	$4,725,222	$875,353	$2,307,955	$3,183,307
Sales	$773,154	$1,507,343	$2,280,497	n/a	n/a	n/a
Payroll	$51,474	$135,391	$186,865	n/a	n/a	n/a
Other	$458,407	$1,057,290	$1,515,697	n/a	n/a	n/a
Total	$2,680,416	$6,317,924	$8,998,340	$1,687,253	$3,898,393	$5,585,646
Local Spending						
Property	$49,015	$192,030	$241,045	$405,950	$1,590,439	$1,996,389
Income	$649,676	$3,425,870	$4,075,546	$437,676	$2,307,955	$2,745,631
Sales	$386,577	$1,507,343	$1,893,920	n/a	n/a	n/a
Payroll	$25,737	$135,391	$161,128	n/a	n/a	n/a
Other	$229,202	$1,057,290	$1,286,492	n/a	n/a	n/a
Total	$1,340,207	$6,317,924	$7,658,131	$843,627	$3,898,393	$4,742,020

Sources: IMPLAN, RESI

Fiscal impacts will largely be produced during the operations phase and result primarily in income tax revenues.

[11] Sales, payroll, and other taxes are state-level only.

3.2 Incremental Reinvestment to the Baseline Scenario

The impacts presented above in Section 3.1 show the impacts for the proposed three-year construction period, with operations to begin in the fourth year. However, impacts would increase substantially if the project scope expanded to include annual reinvestment activity. The reinvestment phase would transition this project into a self-sustaining program by directing surplus cash flow back into the project in the form of system upgrades, installation of new Best Management Practices (BMPs), and related site-work. This type of expenditure would be in addition to routine operations and maintenance required to keep the systems in good, operable condition, and ensures that the systems remain fully modernized.

Corvias' proposed reinvestment scenario, or Scenario 2, is as follows: The proposed three-year construction period will total $100.0 million, $50 million of which would be local spending. The operations and reinvestment phases will begin in the fourth year. Operating and reinvestment annual expenses will be $3.0 million and $2.5 million, respectively, and reflect all local spending following the construction period for the remainder of the thirty-year term.[12]

Figure 6: Economic Impacts of $2.5 Million Annual Local Reinvestment Spending

Impact Type	Direct	Indirect	Induced	Total
Jobs	12.2	4.4	6.5	23.1
Output	$49,041,856	$16,592,006	$21,657,221	$87,291,083
Wages	$19,599,016	$6,361,403	$7,039,677	$33,000,096

Sources: IMPLAN, RESI

The addition of $2.5 million in annual reinvestment would add approximately 23 annual jobs and nearly $87.3 million in output and $33.0 million in wages following the construction period for the remainder of the thirty-year term of activity.

Figure 7: Fiscal Impacts of $2.5 Million Annual Local Reinvestment Spending

Impact Type	State	Local	Total
Property	$98,156	$812,948	$911,104
Income	$1,301,029	$876,483	$2,177,511
Sales	$774,152	n/a	$774,152
Payroll	$51,541	n/a	$51,541
Other	$458,996	n/a	$458,996
Total	$2,683,874	$1,689,431	$4,373,304

Sources: IMPLAN, RESI

The addition of $2.5 million in annual reinvestment increases the economic impacts by an average of 32 percent and the overall fiscal impacts by 30 percent.

[12] Corvias Solutions, "PGC data for Economic Impact v4," private correspondence, August 8, 2014.

3.3 Alternative Spending Scenarios

In addition to potential reinvestment activity, there is room for the project scope to further increase. Under these scenarios the construction period expands, as do expenditures, substantially increasing impacts.

Scenario 3

A five-year construction period totaling $250.0 million, $125.0 million of which would be local spending. Operations would begin in the sixth year, and operating expenses will total $7.5 million annually, and reflect all local spending following the construction period for the remainder of the thirty-year term. [13]

According to RESI's analysis, given initial construction expenditures of $250.0 million, the construction and operation phases of Corvias' stormwater retrofit activity in Prince George's County will support approximately 150 jobs annually and will generate nearly $625.7 million in output, $276.9 million in wages, and approximately $33.8 million in state and local tax revenues during the thirty-year term of activity in Maryland.

Figure 8: Economic Impacts of Stormwater Retrofit Activity—$250.0 Million Construction

Impact Type	Construction	Operations	Total	Local
Jobs	282.5	122.8	149.4	125.9
Output	$213,525,172	$412,138,739	$625,663,911	$518,901,324
Wages	$80,722,460	$196,171,334	$276,893,795	$236,532,565

Sources: IMPLAN, RESI

Construction activity comprises the greatest job impacts, while operations provide the greatest output and wage impacts.

[13] Corvias Solutions, "PGC data for Economic Impact v4," private correspondence, August 8, 2014.

