NPDES MS4 permit MEP Narrative
Baltimore County
April 3, 2020

1. **Introduction**

Baltimore County is pleased to present MDE with this Maximum Extent Practicable (MEP) narrative and attachments. Developing a MS4 permit restoration requirement that maximizes water quality restoration while remaining practicable to achieve is clearly in the best interests of Baltimore County, MDE, EPA, and the citizens of the County and State. It is our hope that reviewing these documents will prove to be informative and useful to MDE staff.

Integration of MEP principals in MS4 permit development is new to the State of Maryland, and was introduced in January of 2019. Guidance specific to this MEP analysis was issued by MDE in parts, on April 12, May 17, and May 24, 2019, with additional guidance issued in October 2019, December 2019, January 2020, and February 2020. The full requirements of the next MS4 permit may not be known to Baltimore County until tentative determination. Because the MS4 permit requirements may impact County expenditures, Baltimore County reserves the right to revise the narrative and attachments during the public comment period after tentative determination. Baltimore County recognizes that this is a first attempt at applying MEP to MS4 permits in Maryland, and is committed to working with MDE to make this first attempt a success, and to support efforts to improve MEP approaches for use in future MS4 permit development.

MDE has indicated that the restoration progress proposed in the restoration portfolio, as measured in reductions in pounds of nitrogen delivered to the Chesapeake Bay, pounds of suspended sediment delivered to local water bodies, and acres of impervious surface restoration, is intended to become the next MS4 permit restoration requirement. These restoration metrics produced by restoration projects are dependent on guidance from MDE and the Chesapeake Bay Program's phase 6 watershed model. MDE provided new restoration accounting guidance to Baltimore County on December 23, 2020, and responded to questions from MS4 permittees regarding said guidance on February 14, 2020. This MEP analysis reflects the new guidance, and MDE's response to questions, to the extent possible. Note that as MS4 permittees and MDE gain experience applying the new guidance to new restoration projects, corrections or other revisions to the guidance may be necessary. Additionally, this guidance is expected to change as the state digests new expert panel reports from the Chesapeake Bay Program. When guidance changes, the outcomes of Baltimore County's MEP restoration portfolio will also change. Therefore, Baltimore County reserves the right to revise this narrative and attachments upon guidance revisions. This will prevent the restoration requirement, designed to be MEP, from exceeding MEP and triggering a permit compliance issue, due not to any fault on Baltimore County's part but rather due to revised/corrected guidance from MDE.

2. **Financial Capacity**

2.1. Financial Capacity Data Sources

Data presented in this section and in the financial capacity spreadsheet was gathered from the following sources: Baltimore County's fiscal year 2018 comprehensive annual financial report, Moody and Fitch's website, United States Census Bureau website, Baltimore County financial system expenditure reports, Baltimore County annual operating budget detail reports, Baltimore County annual capital budget detail reports, work order system reports, and additional information provided by Baltimore County staff. Great care was taken to ensure dollars were recorded in a single category, resulting in no "double counting" of dollars.

2.2. Current Financial Status and Context

In recent years, Baltimore County has taken on substantial debt. Net general obligation debt increased by $802.5 million between 2014 and 2018. Much of the new debt is related to repair and replacement of sanitary sewer infrastructure to eliminate sanitary sewer overflows and other illicit discharges from the sanitary sewer system. Annual debt service for metropolitan district revenue bonds and Maryland Water Quality Revolving Loan Fund loans related to sanitary sewer expenditures increased from $49 million in 2014 to $62 million in 2019. These expenditures are necessary to comply with the federal clean water act, and are directly related to the County's MS4 permit through waste load allocations assigned to Baltimore County's MS4 in existing local bacteria and nitrogen TMDLs. Baltimore County's bacteria TMDL implementation plans identify sanitary sewer repair and maintenance as the primary BMP the County will employ to address bacteria impairments and waste load allocations. Debt has also been used to address other pressing priorities, such as relieving school overcrowding, adding air conditioning to schools, and upgrading or replacing school buildings that are reaching the end of their serviceable lifespan. Debt as a percentage of fair market property value (FMPV) increased from 3.68% in 2014 to 4.35% in 2018. Baltimore County has retained "AAA" bond ratings as debt has increased, but rating agencies currently issue negative outlooks for the County's bonds, an indication that bond ratings may be downgraded in the future, increasing the County's borrowing costs.

The increases in debt and changing revenue sources occurred in the context of a slow labor market recovery from the Great Recession, historically low bond interest rates, income tax reforms, and an aging population. The share of Baltimore County's population age 65 and over increased from 15.1% in 2014 (Maryland was 13%) to 16.1% in 2017 (Maryland was 14.2%). The US Census computes an Age Dependency Ratio to reflect the size of the working age population (18 to 64) relative to the population of children plus older residents. This ratio is an indicator of the financial stresses born by the working age population to support the non-working age population. Baltimore County's age dependency ratio increased from 58.4% in 2014 (Maryland was 56%) to 60.5% in 2017 (Maryland was 57.8%). This economic and demographic context may be contributing to a reduction in the effective local income tax rate. Income tax revenues have fallen from $709 million in 2016 to $680 million in 2018, even as total personal income has increased during the same period. Baltimore County's local income tax rate of 2.83% yielded revenues equal to 1.51% of total personal income in 2015, and this effective tax rate has fallen in each year since, to 1.34% in 2018. If the effective tax rate had remained at 1.51%, 2018 revenues would have been $84 million higher. Hopefully this trend is related to residents delaying capital gains in response to the federal income tax reforms of 2017, but it may due to some longer lasting condition, such as the demographic changes described above. Because local income taxes are a sizeable portion of Baltimore County's budget, the County has extended the financial capacity spreadsheet to contain relevant information about local income taxes.

Recently, the COVID-19 pandemic has begun to cause major economic disruptions. Closure of businesses is expected to increase unemployment, decrease household incomes, and thereby reduce income tax revenues to Baltimore County. The County is also likely to experience increased operational costs related to responding to the COVID-19 emergency.

In 2013, Baltimore County implemented a stormwater remediation fee, providing dedicated revenues for urban stormwater restoration. However, political pressures led to annual reductions of the fee and the complete repeal of the fee and the enabling County legislation by fiscal year 2018. As a result, the County's stormwater restoration efforts are once again dependent on general obligation bonds, metropolitan district revenues and bonds, and general funds. As interest rates rise across bond markets, the cost of borrowing is expected to increase, increasing the cost of stormwater restoration in Baltimore County. Restoration project costs have already increased rapidly independent of borrowing costs, due to low supply of materials (sand and rock in particular) and competition for the limited number of engineering and construction firms that specialize in stormwater restoration work.

2.3. Financial Capacity Metrics and Spreadsheet

2.3.1.Costs and Median Household Income

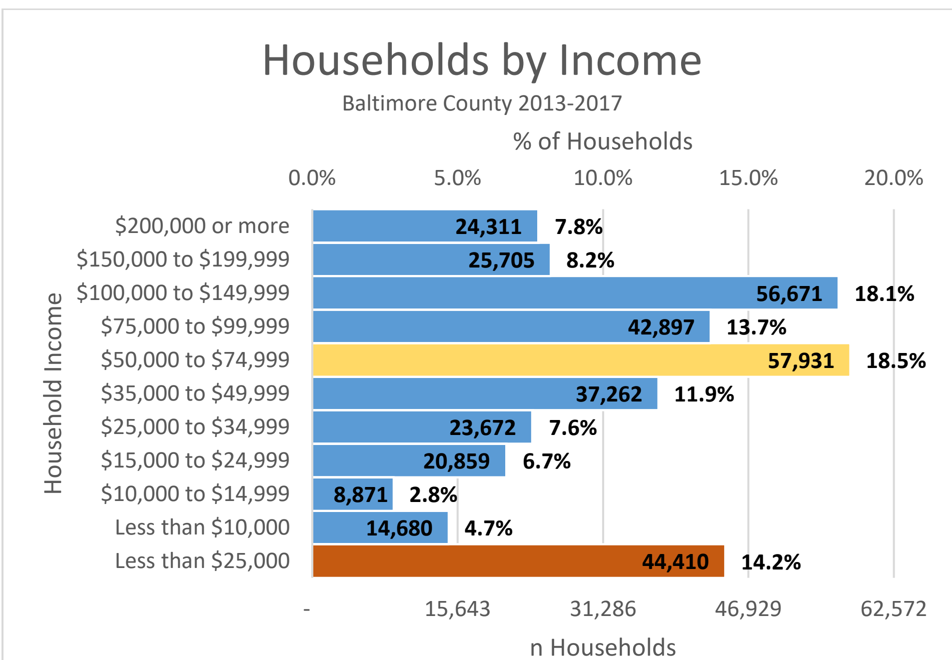
As shown in the financial capacity spreadsheet, Baltimore County's 2014-2018 annual average stormwater infrastructure related expenditures of $33.1 million is equal to $105.81 per household or 0.15% of median household income in the County (MHI). Baltimore County's 2011-2018 annual average impervious surface restoration expenditures were $15.8 million, equal to $50.53 per household or 0.07% of County MHI. The County's restoration portfolio demonstrates that Baltimore County intends to fund stormwater restoration work in 2020-2024 at a level nearly double 2011-2018 ($29.4 million per year, equal to $93.82 per household or 0.13% of MHI.)

Research by the University of Maryland Environmental Finance Center showed that metrics developed by the US EPA for local government water quality affordability and financial capacity were designed to consider not only stormwater infrastructure and pollution but also sanitary sewer infrastructure and pollution (EPA 1997, "Combined Sewer Overflows – Guidance for Financial Capability Assessment and Schedule Development"). As noted in section 2.2 above, sanitary sewer infrastructure and pollution is directly related and relevant to stormwater infrastructure and pollution. The receiving water bodies and taxpayers/utility customers certainly experience them as inseparable parts of a whole (pollution loads to the water body and bills to the households, respectively.) EPA formally recognizes this, for example through the Integrated Planning Framework concept. The thresholds developed by the EPA for combined sanitary sewer systems are intended to be applied to the combined cost of sanitary sewer and stormwater infrastructure and pollution prevention. For these reasons, Baltimore County has assembled data on sanitary sewer system costs. The average annual sewer infrastructure related expenditure of $262.8 million is equal to 1.17% of MHI. Adding the $60 per year household contribution to the State of Maryland's Bay Restoration Fee raises this by 0.08% of MHI. Putting it all together, Baltimore County's annual stormwater and sanitary sewer infrastructure expenditures are equivalent to $1005.80 per household, or 1.40% of MHI.

2.3.2. Costs and Households in Poverty

For the 14.2% of households with annual income below $25,000 (Figure 1), these costs are a much larger burden. Assuming an annual income of $25,000 for these households (a dramatic over-estimate), annual stormwater and sanitary sewer related expenditures equal 4.02% of household income for the 44,426 households living in poverty in Baltimore County. More realistic estimates of annual income can be derived by reviewing the US Census Bureau's household count by income range statistics. Setting household income liberally at the high end of each income range shows that the maximum possible average income for households in poverty in Baltimore County is $18,037, far less than the $25,000 poverty threshold. Stormwater and sewage infrastructure costs are equivalent to 5.58% of these household's incomes. Using the mid-point of the US Census Bureau income ranges provides a more conservative estimate of annual income for households in poverty, equal to $13,539 on average. With this conservative estimate, stormwater and sewage infrastructure costs are equal to 7.43% of annual income for households in poverty in Baltimore County.

Figure 1: Household Income Distribution in Baltimore County



2.3.3. EPA Financial Capability Matrix

Comparing the financial statistics developed above and in the financial capacity spreadsheet, to the EPA guidance for financial capacity indicators (EPA 1997, "Combined Sewer Overflows – Guidance for Financial Capability Assessment and Schedule Development"), Baltimore County rates Strong for bond rating, Mid-Range for Debt as % of FMPV, Mid-Range for unemployment, Strong for property tax revenues as % of FMPV, strong for property tax collection rate, and Mid-Range for MHI. The County's "Permittee Financial Capability Indictors Score" is 2.5 or "Mid-range". The County's "Residential Indicator" is Mid-Range for median households, and High for the 44,426 (14.2%) of households living in poverty. The household income at which public stormwater and sanitary sewer expenditures equates to 2% of household income is $50,291.50 ($1005.80 ÷ 2.0%). As seen in Figure 1, more than one-third of households in Baltimore County (105,344 households, 33.7% of total households) have income below $50,291.50 and experience "High" costs as per EPA guidance. Considering the median household income alone, Baltimore County lands in the "Medium Burden" category in EPA's financial capability analysis. For the 14.2% of households in poverty (44,426 households), and the 33.7% of households experiencing "High" costs exceeding 2% of household income (105,344 households), Baltimore County lands in the "High Burden" category.

2.4. Financial Capacity Outlook and Conclusions

Baltimore County's recently (May 23, 2019) adopted FY2020 budget addresses structural budget deficits by raising new revenues. These new revenues derive from increasing the local income tax rate from 2.83% to 3.2% (the maximum permitted by law), adding a fee to cellular telephone bills, and implementing developer impact fees. Some of these new revenues have been directed towards stormwater restoration programs, providing funding sufficient for the County to complete its stormwater restoration work plans. Additional revenue raising is unlikely to be accepted by County tax and rate payers or by County politicians for the next four years, at a minimum.

Considering the recent tax and fee increases, the financial capacity and residential indicators and corresponding ratings of "Medium Burden" for median income households and "High Burden" for 33.7% of households, and available funding sources (with particular attention to debt), Baltimore County is at maximum financial capacity for stormwater restoration.

The on-going COVID-19 pandemic and public health emergency will have meaningful impacts on Baltimore County household income, unemployment rate, poverty rate, government revenues (most notably income taxes), and government expenditures. The financial capacity metrics developed for this report and discussed in this section are likely to weaken in FY2021, and should be revisited in the future.

3. Physical Capacity

3.1. Restoration Implementation Time Horizon

As documented in the physical capacity questionnaire responses, urban stormwater restoration planning time frames vary across BMP categories and restoration programs. A new restoration program must first obtain capital funding and secure the professional service contracts necessary to supplement County staff planning, design, and installation services. To obtain capital funding, new programs must be presented in the capital budget 24 to 36 months before funding is needed. Once funding is secured in the capital budget, professional service contracts can be procured, a process that takes approximately 20 months. Combined, these initial tasks typically take 44 to 56 months (3.6 to 4.6 years), before any individual BMPs can be designed. Design to completion of construction and as-built inspection takes between 5 months (e.g., minimum for a "perfect" private property reforestation with zero delays or issues) and 9 years (e.g., maximum for a "troublesome" stream restoration project with delays due to timing, weather, permit review, and land acquisition troubles.) The total time required to initiate a new restoration program and install the first BMP is thus between 49 and 164 months (4 to 13.6 years). These long time horizons demonstrate that major adjustments to the County's urban stormwater restoration programs (specifically, creation of a new restoration program) takes substantial time, on the order of one or more 5 year NPDES MS4 permit terms. While smaller adjustments can be made quickly (e.g. changing the funds assigned to existing restoration programs) and allows the County to adapt to small changes in conditions, adapting to major changes requires many years.

3.2. Capital and Operating Budgets

Pertinent details of Baltimore County's 6 year capital budget and current (FY 2019) operating and maintenance budget are provided in the physical capacity questionnaire responses. During the six year period 2020 through 2025, Baltimore County's capital budget includes $21.26million per year for restoration projects and $3.18million for storm drain and flood control projects, for a combined total $24.4million per year for stormwater infrastructure and restoration. Operating costs for annual BMPs in FY 2019 are expected to exceed $1.2 million. As Baltimore County installs more perennial BMPs, and as more volunteered BMPs are installed (e.g. new and redevelopment stormwater facilities, watershed association projects), the costs associated with inspecting, operating, and maintaining the growing number of BMPs will continue to grow. Notably, stormwater facilities installed in the 1980s require structural repairs, costing the County between $3 and $4 million per year. The costs for operation and maintenance of the County's portfolio of previously installed urban stormwater BMPs is expected to reach $4.76 million in FY 2019.

3.3. Physical Capacity Outlook and Conclusions

Good opportunities for urban stormwater restoration exist in Baltimore County. The quantity of high efficiency and high control opportunities ("low hanging fruit") is dwindling. Baltimore County staff continue to strive for high efficiency project selection, but decreases in project efficiency (less pollution reduction per dollar spent) are occurring with no end in sight. As quality County-owned restoration sites diminish, project selection and new restoration programs will have to utilize more privately owned property, reducing the degree of control Baltimore County can exercise over project selection, design, and completion dates. It will become harder for the County to guarantee that restoration targets will be met on schedules, such as MS4 permit expiration dates.

Additionally, the new MDE guidance issued 12/23/2019 denies impervious surface restoration and TMDL reductions for stream restoration projects that lack Chesapeake Bay Expert Panel protocol calculations (projects that are "interim rate"), if the projects are constructed after the end of calendar year 2018. Unfortunately, several stream restoration projects that were designed prior to the expert panel protocols, and funded and begun prior to the release of the new guidance, experienced delays beyond calendar year 2019. The environmental benefits of these delayed "interim rate" stream restoration projects are not reflected in the nutrient, sediment, and impervious surface restoration accounting metrics devised by MDE. Baltimore County stands behind these projects and the environmental benefits they provide, and will complete them regardless of zeroed-out restoration accounting metrics.

Innovative restoration program structures (e.g. public private partnerships, pay for performance contracts, etc.) may be worth piloting. However, the results of such innovative programs cannot be known in advance. Even when such programs have been piloted by other MS4 permittees, variability among permittees in available restoration opportunities, procurement requirements, and other factors creates uncertainty in the outcomes of "transplanted" programs. Finally, the time horizon for deploying a new restoration program means such innovative programs will be operational for only the final one to two years of the MS4 permit term.

