**Chesapeake Bay Watershed Agreement**

**Brook Trout Management Strategy**

*Outcomes and Baselines*

Vital Habitats Goal: Restore, enhance, and protect a network of land and water habitats to support fish and wildlife, and to afford other public benefits, including water quality, recreational uses and scenic value across the watershed.

Brook Trout Outcome: Restore and sustain naturally reproducing Brook Trout populations in Chesapeake headwater streams with an eight percent increase in occupied habitat by 2025.

Importance: The Brook Trout is an iconic symbol of clean water and healthy aquatic systems since it’s unable to thrive in poor water quality or degraded habitat. The disappearance of Brook Trout serves as a warning about the health of our waters and watersheds. Brook Trout are also highly prized by recreational anglers and has been designated as the state fish in many eastern states.

Current Conditions: The wild Brook Trout populations in the Chesapeake Bay watershed have been significantly reduced over the last 150 years and continue to face ongoing and future threats from land use changes, invasive species, loss of genetic integrity, and climate change (Hudy et al. 2008). In this region of the country, most wild Brook Trout are relegated to headwater streams, where human disturbance is minimal and forest cover is still prevalent.

A 2005 assessment of Brook Trout status in 1,443 subwatersheds (sixth level hydrologic unit) located in the Chesapeake Bay watershed, resulted in 226 subwatersheds (16%) being classified as Intact (Brook Trout are present in >50% of the streams); 542 (38%) were classified as Reduced (Brook Trout are present in ≤50% of the streams), 290 (20%) were classified as Extirpated (Brook Trout no longer exist in the streams), and 385 subwatersheds (27%) weren’t classified because either the historical presence of Brook Trout isn’t known or the species was never known to occur in these subwatersheds (Hudy et al. 2008). Additionally, an approach was developed that assists with prioritizing subwatersheds with the greatest potential for successful Brook Trout protection, enhancement, or restoration actions (Hanson et al. 2014). A subwatershed’s priority score has a possible range in value from 0-2 and was calculated by adding a Classification and Regression Tree (CART) model’s estimated probability of the subwatershed being intact (0-1) with the geodesic distance weighted average of its 10 nearest neighbors’ probability of being intact (0-1). A neighborhood size of 10 subwatersheds was used to define a region of influence around a subwatershed. The resulting probability scores ranged from 0 to 1.66. The highest values represent subwatersheds that have a high probability of being intact, and are surrounded by neighboring subwatersheds that also have a high probability of being intact. The lowest values represent the subwatersheds that have a very low probability of being intact (high probability of being extirpated), and are surrounded by neighbors that also have a low probability of being intact. In the Chesapeake Bay watershed there are only 103 Intact subwatersheds and 43 Reduced subwatersheds that are assigned high priority scores (≥0.79) (Appendix Table I).

A finer scale assessment of Brook Trout populations in the Chesapeake Bay watershed was recently (2012-2014) completed by the Eastern Brook Trout Joint Venture in an effort to provide natural resource managers with better tools for detecting population changes and setting conservation priorities. This assessment entailed determining wild Brook Trout occupancy at the catchment scale, which was then used to identify Brook Trout patches and classify them as being Wild Brook Trout Only (i.e. allopatric), Wild Brook Trout with Brown Trout present, Wild Brook Trout with Rainbow Trout present or Wild Brook Trout with Rainbow Trout and Brown Trout present (Hudy et al. 2013a). A “patch” is defined as a group of contiguous catchments occupied by wild Brook Trout. Patches are not connected physically (i.e., they are separated by a dam, unoccupied warm water habitat, downstream invasive species, etc.) and are generally assumed to be genetically isolated. While findings from this assessment indicate there are 1,552 Wild Brook Trout patches in the Chesapeake Bay watershed, with a combined area of 34,431 km2 (Table 1), there are only 952 “Wild Brook Trout Only” patches and the area of these patches is just 13,495 km2 (Table 2).

Additionally, Downstream Strategies is in the process of completing its development of a Boosted Regression Tree (BRT) model that uses widely available landscape variables to predict the presence of Brook Trout in catchments located in the Chesapeake Bay watershed. One of the model outcomes is baseline information on the optimal potential condition of a catchment, which is presented as a natural habitat quality index (HQI). The HQI is defined as the maximum probability of Brook Trout presence under a zero-stress situation; essentially, the highest attainable condition in the catchment (Martin et al. 2012). Preliminary results from the Chesapeake Bay Brook Trout BRT model indicates only 54% of the catchments within the Chesapeake Bay watershed have a HQI ≥ 0.50 (Appendix Table II).

Baseline: This management strategy is focused on conserving Wild Brook Trout Only patches and therefore is using the current area of occupancy (13,495 km2) as the baseline for measuring progress towards achieving the Brook Trout outcome. To be successful, the total amount of Wild Brook Trout Only patch area needs to reach 14,575 km2 (an 8% increase) by 2025 (Table 3).

*Jurisdictions and Agencies Participating in the Strategy*

Maryland Department of Natural Resources: The Department of Natural Resources, Fisheries Service, is responsible for managing commercial and recreational fishing. Fishery Management Plans (FMPs) are developed to outline agreed upon management goals, objectives, strategies, and actions Freshwater, estuarine, and migratory fish stocks are managed for sustainable fisheries, to enhance and restore fish or shellfish species in decline; to promote ethical fishing practices, and to ensure public involvement in the fishery management process. The mission of the Fisheries Service is to: develop a management framework for the conservation and equitable use of fishery resources; manage fisheries in balance with the ecosystem for present and future generations; monitor and assess the status and trends of fisheries resources; and, provide high quality, diverse, accessible fishing opportunities.