Figure 9: Fiscal Impacts of Stormwater Retrofit Activity—$250.0 Million Construction

Impact Type	State	Local	Total
Total Spending			
Property	$674,663	$5,587,713	$6,262,376
Income	$10,935,174	$7,366,854	$18,302,028
Sales	$5,304,769	n/a	$5,304,769
Payroll	$432,465	n/a	$432,465.00
Other	$3,515,394	n/a	$3,515,394
Total	$20,862,465	$12,954,567	$33,817,032
Local Spending			
Property	$554,612	$4,593,426	$5,148,038
Income	$9,343,933	$6,294,860	$15,638,793
Sales	$4,357,931	n/a	$4,357,931
Payroll	$369,427	n/a	$369,427.00
Other	$2,954,010	n/a	$2,954,010
Total	$17,579,913	$10,888,286	$28,468,199

Sources: IMPLAN, RESI

Fiscal impacts will result primarily in income tax revenues.

The optional reinvestment under this scenario would total $6.25 million annually beginning in the sixth year. [14]

Figure 10: Total Economic Impacts of $6.25 Million Annual Local Reinvestment Spending

Impact Type	Direct	Indirect	Induced	Total
Jobs	27.6	10.0	14.6	52.3
Output	$110,980,967	$37,547,453	$49,009,964	$197,538,384
Wages	$44,352,270	$14,395,758	$15,930,682	$74,678,709

Sources: IMPLAN, RESI

The addition of $6.25 million in annual reinvestment would add approximately 52 annual jobs, and more than $197.5 million in output and nearly $74.7 million in wages to the local economy following the construction period for the remainder of the thirty-year term of activity.

[14] Corvias Solutions, "PGC data for Economic Impact v4," private correspondence, August 8, 2014.

Figure 11: Fiscal Impacts of $6.25 Million Annual Local Reinvestment Spending

Impact Type	State	Local	Total
Property	$222,125	$1,839,688	$2,061,813
Income	$2,944,208	$1,983,467	$4,927,675
Sales	$1,751,894	n/a	$1,751,894
Payroll	$116,636	n/a	$116,636
Other	$1,038,703	n/a	$1,038,703
Total	$6,073,566	$3,823,155	$9,896,721

Sources: IMPLAN, RESI

The addition of $6.25 million in annual local reinvestment spending would add approximately $9.9 million in tax revenues.

Scenario 4

A five-year construction period totaling $500.0 million, $250.0 million of which is local spending. Operations will begin in the sixth year. Operating expenses will be $15.0 million annually, and reflect all local spending following the construction period for the remainder of the thirty-year term.[15]

According to RESI's analysis, given initial construction expenditures of $500.0 million, the construction and operation phases of Corvias' stormwater retrofit activity in Prince George's county will support approximately 299 jobs annually and will generate $1.3 billion in output, $553.8 million in wages, and approximately $67.6 million in state and local tax revenues during the thirty-year term of activity in Maryland.

Figure 12: Economic Impacts of Stormwater Retrofit Activity—$500.0 Million Construction

Impact Type	Construction	Operations	Total	Local
Jobs	565.0	245.6	298.9	251.8
Output	$427,050,345	$824,277,486	$1,251,327,831	$1,037,802,658
Wages	$161,444,921	$392,342,672	$553,787,593	$473,065,132

Sources: IMPLAN, RESI

Construction activity comprises the greatest job impacts, while operations provide the greatest output and wage impacts.

[15] Corvias Solutions, "PGC data for Economic Impact v4," private correspondence, August 8, 2014.

Figure 13: Fiscal Impacts of Stormwater Retrofit Activity—$500.0 Million Construction

Impact Type	State	Local	Total
Total Spending			
Property	$1,349,326	$11,175,428	$12,524,754
Income	$21,833,076	$14,708,598	$36,541,674
Sales	$10,609,537	n/a	$10,609,537
Payroll	$864,930	n/a	$864,930.00
Other	$7,030,789	n/a	$7,030,789
Total	$41,687,658	$25,884,026	$67,571,684
Local Spending			
Property	$1,109,225	$9,186,852	$10,296,077
Income	$18,650,593	$12,564,610	$31,215,203
Sales	$8,715,862	n/a	$8,715,862
Payroll	$738,854	n/a	$738,854.00
Other	$5,908,025	n/a	$5,908,025
Total	$35,122,559	$21,751,462	$56,874,021

Sources: IMPLAN, RESI

Fiscal impacts will result primarily in income tax revenues.

The optional reinvestment under this scenario would total $12.5 million annually beginning in the sixth year. [16]

Figure 14: Total Economic Impacts of $12.5 Million Annual Local Reinvestment Spending

Impact Type	Direct	Indirect	Induced	Total
Jobs	55.3	20.0	29.3	104.5
Output	$221,961,934	$75,094,907	$98,019,920	$395,076,761
Wages	$88,704,540	$28,791,515	$31,861,361	$149,357,416

Sources: IMPLAN, RESI

The addition of $12.5 million in annual reinvestment would add approximately 105 annual jobs, and $395.1 million in output and nearly $149.4 million in wages following the construction period for the remainder of the thirty-year term of activity.