In the timeframe of the next MS4 permit (through 2025), physical restoration capacity will not typically be limited by available restoration project sites, but will be limited by the quantity of work County staff and programs can accomplish given the program and project implementation time frames described in the physical capacity questionnaire. Therefore, the restoration portfolio accompanying this report presents Baltimore County's maximum physical capacity for the next MS4 permit term.

4. <u>Restoration Portfolio</u>

4.1. Restoration Portfolio Costs

Costs in the restoration portfolio are assigned to years based on the expected date an allotment is executed, assigning funds to be spent on the project. This keeps the cost information more contemporaneous with County budget projections, compared to using the date funds are expected to be expended. Costs incurred during the prior permit term are not shown. This is relevant when a project was initiated and partially or fully funded during the prior permit term, and is expected to be completed after the prior permit expired.

4.2. BMP Selection for Restoration Portfolio

In selecting how to employ urban stormwater restoration BMPs in the restoration portfolio, Baltimore County has considered some of the factors discussed in the physical capacity questionnaire. Some BMPs are subject to so little control by the County that they may be regarded as voluntary or opportunistic BMPs. They occur either as a side-effect of some other effort by the County (e.g. installing stormwater facilities to meet environmental requirements for constructing a new school), or as an effort directed by actors external to County government (e.g. land developers engaged in redevelopment projects, septic system owners electing to pumpout their septic systems, or private property owners collaborating with watershed associations to plant trees or install stormwater facilities). County staff track and report on these voluntary and opportunistic BMPs, because they represent real urban stormwater pollution reductions and the efforts of the County and its residents and tax payers. This is part of Baltimore County's responsibility to the citizens of Baltimore County (make progress on local TMDLs and MS4 permit requirements), the State of Maryland (contribute towards the Chesapeake Bay TMDL effort), and the broader water quality restoration community (provide complete data to support water quality modeling and management efforts). However, because these restoration BMPs are effectively outside the control of the County, it would be irresponsible to use them to increase the size of the County's MS4 permit restoration requirements.

4.3. Remaining impervious restoration from prior permit

As documented in Baltimore County's 2018 and 2019 NPDES Annual Reports, Baltimore County completed the impervious restoration requirement from the prior permit. No restoration projects are presented in this section of the portfolio.

4.4. Obligations (annual practices) from prior permit

During the prior permit term, Baltimore County utilized four kinds of annual BMPs (street sweeping, storm drain cleaning, septic pumpouts, and advanced illicit discharge detection and elimination (IDDE) programs) to help address the impervious surface restoration requirement. The nitrogen and sediment loads prevented by these annual BMPs from reaching the Chesapeake Bay and local water bodies respectively during the prior permit term must be maintained during the new permit term, using either new perennial BMPs, or continued annual BMP programs. Baltimore County chooses to meet this obligation by replacing the pollution reductions achieved by prior permit annual BMPs with new perennial BMPs.

The Chesapeake Bay Program revised the protocols required for street sweeping to count as pollution reductions, and Baltimore County's street sweeping programs are not expected to qualify for pollution reductions during the next permit term. The quantity of storm drain cleaning work completed varies considerably from year to year, because storm drain cleaning is opportunistic in nature (the County has no direct control over the quantity of materials that enter and become entrained in the storm drain inlets and pipes), and because Baltimore County's storm drain cleaning staff and equipment is also employed to inspect and maintain sanitary sewer pipes, so the time devoted to cleaning storm drains may decrease when sanitary sewer work increases, as it has during the sanitary sewer consent decree. Septic system pumping is a voluntary action taken by residents of the County. The Chesapeake Bay Program had scheduled the advanced IDDE program credit to lapse after 2018, and it is not expected to be available as a BMP during the next permit term. MDE has indicated that, for the purposes of maintaining prior permit annual BMP obligations, the equivalent impervious surface restoration acres generated by annual BMPs in 2018 must be continued. MDE has further stated that calculation of equivalent impervious surface restoration acres for purposes of continuing 2018 annual BMPs must follow the 2019 MDE guidance.

Replacing these obligations is a top priority for the County, and so the County is applying all the perennial urban stormwater BMPs that were installed during the second half of FY2019 (after expiration of prior permit) and many BMPs expected to be installed during FY2020 towards this task. If any pollution reductions are achieved using annual BMPs during the next permit term, the County anticipates applying those reductions towards the Proposed Restoration for the Next Permit Term.

4.4.1. Impervious Surface Restoration

Following MDE guidance, Baltimore County calculated that during FY2018, annual BMPs tracked and reported by the County generated 470.4 acres of impervious surface restoration. Baltimore County has retroactively applied the 12/23/2019 MDE guidance to FY2019 annual BMPs, and entered them into the restoration portfolio. Annual BMPs in

FY2019 provided 65.4 acres of impervious surface restoration. The County retroactively applied the 12/23/2019 MDE guidance to all perennial BMPs completed in the second half of FY2019 (after permit term expiration), which provide an additional 175.2 acres of impervious surface restoration, for a total of 240.6 acres. Baltimore County then identified a set of perennial BMPs expected to be completed in FY2020 that provide an additional 295.5 acres of impervious surface restoration, bringing the total impervious surface restoration from perennial BMPs to 470.7 acres, exceeding the FY2018 annual BP total by 0.3 acres. This addresses the continuation of annual BMPs from the prior permit, before the new permit term begins.

4.4.2. Total nitrogen delivered to the Chesapeake Bay

The associated nitrogen reduction delivered to the bay from perennial BMPs used to replace annual obligations from the previous permit is 3,373 lbs/yr.

4.4.3. Total phosphorus delivered to local water bodies

The associated phosphorus reduction delivered to local water bodies from perennial BMPs used to replace annual obligations from the previous permit is 2,049 lbs/yr.

4.4.4. Suspended sediment delivered to local water bodies

The associated suspended sediment reduction delivered to local water bodies from perennial BMPs used to replace annual obligations from the previous permit is 2,829,786 lbs/yr.

4.4.5. Costs

Baltimore County calculates that the costs of the annual BMPs employed during the prior permit were $5,412,593, or $1,082,518 per year. As shown in the restoration portfolio, Baltimore County expects to spend $7,054,153 on annual BMPs during 2019-2025, or $1,007,736 per year. The expected cost of the perennial BMPs to be used to replace the impervious surface restoration provided by annual BMPs during the prior permit is $3,852,925. Note that this is the cost expected to be incurred during 2019 through the end of the BMP installation and any construction warranty period, and therefore substantial costs related to these BMPs that were incurred during the prior permit term are not included here. These perennial BMPs are expected to have a "lifespan" of several decades, and over time this up-front investment will cost less than annual BMPs, particularly when inflation is considered. In addition to nitrogen, phosphorus, and sediment pollution removal, these BMPs will provide many co-benefits, including wildlife habitat improvements, and protection of infrastructure (such as sanitary sewer pipes) and property from erosion and flooding.

4.5. New restoration

MDE has indicated that once prior permit obligations are completed, any nitrogen, phosphorus and sediment pollution reductions and impervious surface restoration will be applied towards Baltimore County's restoration requirement under the next MS4 permit. MDE has also indicated that the next MS4 permit restoration requirement will be informed by the pollution reductions and impervious surface restoration (beyond the prior permit obligations) provided by BMPs in the restoration portfolio with completion dates during the next MS4 permit term (currently expected to be 2021-2025).

Baltimore County proposes employing a variety of perennial BMPs during the next MS4 permit term to achieve new restoration progress beyond what was required under prior MS4 permits. Some BMPs and programs are listed with zero nitrogen or sediment reductions and zero impervious surface restoration. These are BMPs and programs the County implements for co-benefits other than nitrogen and sediment reduction (e.g. trash booms and education/outreach), or they are programs that incur a meaningful cost to the County but have nitrogen and sediment reductions that are generally not within the County's direct control (e.g. watershed association capacity grants), or they are BMPs and programs the County committed to completing prior to the 12/23/2019 release of MDE guidance eliminating reductions for said BMPs and programs (e.g. stream restoration projects designed prior to CBP expert panel report.)

4.5.1. Nitrogen delivered to The Chesapeake Bay

The new restoration project portfolio is expected to reduce total nitrogen pollution delivered to the Chesapeake Bay by 12,811 lbs annually. However, much of this pollution reduction comes from restoration projects that are expected to be allotted funds and initiated during the next permit term , but will not be completed until after the next permit is expected to expire in 2025. **The nitrogen reductions from BMPs that are expected to be installed during the next permit term (2021-2025) are 7,371 lbs annually.**

4.5.2. Phosphorus delivered to local water bodies

The new restoration project portfolio is expected to reduce total phosphorus pollution delivered to the Chesapeake Bay by 10,390 lbs annually. However, much of this pollution reduction comes from restoration projects that are expected to be allotted funds and initiated during the next permit term, but will not be completed until after the next permit is expected to expire in 2025. **The phosphorus reductions from BMPs that are expected to be installed during the next permit term (2021-2025) are 3,953 lbs annually.**

4.5.3. Suspended sediment delivered to local water bodies

The new restoration project portfolio is expected to reduce total suspended sediment pollution delivered to local water bodies by 32,564,246 lbs annually. However, much of this pollution reduction comes from restoration projects that are expected to be allotted funds and initiated during the next permit term, but will not be completed until after the next permit is expected to expire in 2025. **The sediment reductions from BMPs that are expected to be installed during the next permit term are 10,780,043 lbs annually.**

4.5.4. New Impervious Surface Restoration

The new restoration project portfolio is expected to restore 3,390.5 acres of impervious surfaces. However, much of this restoration comes from restoration projects that are expected to be allotted funds and initiated during the next permit term, but will not be completed until after the next permit is expected to expire in 2025. **Impervious surface**

treated through BMPs expected to be installed during the next permit term will provide 1,474.9 acres of impervious surface restoration.

4.5.5. Costs

The new restoration section of the portfolio has a total expected cost of $177,463,650 for the time period 2019 through 2025. Perennial (capital) restoration BMPs are expected to consume $122,809,073 of the total. The remaining $54,654,577 is expected to be used on other tasks that support the inspection, repair, and maintenance of existing BMPs, the installation of new BMPs, removal of trash and litter from waterbodies, or to encourage voluntary BMP installation via MS4 permit required education and outreach efforts.

If the time period is limited to the next MS4 permit term (2021 through 2025), the cost of the new restoration section of the portfolio is $134,502,628.

4.6. Total Benefits

After installation, the County expects the perennial BMPs proposed in the restoration portfolio (to be completed or funded in FY2019 Q3 through FY2025) will restore 3,861.2 acres of impervious surfaces, prevent 12,439 lbs of phosphorus and 35,394,032 lbs of suspended sediment from reaching local water bodies annually, and prevent 16,183 lbs of total nitrogen from reaching the Chesapeake Bay annually. The restoration portfolio shows how these BMPs will be utilized by the County to replace annual obligations, to continue restoration efforts while between MS4 permits (FY2019-FY2020 in the "Proposed Restoration for the Next Permit"), to meet restoration requirements during the next MS4 permit term (FY2021-FY2025), and to continue restoration efforts beyond the next permit term (FY2026 and beyond). The County expects **1,474.9 acres of new impervious surface restoration, 3,953 lbs of new phosphorus and 10,780,043 lbs of new suspended sediment reduction to local water bodies, and 7,371 lbs of new total nitrogen reduction to the Chesapeake Bay from BMPs to be installed during the next MS4 permit term (2021 through 2025).** In addition to these four metrics, many co-benefits will be provided by the projects in the restoration portfolio.

4.7. Total Costs and Revenue Sources

The total expected cost of the restoration portfolio is $188,370,728. Of that total, $171,540,988 is expected to be allotted during FY2020 plus the next MS4 permit term (2021 through 2025). The remaining $53,268,100 is expected to be allotted between the expiration of the prior MS4 permit and the beginning of the next MS4 permit (approximately calendar year 2019 plus FY2020). Capital projects cost estimates during the planning stage tend to be slightly higher than the actual costs incurred by the time the project is completed. This is because project size and scope begins large, and the design and landowner processes gradually reduces the project size, scope, and corresponding cost. A substantial portion of the projects in the restoration portfolio will not enter design phase until 2021 or later, including $59.7 million worth of shoreline enhancements and stream restoration (equal to 35% of 2021 through 2025 costs).

The County's budget documents demonstrate the County's intention to fund the restoration portfolio. The FY2020 six year capital budget (adopted in May 23, 2019) contains $67,533,075 in funding for the Waterway Improvement Fund and $19,050,000 in funding for the storm drain fund for FY2020 through FY2025. An additional $60,000,000 ($10 million per year) is expected to be available from metropolitan district funds to support urban stormwater BMPs that protect the public drinking water and sanitary sewer systems. The department of public works is expected to fund two stream restoration projects and the cost of street sweeping and storm drain cleaning, totaling $7,302,471 during 2020 through 2025. An additional $8,701,889 will be spent from the County's operating budget to support inspection and maintenance of stormwater BMPs. The total revenues expected to be available are therefore $162,587,435.

Comparing the expected revenues and costs, expenditures in 2020 through 2025 from Baltimore County's waterway improvement fund and other stormwater restoration funding sources are projected to consume 105.5% of the corresponding expected budget, or $8,953,553 more than what is budgeted. Baltimore County expects this difference will be addressed as projects in the planning stages move through design and have their size, scope, and cost reduced. The restoration portfolio is therefore a full deployment of the financial resources Baltimore County is capable of directing towards stormwater restoration.

5. Summary and Conclusion

Baltimore County has made a good faith effort to prepare a 2020-2025 restoration portfolio that reflects the County's maximum practicable urban stormwater restoration effort. The data assembled in response to MDE's questionnaires demonstrates that the restoration portfolio represents Baltimore County's maximum financial and physical capacity for the 2020 to 2025 time period. This narrative demonstrates that all available funds for urban stormwater restoration are deployed in the restoration portfolio. If additional revenue raising were politically acceptable, doing so would place a medium to high burden on County government finances and on the personal finances of the residents of Baltimore County. The COVID-19 pandemic and public health emergency is likely to cause Baltimore County's financial capacity during FY2021 and perhaps beyond to weaken relative to what is reported in this document. For the time period 2020-2025, physical capacity is constrained by the time necessary to implement and complete restoration projects. To exceed these time constraints to access more physical capacity, Baltimore County would have to hire or contract more staff, which would cause the costs to exceed the County's maximum practicable financial capacity. The County's restoration portfolio demonstrates that BMPs installed during the next permit term (FY2021 through FY2025), and available to meet MS4 permit restoration requirements during said permit term, are expected to provide 1,474.9 acres of new impervious surface restoration, 3,953 lbs of new phosphorus and 10,780,043 lbs of new suspended sediment reductions to local water bodies, and 7,371 lbs of new total nitrogen reductions to the Chesapeake Bay.

Restoration Projects To Be Planned, Designed, and/or

Remaining Unmet Restoration Obligation from Previous Permit (Impervious Acres):				