New York State Department of Environmental Conservation: The mission of the New York State Department of Environmental Conservation is "to conserve, improve and protect New York's natural resources and environment and to prevent, abate and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the state and their overall economic and social well-being." The New York State Department of Environmental Conservation, Division of Fish, Wildlife and Marine Resources, Bureau of Fisheries delivers a diverse program and annually conducts a wide array of activities to conserve and enhance New York State's abundant and diverse populations of freshwater fishes while providing the public with quality recreational angling opportunities.

Pennsylvania Fish and Boat Commission: The mission of the Pennsylvania Fish and Boat Commission (PFBC) is to protect, conserve, and enhance the Commonwealth’s aquatic resources and provide fishing and boating opportunities. Within the PFBC, the Division of Fisheries Management, Bureau of Fisheries, oversees PFBC efforts in the management of Pennsylvania fisheries. A key strategy for the PFBC is “provide high quality resource management and protection to reduce the impacts of current and increasing threats to aquatic resources.”

Virginia Department of Game and Inland Fisheries: The mission of the Virginia Department of Game and Inland Fisheries (VDGIF) is to manage Virginia's wildlife and inland fish to maintain optimum populations of all species to serve the needs of the Commonwealth; provide opportunity for all to enjoy wildlife, inland fish, boating and related outdoor recreation and to work diligently to safeguard the rights of the people to hunt, fish and harvest game as provided for in the Constitution of Virginia; promote safety for persons and property in connection with boating, hunting and fishing; and, provide educational outreach programs and materials that foster an awareness of and appreciation for Virginia's fish and wildlife resources, their habitats, and hunting, fishing, and boating opportunities. VDGIF is responsible for the management of inland fisheries, wildlife, and recreational boating for the Commonwealth of Virginia.

West Virginia Division of Natural Resources: It is the statutory mission of the West Virginia Division of Natural Resources (WV DNR) to provide and administer a long-range comprehensive program for the exploration, conservation, development, protection, enjoyment and use of the natural resources of the State of West Virginia. The WV DNR’s Wildlife Resources Section (WRS) is responsible for the management of the state’s wildlife resources for the use and enjoyment of its citizens. The primary objective of the section is to maintain and perpetuate fish and wildlife at levels compatible with the available habitat, while providing maximum opportunities for recreation, research and education.

U.S. Fish and Wildlife Service: The mission of U.S. Fish and Wildlife Service (FWS) is to work with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people. The FWS Northeast Region Fisheries Program is designed to support the conservation and management of aquatic species by maintaining, restoring, and recovering populations of species of conservation and management concern to self-sustaining levels; and, conservation and management of aquatic ecosystems by maintaining and restoring the ecological composition, structure, and function of natural and modified aquatic ecosystems to ensure the long-term sustainability of populations of species of conservation and management concern.

U.S. Geological Survey: The mission of U.S. Geological Survey (USGS) is to serve the Nation by providing reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life. The Aquatic Ecology Branch of the USGS Leetown Science Center conducts science for ecological conservation at a landscape scale. Their work emphasizes population, community, and ecosystem ecology, addressing research questions of specific importance for the eastern United States and Appalachian region. Their capabilities include genetics and genomics, landscape ecology, stream fish ecology, GIS and remote sensing, and statistical modeling. They apply a variety of experimental and statistical approaches to assess ecological status and trends, and to understand the underlying causes of ecological resilience and change.

National Park Service: The fundamental purpose of the National Park Service (NPS) “is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.” The NPS covers more than 84 million acres and is comprised of 401 sites. These include 125 historical parks or sites, 78 national monuments,

59 national parks, 25 battlefields or military parks, 18 preserves, 18 recreation areas, 10 seashores, four parkways, four lakeshores, and two reserves.

USDA Forest Service: The mission of the Forest Service is to sustain the health, diversity, and productivity of the nation’s forests and grasslands to meet the needs of present and future generations. The Forest Service is a multi-faceted agency that protects and manages 154 national forests and grasslands in 44 states and Puerto Rico and is the world’s largest forestry research organization. Their experts provide technical and financial help to state and local government agencies, businesses, private landowners to help protect and manage non-federal forest and associated range and watershed lands. They develop partnerships with many public and private agencies to augment their work planting trees, improving trails, providing education on conservation and fire prevention, and improve conditions in wildland/urban interfaces and rural areas. Their team also promotes sustainable forest management and biodiversity conservation internationally.

USDA Natural Resource Conservation Service: The mission of the USDA Natural Resource Conservation Service (NRCS) is to improve the health of our Nation’s natural resources while sustaining and enhancing the productivity of American agriculture. They achieve this by providing voluntary assistance through strong partnerships with private landowners, managers, and communities to protect, restore, and enhance the lands and waters upon which people and the environment depend. NRCS is “Helping People Help the Land” by ensuring productive lands in harmony with a healthy environment is their priority. The NRSC staffs State Offices in the five Chesapeake Bay states (MD, NY, PA, VA, and WV).