[16] Corvias Solutions, "PGC data for Economic Impact v4," private correspondence, August 8, 2014.

Figure 15: Fiscal Impacts of $12.5 Million Annual Local Reinvestment Spending

Impact Type	State	Local	Total
Property	$444,250	$3,679,378	$4,123,628
Income	$5,888,416	$3,966,933	$9,855,349
Sales	$3,503,788	n/a	$3,503,788
Payroll	$233,273	n/a	$233,273.00
Other	$2,077,405	n/a	$2,077,405
Total	$12,147,132	$7,646,311	$19,793,443

Sources: IMPLAN, RESI

The addition of $12.5 million in annual local reinvestment spending would add approximately $19.8 million in tax revenues.

4.0 Conclusion

According to RESI's analysis, Corvias' stormwater retrofit activities in Prince George's County have an annual impact of 64 annual jobs and will generate nearly $269.3 million in output and more than $119.6 million in wages during the thirty-year term of activity. State and local fiscal impacts generated by stormwater retrofit activity will total nearly $14.6 million over the thirty-year term of activity. The addition of annual reinvestment would add 23 annual local jobs and will generate $87.3 million in local output and $33.0 million in local wages following the construction period for the remainder of the thirty-year term of activity. The addition of a reinvestment account raises the local economic impacts from 85 percent of the total impacts to 89 percent of the total impacts.

If the partnerships added the self-sustaining reinvestment account and/or expanded the construction phase scope and subsequent O&M and reinvestment account, as described in Scenarios 3 and 4, impacts would increase substantially.

5.0 References

Corvias Solutions. "PGC data for Economic Impact v4." Private correspondence. August 8, 2014.

United State Environmental Protection Agency. "EPA, MDE, Prince George's County Announce Public, Private Partnership Model to Accelerate Green Stormwater Controls and Support Local Job Creation." January 10, 2014. Accessed August 15, 2014. http://yosemite.epa.gov/opa/admpress.nsf/0/C73E9DD8611D83AD85257C5C005CBD1B.

Appendix A—Methodology

A.1 IMPLAN Model Overview

To quantify the economic impact of Corvias' activity, RESI utilized the IMPLAN input/output model. This model enumerates the employment (in this case, average annual jobs were reported) and fiscal impact of each dollar earned and spent by the following: employees of the event, other supporting vendors (business services, retail, etc.), each dollar spent by these vendors on other firms and each dollar spent by the households of the event's employees, other vendors' employees, and other businesses' employees.

Economists measure three types of economic impacts: direct, indirect, and induced impacts. The direct economic effects are generated as the event create jobs and hire workers to support the event's activities. The indirect economic impacts occur as the vendors purchase goods and services from other firms. In either case the increases in employment generate an increase in household income, as new job opportunities are created and income levels rise. This drives the induced economic impacts that result from households increasing their purchases at local businesses.

Consider the following example. A new firm opens in a region and directly employs 100 workers. The firm purchases supplies, both from outside the region as well as from local suppliers, which leads to increased business for local firms, thereby hypothetically creating jobs for another 100 workers. This is called the indirect effect. The workers at the firm and at suppliers spend their income mostly in the local area, hypothetically creating jobs for another 50 workers. This is the induced effect. The direct, indirect and induced effects add up to 250 jobs created from the original 100 jobs. Thus, in terms of employment, the total economic impact of the firm in our example is 250.[17]

A.2 Input Assumptions

RESI determined economic impacts based on operating and construction expenditures provided by Corvias. RESI analyzed IMPLAN industry sectors based on the provided expenditures. RESI's analysis includes the following modeling assumptions:

- Economic impact multipliers are developed from IMPLAN input/output software.
- IMPLAN data are based on the North American Industrial Classification System (NAICS).
- IMPLAN employment multipliers are adjusted for inflation using the Bureau of Labor Statistic's CPI-U.
- Impacts were based on 2012 IMPLAN data for Maryland, the most recent available and scaled to the county level where applicable.
- Impacts are represented in 2014 dollars and apply to Prince George's County.
- Employment impacts include both full- and part-time employees. IMPLAN does not differentiate between full- and part-time employment.

[17] Total economic impact is defined as the sum of direct, indirect, and induced effects.

- With the exception of jobs, impacts are represented as cumulative impacts of each phase.

For the IMPLAN analysis, RESI analyzed industry sectors based on the expenditure categories outlined in Section 3.0. The specific industry sectors analyzed can be found in Figure 16 below.