REST BMP ID	REST BMP TYPE[1]	BMP CLASS[1]	PERMA-NENT OR ANNUAL BMP	NUM BMP	DRAIN-AGE AREA (acres)	PE (inches)	LENGTH RESTORED (feet)/ LANE MILES (miles)/ MASS LOADING (lbs)	TP REDUCTION (lbs/year)	TSS REDUCTION (lbs/year)	TN[6] REDUCTION (lbs/year)	IMP ACRES (IA)	GREEN STORMWATER INFRASTRUC-TURE (GSI) CREDIT (IA X 0.35)	WATERSHED MANAGE-MENT (WM) CREDIT	TOTAL IMP ACRES (W/ GSI AND WM CREDITS)	IMPLEMEN-TATION COST	IMPLEMEN-TATION STATUS[2]	PROJECTED IMPLEMEN-TATION YEAR	TMDL PARAMETER OR WQ OBJECTIVE ADDRESSED	GENERAL COMMENTS[7]
Remaining Unmet Restoration Obligations from Previous Permit																			
Annual Operational Programs (Unmet Obligations from Previous Permit)[3,4]																			
Street Sweeping*	MSS	A	ANNUAL											0					
Street Sweeping*	MSS	A	ANNUAL											0					
Street Sweeping*	MSS	A	ANNUAL											0					
Street Sweeping*	MSS	A	ANNUAL											0					
Street Sweeping*	MSS	A	ANNUAL											0					
Street Sweeping*	MSS	A	ANNUAL											0					
Catch Basin Cleaning*	CBC	A	ANNUAL											0					
Catch Basin Cleaning*	CBC	A	ANNUAL											0					
Catch Basin Cleaning*	CBC	A	ANNUAL											0					
Catch Basin Cleaning*	CBC	A	ANNUAL											0					
Catch Basin Cleaning*	CBC	A	ANNUAL											0					
Septic Sytem Pumping	SEPP	A	ANNUAL											0					
Septic Sytem Pumping	SEPP	A	ANNUAL											0					
Septic Sytem Pumping	SEPP	A	ANNUAL											0					
Septic Sytem Pumping	SEPP	A	ANNUAL											0					
Septic Sytem Pumping	SEPP	A	ANNUAL											0					
Septic Sytem Pumping	SEPP	A	ANNUAL											0					
Subtotal Operations[3]				0				0	0	0	0			0	$0				
Capital Projects (Unmet Obligations from Previous Permit Term)																			
														0					
														0					
														0					
														0					
Subtotal Capital				0				0	0	0	0	0	0	0	$0				
Other (Unmet Obligations from Previous Permit Term)																			
														0					
														0					
Subtotal Other				0				0	0	0	0	0	0	0	$0				
Total of Remaining Obligations from The Previous Permit				**0**				**0**	**0**	**0**	**0**	**0**	**0**	**0**	**$0**				
Obligations from Previous Permit That Must Be Continued																			
Annual Operational Programs Required to be Maintained from																			
Street Sweeping	MSS	A	ANNUAL					0	0	0	0			0	$921,274	Complete	2019	Flooding, Trash TMDL, Trash Reduction Strategy	
Street Sweeping	MSS	A	ANNUAL					0	0	0	0			0	$815,169	Under Construction	2020	Flooding, Trash TMDL, Trash Reduction Strategy	
Street Sweeping	MSS	A	ANNUAL					0	0	0	0			0	$822,610	Planning	2021	Flooding, Trash TMDL, Trash Reduction Strategy	
Street Sweeping	MSS	A	ANNUAL					0	0	0	0			0	$830,424	Planning	2022	Flooding, Trash TMDL, Trash Reduction Strategy	
Street Sweeping	MSS	A	ANNUAL					0	0	0	0			0	$838,629	Planning	2023	Flooding, Trash TMDL, Trash Reduction Strategy	
Street Sweeping	MSS	A	ANNUAL					0	0	0	0			0	$847,244	Planning	2024	Flooding, Trash TMDL, Trash Reduction Strategy	
Street Sweeping	MSS	A	ANNUAL					0	0	0	0			0	$855,947	Planning	2025	Flooding, Trash TMDL, Trash Reduction Strategy	
Catch Basin Cleaning	CBC	A	ANNUAL	777			304900	88	114,948	401	28.94			28.94	$160,408	Complete	2019	TN, TP, and TSS TMDLs, Flooding, Trash TMDL, Trash Reduction Strategy	This BMP includes both catch basin cleaning and storm drain vacuuming. Costs and pollution reductions are tracked in a single BMP record because the same County government unit is responsible for both BMPs.
Catch Basin Cleaning	CBC	A	ANNUAL					0	0	0				0	$160,408	Under Construction	2020	TN, TP, and TSS TMDLs, Flooding, Trash TMDL, Trash Reduction Strategy	This BMP includes both catch basin cleaning and storm drain vacuuming. Costs and pollution reductions are tracked in a single BMP record because the same County government unit is responsible for both BMPs.
Catch Basin Cleaning	CBC	A	ANNUAL					0	0	0				0	$160,408	Planning	2021	TN, TP, and TSS TMDLs, Flooding, Trash TMDL, Trash Reduction Strategy	This BMP includes both catch basin cleaning and storm drain vacuuming. Costs and pollution reductions are tracked in a single BMP record because the same County government unit is responsible for both BMPs.
Catch Basin Cleaning	CBC	A	ANNUAL					0	0	0				0	$160,408	Planning	2022	TN, TP, and TSS TMDLs, Flooding, Trash TMDL, Trash Reduction Strategy	This BMP includes both catch basin cleaning and storm drain vacuuming. Costs and pollution reductions are tracked in a single BMP record because the same County government unit is responsible for both BMPs.
Catch Basin Cleaning	CBC	A	ANNUAL					0	0	0				0	$160,408	Planning	2023	TN, TP, and TSS TMDLs, Flooding, Trash TMDL, Trash Reduction Strategy	This BMP includes both catch basin cleaning and storm drain vacuuming. Costs and pollution reductions are tracked in a single BMP record because the same County government unit is responsible for both BMPs.
Catch Basin Cleaning	CBC	A	ANNUAL					0	0	0				0	$160,408	Planning	2024	TN, TP, and TSS TMDLs, Flooding, Trash TMDL, Trash Reduction Strategy	This BMP includes both catch basin cleaning and storm drain vacuuming. Costs and pollution reductions are tracked in a single BMP record because the same County government unit is responsible for both BMPs.
Catch Basin Cleaning	CBC	A	ANNUAL					0	0	0				0	$160,408	Planning	2025	TN, TP, and TSS TMDLs, Flooding, Trash TMDL, Trash Reduction Strategy	This BMP includes both catch basin cleaning and storm drain vacuuming. Costs and pollution reductions are tracked in a single BMP record because the same County government unit is responsible for both BMPs.
Septic System Pumping	SEPP	A	ANNUAL	1,823				0	0	745	36.46			36.46	$0	Complete	2019	Local TN TMDL and Bay TMDL, Bacteria TMDLs	
Septic System Pumping	SEPP	A	ANNUAL					0	0	0				0	$0	Under Construction	2020	Local TN TMDL and Bay TMDL, Bacteria TMDLs	
Septic System Pumping	SEPP	A	ANNUAL					0	0	0				0	$0	Planning	2021	Local TN TMDL and Bay TMDL, Bacteria TMDLs	
Septic System Pumping	SEPP	A	ANNUAL					0	0	0				0	$0	Planning	2022	Local TN TMDL and Bay TMDL, Bacteria TMDLs	
Septic System Pumping	SEPP	A	ANNUAL					0	0	0				0	$0	Planning	2023	Local TN TMDL and Bay TMDL, Bacteria TMDLs	
Septic System Pumping	SEPP	A	ANNUAL					0	0	0				0	$0	Planning	2024	Local TN TMDL and Bay TMDL, Bacteria TMDLs	
Septic System Pumping	SEPP	A	ANNUAL					0	0	0				0	$0	Planning	2025	Local TN TMDL and Bay TMDL, Bacteria TMDLs	
Subtotal Operations[3]				520				18	22,990	229	13			13.08	$7,054,153				
Capital Projects (Proposed to Replace Annual Obligations)																			
RST003972	WSHW	S	PERMANENT	1	4	1.02		4	9,823	11	1.61			1.609958	$24,014	Complete	2019	TN, TP, TSS TMDLs, wildlife habitat	
RST003968	WSHW	S	PERMANENT	1	11	1.01		8	4,361	11	3.83			3.825375	$19,063	Complete	2019	TN, TP, TSS TMDLs, wildlife habitat	
RST003733	WSHW	S	PERMANENT	1	12	1.72		10	9,332	10	6.03			6.028324	$36,655	Complete	2019	TN, TP, TSS TMDLs, wildlife habitat	
RST003971	WSHW	S	PERMANENT	1	30	0.98		21	12,035	20	11.52			11.52118	$34,996	Complete	2019	TN, TP, TSS TMDLs, wildlife habitat	
RST004058	WSHW	S	PERMANENT	1	13	1.37		15	35,381	31	4.02			4.021106	$24,262	Complete	2019	TN, TP, TSS TMDLs, wildlife habitat	
RST004059	WSHW	S	PERMANENT	1	12	1.41		15	31,271	53	3.71			3.706393	$22,988	Complete	2019	TN, TP, TSS TMDLs, wildlife habitat	
RST004060	WSHW	S	PERMANENT	1	58	0.72		48	103,598	169	7.99			7.9903	$40,419	Complete	2020	TN, TP, TSS TMDLs, wildlife habitat	
RST004054	WSHW	S	PERMANENT	1	17	2.3		22	32,744	50	2.73			2.729424	$24,881	Complete	2020	TN, TP, TSS TMDLs, wildlife habitat	
RST004061	WSHW	S	PERMANENT	1	6	0.82		5	12,279	15	1.42			1.4202	$20,474	Complete	2020	TN, TP, TSS TMDLs, wildlife habitat	
ALN000113	STRE	A	PERMANENT											0	$703,000	Under Construction	2019	TN, TP, TSS, Bay TMDL	$1,483,000 allotted prior to FY19
ALN000113	STRE	A	PERMANENT	1			2235	267	508,000	251	78.49			78.49		Complete	2019		protocol reductions
ALN000070	STRE	A	PERMANENT											0	$395,000	Under Construction	2019	TN, TP, TSS, Bay TMDL, Local TSS TMDL	$2,092,000 allotted prior to FY19
ALN000070	STRE	A	PERMANENT	1			2347	686	341,000	432	54.24			54.24		Complete	2019		protocol reductions
ALN000060	STRE	A	PERMANENT											0		Design	2018	TN, TP, TSS, Bay TMDL, Local TSS TMDL	$3,685,487 allotted prior to FY19
ALN000060	STRE	A	PERMANENT											0	$110,418	Under Construction	2019		
ALN000060	STRE	A	PERMANENT	1			4500	71	132,713	1,140	42.68			42.68	$650,000	Complete	2020		protocol reductions
ALN000135	STRE	A	PERMANENT											0		Design	2018	TN, TP, TSS, Bay TMDL, Local TSS TMDL	$1,640,000 allotted prior to FY19
ALN000135	STRE	A	PERMANENT											0		Under Construction	2019		
ALN000135	STRE	A	PERMANENT	1			700	101	192,333	79	25.42			25.42		Complete	2020		protocol reductions
ALN000114	STRE	A	PERMANENT											0		Design	2018	TN, TP, TSS, Bay TMDL, Local TSS TMDL	$1.71 million alloted prior to FY2019
ALN000114	STRE	A	PERMANENT											0	$1,486,000	Under Construction	2019		
ALN000114	STRE	A	PERMANENT	1			1671	728	1,386,125	979	208.25			208.25		Complete	2020		protocol reductions
ALN000110	STRE	A	PERMANENT											0		Design	2019	TN, TP, TSS, Bay TMDL, Local TSS TMDL	$900,000 allotted prior to FY19
ALN000110	STRE	A	PERMANENT											0		Under Construction	2020		
ALN000110	STRE	A	PERMANENT	1			310	22	8,000	30	4.53			4.53		Complete	2020		protocol reductions
APY013811	FPU	A	PERMANENT	1	1			2	905	10	1.30			1.3	$18,769	Complete	2019	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APY013252	FPU	A	PERMANENT	1	1			2	814	12	1.17			1.17	$15,168	Complete	2019	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APY002301	FPU	A	PERMANENT	1	2			4	1,434	9	2.06			2.06	$60,301	Complete	2019	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APY013812	FPU	A	PERMANENT	1	2			3	1,044	6	1.50			1.5	$32,200	Complete	2019	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APY000331	RFP	A	PERMANENT	1	1			2	891	6	1.28			1.28	$12,992	Complete	2019	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APY000331	FPU	A	PERMANENT	1	1			2	1,527	4	0.92			0.923	$30,771	Complete	2019	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APY001500	FPU	A	PERMANENT	1	4			6	2,464	32	3.54			3.54	$53,100	Complete	2019	TN, TP, TSS TMDLs, wildlife habitat, temperature	