Trout Unlimited: Trout Unlimited (TU) is a non-profit organization dedicated to the conservation of North America’s coldwater fisheries and their watersheds—places where trout and salmon thrive. Within the Chesapeake Bay watershed, TU has over 70 local chapters and 5 state councils, representing over 16,000 members, and a staff of 15 that work in the watershed’s headwaters protecting, reconnecting, and restoring brook trout habitat. At all levels of government, TU advocates for native trout conservation. In addition this advocacy, TU’s role in this strategy will be as an on-the-ground implementer of the priority conservation actions described below, specifically those related to the reconnection and restoration of brook trout habitat.

Eastern Brook Trout Joint Venture: The Eastern Brook Trout Joint Venture (EBTJV) is a diverse group of partners, including state fish and wildlife agencies, federal resource agencies, Indian tribes, regional and local governments, businesses, conservation organizations, academic institutions, scientific societies, and private citizens working to conserve wild Brook Trout resources across their native range in the eastern portion of the U.S. The EBTJV facilitates collaboration among the conservation community by completing landscape-level scientific assessments on the status of wild Brook Trout, along with identifying the major threats they face, and using the results of these assessments to establish key priorities that serve as the framework for the coordination of strategic conservation actions.

*Factors Influencing Ability to Meet the Outcome*

An output of Downstream Strategy’s BRT modeling approach is a list of the predictor variables used in the model, ordered and scored by their relative importance (Martin et al. 2012). The relative importance values are based on the number of times a variable is selected for splitting, weighted by the squared improvement to the model as a result of each split, and averaged over all trees. The relative influence score is scaled so that the sum of the scores for all variables is 100, where higher numbers indicate higher influence. Downstream Strategies used ten predictor variables in the Chesapeake Bay Brook Trout BRT Model (Table 4). The most influential predictor, which accounted for almost 43% of the total influence in the model, was predicted mean July water temperature. The three predictor variable that are identified as anthropogenic stressors (network mean imperviousness, network percent agriculture, and network percent mined, non-active) accounted for approximately 34% of the total influence.

Thieling (2006) also developed a predictive model for determining Brook Trout population status in the eastern United States using classification trees (CART 5.0 Modeling Program), which determined that six core subwatershed and subwatershed water corridor metrics (percentage of forested lands, combined sulfate and nitrate deposition, percentage of mixed forests in the water corridor, percentage of agriculture, road density, and latitude) were useful predictors of Brook Trout distribution and status. One finding from this modeling effort was that 94% of the subwatersheds classified as Intact had more than 68% of its land base covered by forests. Another important threshold metric for Brook Trout is when subwatersheds approach a combined NO3 and SO4 deposition greater than 24kg/ha (Thieling 2006). Other important thresholds include having the percentage of agricultural land in the subwatershed in the 12-19% range or higher and a road density value greater than 1.8-2.0 km/km2.

In addition to compiling data on Brook Trout populations over a 17-state region, Hudy et al. (2005) interviewed regional fisheries managers and asked them to rank perturbations and threats to all subwatersheds that historically supported wild Brook Trout populations. Perturbations and threats were separated into three categories of severity: (1) eliminates Brook Trout life cycle component; (2) reduces Brook Trout populations; and (3) potentially impacts Brook Trout populations. Across the entire study region (eastern U.S), the top five perturbations listed as category 1 or 2 severity for streams were high water temperature, agriculture, riparian condition, the presence of one or more non-native fish species, and urbanization. While their relative influence has not been quantified at a watershed or landscape scale, changes in water quality, modification of hydrologic regime, altered stream flows, and fish passage barriers are other factors affecting the viability of wild Brook Trout populations (EBTJV 2005).

DeWeber and Wagner (2015) utilized hierarchical logistic regression with Bayesian estimation to predict Brook Trout occurrence probability, which concluded that predicted water temperature had a strong negative effect on Brook Trout occurrence probability at the stream reach scale, and was also negatively associated with the ecological drainage unit (EDU) average probability of Brook Trout occurrence. The effect of soil permeability was positive but decreased as EDU mean soil permeability increased. Brook Trout were less likely to occur in stream reaches surrounded by agricultural or developed land cover, and an interaction suggested that agricultural land cover also resulted in an increased sensitivity to water temperature.

*Current Efforts and Gaps*

“Detailed content for this section pending previously requested input from State natural resource/regulatory agency contacts, or key partner organizations. Input to be provided by March 6 during course of Management Board review."

*Management Approach*

Priority Focal Areas for Brook Trout Conservation

In order to assist with strategic decision-making on where to focus Brook Trout conservation actions, the Wild Brook Trout Only patches in the Chesapeake Bay watershed have been sorted into three priority levels. Wild Brook Trout Only patches that occur in and around current Brook Trout strongholds, which are defined as being located in subwatersheds with a priority score ≥0.79, have been assigned priority Level 1 since these subwatersheds offer the best potential for sustaining wild Brook Trout populations and capitalizing on increased habitat connectivity (Hanson et al. 2014). Priority Level 1 Wild Brook Trout Only patches occur in 146 subwatersheds; 77 of these subwatersheds are located in Pennsylvania, 65 are in Virginia, 3 are in West Virginia, and 1 is in Maryland (Table 5 and Appendix Table III).