Figure 16: IMPLAN Industry Sectors

Industry Code	Description
36	Construction of other new nonresidential structures
369	Architectural, engineering, and related services

Source: IMPLAN

Appendix B—Detailed Economic Impacts

Figure 17: Detailed Annual Local Jobs Impacts

Industry	Direct	Indirect	Induced	Total
Agriculture	0.0	0.0	0.0	0.1
Mining	0.0	0.0	0.0	0.0
Utilities	0.0	0.0	0.1	0.1
Construction	7.2	0.2	0.1	7.5
Manufacturing	0.0	0.2	0.2	0.4
Wholesale Trade	0.0	0.2	0.5	0.7
Retail Trade	0.0	0.2	3.5	3.8
Transportation and Warehousing	0.0	0.3	0.4	0.8
Information	0.0	0.2	0.3	0.5
Finance and Insurance	0.0	0.6	1.2	1.8
Real Estate and Rental and Leasing	0.0	0.5	0.9	1.4
Professional, Scientific and Technical Services	27.3	3.6	0.7	31.5
Management of Companies and Enterprises	0.0	0.1	0.1	0.2
Administrative and Support and Waste Management and Remediation Services	0.0	2.9	0.9	3.8
Educational Services	0.0	0.0	0.9	0.9
Health Care and Social Services	0.0	0.0	4.3	4.3
Arts, Entertainment and Recreation	0.0	0.2	0.7	0.9
Accommodation and Food Services	0.0	1.1	2.2	3.2
Other Services	0.0	0.5	1.7	2.2
Government	0.0	0.1	0.2	0.3
Total	**34.5**	**11.2**	**18.8**	**64.4**

Sources: IMPLAN, RESI

Figure 18: Detailed Local Output Impacts

Industry	Direct	Indirect	Induced	Total
Agriculture	$0	$37,285	$163,153	$200,439
Mining	$0	$174,072	$49,818	$223,890
Utilities	$0	$595,527	$1,789,738	$2,385,265
Construction	$36,733,985	$892,490	$770,576	$38,397,051
Manufacturing	$0	$2,666,895	$2,524,945	$5,191,840
Wholesale Trade	$0	$1,297,577	$3,311,994	$4,609,571
Retail Trade	$0	$530,079	$7,464,650	$7,994,730
Transportation and Warehousing	$0	$1,163,193	$1,537,080	$2,700,273
Information	$0	$2,921,996	$3,080,344	$6,002,340
Finance and Insurance	$0	$4,740,773	$8,236,772	$12,977,545
Real Estate and Rental and Leasing	$0	$3,436,357	$15,646,020	$19,082,377
Professional, Scientific and Technical Services	$111,906,630	$15,683,784	$3,019,060	$130,609,475
Management of Companies and Enterprises	$0	$878,595	$460,484	$1,339,079
Administrative and Support and Waste Management and Remediation Services	$0	$5,785,017	$1,901,655	$7,686,672
Educational Services	$0	$26,432	$1,945,810	$1,972,241
Health Care and Social Services	$0	$1,032	$13,746,721	$13,747,753
Arts, Entertainment and Recreation	$0	$356,209	$1,141,479	$1,497,688
Accommodation and Food Services	$0	$2,104,639	$4,204,987	$6,309,626
Other Services	$0	$1,398,756	$3,590,906	$4,989,662
Government	$0	$396,678	$986,141	$1,382,819
Total	**$148,640,614**	**$45,087,386**	**$75,572,334**	**$269,300,334**

Sources: IMPLAN, RESI

Figure 19: Detailed Local Wage Impacts

Industry	Direct	Indirect	Induced	Total
Agriculture	$0	$4,526	$14,930	$19,457
Mining	$0	$26,153	$2,377	$28,530
Utilities	$0	$87,820	$265,905	$353,725
Construction	$12,495,850	$349,152	$198,291	$13,043,294
Manufacturing	$0	$444,367	$303,686	$748,053
Wholesale Trade	$0	$491,336	$1,254,110	$1,745,446
Retail Trade	$0	$253,329	$3,429,510	$3,682,840
Transportation and Warehousing	$0	$439,468	$582,105	$1,021,573
Information	$0	$562,299	$602,198	$1,164,497
Finance and Insurance	$0	$1,395,151	$2,486,844	$3,881,994
Real Estate and Rental and Leasing	$0	$401,983	$504,868	$906,851
Professional, Scientific and Technical Services	$64,686,504	$7,801,263	$1,370,883	$73,858,650
Management of Companies and Enterprises	$0	$480,768	$251,977	$732,746
Administrative and Support and Waste Management and Remediation Services	$0	$3,262,348	$933,748	$4,196,097
Educational Services	$0	$14,969	$1,113,649	$1,128,618
Health Care and Social Services	$0	$428	$7,116,652	$7,117,080
Arts, Entertainment and Recreation	$0	$110,875	$425,133	$536,008
Accommodation and Food Services	$0	$760,775	$1,522,509	$2,283,284
Other Services	$0	$740,153	$1,670,579	$2,410,732
Government	$0	$274,101	$510,982	$785,083
Total	**$77,182,354**	**$17,901,265**	**$24,560,937**	**$119,644,556**