APY013923	FPU	A	PERMANENT	1	1			2	585	9	0.84			0.84	$11,642	Complete	2020	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APY014857	FPU	A	PERMANENT	1	0			1	209	1	0.30			0.3	$10,811	Complete	2020	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APY013920	FPU	A	PERMANENT	1	1			2	919	2	1.32			1.32	$15,000	Complete	2020	TN, TP, TSS TMDLs, wildlife habitat, temperature	
Subtotal Capital				25				2,049	2,829,786	3,373	471	0	0	470.69526	$3,852,925				
Other (Proposed to Replace Annual Obligations)																			
														0					
														0					
Subtotal Other				0				0	0	0	0	0	0	0	$0				
Total of Obligations from Previous Permit That Must Be Continued				**545**				**2,066**	**2,852,775**	**3,602**	**484**	**0.0**	**0.0**	**483.8**	**$10,907,078**				
Proposed Restoration for the Next Permit																			
Operational Programs[4]																			
Street Sweeping	MSS	A	ANNUAL											0					
Street Sweeping	MSS	A	ANNUAL											0					
Street Sweeping	MSS	A	ANNUAL											0					
Street Sweeping	MSS	A	ANNUAL											0					
Street Sweeping	MSS	A	ANNUAL											0					
Catch Basin Cleaning	CBC	A	ANNUAL											0					This BMP includes both catch basin cleaning and storm drain vacuuming. Costs and pollution reductions are tracked in a single BMP record because the same County government unit is responsible for both BMPs.
Catch Basin Cleaning	CBC	A	ANNUAL											0					This BMP includes both catch basin cleaning and storm drain vacuuming. Costs and pollution reductions are tracked in a single BMP record because the same County government unit is responsible for both BMPs.
Catch Basin Cleaning	CBC	A	ANNUAL											0					This BMP includes both catch basin cleaning and storm drain vacuuming. Costs and pollution reductions are tracked in a single BMP record because the same County government unit is responsible for both BMPs.
Catch Basin Cleaning	CBC	A	ANNUAL											0					This BMP includes both catch basin cleaning and storm drain vacuuming. Costs and pollution reductions are tracked in a single BMP record because the same County government unit is responsible for both BMPs.
Catch Basin Cleaning	CBC	A	ANNUAL											0					This BMP includes both catch basin cleaning and storm drain vacuuming. Costs and pollution reductions are tracked in a single BMP record because the same County government unit is responsible for both BMPs.
Septic Sytem Pumping	SEPP	A	ANNUAL											0					
Septic Sytem Pumping	SEPP	A	ANNUAL											0					
Septic Sytem Pumping	SEPP	A	ANNUAL											0					
Septic Sytem Pumping	SEPP	A	ANNUAL											0					
Septic Sytem Pumping	SEPP	A	ANNUAL											0					
Subtotal Operations (up to 2025)[5]				0				0	0	0	0			0	$0				
Capital Projects																			
RST004053	WSHW	S	PERMANENT	1	6	1.67		9	27,408	22	0.00			0	$14,460	Complete	2020	TN, TP, TSS TMDLs, wildlife habitat	
RSTTBD0001	WSHW	S	PERMANENT											0	$520,142	Planning	2021	TN, TP, TSS, Bay TMDL, Local TP & TSS TMDLs, wildlife habitat	Based on 16 conv/year, 11 conversions
RSTTBD0002	WSHW	S	PERMANENT	6	67	1.01		51	62,598	152	21.16			21.162		Complete	2021	TN, TP, TSS TMDLs, wildlife habitat	
RSTTBD0003	WSHW	S	PERMANENT	5	56	1.01		43	52,165	75	17.64			17.635		Complete	2021	TN, TP, TSS TMDLs, wildlife habitat	
RSTTBD0004	WSHW	S	PERMANENT											0	$556,551	Planning	2022	TN, TP, TSS, Bay TMDL, Local TP & TSS TMDLs, wildlife habitat	Based on 16 conv/year, 20 conversions
RSTTBD0005	WSHW	S	PERMANENT	5	56	1.01		43	52,165	75	17.64			17.635		Complete	2022	TN, TP, TSS TMDLs, wildlife habitat	
RSTTBD0006	WSHW	S	PERMANENT	2	22	1.01		17	20,866	51	7.05			7.054		Complete	2022	TN, TP, TSS TMDLs, wildlife habitat	
RSTTBD0007	WSHW	S	PERMANENT	5	56	1.01		43	52,165	0	17.64			17.635		Complete	2022	TN, TP, TSS TMDLs, wildlife habitat	
RSTTBD0008	WSHW	S	PERMANENT	4	44	1.01		34	41,732	90	14.11			14.108		Complete	2022	TN, TP, TSS TMDLs, wildlife habitat	
RSTTBD0009	WSHW	S	PERMANENT	3	33	1.01		26	31,299	35	10.58			10.581		Complete	2022	TN, TP, TSS TMDLs, wildlife habitat	
RSTTBD0010	WSHW	S	PERMANENT											0	$595,510	Planning	2023	TN, TP, TSS, Bay TMDL, Local TP & TSS TMDLs, wildlife habitat	Based on 16 conv/year, 20 conversions
RSTTBD0011	WSHW	S	PERMANENT	10	111	1.01		85	104,330	226	35.27			35.27		Complete	2023	TN, TP, TSS TMDLs, wildlife habitat	
RSTTBD0012	WSHW	S	PERMANENT	6	67	1.01		51	62,598	140	21.16			21.162		Complete	2023	TN, TP, TSS TMDLs, wildlife habitat	
RSTTBD0013	WSHW	S	PERMANENT	3	33	1.01		26	31,299	35	10.58			10.581		Complete	2023	TN, TP, TSS TMDLs, wildlife habitat	
RSTTBD0014	WSHW	S	PERMANENT											0	$637,196	Planning	2024	TN, TP, TSS, Bay TMDL, Local TP & TSS TMDLs, wildlife habitat	Based on 16 conv/year, 17 conversions
RSTTBD0015	WSHW	S	PERMANENT	6	67	1.01		51	62,598	136	21.16			21.162		Complete	2024	TN, TP, TSS TMDLs, wildlife habitat	
RSTTBD0016	WSHW	S	PERMANENT	2	22	1.01		17	20,866	47	7.05			7.054		Complete	2024	TN, TP, TSS TMDLs, wildlife habitat	
RSTTBD0017	WSHW	S	PERMANENT	6	67	1.01		51	62,598	70	21.16			21.162		Complete	2024	TN, TP, TSS TMDLs, wildlife habitat	
RSTTBD0018	WSHW	S	PERMANENT	1	11	1.01		9	10,433	16	3.53			3.527		Complete	2024	TN, TP, TSS TMDLs, wildlife habitat	
RSTTBD0019	WSHW	S	PERMANENT	2	22	1.01		17	20,866	44	7.05			7.054		Complete	2024	TN, TP, TSS TMDLs, wildlife habitat	
RSTTBD0020	WSHW	S	PERMANENT											0	$681,799	Planning	2025	TN, TP, TSS, Bay TMDL, Local TP & TSS TMDLs, wildlife habitat	Based on 16 conv/year, 14 conversions
RSTTBD0021	WSHW	S	PERMANENT	4	44	1.01		34	41,732	46	14.11			14.108		Complete	2025	TN, TP, TSS TMDLs, wildlife habitat	
RSTTBD0022	WSHW	S	PERMANENT	4	44	1.01		34	41,732	65	14.11			14.108		Complete	2025	TN, TP, TSS TMDLs, wildlife habitat	
RSTTBD0023	WSHW	S	PERMANENT	4	44	1.01		34	41,732	88	14.11			14.108		Complete	2025	TN, TP, TSS TMDLs, wildlife habitat	
RSTTBD0024	WSHW	S	PERMANENT	2	22	1.01		17	20,866	47	7.05			7.054		Complete	2025	TN, TP, TSS TMDLs, wildlife habitat	
RSTTBD0025	WSHW	S	PERMANENT	2	22	1.01		17	20,866	23	7.05			7.054		Complete	2026	TN, TP, TSS TMDLs, wildlife habitat	
RSTTBD0026	WSHW	S	PERMANENT	3	33	1.01		26	31,299	66	10.58			10.581		Complete	2026	TN, TP, TSS TMDLs, wildlife habitat	
RSTTBD0027	WSHW	S	PERMANENT	2	22	1.01		17	20,866	47	7.05			7.054		Complete	2026	TN, TP, TSS TMDLs, wildlife habitat	
ALN000068	STRE	A	PERMANENT											0		Design	2018	TN, TP, TSS, Bay TMDL, Local TSS TMDL	$2.8 million alloted prior to FY19
ALN000068	STRE	A	PERMANENT											0	$270,000	Under Construction	2019		$270k revised allotment FY19
ALN000068	STRE	A	PERMANENT	1			3320	233	444,000	557	70.46			70.46		Complete	2020		protocol reductions
ALN000147	STRE	A	PERMANENT											0		Design	2019	TN, TP, TSS, Bay TMDL, Local TSS TMDL	$3 million alloted prior to FY 2019
ALN000147	STRE	A	PERMANENT											0	$2,800,000	Under Construction	2019		Construction funded in FY 2019 begin in FY2020
ALN000147	STRE	A	PERMANENT	1			3386	231	439,664	768	73.35			73.35		Complete	2020		protocol reductions
ALN000054	STRE	A	PERMANENT											0		Design	2018	TN, TP, TSS, Bay TMDL, Local TSS TMDL	
ALN000054	STRE	A	PERMANENT											0	$531,000	Under Construction	2019		METRO funded, $6,763,000 allotted prior to FY19
ALN000054	STRE	A	PERMANENT	1			8000	544	1,984,000	432	160			160		Complete	2020		interim rate reductions, piedmont
ALN000062	STRE	A	PERMANENT											0		Design		TN, TP, TSS, Bay TMDL	
ALN000062	STRE	A	PERMANENT											0	$1,800,000	Under Construction	2019		$3,150,217 allotted prior to FY19
ALN000062	STRE	A	PERMANENT	1			7475	508	1,853,800	157	149.5			149.5		Complete	2020		not a protocol project, interim rate reductions
ALN000046	STRE	A	PERMANENT											0		Design	2017	TN, TP, TSS, Bay TMDL, Local TSS TMDL	
ALN000046	STRE	A	PERMANENT											0		Under Construction	2019		$3,260,520 allotted prior to FY19
ALN000046	STRE	A	PERMANENT	1			4513	307	1,119,224	244	90.26			90.26		Complete	2019		interim rate reductions, project began design in 2002, piedmont
ALN000118	STRE	A	PERMANENT	1			505	34	125,240	15	10.1			10.1	$730,000	Complete	2020	TN, TP, TSS, Bay TMDL, Local TN, TP, TSS TMDLs	DPW interim rate project
ALN000119	STRE	A	PERMANENT	1			130	9	32,240	4	2.6			2.6	$600,000	Complete	2020	TN, TP, TSS, Bay TMDL, Local TP & TSS TMDLs	DPW interim rate project
ALN000052	STRE	A	PERMANENT											0	$450,000	Design	2019	TN, TP, TSS, Bay TMDL, Local TSS TMDL	$2,650,000 allotted prior to FY19, 450,000 allotment added in FY19
ALN000052	STRE	A	PERMANENT											0	$1,625,000	Under Construction	2020		$1,624,407 2020 Needs but not constr until 2022 due to consultant change
ALN000052	STRE	A	PERMANENT											0	$1,170,000	Under Construction	2021		
ALN000052	STRE	A	PERMANENT	1			4456	341	1,645,578	1,439	180.19			180.19		Complete	2022		protocol reductions
ALN000136	STRE	A	PERMANENT							0				0		Design	2019	TN, TP, TSS, Bay TMDL, Local TSS TMDL	
ALN000136	STRE	A	PERMANENT							0				0	$6,000,000	Under Construction	2020		$750,000 allotted prior to FY19
ALN000136	STRE	A	PERMANENT	1			5620	546	1,664,800	1,454	186.81			186.81		Complete	2022		protocol reductions
ALN000128	STRE	A	PERMANENT							0				0		Design	2019	TN, TP, TSS, Bay TMDL, Local TSS TMDL	
ALN000128	STRE	A	PERMANENT							0				0	$3,200,000	Under Construction	2021		METRO funded project: $600,000 allotment for design prior to FY2019
ALN000128	STRE	A	PERMANENT	1			5000	340	1,240,000	304	100			100		Complete	2023		interim rate reductions, coastal plain
ALN000141	STRE	A	PERMANENT							0				0	$3,500,000	Design	2020	TN, TP, TSS, Bay TMDL, Local TP & TSS TMDLs	
ALN000141	STRE	A	PERMANENT							0				0	$1,500,000	Under Construction	2022		METRO funded
ALN000141	STRE	A	PERMANENT	1			5000	340	1,240,000	165	100			100		Complete	2026		interim rate reductions, piedmont
ALN000111	STRE	A	PERMANENT							0				0		Design	2018	TN, TP, TSS, Bay TMDL, Local TP & TSS TMDLs	
ALN000111	STRE	A	PERMANENT							0				0		Under Construction	2019		METRO funded project, $5,200,000 allotted prior to FY19
ALN000111	STRE	A	PERMANENT	1			6300	280	604,000	348	82.62			82.62		Complete	2021		protocol reductions
ALN000144	STRE	A	PERMANENT							0				0	$602,000	Design	2019	TN, TP, TSS, Bay TMDL, Local TSS TMDL	
ALN000144	STRE	A	PERMANENT							0				0	$4,620,000	Under Construction	2022		METRO funded project
ALN000144	STRE	A	PERMANENT	1			4700	320	1,165,600	162	94			94		Complete	2025		interim rate reductions, piedmont
ALN000125	STRE	A	PERMANENT							0				0	$5,167,361	Design	2019	TN, TP, TSS, Bay TMDL, Local TSS TMDL	
ALN000125	STRE	A	PERMANENT							0				0	$1,830,000	Under Construction	2021		$690,000 allotted prior to FY19
ALN000125	STRE	A	PERMANENT	1			7700	524	1,909,600	312	154			154		Complete	2025		interim rate reductions, piedmont
ALN000134	STRE	A	PERMANENT							0				0		Design	2020	TN, TP, TSS, Bay TMDL, Local TP & TSS TMDLs	
ALN000134	STRE	A	PERMANENT							0				0	$430,000	Under Construction	2021		METRO funded $1,300,000 allotted prior to FY19
ALN000134	STRE	A	PERMANENT	1			1600	109	396,800	53	32			32		Complete	2022		interim rate reductions, piedmont
ALN000152	STRE	A	PERMANENT							0				0	$680,000	Design	2019	TN, TP, TSS, Bay TMDL, Local TSS TMDL	
ALN000152	STRE	A	PERMANENT							0				0	$2,000,000	Under Construction	2021		
ALN000152	STRE	A	PERMANENT	1			1,900	129	471,200	66	38			38		Complete	2023		interim rate reductions, piedmont
ALNTBD001	STRE	A	PERMANENT							0				0		Design	2019	TN, TP, TSS	
ALNTBD001	STRE	A	PERMANENT							0				0	$627,500	Under Construction	2022		METRO: This allotment covers both design and future construction costs
ALNTBD001	STRE	A	PERMANENT	1			500	34	124,000	0	10			10		Complete	2024		interim rate reductions, piedmont
ALNTBD002	STRE	A	PERMANENT							0				0	$3,778,000	Design	2020	TN, TP, TSS, Bay TMDL, Local TSS TMDL	METRO: This allotment covers both design and future construction costs
ALNTBD002	STRE	A	PERMANENT							0				0	$300,000	Under Construction	2022		

ALNTBD002	STRE	A	PERMANENT	1			3,500	238	868,000	142	70			70		Complete	2026		interim rate reductions, piedmont
ALN000153	STRE	A	PERMANENT							0				0	$600,000	Design	2020	TN, TP, TSS, Bay TMDL, Local TSS TMDL	
ALN000153	STRE	A	PERMANENT							0				0	$680,000	Under Construction	2022		
ALN000153	STRE	A	PERMANENT	1			1,000	68	248,000	35	20			20		Complete	2026		interim rate reductions, piedmont
ALNTBD003	STRE	A	PERMANENT							0				0	$1,000,000	Design	2021	TN, TP, TSS, Bay TMDL	
ALNTBD003	STRE	A	PERMANENT							0				0	$3,140,000	Under Construction	2023		
ALNTBD003	STRE	A	PERMANENT	1			2,000	136	496,000	105	40			40		Complete	2027		interim rate reductions, piedmont
ALN000151	STRE	A	PERMANENT							0				0	$2,430,000	Design	2020	TN, TP, TSS, Bay TMDL, Local TSS TMDL	METRO funded
ALN000151	STRE	A	PERMANENT							0				0	$1,570,000	Under Construction	2021		
ALN000151	STRE	A	PERMANENT							0				0	$1,000,000	Under Construction	2022		
ALN000151	STRE	A	PERMANENT	1			3,000	204	744,000	182	60			60		Complete	2026		interim rate reductions, piedmont
ALNTBD004	STRE	A	PERMANENT							0				0	$1,000,000	Design	2024	TN, TP, TSS, Bay TMDL, Local TSS TMDL	METRO: This allotment covers both design and future construction costs
ALNTBD004	STRE	A	PERMANENT							0				0		Under Construction	2028		
ALNTBD004	STRE	A	PERMANENT	1			2,500	170	620,000	152	50			50		Complete	2030		interim rate reductions, piedmont
ALNTBD005	STRE	A	PERMANENT							0				0	$500,000	Design	2022	TN, TP, TSS, Bay TMDL, Local TP & TSS TMDLs	METRO funded
ALNTBD005	STRE	A	PERMANENT							0				0	$3,500,000	Under Construction	2024		
ALNTBD005	STRE	A	PERMANENT	1			4,000	272	992,000	93	80			80		Complete	2028		interim rate reductions, piedmont
ALNTBD006	STRE	A	PERMANENT							0				0	$1,762,500	Design	2020	TN, TP, TSS, Bay TMDL, Local TSS TMDL	METRO: This allotment covers both design and future construction costs
ALNTBD006	STRE	A	PERMANENT							0				0	$300,000	Under Construction	2022		
ALNTBD006	STRE	A	PERMANENT	1			1,500	102	372,000	71	30			30		Complete	2026		interim rate reductions, piedmont
ALNTBD007	STRE	A	PERMANENT							0				0	$600,000	Design	2021	TN, TP, TSS, Bay TMDL, Local TSS TMDL	
ALNTBD007	STRE	A	PERMANENT							0				0	$2,200,000	Under Construction	2022		
ALNTBD007	STRE	A	PERMANENT	1			1,000	68	248,000	35	20			20		Complete	2027		interim rate reductions, piedmont
ALNTBD008	STRE	A	PERMANENT							0				0	$600,000	Design	2025	TN, TP, TSS, Bay TMDL, Local TSS TMDL	
ALNTBD008	STRE	A	PERMANENT							0				0		Under Construction	2026		cost $1,442,000
ALNTBD008	STRE	A	PERMANENT	1			1,200	82	297,600	41	24			24		Complete	2031		interim rate reductions, piedmont
ALNTBD009	STRE	A	PERMANENT							0				0	$700,000	Design	2021	TN, TP, TSS, Bay TMDL, Local TSS TMDL	
ALNTBD009	STRE	A	PERMANENT							0				0	$3,000,000	Under Construction	2023		
ALNTBD009	STRE	A	PERMANENT	1			3,100	211	768,800	107	62			62		Complete	2027		interim rate reductions, piedmont
ALNTBD010	STRE	A	PERMANENT							0				0	$6,000,000	Design	2025	TN, TP, TSS, Bay TMDL, Local TP & TSS TMDLs	
ALNTBD010	STRE	A	PERMANENT							0				0		Under Construction	2029		
ALNTBD010	STRE	A	PERMANENT	1			5,500	374	1,364,000	182	110			110		Complete	2031		interim rate reductions, piedmont
ALNTBD011	STRE	A	PERMANENT							0				0	$2,125,000	Design	2024	TN, TP, TSS, Bay TMDL, Local TP & TSS TMDLs	METRO: This allotment covers both design and future construction costs
ALNTBD011	STRE	A	PERMANENT							0				0		Under Construction	2028		
ALNTBD011	STRE	A	PERMANENT	1			2,500	170	620,000	58	50			50		Complete	2030		interim rate reductions, piedmont
ALNTBD012	STRE	A	PERMANENT							0				0	$600,000	Design	2022	TN, TP, TSS, Bay TMDL, Local TSS TMDL	
ALNTBD012	STRE	A	PERMANENT							0				0	$2,500,000	Under Construction	2024		
ALNTBD012	STRE	A	PERMANENT	1			2,500	170	620,000	118	50			50		Complete	2028		interim rate reductions, coastal plain
ALNTBD013	STRE	A	PERMANENT							0				0	$600,000	Design	2023	TN, TP, TSS, Bay TMDL, Local TSS TMDL	
ALNTBD013	STRE	A	PERMANENT							0				0	$1,200,000	Under Construction	2025		
ALNTBD013	STRE	A	PERMANENT	1			1000	68	248,000	47	20			20		Complete	2029		
ALNTBD014	STRE	A	PERMANENT							0				0	$600,000	Design	2023	TN, TP, TSS, Bay TMDL, Local TSS TMDL	
ALNTBD014	STRE	A	PERMANENT							0				0	$2,525,000	Under Construction	2025		
ALNTBD014	STRE	A	PERMANENT	1			2600	177	644,800	123	52			52		Complete	2029		
ALNTBD015	STRE	A	PERMANENT							0				0	$3,100,000	Design	2023	TN, TP, TSS, Bay TMDL, Local TSS TMDL	
ALNTBD015	STRE	A	PERMANENT							0				0		Under Construction	2027		
ALNTBD015	STRE	A	PERMANENT	1			3000	204	744,000	108	60			60		Complete	2029		
ALNTBD016	STRE	A	PERMANENT							0				0	$2,000,000	Design	2024	TN, TP, TSS, Bay TMDL, Local TSS TMDL	
ALNTBD016	STRE	A	PERMANENT							0				0		Under Construction	2028		
ALNTBD016	STRE	A	PERMANENT	1			1200	82	297,600	43	24			24		Complete	2030		
ALNTBD017	STRE	A	PERMANENT							0				0	$3,500,000	Design	2023	TN, TP, TSS, Bay TMDL, Local TN, TP, TSS TMDLs	does not include $1,000,000 in funding prior to FY2019.
ALNTBD017	STRE	A	PERMANENT							0				0		Under Construction	2027		
ALNTBD017	STRE	A	PERMANENT	1			6000	408	1,488,000	369	120			120		Complete	2029		
ALNTBD018	STRE	A	PERMANENT							0				0	$600,000	Design	2022	TN, TP, TSS, Bay TMDL, Local TSS TMDL	
ALNTBD018	STRE	A	PERMANENT							0				0	$3,200,000	Under Construction	2024		
ALNTBD018	STRE	A	PERMANENT	1			3100	211	768,800	111	62			62		Complete	2028		
ALNTBD019	STRE	A	PERMANENT							0				0	$600,000	Design	2022	TN, TP, TSS, Bay TMDL, Local TSS TMDL	
ALNTBD019	STRE	A	PERMANENT							0				0	$1,700,000	Under Construction	2024		
ALNTBD019	STRE	A	PERMANENT	1			1600	109	396,800	76	32			32		Complete	2028		
APY014833	FPU	A	PERMANENT	1	3			8	7,047	19	4.26			4.26	$41,860	Complete	2020	TN, TP, TSS TMDLs, wildlife habitat, temperature	This REST BMP ID (APY014833) is reported twice in the portfolio. Part of this planting is riparian buffer, part is upland reforestation. One of the two rows is for the buffer portion, the other is for the upland portion. In future reports, the buffer or upland part will be assigned a new, unique REST BMP ID.
APY014833	FPU	A	PERMANENT	1	3			5	2,088	15	3.00			3	$41,860	Complete	2020	TN, TP, TSS TMDLs, wildlife habitat, temperature	This REST BMP ID (APY014833) is reported twice in the portfolio. Part of this planting is riparian buffer, part is upland reforestation. One of the two rows is for the buffer portion, the other is for the upland portion. In future reports, the buffer or upland part will be assigned a new, unique REST BMP ID.
APY013813	FPU	A	PERMANENT	1	1			1	383	4	0.55			0.55	$12,650	Complete	2020	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APY014832	FPU	A	PERMANENT	1	10			18	7,099	0	10.20			10.2	$153,000	Complete	2020	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APY013921	FPU	A	PERMANENT	1	6			11	4,176	9	6.00			6	$92,034	Complete	2020	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APY014830	UTC	A	PERMANENT	1	0			0	17	0	0.06			0.0588	$3,150	Complete	2020	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APY013922	FPU	A	PERMANENT	1	2			3	1,183	14	1.70			1.7	$25,500	Complete	2020	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APYTBD001	FPU	A	PERMANENT	1	1			2	696	11	1.00			1	$15,000	Planning	2021	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APYTBD002	FPU	A	PERMANENT	1	1			2	696	4	1.00			1	$15,000	Planning	2021	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APYTBD003	UTC	A	PERMANENT	1	1			0	41	1	0.14			0.14	$7,500	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APY001314	RFP	A	PERMANENT	1	2			5	4,299	10	2.60			2.5986	$27,450	Planning	2021	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APY001314	FPU	A	PERMANENT	1	1			3	1,037	6	1.49			1.49	$22,350	Planning	2021	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APY014831	FPU	A	PERMANENT	1	1			2	703	2	1.01			1.01	$15,000	Planning	2021	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APY001716	FPU	A	PERMANENT	1	1			2	696	7	1.00			1	$15,000	Planning	2022	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APY001632	UTC	A	PERMANENT	1	0			0	8	0	0.03			0.028	$4,000	Planning	2022	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APY000300	FPU	A	PERMANENT	1	1			2	647	8	0.93			0.93	$13,950	Planning	2022	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APY001438	FPU	A	PERMANENT	1	3			5	2,088	24	3.00			3	$45,000	Planning	2022	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APYTBD004	UTC	A	PERMANENT	6,000	20			10	1,640	32	5.60			5.6	$24,000	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD005	UTC	A	PERMANENT	1	1			0	57	2	0.20			0.196	$28,000	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD006	UTC	A	PERMANENT	1	0			0	33	1	0.11			0.112	$16,000	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD007	UTC	A	PERMANENT	1	0			0	16	1	0.06			0.056	$8,000	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD008	UTC	A	PERMANENT	1	0			0	12	0	0.04			0.042	$6,000	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD009	UTC	A	PERMANENT	1	0			0	7	0	0.03			0.0252	$3,600	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD010	UTC	A	PERMANENT	1	0			0	20	1	0.07			0.0672	$9,600	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD011	UTC	A	PERMANENT	1	0			0	22	1	0.08			0.0756	$10,800	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD012	UTC	A	PERMANENT	1	0			0	18	1	0.06			0.0616	$8,800	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD013	UTC	A	PERMANENT	1	0			0	37	0	0.13			0.126	$18,000	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD014	RFP	A	PERMANENT	1	1			3	2,584	7	1.56			1.562	$16,500	Planning	2021	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APYTBD015	FPU	A	PERMANENT	1	1			2	905	14	1.30			1.3	$20,000	Planning	2021	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APYTBD016	UTC	A	PERMANENT	1	0			0	7	0	0.02			0.0224	$3,200	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD017	UTC	A	PERMANENT	1	0			0	14	0	0.05			0.0476	$6,800	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD018	UTC	A	PERMANENT	1	0			0	2	0	0.01			0.0084	$1,200	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD019	UTC	A	PERMANENT	1	0			0	6	0	0.02			0.0196	$2,800	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD020	UTC	A	PERMANENT	1	0			0	11	0	0.04			0.0364	$5,200	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD021	UTC	A	PERMANENT	1	0			0	9	0	0.03			0.0308	$4,400	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD022	UTC	A	PERMANENT	1	0			0	14	0	0.05			0.0476	$6,800	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD023	UTC	A	PERMANENT	1	0			0	2	0	0.01			0.0084	$1,200	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD024	UTC	A	PERMANENT	1	0			0	3	0	0.01			0.0112	$1,600	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD025	UTC	A	PERMANENT	1	0			0	5	0	0.02			0.0168	$2,400	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD026	UTC	A	PERMANENT	1	0			0	10	0	0.03			0.0336	$4,800	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD027	UTC	A	PERMANENT	1	1			0	57	1	0.20			0.196	$28,000	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD028	UTC	A	PERMANENT	1	0			0	21	0	0.07			0.07	$10,000	Planning	2021	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD029	FPU	A	PERMANENT	1	10			18	7,009	57	10.07			10.07	$151,050	Planning	2022	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APYTBD030	UTC	A	PERMANENT	1	1			0	53	1	0.18			0.182	$26,000	Planning	2022	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD031	FPU	A	PERMANENT	1	45			81	31,320	254	45.00			45	$675,000	Planning	2022	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APYTBD032	UTC	A	PERMANENT	1	1			0	41	1	0.14			0.14	$20,000	Planning	2022	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD033	FPU	A	PERMANENT	1	15			27	10,440	85	15.00			15	$225,000	Planning	2023	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APYTBD034	UTC	A	PERMANENT	1	1			0	62	1	0.21			0.21	$30,000	Planning	2023	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD035	FPU	A	PERMANENT	1	45			81	31,320	254	45.00			45	$675,000	Planning	2023	TN, TP, TSS TMDLs, wildlife habitat, temperature	