Wild Brook Trout Only patches that occur in subwatersheds having priority scores < 0.79, but have ≥60% of their catchments with an HQI ≥0.50, have been given a Level 2 priority because they possess habitat that exhibits good potential for attaining favorable conditions when stressors are lessened. Priority Level 2 Wild Brook Trout Only patches occur in 238 subwatersheds; 152 of these subwatersheds are in Pennsylvania, 44 are in New York, 22 are in Virginia, 14 are in Maryland, and 6 are in West Virginia (Table 5 and Appendix Table IV).

Wild Brook Trout Only patches that occur in subwatersheds having priority scores < 0.79 and have <60% of their catchments with an HQI ≥0.50, have been given a Level 3 priority. Priority Level 3 Wild Brook Trout Only patches occur in 216 subwatersheds; 82 of these subwatersheds are in Pennsylvania, 68 are in New York, 32 are in Virginia, 21 are in West Virginia, and 13 are in Maryland (Table 5 and Appendix Table V).

The specific locations of Wild Brook Trout Only patches can be viewed at the [Brook Trout Integrated Spatial Data and Tools website](http://felek.cns.umass.edu:8080/geoserver/www/Web_Map_Viewer.html), which was developed in part to display the data associated with the EBTJV’s Brook Trout status assessment at the catchment scale. Enabling the HUC 12, EBTJV Classified Catchments, and Brook Trout Habitat Patches GIS data layers in conjunction with turning on the Feature ID function will result in pertinent data being displayed whenever a patch is clicked.

Climate Change Considerations

Regardless of a Wild Brook Trout Only patch’s priority level, added considerations need to be given to those locations where Brook Trout have a lower vulnerability to the effects of climate change because their populations are less likely to disappear under various climate change scenarios (Trumbo et al. 2014). While the data layer does not cover the entire Chesapeake Bay watershed, the Brook Trout Integrated Spatial Data and Tools website has a GIS data layer (Brook Trout Patch Vulnerability) that identifies Wild Brook Trout patches with low exposure (predicted change in water temperature per unit increase in air temperature) and sensitivity (predicted frequency, magnitude, and duration of water temperature averaged over a range of temperatures). Groundwater exchange may also mitigate stream thermal sensitivity to air temperature change (Snyder et al. *in press*), and spatial models are needed to predict the role of groundwater for Brook Trout spawning, feeding, and refugia across stream networks.

Downstream Strategies has incorporated a climate change assessment into the Chesapeake Bay Brook Trout BRT Model it is developing that quantifies potential changes in the probability of Brook Trout presence that may result from a projected future climate scenario (Jason Clingerman, personal communication). It should be noted that these are “generalized” projections since broad scale modeling is being performed and the predictor variables being used are annual (precipitation) or seasonal (stream temperatures). Therefore, the impacts of local extremes to climate (drought, flood) may have impacts on Brook Trout populations that are beyond the scope of the model. Future air temperature projections were obtained from the regional downscaled climate model ECHAM5 described by Hostetler et al. (2011). All projections are based on the A2 scenario described in the Intergovernmental Panel on Climate Change AR4 report (IPCC 2007). Predictions of the probability of Brook Trout presence under this future scenario were made and then compared to the model’s original outputs. Under this future scenario, decreases in the probability of Brook Trout presence are due mainly to increased temperatures, while increases occurred when increased precipitation moderates the impacts of increased temperatures. Appendix Table VI summarizes at the HUC 8 level, the percentage of catchments that have a decreased probability of Brook Trout presence under the ECHAM5 A2 2042 climate scenario.

Priority Brook Trout Conservation Strategies

1. Protect highly functional Wild Brook Trout Only patches from detrimental changes in land use and water use practices.
2. Connect habitats that have a high likelihood of sustaining stable wild Brook Trout populations.
3. Improve access to Brook Trout spawning and seasonally important habitats (e.g., coldwater refugia, wintering areas).
4. Improve Brook Trout habitat that have been impacted by poor land and water use practices.
5. Mitigate factors that degrade water quality.
6. Enhance or restore natural hydrologic regimes.
7. Prevent and mitigate the spread of invasives/exotic species into patches containing wild Brook Trout only.
8. Re-introduce wild Brook Trout into catchments within Wild Brook Trout Only patches, where the species has been extirpated or an increase in genetic fitness of the population is needed.

Decision Support Tools

In addition to the Brook Trout Integrated Spatial Data and Tools website, there are several other decision support tools available that will assist the conservation community in refining their efforts to conserve Chesapeake Bay Brook Trout resources at the local level.

[Chesapeake Bay Fish Passage Prioritization](http://maps.tnc.org/EROF_ChesapeakeFPP/) - This web-mapping platform is designed to be screening-level tool that can be used to help investigate potential fish passage projects in the context of many ecological factors (Martin and Apse 2013). However, results do not incorporate important social, economic, or feasibility factors and are not intended to be a replacement for site-specific knowledge nor a prescription for on-the-ground action. This platform includes a Brook Trout-specific scenario, though this scenario is limited to dams on small streams (those draining <100 km2). Users of this tool can view results in the context of other relevant data including project data and various base maps, query results, download tabular data, search for a dam interactively or by name, annotate a map, and print or save a map.

[Riparian Restoration for Climate Change Resilience Tool](http://www.conservationdesign.org/rpccr/%29) – This tool enables users to dynamically locate areas (within the selected region) in the riparian zone that would benefit most from increased shading produced by planting of trees. The tool operates on a 200 meter stream buffer (100 on each side), and requires the user to specify values for maximum percent canopy cover and minimum solar gain percentile. The user can additionally choose to include minimum elevation (meters) and maximum percent impervious surface values in the analysis.