Sources: IMPLAN, RESI

Appendix B

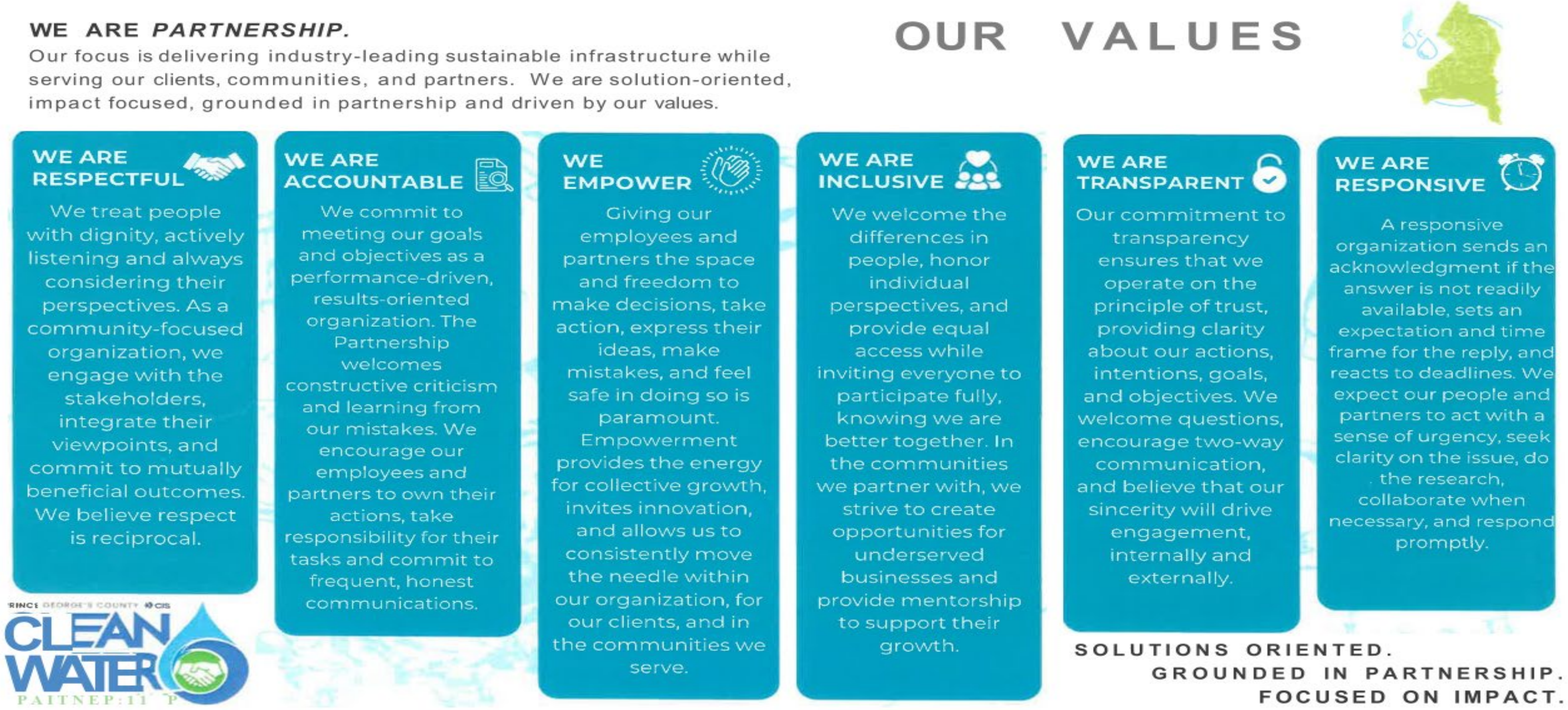
PRINCE GEORGE'S COUNTY DEPARTMENT OF THE ENVIRONMENT – TIEE

DEPARTMENT OF THE ENVIRONMENT
TIEE COMMITTEE
CLEAN WATER PARTNERHIP PRESENTATION
OCTOBER 23, 2025

Prince George's County
DEPARTMENT OF THE ENVIRONMENT
Samuel B. Moki, Ph.D | Acting Director

URBAN STORMWATER RETROFIT PROGRAM

Intentionally developed to provide multiple, overlaying benefits (socioeconomic, environmental, implementation efficiency, community uplift, regulatory compliance)