APYTBD036	UTC	A	PERMANENT	1	1			0	62	1	0.21			0.21	$30,000	Planning	2023	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD037	FPU	A	PERMANENT	1	15			27	10,440	85	15.00			15	$225,000	Planning	2024	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APYTBD038	UTC	A	PERMANENT	1	1			0	62	1	0.21			0.21	$30,000	Planning	2024	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD039	FPU	A	PERMANENT	1	45			81	31,320	254	45.00			45	$675,000	Planning	2024	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APYTBD040	UTC	A	PERMANENT	1	1			0	41	1	0.14			0.14	$20,000	Planning	2024	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD041	FPU	A	PERMANENT	1	15			27	10,440	85	15.00			15	$225,000	Planning	2025	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APYTBD042	UTC	A	PERMANENT	1	1			0	62	1	0.21			0.21	$30,000	Planning	2025	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
APYTBD043	FPU	A	PERMANENT	1	45			81	31,320	254	45.00			45	$675,000	Planning	2025	TN, TP, TSS TMDLs, wildlife habitat, temperature	
APYTBD044	UTC	A	PERMANENT	1	1			0	62	1	0.21			0.21	$30,000	Planning	2025	TN, TP, TSS TMDLs, temperature, aesthetic benefit	Urban Tree Canopy Expansion Over Pervious
ALN000008	SHST	A	PERMANENT											0	$0	Design	2019		
ALN000008	SHST	A	PERMANENT											0	$0	Under Construction	2019		
ALN000008	SHST	A	PERMANENT	1			1510	69	310,603	194	27.2			27.22425403	$0	Complete	2020	TN, TP, TSS TMDLs, protection of property from erosion, wildlife habitat, climate change resiliency	Does not include $1,283,229 alloted prior to FY2019
ALN000156	SHST	A	PERMANENT											0	$210,000	Design	2019		
ALN000156	SHST	A	PERMANENT											0	$2,100,000	Under Construction	2022		
ALN000156	SHST	A	PERMANENT	1			1750	28	135,810	45	10.9			10.88	$0	Complete	2023	TN, TP, TSS TMDLs, protection of property from erosion, wildlife habitat, climate change resiliency	
ALN000157	SHST	A	PERMANENT											0	$158,000	Design	2019		
ALN000157	SHST	A	PERMANENT											0	$1,500,000	Under Construction	2022		
ALN000157	SHST	A	PERMANENT	1			500	13	31,666	67	4.6			4.622363294	$0	Complete	2023	TN, TP, TSS TMDLs, protection of property from erosion, wildlife habitat, climate change resiliency	
ALN000158	SHST	A	PERMANENT											0	$500,000	Design	2020		Does not include $153,000 alloted prior to FY2019
ALN000158	SHST	A	PERMANENT	1			295	12	31,474	30	3.7			3.73	$0	Complete	2024	TN, TP, TSS TMDLs, protection of property from erosion, wildlife habitat, climate change resiliency	
ALNTBD020	SHST	A	PERMANENT											0	$200,000	Design	2024		
ALNTBD020	SHST	A	PERMANENT											0	$1,400,000	Under Construction	2025		
ALNTBD020	SHST	A	PERMANENT	1			1600	98	262,400	138	28.4			28.44156162		Complete	2028	TN, TP, TSS TMDLs, protection of property from erosion, wildlife habitat, climate change resiliency	
ALNTBD021	SHST	A	PERMANENT											0	$150,000	Design	2022		
ALNTBD021	SHST	A	PERMANENT											0	$171,000	Under Construction	2024		
ALNTBD021	SHST	A	PERMANENT	1			100	6	16,400	9	1.8			1.777597602		Complete	2026	TN, TP, TSS TMDLs, protection of property from erosion, wildlife habitat, climate change resiliency	
ALNTBD022	SHST	A	PERMANENT											0	$200,000	Design	2022		
ALNTBD022	SHST	A	PERMANENT											0	$800,000	Under Construction	2024		
ALNTBD022	SHST	A	PERMANENT	1			900	55	147,600	77	16.0			15.99837841		Complete	2026	TN, TP, TSS TMDLs, protection of property from erosion, wildlife habitat, climate change resiliency	
ALNTBD023	SHST	A	PERMANENT											0	$105,000	Design	2022		
ALNTBD023	SHST	A	PERMANENT											0	$1,305,000	Under Construction	2024		
ALNTBD023	SHST	A	PERMANENT	1			1500	92	246,000	129	26.7			26.66396402		Complete	2026	TN, TP, TSS TMDLs, protection of property from erosion, wildlife habitat, climate change resiliency	
ALNTBD024	SHST	A	PERMANENT											0	$25,000	Design	2021		
ALNTBD024	SHST	A	PERMANENT											0	$220,000	Under Construction	2023		
ALNTBD024	SHST	A	PERMANENT	1			250	15	41,000	22	4.4			4.443994004		Complete	2025	TN, TP, TSS TMDLs, protection of property from erosion, wildlife habitat, climate change resiliency	
ALNTBD025	SHST	A	PERMANENT											0	$200,000	Design	2021		
ALNTBD025	SHST	A	PERMANENT											0	$850,000	Under Construction	2023		
ALNTBD025	SHST	A	PERMANENT	1			950	58	155,800	82	16.9			16.88717721		Complete	2025	TN, TP, TSS TMDLs, protection of property from erosion, wildlife habitat, climate change resiliency	
ALNTBD026	SHST	A	PERMANENT											0	$200,000	Design	2021		
ALNTBD026	SHST	A	PERMANENT											0	$800,000	Under Construction	2023		
ALNTBD026	SHST	A	PERMANENT	1			900	55	147,600	77	16.0			15.99837841		Complete	2025	TN, TP, TSS TMDLs, protection of property from erosion, wildlife habitat, climate change resiliency	
ALNTBD027	SHST	A	PERMANENT											0	$150,000	Design	2023		
ALNTBD027	SHST	A	PERMANENT											0	$840,000	Under Construction	2025		
ALNTBD027	SHST	A	PERMANENT	1			950	58	155,800	82	16.9			16.88717721		Complete	2027	TN, TP, TSS TMDLs, protection of property from erosion, wildlife habitat, climate change resiliency	
ALN000010	SHST	A	PERMANENT											0	$3,536,000	Design	2025		Does not include $250,000 alloted prior to FY2019
ALN000010	SHST	A	PERMANENT	1			3200	218	438,400	56	55.9			55.8593441	$0	Complete	2028	TN, TP, TSS TMDLs, protection of property from erosion, wildlife habitat, climate change resiliency	
Subtotal Capital (up through 2025)				6,161				5,943	17,138,215	9,824	2,084.2	0	0	2084.155967	$122,809,073				
Other																			
TBD000001	Stream restoration repair														$600,000	Design	2024		
TBD000002	Stream restoration repair															Under Construction	2026		cost $2,500,000
TBD000003	Stream restoration repair														$700,000	Under Construction	2021		does not include 2.525M alloted prior to FY2019
TBD000004	Back River Watershed BRRC (Trash Boom)		ANNUAL												$100,000	Planning	2020	Trash Reduction Strategy	
TBD000005	Back River Watershed BRRC (Trash Boom)		ANNUAL												$100,000	Planning	2021	Trash Reduction Strategy	
TBD000006	Back River Watershed BRRC (Trash Boom)		ANNUAL												$100,000	Planning	2022	Trash Reduction Strategy	
TBD000007	Back River Watershed BRRC (Trash Boom)		ANNUAL												$100,000	Planning	2023	Trash Reduction Strategy	
TBD000008	Back River Watershed BRRC (Trash Boom)		ANNUAL												$100,000	Planning	2024	Trash Reduction Strategy	
TBD000009	Back River Watershed BRRC (Trash Boom)		ANNUAL												$100,000	Planning	2025	Trash Reduction Strategy	
TBD000010	Capital Project Enhance ment (Remediation)														$500,000	Planning	2020	Restoration project permit requirement, CBP verification requirement	
TBD000011	Capital Project Enhance ment (Remediation)														$500,000	Planning	2021	Restoration project permit requirement, CBP verification requirement	
TBD000012	Capital Project Enhance ment (Remediation)														$500,000	Planning	2022	Restoration project permit requirement, CBP verification requirement	
TBD000013	Capital Project Enhance ment (Remediation)														$500,000	Planning	2023	Restoration project permit requirement, CBP verification requirement	
TBD000014	Capital Project Enhance ment (Remediation)														$500,000	Planning	2024	Restoration project permit requirement, CBP verification requirement	
TBD000015	Capital Project Enhance ment (Remediation)														$500,000	Planning	2025	Restoration project permit requirement, CBP verification requirement	
TBD000016	Gwynns Falls Trash Wheel		ANNUAL												$100,000	Planning	2020	Trash TMDL, Trash Reduction Strategy	
TBD000017	Gwynns Falls Trash Wheel		ANNUAL												$100,000	Planning	2021	Trash TMDL, Trash Reduction Strategy	
TBD000018	Gwynns Falls Trash Wheel		ANNUAL												$100,000	Planning	2022	Trash TMDL, Trash Reduction Strategy	
TBD000019	Gwynns Falls Trash Wheel		ANNUAL												$100,000	Planning	2023	Trash TMDL, Trash Reduction Strategy	
TBD000020	Gwynns Falls Trash Wheel		ANNUAL												$100,000	Planning	2024	Trash TMDL, Trash Reduction Strategy	
TBD000021	Gwynns Falls Trash Wheel		ANNUAL												$100,000	Planning	2025	Trash TMDL, Trash Reduction Strategy	
TBD000022	Shoreline Project Enhancement/Monitoring														$100,000	Planning	2020	Restoration project permit requirement, CBP verification requirement	
TBD000023	Shoreline Project Enhancement/Monitoring														$100,000	Planning	2021	Restoration project permit requirement, CBP verification requirement	
TBD000024	Shoreline Project Enhancement/Monitoring														$110,000	Planning	2022	Restoration project permit requirement, CBP verification requirement	
TBD000025	Shoreline Project Enhancement/Monitoring														$110,000	Planning	2023	Restoration project permit requirement, CBP verification requirement	
TBD000026	Shoreline Project Enhancement/Monitoring														$110,000	Planning	2024	Restoration project permit requirement, CBP verification requirement	
TBD000027	Shoreline Project Enhancement/Monitoring														$110,000	Planning	2025	Restoration project permit requirement, CBP verification requirement	
TBD000028	Stream Monitoring (stream restoration permits)														$250,000	Planning	2020	Restoration project permit requirement, CBP verification requirement	
TBD000029	Stream Monitoring (stream restoration permits)														$250,000	Planning	2021	Restoration project permit requirement, CBP verification requirement	
TBD000030	Stream Monitoring (stream restoration permits)														$250,000	Planning	2022	Restoration project permit requirement, CBP verification requirement	
TBD000031	Stream Monitoring (stream restoration permits)														$250,000	Planning	2023	Restoration project permit requirement, CBP verification requirement	
TBD000032	Stream Monitoring (stream restoration permits)														$250,000	Planning	2024	Restoration project permit requirement, CBP verification requirement	
TBD000033	Stream Monitoring (stream restoration permits)														$250,000	Planning	2025	Restoration project permit requirement, CBP verification requirement	
TBD000034	Stormwater BMP Repairs, Inspections														$2,313,886	Planning	2020	Repair of BMPs, CBP verification requirement	watershed management
TBD000035	Stormwater BMP Repairs, Inspections														$2,879,858	Planning	2021	Repair of BMPs, CBP verification requirement	watershed management
TBD000036	Stormwater BMP Repairs, Inspections														$2,843,449	Planning	2022	Repair of BMPs, CBP verification requirement	watershed management
TBD000037	Stormwater BMP Repairs, Inspections														$2,804,490	Planning	2023	Repair of BMPs, CBP verification requirement	watershed management
TBD000038	Stormwater BMP Repairs, Inspections														$2,762,804	Planning	2024	Repair of BMPs, CBP verification requirement	watershed management
TBD000039	Stormwater BMP Repairs, Inspections														$2,718,201	Planning	2025	Repair of BMPs, CBP verification requirement	watershed management
TBD000040	WMM Watershed Association Grants														$240,000	Planning	2020	Education and outreach, local TMDLs, Bay TMDL	Capacity building grants support staffing and restoration reporting among watershed associations.
TBD000041	WMM Watershed Association Grants														$240,000	Planning	2021	Education and outreach, local TMDLs, Bay TMDL	Capacity building grants support staffing and restoration reporting among watershed associations.
TBD000042	WMM Watershed Association Grants														$240,000	Planning	2022	Education and outreach, local TMDLs, Bay TMDL	Capacity building grants support staffing and restoration reporting among watershed associations.
TBD000043	WMM Watershed Association Grants														$240,000	Planning	2023	Education and outreach, local TMDLs, Bay TMDL	Capacity building grants support staffing and restoration reporting among watershed associations.
TBD000044	WMM Watershed Association Grants														$240,000	Planning	2024	Education and outreach, local TMDLs, Bay TMDL	Capacity building grants support staffing and restoration reporting among watershed associations.
TBD000045	WMM Watershed Association Grants														$240,000	Planning	2025	Education and outreach, local TMDLs, Bay TMDL	Capacity building grants support staffing and restoration reporting among watershed associations.
TBD000046	WMM Watershed Education and Outreach														$250,000	Planning	2020	Education and outreach, trash TMDL, bacteria TMDLs	
TBD000047	WMM Watershed Education and Outreach														$250,000	Planning	2021	Education and outreach, trash TMDL, bacteria TMDLs	
TBD000048	WMM Watershed Education and Outreach														$250,000	Planning	2022	Education and outreach, trash TMDL, bacteria TMDLs	
TBD000049	WMM Watershed Education and Outreach														$250,000	Planning	2023	Education and outreach, trash TMDL, bacteria TMDLs	
TBD000050	WMM Watershed Education and Outreach														$250,000	Planning	2024	Education and outreach, trash TMDL, bacteria TMDLs	
TBD000051	WMM Watershed Education and Outreach														$250,000	Planning	2025	Education and outreach, trash TMDL, bacteria TMDLs	
TBD000052	Stormwater BMP Operation and Maintenance														$1,353,760	Planning	2020	Inspection and repair of BMPs, CBP verification requirement	Operating budget expenses, 2.75% inflation rate.
TBD000053	Stormwater BMP Operation and Maintenance														$1,390,988	Planning	2021	Inspection and repair of BMPs, CBP verification requirement	Operating budget expenses, 2.75% inflation rate.
TBD000054	Stormwater BMP Operation and Maintenance														$1,429,241	Planning	2022	Inspection and repair of BMPs, CBP verification requirement	Operating budget expenses, 2.75% inflation rate.
TBD000055	Stormwater BMP Operation and Maintenance														$1,468,545	Planning	2023	Inspection and repair of BMPs, CBP verification requirement	Operating budget expenses, 2.75% inflation rate.
TBD000056	Stormwater BMP Operation and Maintenance														$1,508,930	Planning	2024	Inspection and repair of BMPs, CBP verification requirement	Operating budget expenses, 2.75% inflation rate.
TBD000057	Stormwater BMP Operation and Maintenance														$1,550,425	Planning	2025	Inspection and repair of BMPs, CBP verification requirement	Operating budget expenses, 2.75% inflation rate.
TBD000058	Stormwater and Flood Control Repairs and Enhancements														$3,175,000	Planning	2020	Flooding and climate resliency	watershed management, Climate resliency
TBD000059	Stormwater and Flood Control Repairs and Enhancements														$3,175,000	Planning	2021	Flooding and climate resliency	watershed management, Climate resliency
TBD000060	Stormwater and Flood Control Repairs and Enhancements														$3,175,000	Planning	2022	Flooding and climate resliency	watershed management, Climate resliency
TBD000061	Stormwater and Flood Control Repairs and Enhancements														$3,175,000	Planning	2023	Flooding and climate resliency	watershed management, Climate resliency
TBD000062	Stormwater and Flood Control Repairs and Enhancements														$3,175,000	Planning	2024	Flooding and climate resliency	watershed management, Climate resliency
TBD000063	Stormwater and Flood Control Repairs and Enhancements														$3,175,000	Planning	2025	Flooding and climate resliency	watershed management, Climate resliency
														0					
														0					