Although it’s still in the final phases of developing, Downstream Strategies will produce a web-based GIS visualization and decision support application for the Chesapeake Bay Brook Trout Model. The model’s statistical outcomes are used to generate the post modeling indices of anthropogenic stress and natural habitat quality (Martin et al. 2012). These indices are derived directly from the measures of variable influence and their functional relationships with the response. The individual predictors that are anthropogenic in nature are used to generate anthropogenic stress metrics and the cumulative anthropogenic stress index (CASI), whereas predictors that are of natural origin are used to generate natural quality metrics and the cumulative natural quality index (CNQI). These metrics and indices are generated at the 1:100k NHD catchment scale so they can be used to generate and visualize restoration and protection priorities at a fine scale. For example, areas of high natural quality (i.e., high CNQI score) and low stress (i.e., low CASI score) could represent protection priorities, whereas areas of high natural quality and high stress may represent restoration priorities. You can also rank catchments within a selected HUC 8 based on user selection and weighting of stressors based on “importance”. These variables include modeling results and additional socioeconomic variables. The tool displays catchments ranked on the users’ criteria. Another component of this web-tool is futuring, which allows the user to examine the natural quality and stress that is relevant to a specific catchment. This process includes the ability to modify existing conditions through a user interface and predict changes in overall CASI index score for a selected catchment based on local changes in stressors.

*Monitoring Progress*

Monitoring the Status of Wild Brook Trout Only Patches

A cluster analysis will be used to subsample the existing number of Wild Brook Trout Only patches to determine changes in status (Hudy et al. 2013b). A panel design will be developed where “x” patches are sampled every year (sentinel samples) and others are sampled every 5 years. Sentinel samples are intended to capture year-to-year and fast changes while the once every five year samples will capture long-term trends. For example, 250 sites are selected by cluster analysis for monitoring (cluster based on patch size, elevation, climate vulnerability, eco-region, regional interest, etc.). A total of 25 of the 250 sites will be designated as sentinel sites and sampled every year. An additional 45 of the remaining sites will be sampled every year on a rotating basis so that each site is visited once every 5 years. This equates to 70 sites being monitored in the Chesapeake Bay watershed each year.

Number of patches, number of patches with increasing size/connectivity (i.e., additional downstream/upstream catchments occupied by wild Brook Trout only), number of patches decreasing in size (loss of occupancy of downstream/upstream catchments), average patch size, and genetic diversity contained within these patches (defined as heterozygosity and allelic diversity) will be used to determine the status of Wild Brook Trout Only patches. These metrics will be calculated using standard electrofishing occupancy sampling and fin clips will be taken from young of the year Brook Trout collected during electrofishing samples to determine genetic diversity using the methods described in Whiteley et al. (2012a).

The effective number of individual Brook Trout (regardless of age) contributing to a year class or cohort (Nb) will also be monitored because Nb estimates represent the entire “patch” or population and not just a representative reach (Whiteley et al. 2012b). Nb values for a patch are always less than N (typically 10%-50%), and thus require fewer samples for accurate estimation than estimates of N using depletion or mark-recapture estimates (Tallmon et al. 2010) making them better suited for determining trends for numerous sites. Nb will provide a reliable ‘at risk’ evaluation that integrates year-to-year variation in N. Analysis of the genetic data can also provide information about the genetic diversity within a patch, which is an indication of past population size and population resilience to future environmental change, population structure, and archiving data for future genomics analyses.

*Assessing Progress*

To achieve the Brook Trout outcome, there is a need to increase the amount of wild Book Trout only occupied patch area by 1,080 km2. This equates to expanding occupancy by 108 km2 per year over a ten year period. To assess progress, pertinent jurisdictions will annually report the amount of habitat (km2) occupied by wild Brook Trout only that was added to the baseline figure through conservation actions. These annual gains will be combined with the outputs of the monitoring protocol (i.e., sentinel sampling sites) to determine overall progress. Then, after every five year period, when all monitoring sites have been sampled at least once, a status report will be developed that summarizes the gains and/or losses of area occupied by wild Brook Trout only over that time period and contains recommendations for making adjustments to keep the efforts on track.

Table 1. The number and area of all wild Brook Trout patches (allopatric and sympatric) in the Chesapeake Bay watershed.

|  |  |  |
| --- | --- | --- |
| **State** | **Number of Wild Brook Trout Patches** | **Wild Brook Trout****Patch Area (km2)** |
| Maryland |  110 | 1,017 |
| New York | 256 | 5,904 |
| Pennsylvania | 867 | 19,870 |
| Virginia | 240 | 6,042 |
| West Virginia |  79 | 1,598 |
| **Totals** | **1,552** | **34,431** |

Table 2. The number and area of patches classified as Wild Brook Trout Only (allopatric) in the Chesapeake Bay watershed.

|  |  |  |
| --- | --- | --- |
| **State** | **Number of Patches Classified as Wild Brook Trout Only** | **Wild Brook Trout Only Patch Area (km2)** |
| Maryland |  75 | 604 |
| New York | 158 | 2,537 |
| Pennsylvania | 408 | 4,671 |
| Virginia | 213 | 4,651 |
| West Virginia |  71 | 1,032 |
| **Totals** | **925** | **13,495** |