Roland Jones
Program Director

Sonya Williams
Program(s) Manager

David Washington
Finance & Project Controls

Joey Monheit
DBOM Operations Director

CONTRACTUAL STRUCTURE

Based on the Community-Based Public Private Partnership (CBP3) model as developed by the US EPA Region III

- 30 Year Contractual Partnership (2015 – 2045)
- MPA / MMA
  - Master Program Agreement manages planning, design, and build activities.
  - Master Maintenance Agreement manages maintenance and capital repair, replacement activities.
  - 10% capped management fee
  - Management fee is performance based with 50% of fee earned by achieving local utilization, resident inclusion, budget, and schedule controls.
  - Qualifies under IRS Revenue Proc 2017-13 Safe Harbor provision for management contracts.
- Parties
  - County: Prince George's County, MD
  - Manager: CIS

+ =

WHO WE ARE

The Clean Water Partnership is comprised of over 200 registered firms – designers, engineers, construction professionals, environmental science experts, outreach professionals, community engagement, communications, maintenance professionals, led by CIS who is responsible for ensuring the contractors have the resources to be successful and the delivery requirements to the County.

WHY DO WE EXIST

To address surface water related infrastructure requirements (MS4, Public Safety, Flooding), accelerating the delivery of infrastructure, with long term maintenance, that improves quality of life for the County's citizens and businesses.

- Support the County with;
  - NPDES MS4 Permit Water Quality Regulatory Compliance
  - Public Safety (High Hazard Dams) and Water Volume Management (localized flooding)
  - Operate across Public, ROW, and Private properties.
  - CIS, Inc. is a CCBB Certified County Based Business) for over years.

- By Providing;
  - Accelerated delivery of built infrastructure
  - Community and Contractor engagement performance metrics
  - Long Term Maintenance and transfer of risk
  - Contractor "Quick Pay"
  - Lower barriers of entry for local disadvantaged businesses
  - Economic development

Over 50% of certified man hours worked is completed by County residents.

HOW IS THE PROGRAM FUNDED

The program is funded through the enterprise account and the Stormwater Enterprise Tax (Fund 5100). The County leverages those funds for State Revolving Fund loans and grants provided through the Maryland Department of Environment matched with federal water quality funding appropriations.

$229M to date in SRF Loans from MDE

Greatly reduced long-term cost of the MWQFA loans vs. traditional bond financing.

The repayment term of each SRF Loan is 30 years instead of 20 years for traditional bond financing.

Also, the interest rate for each SRF Loan is significantly less than the interest rate paid for bond financing.

$9M to date in loan forgiveness grants to date saves the County significant cost in debt service

Local Economic Development Investment

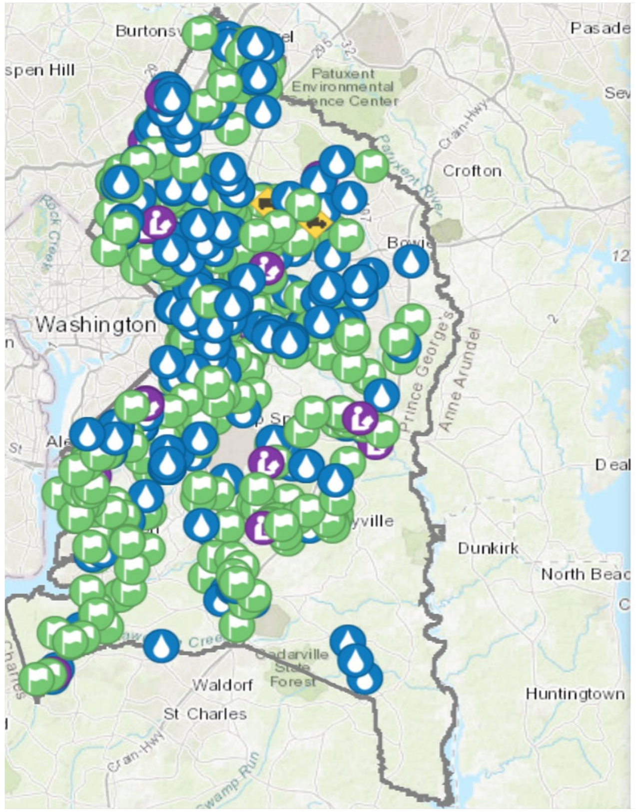
- 10-year track record of ensuring approximately 80% of all expenditures are received by county-based and located businesses
- 50% of all work is done by County residents.

No additional cost to County staff budget

WHAT HAVE WE ACCOMPLISHED

In the first 10 years of the program CWP has supported the County in achieving compliance with its Regulatory Consent Decree, built a skilled workforce and contractor capacity in stormwater and green infrastructure industry, and implemented stormwater maintenance, education and engagement platform.