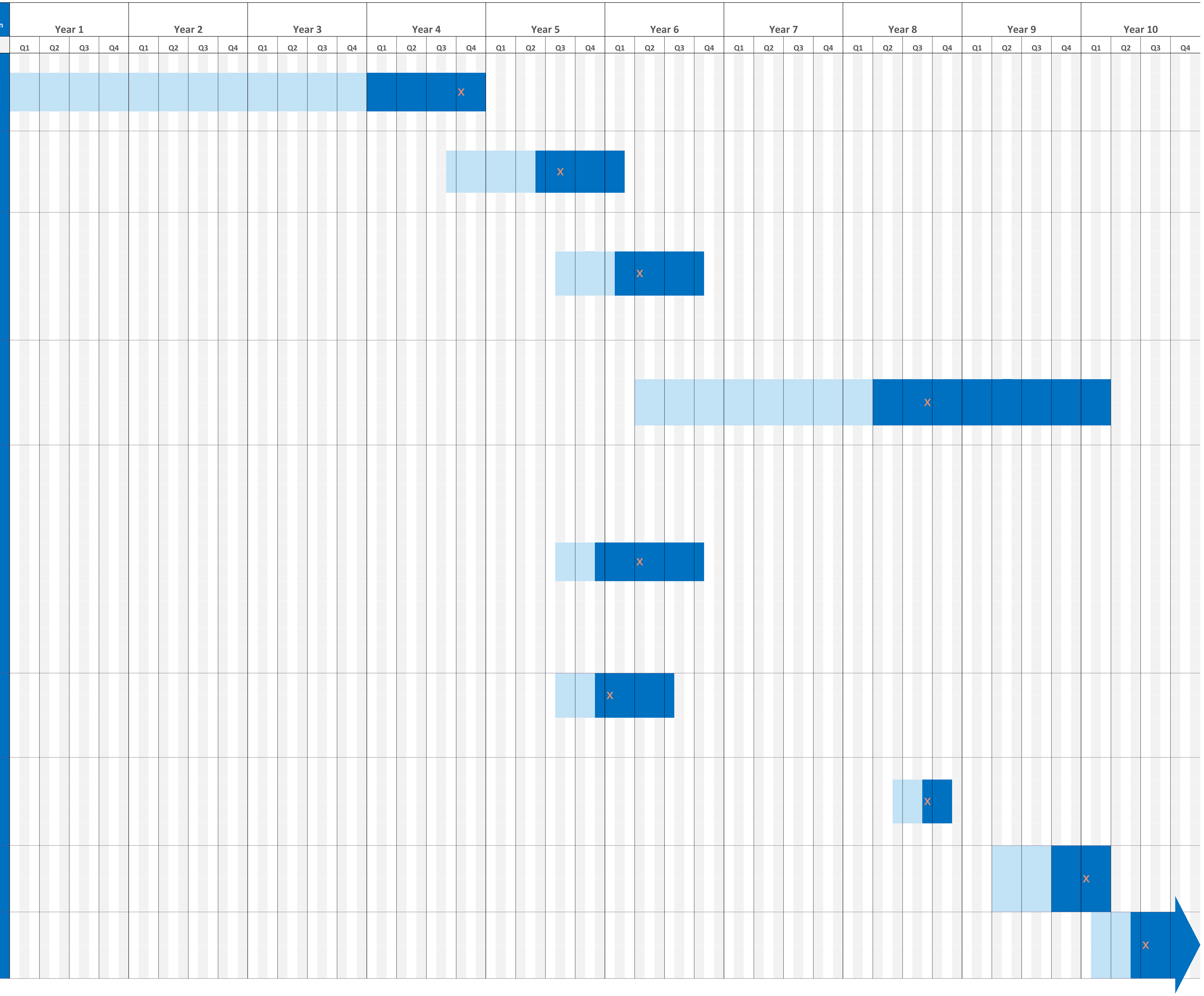
Subtotal Other (up through 2025)			0				0	0	0	0	0	0	0	$54,654,577				
Total for Next Permit (up to 2025)			**6,161**				**5,943**	**17,138,215**	**9,824**	**2,084.2**	**0.0**	**0.0**	**2,084.2**	**$177,463,650**				
Total for Next Permit and Projected Years			**6,195**				**10,390**	**32,564,246**	**12,811**	**3,390.5**	**0.0**	**0.0**	**3,390.5**	**$177,463,650**				
Total for Remaining Obligations from The Previous Permit, Continued Obligations, and Proposed Activities for The Next Permit (up to 2025)			**6,557**				**8,004**	**19,984,422**	**13,360**	**2,564.2**	**0.0**	**0.0**	**2,564.2**	**$188,370,728**				
Total for Remaining Obligations from The Previous Permit, Continued Obligations, and Proposed Activities for The Next Permit (up to 2027)			**6,494**				**9,638**	**25,604,404**	**14,597**	**3,050.1**	**0.0**	**0.0**	**3,050.1**	**$188,370,728**				

BMP Class	
Code	**Code Description**
A	Alternative BMP
E	ESD
S	Structural BMP

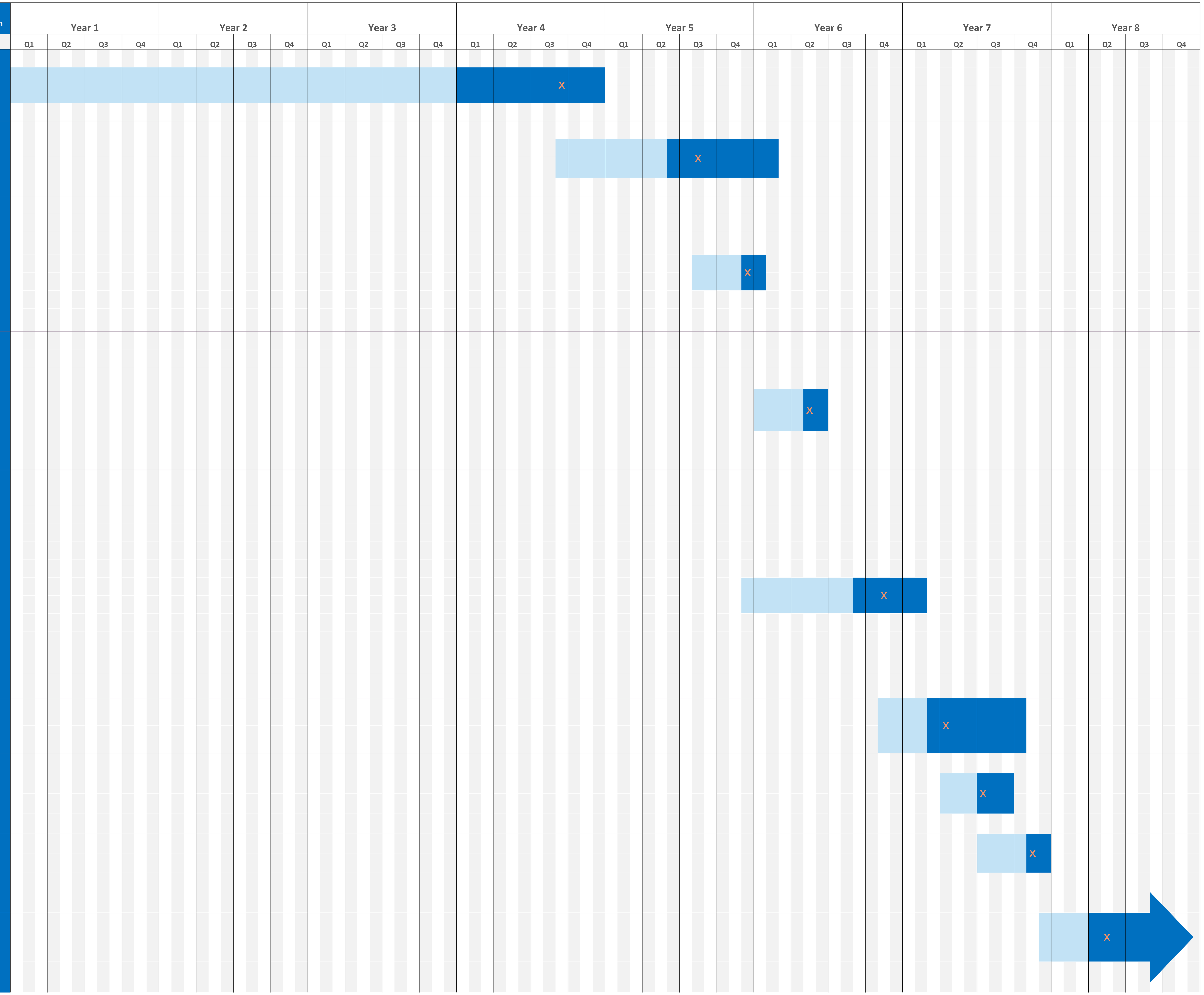
BMP Classification	BMP Type Code	BMP Type
Alternative Surfaces (A)		
E	AGRE	Green Roof – Extensive
E	AGRI	Green Roof – Intensive
E	APRP	Permeable Pavements
E	ARTF	Reinforced Turf
Nonstructural Techniques (N)		
E	NDRR	Disconnection of Rooftop Runoff
E	NDNR	Disconnection of Non-Rooftop Runoff
E	NSCA	Sheetflow to Conservation Areas
Micro-Scale Practices (M)		
E	MRWH	Rainwater Harvesting
E	MSGW	Submerged Gravel Wetlands
E	MILS	Landscape Infiltration
E	MIBR	Infiltration Berms
E	MIDW	Dry Wells
E	MMBR	Micro-Bioretention
E	MRNG	Rain Gardens
E	MSWG	Grass Swale
E	MSWW	Wet Swale
E	MSWB	Bio-Swale
E	MENF	Enhanced Filters
Ponds (P)		
S	PWED	Extended Detention Structure, Wet
S	PWET	Retention Pond (Wet Pond)
S	PMPS	Multiple Pond System
S	PPKT	Pocket Pond
S	PMED	Micropool Extended Detention Pond
Wetlands (W)		
S	WSHW	Shallow Marsh
S	WEDW	ED – Wetland
S	WPWS	Wet Pond – Wetland
S	WPKT	Pocket Wetland
Infiltration (I)		
S	IBAS	Infiltration Basin
S	ITRN	Infiltration Trench
Filtering Systems (F)		
S	FBIO	Bioretention
S	FSND	Sand Filter
S	FUND	Underground Filter
S	FPER	Perimeter (Sand) Filter
S	FORG	Organic Filter (Peat Filter)
S	FBIO	Bioretention
Open Channels (O)		
S	ODSW	Dry Swale
S	OWSW	Wet Swale
Other Practices (X)		
S	XDPD	Detention Structure (Dry Pond)
S	XDED	Extended Detention Structure, Dry
S	XFLD	Flood Management Area
S	XOGS	Oil Grit Separator

S	XOTH	Other
Alternative BMPs		
A	MSS	Mechanical Street Sweeping
A	VSS	Regenerative/Vacuum Street Sweeping
A	IMPP	Impervious Surface Elimination (to pervious)
A	IMPF	Impervious Surface Elimination (to forest)
A	FPU	Planting Trees or Forestation on Pervious Urban
A	CBC	Catch Basin Cleaning
A	SDV	Storm Drain Vacuuming
A	STRE	Stream Restoration
A	OUT	Outfall Stabilization
A	SPSC	Regenerative Step Pool Storm Conveyance
A	SHST	Shoreline Management
A	SEPP	Septic Pumping
A	SEPD	Septic Denitrification
A	SEPC	Septic Connections to WWTP
A	FTW	Floating Treatment Wetland
A	FTC	Forest Conservation
A	CLS	Conservation Landscaping
A	RCL	Riparian Conservation Landscaping
A	IDDE	Illicit Discharge Detection & Elimination
A	OTH	Other

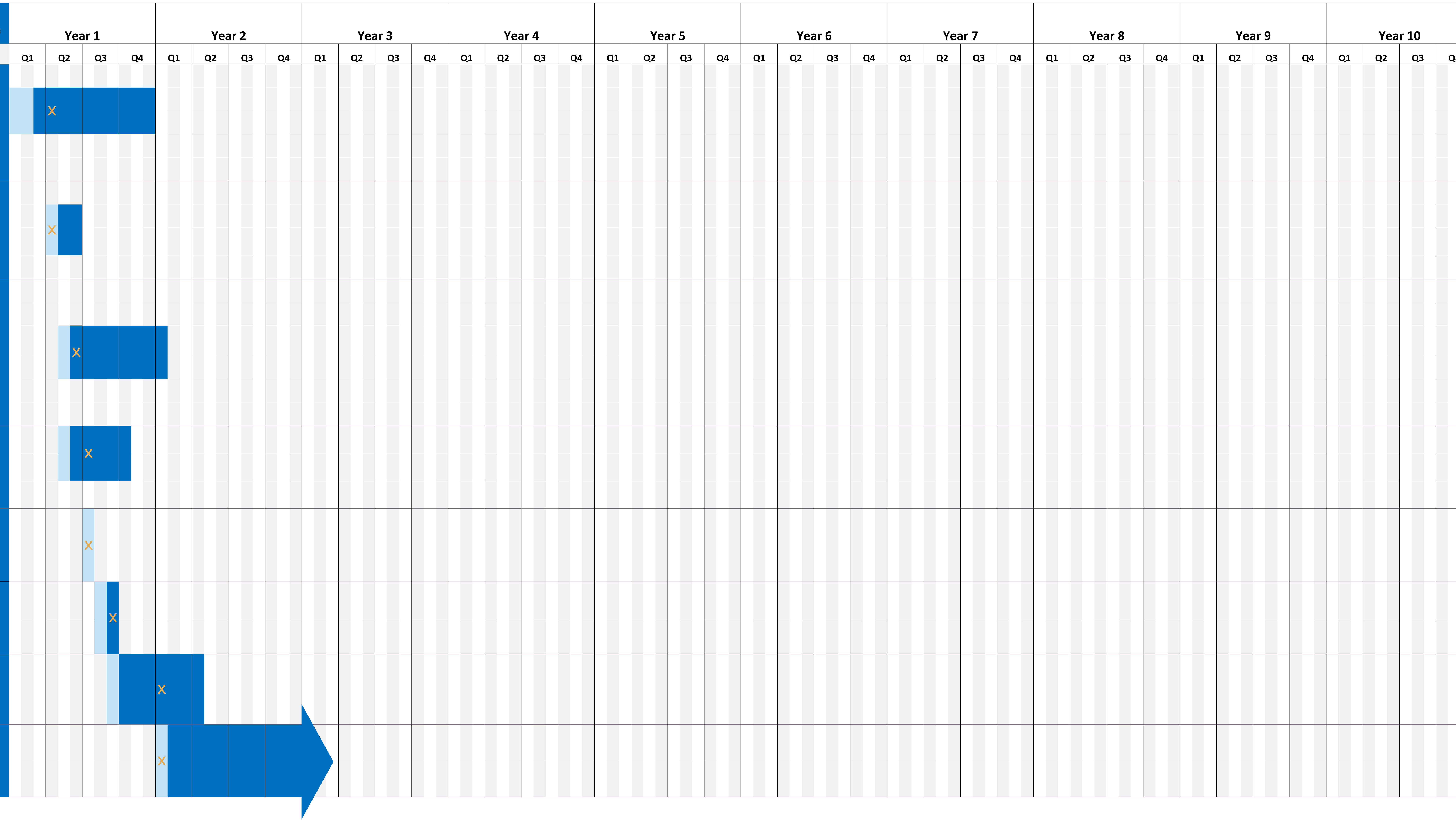
Stage	Task	Typical start	Min. duration	Typical duration (X)	Max. duration
		In Months			
PRE-PLANNING	*Identification and Site Assessment* *SWAP & Mandate Guidance* *Prioritization* *Determine funding source*	1	36	45	48
PLANNING	*Survey to Community* *Determine project scope and limits* *Consultant Selection/Proposal Negotiation* *Procurement Process*	45	9	12	18
DESIGN	**Concept & Preliminary Design** *Topographical Survey* *Stream & Natural Resource Assessments* *Existing H/H Modeling* *Sediment Transport Analysis* *Identify Approach, Techniques, & Constraints*	56	6	9	15
	Design Development *Proposed H/H Development* *Determine Planform, Structure Placement, & Grading* *Formulate Sediment & Erosion Control & Landscaping Plans* *Revisions*	64	24	30	48
PERMITTING	**ACOE & MDE** *Pre-Application Submittal* *Joint Permit Application* *Field Meeting with Reviewer* *Comment Period* *Landowner Noticiation* **Soil Conservation District** **Baltimore County Internal Reviews** *DPW Engineering & Construction Inspection* *Permits Approvals & Inspections* *EPS - Waterhed Restoration, Env. Impact Review, & Stormwater Mgmt.*	56	4	9	15
LANDOWNER COORDINATION	*Community meetings* *Individual meetings* *Signed permissions*	56	4	6	12
CONTRACTOR PROCUREMENT	*Advertisment* *Bid Opening* *Contract Process* *Contract Award*	90	3	4	6
CONSTRUCTION	*Notice to Proceed* *Project Implementation*	100	6	10	12
POST-CONSTRUCTION	*As-built survey* *1 year plant warranty*	110	4	6	9