Table 3. Additional area needed to increase the amount of Wild Brook Trout Only (allopatric) patches by 8% during the next 10 years.

|  |  |  |  |
| --- | --- | --- | --- |
| **State** | **2014 Area (km2) of Wild Brook Trout Only Patches**  | **Area (km2) Needed to Achieve an 8% Increase** | **Projected 2025 Area (km2) of Wild Brook Trout Only Patches** |
| Maryland | 604 |  48 | 652 |
| New York | 2,537 | 203 | 2,740 |
| Pennsylvania | 4,671 | 374 | 5,045 |
| Virginia | 4,651 | 372 | 5,023 |
| West Virginia | 1,032 |  83 | 1,115 |
| **Totals** | **13,495** | **1,080** | **14,575** |

Table 4. Relative influence of all predictor variables used in the Chesapeake Bay Brook Trout BRT Model.

|  |  |  |
| --- | --- | --- |
| **Predictor Variable Description** | **Predictor Variable Code** | **Relative Influence** |
| Predicted mean July water temperature | mnjuly | 42.7 |
| Network mean imperviousness | IMP06C | 21.6 |
| Network percent agriculture | Ag\_pc | 9.7 |
| Catchment slope of flowline | SLOPE\_fix | 7.5 |
| Catchment mean annual precipitation | Precip | 6.6 |
| Nework percent grassland (log transformed) | Log\_Grass\_pc | 2.6 |
| Catchment mean soil pH | SoilpH | 2.5 |
| Network percent acidic bedrock geology | Acid\_geol\_pc | 2.5 |
| Network percent mined, non-active (log transformed) | Log\_past\_minepc | 2.3 |
| Network percent wetlands (log transformed) | Log\_Wet\_pc | 2.1 |

Table 5. The distribution of HUC 12s containing Wild Brook Trout Only (allopatric) patches sorted by priority level and States.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **State** | **Number of** **Priority****Level 1****HUC 12s** | **Number of** **Priority****Level 2****HUC 12s** | **Number of** **Priority****Level 3****HUC 12s** | **Totals** |
| Maryland | 1 | 14 | 13 | **28** |
| New York | 0 | 44 | 68 | **112** |
| Pennsylvania | 77 | 152 | 82 | **311** |
| Virginia | 65 | 22 | 32 | **119** |
| West Virginia | 3 | 6 | 21 | **30** |
| **Totals** | **146** | **238** | **216** | **600** |

Appendix Table I. Subwatersheds within the Chesapeake Bay watershed that have a priority score ≥ 0.79.

|  |  |  |  |
| --- | --- | --- | --- |
| **HUC 12 Code** | **HUC 12 Name** | **HUC 12 Priority****Score** | **Classification** |
| 020501060202 | Millstone Creek-Schrader Creek | 0.86 | Intact |
| 020501061302 | Upper Bowman Creek | 0.87 | Intact |
| 020501070401 | Little Nescopeck Creek-Nescopeck Creek | 0.83 | Intact |
| 020501070501 | Headwaters Huntington Creek | 0.97 | Intact |
| 020501070502 | Kitchen Creek | 0.92 | Intact |
| 020501070701 | East Branch Fishing Creek | 0.86 | Intact |
| 020501070702 | West Branch Fishing Creek | 0.98 | Intact |
| 020502010504 | Cold Stream | 0.89 | Intact |
| 020502010505 | Sixmile Run | 0.94 | Reduced |
| 020502010602 | Gifford Run-Mosquito Creek | 0.88 | Reduced |
| 020502010702 | Trout Run | 0.88 | Intact |
| 020502010704 | Deer Creek | 0.87 | Reduced |
| 020502010710 | Sterling Run | 0.91 | Reduced |
| 020502010711 | Birch Island Run | 1.24 | Intact |
| 020502010712 | Lower Three Runs-West Branch Susquehanna River | 0.99 | Intact |
| 020502020102 | Sinnemahoning Portage Creek-Driftwood Branch Sinnemahoning Creek | 1.03 | Intact |
| 020502020203 | North Creek | 1.06 | Reduced |
| 020502020204 | West Creek | 1.19 | Intact |
| 020502020205 | Hunts Run | 0.99 | Intact |
| 020502020206 | Sterling Run | 1.15 | Reduced |
| 020502020301 | Upper Bennett Branch Sinnemahoning Creek | 1.07 | Intact |
| 020502020302 | Kersey Run | 0.84 | Intact |
| 020502020303 | Laurel Run | 0.93 | Reduced |
| 020502020306 | Spring Run | 1.13 | Intact |
| 020502020310 | Hicks Run | 0.94 | Reduced |
| 020502020311 | Mix Run | 1.19 | Intact |
| 020502020312 | Lower Bennett Branch Sinnemahoning Creek | 1.13 | Intact |
| 020502020403 | Upper First Fork Sinnemahoning Creek | 0.96 | Reduced |
| 020502020405 | East Fork Sinnemahoning Creek | 0.95 | Intact |
| 020502020406 | Middle First Fork Sinnemahoning Creek | 1.20 | Reduced |
| 020502020407 | Lower First Fork Sinnemahoning Creek | 1.02 | Intact |
| 020502020501 | Wykoff Run | 1.16 | Intact |
| 020502020502 | Sinnemahoning Creek-West Branch Susquehanna River | 1.16 | Intact |
| 020502030101 | Little Kettle Creek | 1.13 | Intact |
| 020502030102 | Upper Kettle Creek | 1.22 | Intact |
| 020502030103 | Cross Fork | 1.12 | Intact |
| 020502030104 | Hammersley Fork | 1.35 | Intact |
| 020502030105 | Middle Kettle Creek | 1.30 | Reduced |
| 020502030106 | Lower Kettle Creek | 1.17 | Reduced |
| 020502030201 | Cooks Run | 1.12 | Intact |
| 020502030202 | Fish Dam Run-West Branch Susquehanna River | 1.28 | Intact |
| 020502030203 | Drury Run | 1.05 | Intact |
| 020502030205 | Hall Run-West Branch Susquehanna River | 0.80 | Intact |
| 020502030301 | Left Branch Young Womans Creek | 1.22 | Reduced |
| 020502030302 | Young Womans Creek-West Branch Susquehanna River | 1.34 | Intact |
| 020502030401 | Hyner Run | 1.35 | Intact |
| 020502030402 | Rattlesnake Run-West Branch Susquehanna River | 1.35 | Intact |