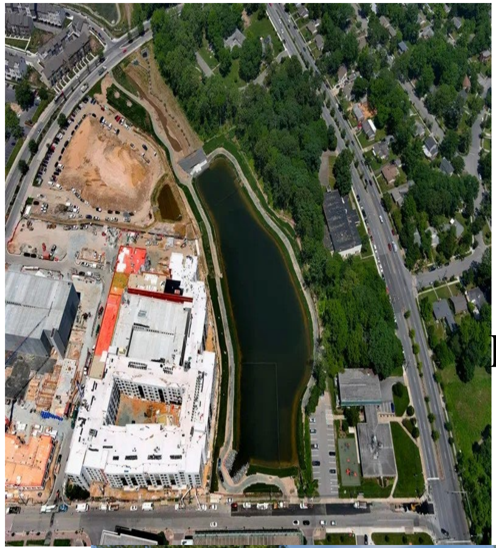
- **428** Stormwater Restoration Projects Delivered
  - (100+) ponds, stream restoration, shoreline restoration; (48) churches; (62) schools
- **$387M** spent on Design, Construction, and Maintenance delivery
- **$273M** (77%) of work procured to MBE and County Based Businesses
- **50%+** of hours performed by County residents. (verified through certified payroll tracking)
- **8** cohorts of mentor-protégé training resulting in $60M in competitive contract awards to participants.
- **500+** stormwater assets under long term maintenance.
- 371 BMPs installed & 4948 Total Impervious Surface Restoration (ISR) acres restored to date



Projects delivered in every Councilmatic District in the County

PROJECTS AND PEOPLE

Nine Pond



Hanover Parkway

Simmons Acres

MENTOR PROTÉGÉ PROGRAM

- **8 Cohorts – 80 Participants**
- **6 Months to 1 Year Enrolment**
- **28 Protégés - $60M in Contract Awards**
    - 100% or greater increases in bonding
    - 50% or greater increases in lines of credit
    - Contract awards across the region
    - New equipment purchases
    - New lines of business established
- **2020 Expansion Emerging Landscapers Program**
    - Building a local 30-year Maintenance Force

***Exclusive Pilot Project selected each year for Protégés**

Graduation 2024

WHAT IS NEXT

Continue to support the County's priorities related to surface water infrastructure throughout the County, while investing in local disadvantaged business utilization and resident workforce inclusion.

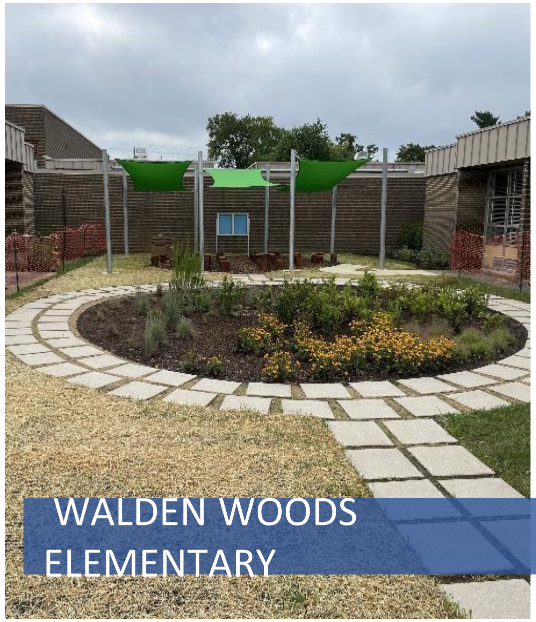
- DOE and CIS just created more savings for the County by reducing projected spending by $31M over the next 4 years.
- Finalize phase 4 amendment for Design and Construction funding & priorities.
- Focus on Public Safety (High Hazard Dams), MS4 Water Quality compliance, and localized flooding and private pond management concerns.

September 30, 2025

Economic Benefits	Subcontractor Cost	Target Class Amount of Sub Cost[1]	*Manager Base Fee*	*Manager Incentive Fee*[2]	Total Cost
Program Expenditures to Date:	**$352,577,092**	**$272,795,543**	***$17,330,736***	***$17,302,003***	**$387,209,832**
MPA Expenditures to Date:	**$323,928,792**	**$250,527,671**	***$15,898,321***	***$15,898,321***	**$355,725,434**
Program Cost	$34,013,322	--	*$1,448,968*	*$1,448,968*	$36,911,258
Design Cost	$93,882,956	--	*$4,694,148*	*$4,694,148*	$103,271,253
Construction Cost	$196,032,513	--	*$9,755,205*	*$9,755,205*	$215,542,924
MMA Expenditures to Date:	**$28,648,300**	**$22,267,872**	***$1,432,415***	***$1,403,682***	**$31,484,397**
Target Class % of Subcontractor Costs	77.4%		*CIS Base Fee*[4]	*$17,330,736*	*4.9%*
Total Work Hours[3]	1,288,004		*CIS Incentive Fee*[4]	*$17,302,003*	*4.9%*
Work Hours by County Residents[3]	663,557	51.5%	***CIS Total***[4]	***$34,632,740***	**9.8%**