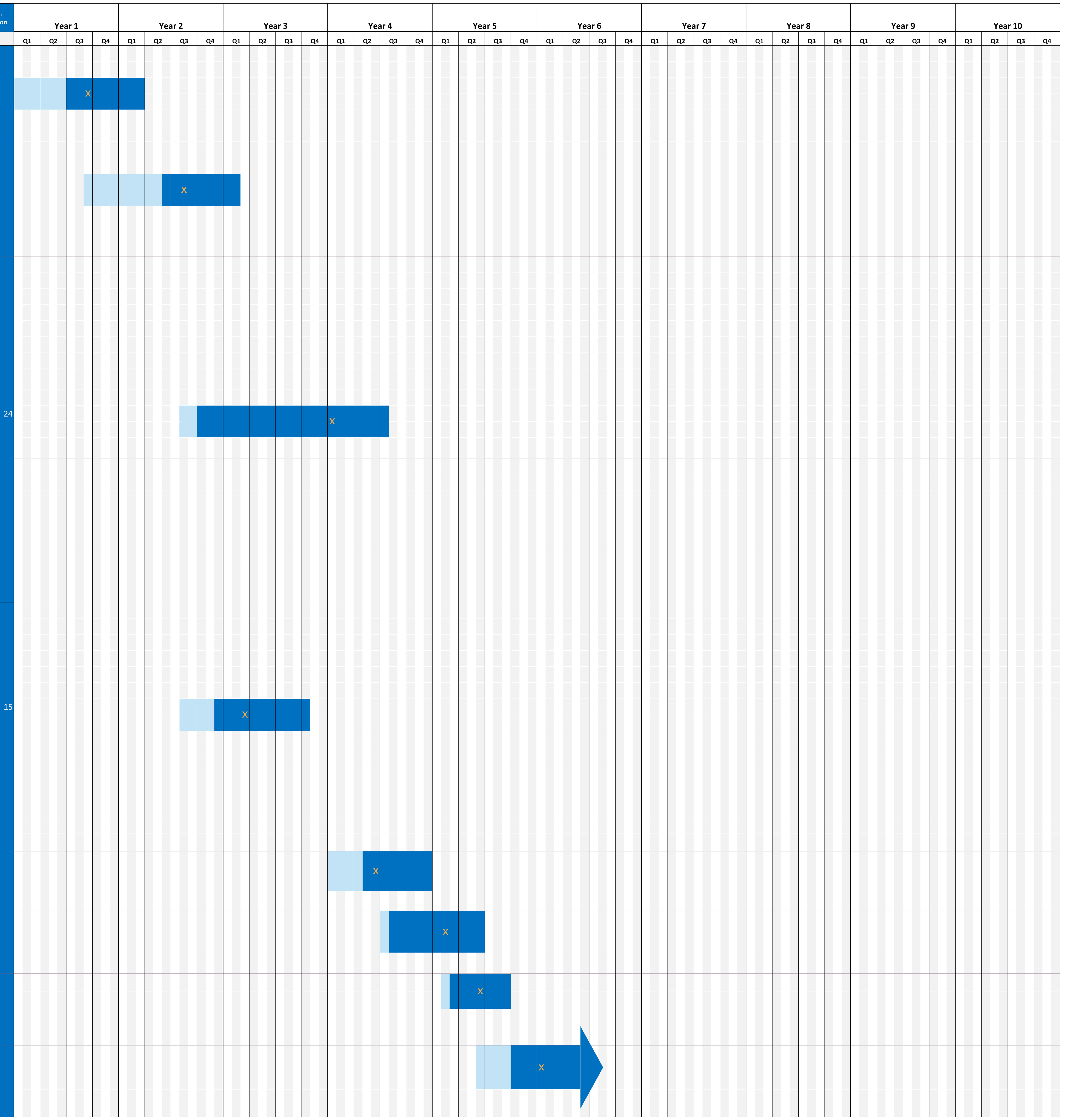
Stage	Task	Typical start	Min. duration	Typical duration (X)	Max. duration
		In Months			
PRE-PLANNING	*Identification and Site Assessment*	1	36	45	48
	SWAP & Mandate Guidance				
	Prioritization				
	Determine funding source				
PLANNING	*Survey to Community*	45	9	12	18
	Determine project scope and limits				
	Consultant Selection/Proposal Negotiation				
	Procurement Process				
DESIGN	**Concept & Preliminary Design**	56	4	5	6
	Topographical & Bathymetric Surveys				
	Existing Strucutres & Conditions				
	Meteorological & Oceanographic Conditions				
	Joint Permit Application - Offshore Borings				
	Natural Resource Assessment				
	Identify Approach, Techniques & Constraints				
	Design Development	61	4	5	6
	Coastal Engineering - Hydrodynamics				
	Morphological Modeling				
	Geotechinical Investigation				
	Determine Design Approach, Structure Placement & Grading				
	Formulate Sediment & Erosion Control and Landscape Plans				
	Revisions				
PERIMITTING	**ACOE, MDE & DNR**	60	9	12	15
	Pre-Application Submittal				
	Joint Permit Application (tidal/nontidal)				
	Field Meeting with Reviewer				
	Comment Period				
	Landowner Notification				
	MD Board of Public Works- TWL Approval				
	Soil Conservation District				
	Baltimore County Internal Reviews				
	DPW Engineering & Construction Inspection				
	Permits Approvals & Inspections				
	EPS - Waterhed Restoration, Env. Impact Review, & Stormwater Mgmt.				
LANDOWNER COORDINATIO N	*Site Meetings (Intra-Agency/Interagency)*	71	4	6	12
	Permissions (Intra-Agency/Interagency)				
CONTRACTOR PROCUREMENT	*Advertisment*	76	3	4	6
	Bid Opening				
	Contract Process				
	Contract Award				
CONSTRUCTION	*Notice to Proceed*	79	4	5	6
	Project Implementation				
	Final Walk Through				
POST-CONSTRUCTION	*As-built survey*	84	4	6	9
	1 year plant warranty				



Stage		Typical start	Min. duration	Typical duration (X)	Max. duration
		In Months			
PRE-PLANNING	*Identification Watershed/sub-watershed* *SW As-built plan review & desktop GIS* *Site Field Assessment* *Identify Access Constraints* *Preliminary Evaluation/Determination*	1	2	4	12
PLANNING	*DA & Impervious calculation/verification* *Conceptual Design* *Pollutant Removal Calculation* *Evaluation/Determination based on P>1"*	4	1	1	3
DESIGN	**Design Facilities: P > 1"** *H/H Modeling* *Design* *Plan Preparation* *Details & Calculations* *Topographical Survey*	5	1	2	9
PERIMITTING	**Baltimore Co Internal Reviews** *EPS - Environmental Impact Review* *EPS - Stormwater Management*	5	1	3	6
LANDOWNER COORDINATION	*Site Meetings (Intra-Agency/Interagency)*	7	1	1	1
CONTRACTOR ON-CALL SERVICES	*Proposal* *Scheduling*	8	1	2	2
CONSTRUCTIO N	*Construction*	9	1	5	8
POST-CONSTRUCTION	*As-built survey* *1 year plant warranty*	13	1	1	12

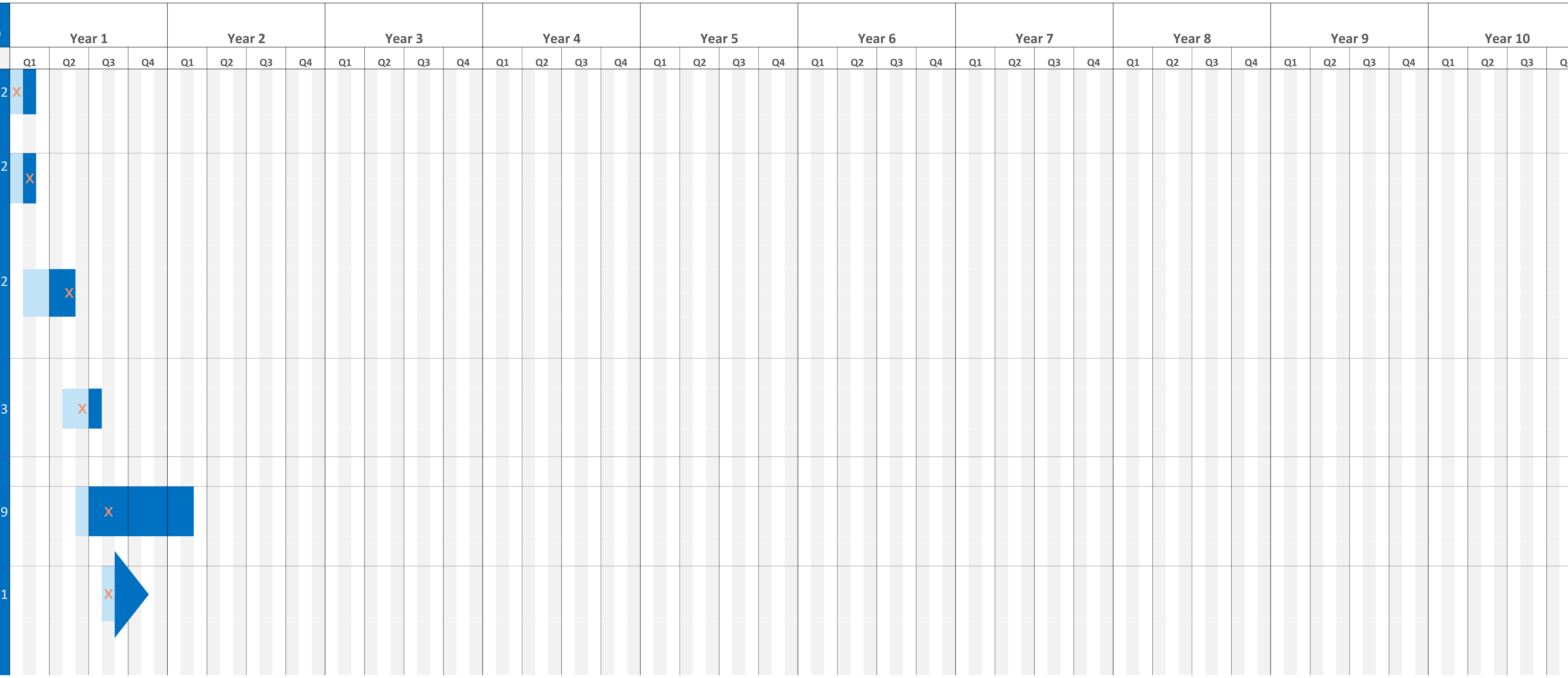


Stage	Task	Typical start	Min. duration	Typical duration (X)	Max. duration
		In Months			
PRE-PLANNING	*Identification Watershed/sub-watershed*				
	SWAP Guidance				
	GIS Desktop Review	1	6	9	15
	Site Field Assessment				
	Identify Resources/Access/ Utility Issues				
	Preliminary Evaluation/Determination				
PLANNING	*Property Ownership/ Potential Acquisition*				
	Detailed Site Constraints				
	Natural Resources Assessment	9	9	12	18
	DA & Impervious Surface Calculation				
	Conceptual BMP Techniques				
	Conceptual Pollutant Removal Calculation				
	Evaluation/Determination				
DESIGN	**Concept & Preliminary Design**				
	Concept Stormwater Design Meeting				
	Topographical Survey				
	Existing H/H Modeling				
	Select Approach/Techniques				
	Proposed Grading				
	Existing Utility Adjustments				
	Meet with DPW Engineering				
	Preliminary Proposed H/H				
	Preliminary Prop Pollutant Removal Calcs	20	2	18	24
	Detailed Site Constraints				
	Proceed with Acquisition Process				
	Design Development				
	Refine Grading				
	Refine Utility Adjustments				
	Refine Ex. & Prop. H/H				
	Continue with Acquisition Process				
	Design Sediment & Erosion Control Plan				
	Design Landscape Plan				
	Revise based on comments from Baltimore County and Regulatory Agencies				
PERIMITTING	**ACOE, MDE & DNR**				
	Pre-Application Submittal				
	Joint Agency Review Group				
	Joint Permit Application				
	Field Meeting with Reviewer				
	Comment Period				
	Respond to Comments	20	4	9	15
	Landowner Notification				
	Receive Authorization				
	Soil Conservation District				
	Baltimore County Internal Reviews				
	EPS - Stormwater Management				
	EPS - Environmental Impact Review				
	DPW Engineering				
	Permits Approvals & Inspections				
LAND ACQUISITION	*Community meetings*				
	Individual meetings	37	4	6	12
	Signed permissions				
CONTRACTOR ON-CALL SERVICES	*Proposal*	43	1	8	12
	Scheduling				
	Bidding				
CONSTRUCTION	*Notice to Proceed*				
	Project Implementation	50	1	5	8
	Final Walk Through				
POST-CONSTRUCTION	*As-built survey*	54	4	8	12
	1 year plant warranty				

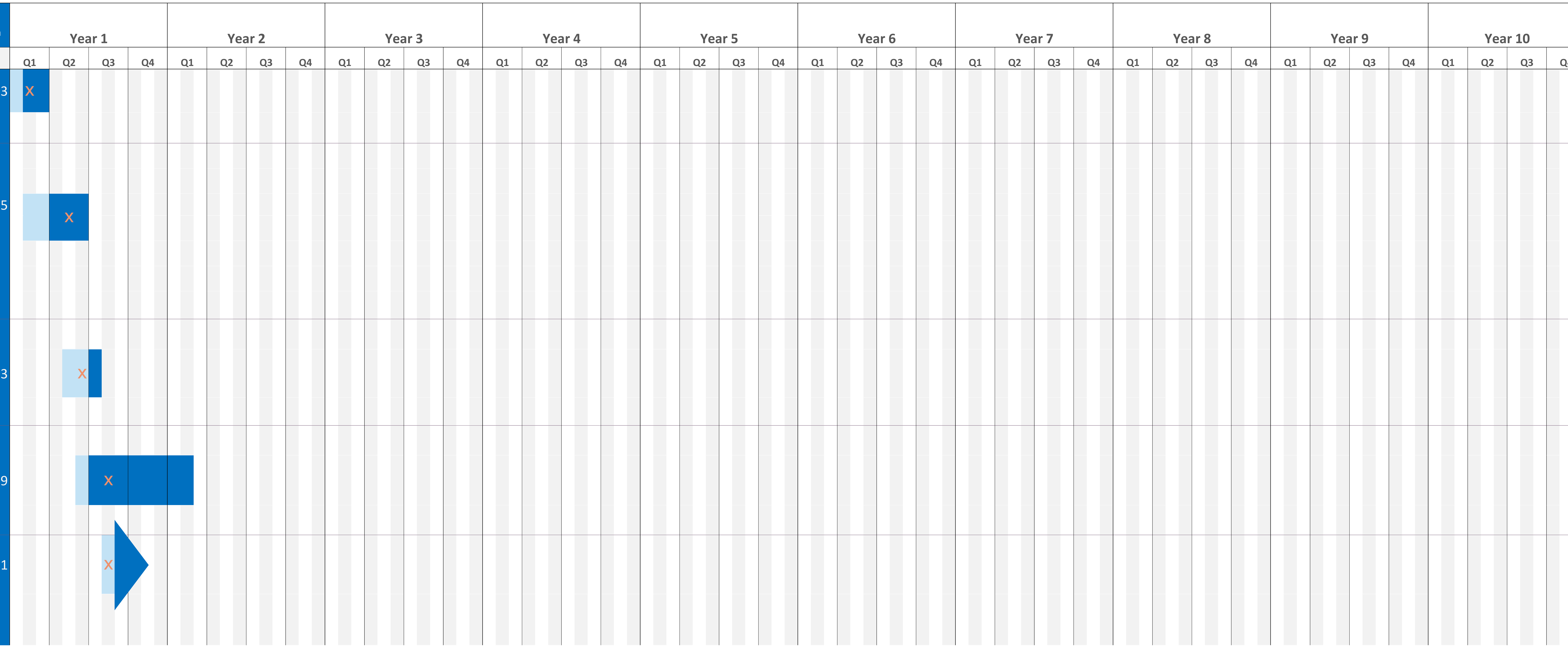


Stage	Task	Typical start	Min. duration	Typical duration (X)	Max. duration
		In Months			
PLANNING	*Identification sites with reforestation potential*	1	1	2	3
	Solicit private property owners				
DESIGN	*Receive request to plant*				
	Internal EPS Review: Check property for easements and spetic/well location	2	1	1	3
	Site Visit				
	Map reforestation area, develop planting plan, confirm planting location with property				
	Receive Entry Agreement from property owner				
CONTRACTOR PROCUREMENT	*Request bid from on-call contractors*				
	Contract Process	2	2	2	3
	Contract Award				
CONSTRUCTION	*Notice to Proceed (Planting Season)*				
	Mark Planting Area	3	1	3	9
	Project Implementation				
POST-CONSTRUCTION	*Planting Inspection*	5	1	1	1
	3 year maintenance warranty				