Appendix Table I. (cont.)

|  |  |  |  |
| --- | --- | --- | --- |
| **HUC 12 Code** | **HUC 12 Name** | **HUC 12 Priority****Score** | **Classification** |
| 020502030404 | Baker Run | 1.18 | Intact |
| 020502030405 | North Fork Tangascootack Creek | 0.94 | Intact |
| 020502030408 | Ferney Run-West Branch Susquehanna River | 1.17 | Intact |
| 020502030409 | Queens Run | 0.99 | Intact |
| 020502040201 | South Fork Beach Creek | 0.96 | Reduced |
| 020502050101 | Lyman Run | 1.06 | Intact |
| 020502050102 | Wetmore Run-West Branch Pine Creek | 1.12 | Intact |
| 020502050201 | Ninemile Run | 0.89 | Intact |
| 020502050203 | Genesee Forks | 0.87 | Intact |
| 020502050205 | Phoenix Run | 0.98 | Intact |
| 020502050208 | Lick Run-Pine Creek | 0.84 | Intact |
| 020502050506 | Little Pine Creek-Pine Creek | 0.82 | Reduced |
| 020502050601 | Trout Run-Pine Creek | 0.92 | Reduced |
| 020502050602 | Cedar Run | 1.12 | Intact |
| 020502050603 | Slate Run | 1.33 | Intact |
| 020502050604 | Mill Run-Pine Creek | 1.11 | Reduced |
| 020502050605 | Trout Run | 1.28 | Intact |
| 020502060101 | Second Fork Larrys Creek | 0.81 | Reduced |
| 020502060102 | First Fork Larrys Creek | 0.81 | Reduced |
| 020502060203 | Rock Run | 0.81 | Intact |
| 020502060204 | Pleasant Stream | 0.87 | Reduced |
| 020502060205 | Grays Run | 0.86 | Intact |
| 020502060302 | Glass Creek-Loyalsock Creek | 0.82 | Reduced |
| 020502060304 | Little Loyalsock Creek-Loyalsock Creek | 0.95 | Intact |
| 020502060503 | Ogdonia Creek-Loyalsock Creek | 0.87 | Reduced |
| 020502060504 | Plunketts Creek | 0.91 | Intact |
| 020502061201 | White Deer Creek-Lower West Branch Susquehanna River | 0.83 | Reduced |
| 020503010902 | Rattling Creek | 0.84 | Reduced |
| 020503020701 | Laurel Run | 0.80 | Reduced |
| 020700010102 | Big Run | 0.81 | Intact |
| 020700010104 | Headwaters Seneca Creek | 0.83 | Intact |
| 020700010105 | Outlet Seneca Creek | 0.91 | Intact |
| 020700010309 | Briggs Run-South Branch Potomac River | 0.82 | Reduced |
| 020700010107 | Zeke Run-North Fork South Branch Potomac River | 0.91 | Reduced |
| 020700020207 | Piney Swamp Run-North Branch Potomac River | 0.91 | Intact |
| 020700050102 | Buffalo Branch-Middle River | 1.37 | Intact |
| 020700050103 | Jennings Branch | 0.93 | Intact |
| 020700050703 | Inch Branch-Back Creek | 0.95 | Intact |
| 020700050801 | Big Run-South Fork Shenandoah River | 0.82 | Intact |
| 020700050805 | South Branch-Naked Creek | 1.10 | Intact |
| 020700051001 | Jeremys Run-South Fork Shenandoah River | 1.24 | Intact |
| 020700051002 | Brown Hollow Run-South Fork Shenandoah River | 1.19 | Reduced |
| 020700051003 | Gooney Run | 1.17 | Reduced |
| 020801030102 | Jordan River | 1.10 | Intact |
| 020801030301 | Piney River-Thornton River | 1.30 | Intact |
| 020801030302 | Covington River | 1.31 | Intact |
| 020801030401 | Hughes River | 1.10 | Intact |
| 020801030402 | Sams Run-Hazel River | 1.16 | Intact |
| 020801030701 | Garth Run-Rapidan River | 1.21 | Intact |

Appendix Table I. (cont.)