[1] Target Class performance based on actual costs through June 30, 2025, and projected through September 30, 2025
[2] Incentive Fees based on actuals through June 30, 2025, and projected through September 30, 2025
[3] Work Hours as of June 30, 2025
[4] Actual Base and Incentive Fees earned through May 31, 2025 as percent of Subcontractor Costs

TREATING & TEACHING – PARTNERSHIP WITH PRINCE GEORGE'S PUBLIC COUNTY SHCOOLS



WALDEN WOODS ELEMENTARY

TALL OAKS VOCATIONAL SCHOOL

WALDEN WOODS ELEMENTARY

treating & teaching

Launched at Parkdale HS in 2016, now in over 60 schools with SWM educational literacy program. This summer completed 7 new outdoor classrooms.

CONTACT US

Prince George's County Department of the Environment
1801 McCormick Drive, Suite 500
Largo, Maryland
(301) 883-5810

Appendix C

MENTOR–PROTÉGÉ PROGRAM SURVEY INSTRUMENT

MENTOR PROTÉGÉ PROGRAM
CWP 10 Year Celebration – Where are they now?
Survey April 10, 2026

Section 1. Company Profile

Company name:

1. What year did your company complete the mentorship program?

- Before 2018
- 2018–2020
- 2021–2022
- 2023–2024
- 2025 or later

2. What is your business designation? (Select all that apply)

- County-Based Business (CBB)
- County-Based Small Business (CBSB)
- Minority Business Enterprise (MBE)
- County-Based Minority Business Enterprise (CBMBE)
- Other

Section 2. Employment Impact

3. How many full-time employees did your company have before entering the mentor program?

- 1
- 2–5
- 6–10
- 11–25
- 26–50
- 50+

4. How many full-time employees did your company have on 12/31/2025?

- 1
- 2–5
- 6–10
- 11–25
- 26–50
- 50+

5. Since completing the program, how has your workforce changed?

- Significant decrease
- Slight decrease
- No change
- Slight increase
- Significant increase

Section 3. Revenue and Business Growth

6. What was your approximate annual revenue before participating in the mentor program?

- <$100,000
- $100,000–$250,000
- $250,000–$1M
- $1M–$5M
- $5M–$10M
- $10M

7. What was your approximate annual revenue on 12/31/2025?

- <$100,000
- $100,000–$250,000
- $250,000–$1M
- $1M–$5M
- $5M–$10M
- $10M

8. Since completing the mentor program, how has your revenue changed?

- Significant decrease
- Slight decrease
- No change
- Slight increase
- Significant increase

Section 4. Market Access and Opportunities

9. Did participation in the mentorship program help your company access new business opportunities?

- Yes, significantly
- Yes, somewhat
- No noticeable impact
- No

10. Since completing the program, how many new contracts or projects has your company secured that you attribute to the program?

- 0
- 1–2
- 3–5
- 6–10
- 10+

11. Did the program improve your ability to compete for larger or more complex contracts?

- Yes, significantly
- Yes, somewhat
- No noticeable impact
- No

Section 5. Capability and Long-Term Impact

12. Which areas improved as a result of the program? (Select all that apply)

- Technical capabilities
- Project management
- Financial management
- Regulatory compliance (e.g., MS4/NPDES)
- Workforce skills
- Business development
- None

13. To what extent did the program contribute to your company's long-term growth?

- Critical to growth
- Important contributor
- Minor contributor
- No impact

14. What was your bonding capacity when you entered the mentor program?

- <$100,000
- $100,000–$250,000
- $250,000–$1M
- $1M–$5M
- $5M–$10M
- $10M

15. What was your bonding capacity on 12/31/2025?

- <$100,000
- $100,000–$250,000
- $250,000–$1M
- $1M–$5M
- $5M–$10M
- $10M

16. What were your staffing levels when you started the mentor program?

- 1-5
- 6-10
- 11-20
- 21-30
- > 30

16. What were your staffing levels when you started the mentor program?

- 1-5
- 6-10
- 11-20
- 21-30
- > 30

17. What were your staffing levels on 12/31/2025?

- 1-5
- 6-10

- 11-20
- 21-30
- > 30

18. What was the value of your equipment when you joined the mentor program?

- <$50,000
- $51,000 –$100,000
- $101,000 - $200,000
- $201,000 - $500,000
- $500,000 – $1M
- >$1M

19. What was the value of your equipment on 12/31/2025?

- <$50,000
- $51,000 –$100,000
- $101,000 - $200,000
- $201,000 - $500,000
- $500,000 – $1M
- >$1M

Appendix D

IMPLAN LICENSING CONTACT INFORMATION

IMPLAN representative contact information

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Regional Sales Manager, Academic Division
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