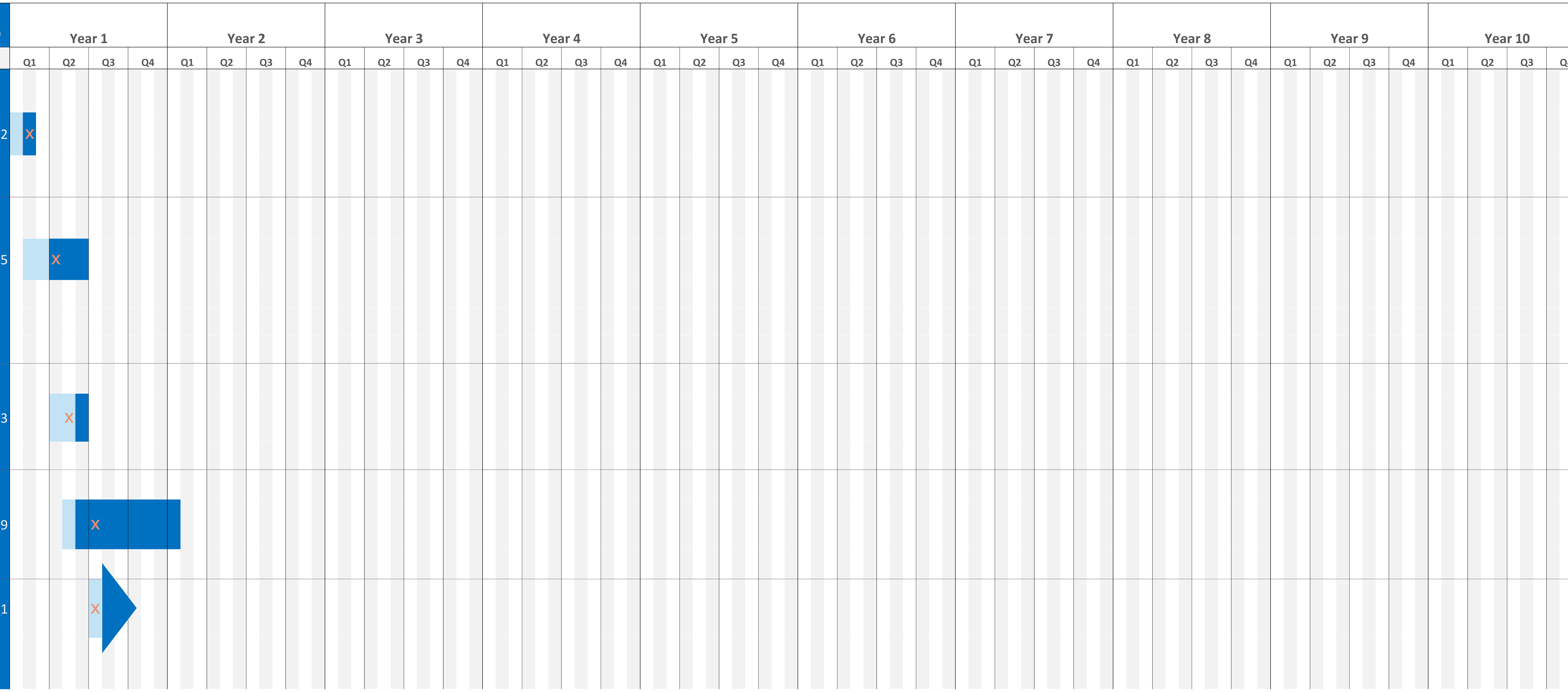
Stage	Task	Typical start	Min. duration	Typical duration (X)	Max. duration
		In Months			
PLANNING	*Identification sites with reforestation potential*	1	1	1	2
	Internal review: Send to County agency responsible for site for initial okay to proceed				
DESIGN	*Site visit, check utilities*	1	1	1	2
	Map reforestation area, develop planting plan				
	Internal Review: send planting plan to agency responsible for property for review and approval				
Landowner Coordination (if required)	*Community meetings*				
	Community mailings	2	2	4	12
	Revise planting plan (if needed)				
	Community letter of support (if community support is required, the project can stop without it)				
CONTRACTOR PROCUREMENT	*Request bid from on-call contractors*				
	Contract Process	5	2	3	3
	Contract Award				
CONSTRUCTION	*Notice to Proceed (Planting Season)*				
	Mark Planting Area	6	1	3	9
	Project Implementation				
POST-CONSTRUCTION	*Planting Inspection*	8	1	1	1
	1 - 3 year maintenance warranty				



Stage	Task	Typical start	Min. duration	Typical duration (X)	Max. duration
		In Months			
PLANNING	*Identification sites with reforestation potential*	1	1	2	3
	Solicit private property owners				
DESIGN	*Receive request to plant*				
	Internal EPS Review: Check property for easements and recorded utilities				
	Meeting with property owner/HOA	2	2	3	5
	Site Visit with HOA/business representative				
	Map tree locations and develop planting plan				
	HOA/business representative approves planting plan (may require community				
	Receive Entry Agreement from property owner				
CONTRACTOR PROCUREMENT	*Request bid from on-call contractors*				
	Contract Process	5	2	3	3
	Contract Award				
CONSTRUCTION	*Notice to Proceed (Planting Season)*				
	Mark Planting Area	6	1	3	9
	Project Implementation				
POST-CONSTRUCTION	*Planting Inspection*	8	1	1	1
	1 year maintenance warranty				



Stage	Task	Typical start	Min. duration	Typical duration (x)	Max. duration
		In Months			
PLANNING	*Receive request to plant from community, meet with community group or community member*				
	Identification sites with reforestation potential (ROW must meet County spacing criteria to plant)	1	1	1	2
	Internal County Review: Check with County Arborist in DPW (Roadside Tree Permit)				
DESIGN	*Solicit private property owners - Send letters to property owners detailing potential project*				
	Solicit private property owners - Community member goes door to door requesting permission to plant a tree	2	2	3	5
	Receive Entry Agreement from property owner				
	Review: Check planting locations, send to DPW for final approval				
	Map Tree Locations, develop planting plan				
CONTRACTOR PROCUREMENT	*Request bid from on-call contractors*				
	Contract Process	4	2	2	3
	Contract Award				
CONSTRUCTION	*Notice to Proceed (Planting Season)*				
	Mark Planting Area	5	1	3	9
	Project Implementation				
POST-CONSTRUCTION	*Planting Inspection*	7	1	1	1
	1 year maintenance warranty				



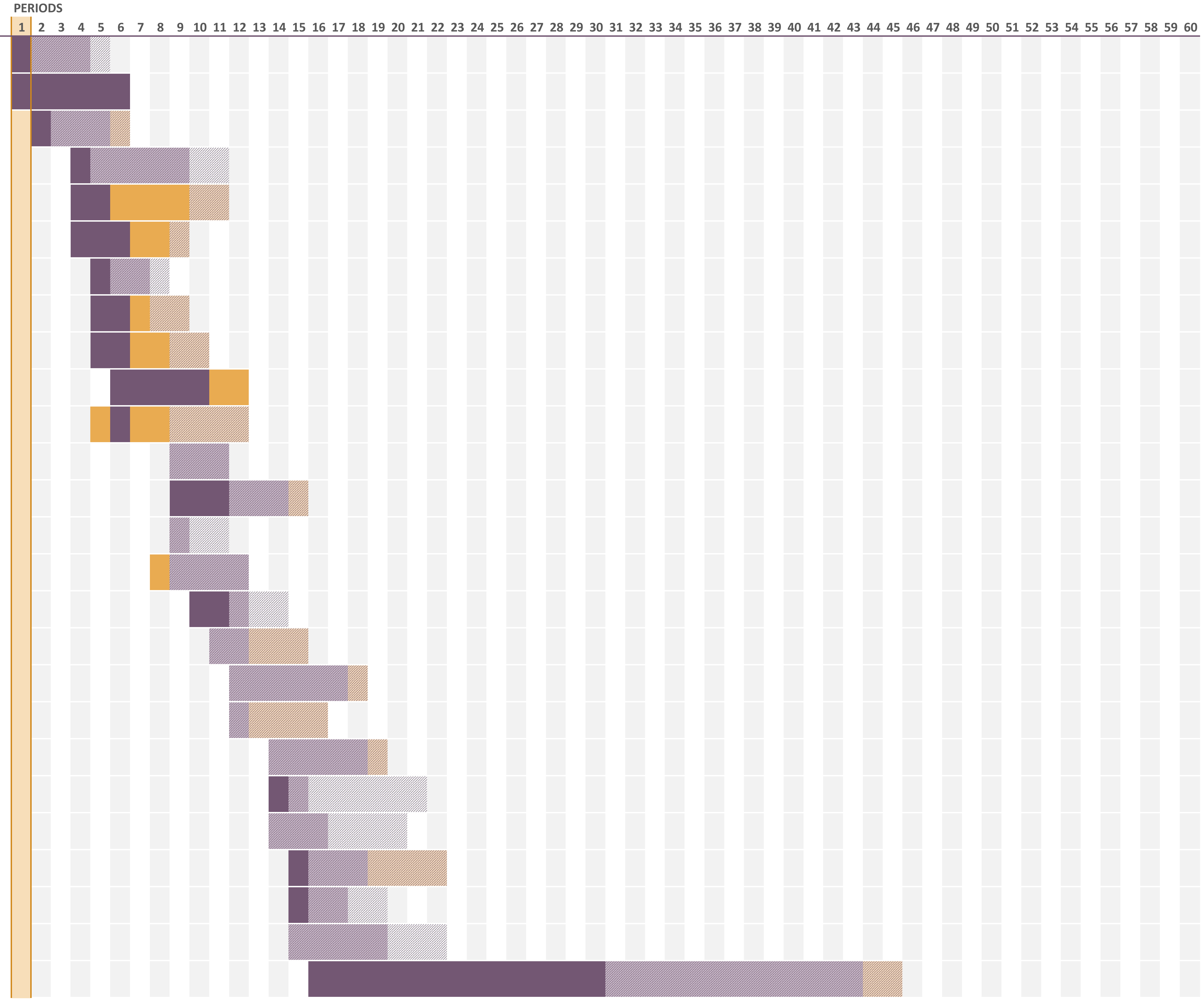
Project Planner

Select a period to highlight at right. A legend describing the charting follows.

Period Highlight: 1

Plan Duration | Actual Start | % Complete | Actual (beyond plan) | % Complete (beyond plan)

ACTIVITY	PLAN START	PLAN DURATION	ACTUAL START	ACTUAL DURATION	PERCENT COMPLETE
Activity 01	1	5	1	4	25%
Activity 02	1	6	1	6	100%
Activity 03	2	4	2	5	35%
Activity 04	4	8	4	6	10%
Activity 05	4	2	4	8	85%
Activity 06	4	3	4	6	85%
Activity 07	5	4	5	3	50%
Activity 08	5	2	5	5	60%
Activity 09	5	2	5	6	75%
Activity 10	6	5	6	7	100%
Activity 11	6	1	5	8	60%
Activity 12	9	3	9	3	0%
Activity 13	9	6	9	7	50%
Activity 14	9	3	9	1	0%
Activity 15	9	4	8	5	1%
Activity 16	10	5	10	3	80%
Activity 17	11	2	11	5	0%
Activity 18	12	6	12	7	0%
Activity 19	12	1	12	5	0%
Activity 20	14	5	14	6	0%
Activity 21	14	8	14	2	44%
Activity 22	14	7	14	3	0%
Activity 23	15	4	15	8	12%
Activity 24	15	5	15	3	5%
Activity 25	15	8	15	5	0%
Activity 26	16	28	16	30	50%



Financial Capacity Spreadsheet			
1	County/City Name	Baltimore County, Maryland	
2	Cost As A Percent Of Household Income		
2a	Median Household Income (MHI)		$ 71,810
2b	Total Number Of Households In Jurisdiction		312,859
2c	Average Annual Cost For Public Stormwater Related Management Programs		$ 33,103,788
2d	Annual Cost For Public Stormwater Related Management Programs Per Household		$ 105.81
2e	% Of MHI Spent On Public Stormwater Related Management Programs		0.15%
2f	Total Annual Stormwater Remediation Fee Per Household		$ -
2g	% Of MHI Spent Annually On Stormwater Remediation Fee		0.00%
3	Cost Of Impervious Surface Restoration As A Percent Of Household Income		
3a	Total In Previous Permit Term Spent On The Impervious Surface Restoration Plan (ISRP)		$ 126,476,911
3b	Average Annual Cost Of The ISRP During The Previous Permit Term		$ 15,809,614
3c	Annual Cost Of The ISRP Per Household During The Previous Permit Term		$ 50.53
3d	% Of MHI Spent On The ISRP During The Previous Permit Term		0.07%
3e	Total Projected Cost For Restoration Portfolio		$ 171,540,988
3f	Projected Annual Cost For Restoration Portfolio		$ 28,590,165
3g	Projected Annual Cost For Restoration Portfolio Per Household		$ 91.38
3h	% Of MHI Spent On Projected Cost Of Restoration Portfolio		0.13%
4	Cost For Low-Income Residential Customers As A Percent Of Household Income		
4a	Percentage Of Households With Annual Income <$25,000		14.20%
4b	% Of Income For Low Income Households Spent On Public Stormwater Related Management Programs		0.42%
4c	% Of Income For Low Income Households Spent On Stormwater Remediation Fees		0.00%
4d	% Of Income For Low Income Household Spent On The ISRP		0.20%
4e	% Of MHI For Low Income House Spent On Projected Cost Of Restoration Portfolio		0.37%
5	Key Socioeconomic Indicators		
5a	Percentage Unemployed		4.20%
5b	Median Household Income		$ 71,810
5c	Percent Of Individuals (All People) Below Poverty Level		9.10%
6	Financial Capacity Indicators		
6a	Debt Indicators	Bond Rating – GO[1] Bonds	Aaa
6b		Bond Rating – Revenue Bonds	Aaa
6c		Net Debt As A % Of FMPV[2]	4.35%
6d	Financial Management Indicators	Property Tax Revenues As % Of FMPV	1.12%
6e		Property Tax Revenue Collection Rate	99.70%

2.1	Additional Cost As A Percent Of Household Income	
2.1c	Average Annual Cost For Public Sanitary Sewer Related Management Programs	$ 262,799,153
2.1d	Annual Cost For Public Sanitary Sewer Related Management Programs Per Household	$ 839.99
2.1e	% Of MHI Spent On Public Sanitary Sewer Related Management Programs	1.17%

2.1f	Total Annual Bay Restoration Fee Per Household		$ 60
2.1g	% Of MHI Spent Annually On Bay Restoration Fee		0.08%
2.1h	Annual Cost For Public Stormwater and Sanitary Sewer Programs Per Household		$ 1,005.80
2.1i	% Of MHI Spent Annually on Public Stormwater and Sanitary Sewer Programs		1.40%
4.1	Additional Cost For Low-Income Residential Customers As A Percent Of Household Income		
4.1b	% Of Income For Low Income Households Spent On Public Stormwater and Sanitary Sewer Programs		4.02%
4.1f	Total Annual Income of Low Income Households, using upper end of Census Household Income Ranges		$ 801,310,270
4.1g	Average Annual Income of Low Income Households, using 4.1f		$ 18,037
4.1h	% Of Income For Low Income Households (4.1g) Spent On Public Stormwater and Sanitary Sewer Programs		5.58%
4.1i	Total Annual Income of Low Income Households, using mid-point of Census Household Income Ranges		$ 601,467,500
4.1j	Average Annual Income of Low Income Households, using 4.1j		$ 13,539
4.1k	% Of Income For Low Income Households (4.1g) Spent On Public Stormwater and Sanitary Sewer Programs		7.43%
6.1	Additional Financial Capacity Indicators: Income Tax		
6.1c	Debt Indicators	Net Debt As A % of FMPV + Personal Income[3]	2.72%
6.1d	Financial Management Indicators	Income Tax Revenues As % of Personal Income[3]	1.34%

Notes:
1. GO = General Obligation
2. FMPV = Full Market Property Value

Moody's	Aaa
	Aa
	A
	Baa
	Ba
	B
	Caa
	Ca
	C
S&P	AAA
	AA
	A
	BBB
	BB
	B
	CCC
	CC
	R
	SD
	D

Parameter from 2017 ACS	2017 Value
National Average MHI	$ 57,652.00
National Percent Unemployed	4.1%
National Percent of Individuals Below Poverty Level	14.6%