|  |  |  |  |
| --- | --- | --- | --- |
| **HUC 12 Code** | **HUC 12 Name** | **HUC 12 Priority****Score** | **Classification** |
| 020801030702 | Conway River | 1.16 | Intact |
| 020801030703 | South River-Rapidan River | 0.84 | Intact |
| 020801030901 | Rose River-Robinson River | 1.24 | Intact |
| 020802010102 | Bolar Run-Jackson River | 1.02 | Reduced |
| 020802010103 | Warm Springs Run-Jackson River | 1.11 | Reduced |
| 020802010202 | Jim Dave Run-Back Creek | 0.93 | Intact |
| 020802010203 | Little Back Creek | 0.92 | Intact |
| 020802010302 | Cove Run-Dunlap Creek | 1.19 | Reduced |
| 020802010401 | South Fork Potts Creek-North Fork Potts Creek | 0.93 | Reduced |
| 020802010403 | Mill Branch-Potts Creek | 1.13 | Intact |
| 020802010404 | Cast Steel Run-Potts Creek | 1.12 | Intact |
| 020802010405 | Hays Creek-Potts Creek | 1.04 | Intact |
| 020802010501 | Hot Springs Run-Cedar Creek | 1.08 | Reduced |
| 020802010502 | Falling Spring Creek-Jackson River | 0.99 | Reduced |
| 020802010503 | Indian Draft-Jackson River | 1.04 | Reduced |
| 020802010505 | Karnes Creek-White Rock Creek | 1.04 | Intact |
| 020802010506 | Wilson Creek | 1.16 | Intact |
| 020802010507 | Smith Creek-Jackson River | 1.29 | Intact |
| 020802010603 | Benson Run-Cowpasture River | 1.02 | Intact |
| 020802010605 | Crab Run-Bullpasture River | 0.93 | Reduced |
| 020802010703 | Thompson Creek-Cowpasture River | 1.13 | Intact |
| 020802010704 | Lick Run-Stuart Run | 1.13 | Intact |
| 020802010801 | Mill Creek-Cowpasture River | 1.15 | Intact |
| 020802010802 | Pads Creek | 1.09 | Reduced |
| 020802010902 | Sinking Creek | 1.04 | Intact |
| 020802010903 | Smith Branch-Mill Creek | 0.98 | Intact |
| 020802011101 | Upper Johns Creek | 1.01 | Reduced |
| 020802011102 | Lower Johns Creek | 1.09 | Reduced |
| 020802011202 | Barbours Creek | 1.14 | Intact |
| 020802011203 | Mill Creek-Craig Creek | 1.03 | Reduced |
| 020802011502 | North Creek-Jennings Creek | 0.94 | Reduced |
| 020802020102 | Ramseys Draft | 0.84 | Intact |
| 020802020103 | Holloway Draft-Calfpasture River | 1.09 | Intact |
| 020802020105 | Fridley Branch-Calfpasture River | 1.12 | Intact |
| 020802020106 | Cabin Creek-Mill Creek | 1.13 | Intact |
| 020802020107 | Brattons Run | 1.08 | Intact |
| 020802020108 | Guys Run-Calfpasture River | 1.03 | Intact |
| 020802020201 | Upper Little Calfpasture River | 1.03 | Intact |
| 020802020202 | Lower Little Calfpasture River | 1.00 | Intact |
| 020802020403 | Irish Creek | 0.93 | Intact |
| 020802020502 | South Buffalo Creek | 0.94 | Intact |
| 020802030101 | Otter Creek-James River | 0.93 | Reduced |
| 020802030201 | Lynchburg Reservoir-Pedlar River | 0.96 | Intact |
| 020802030202 | Browns Creek-Pedlar River | 1.02 | Intact |
| 020802030501 | South Fork Tye River-North Fork Tye River | 1.03 | Intact |
| 020802030502 | Cub Creek-Tye River | 1.07 | Intact |
| 020802030505 | Little Piney River-Piney River | 1.07 | Intact |

Appendix Table I. (cont.)

|  |  |  |  |
| --- | --- | --- | --- |
| **HUC 12 Code** | **HUC 12 Name** | **HUC 12 Priority****Score** | **Classification** |
| 020802030601 | North Fork Buffalo River-Buffalo River | 1.06 | Intact |
| 020802040104 | Doyles River | 0.88 | Intact |

Appendix Table II. Number and percentage of catchments within the Chesapeake Bay watershed that have a HQI ≥ 0.50, summarized by 8-digit HUCs.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **HUC 8 Code** | **HUC 8 Name** | **Total****Number of Catchments in the HUC 8** | **Number of Catchments in the HUC 8 with a****HQI ≥ 0.5000** | **Percentage of Catchments in the HUC 8 with a****HQI ≥ 0.5000** |
| 02050101 | Upper Susquehanna | 2,280 | 1,295 | 56.8% |
| 02050102 | Chenango | 1,840 | 1,611 | 87.6% |
| 02050103 | Owego-Wappasening | 1,491 | 767 | 51.4% |
| 02050104 | Tioga | 930 | 486 | 52.3% |
| 02050105 | Chemung | 976 | 444 | 45.5% |
| 02050106 | Upper Susquehanna-Tunkhannock | 2,511 | 1,349 | 53.7% |
| 02050107 | Upper Susquehanna-Lackawanna | 1,942 | 1,255 | 64.6% |
| 02050201 | Upper West Branch Susquehanna | 1,691 | 1,504 | 88.9% |
| 02050202 | Sinnemahoning | 1,548 | 1,394 | 90.1% |
| 02050203 | Middle West Branch Susquehanna | 836 | 718 | 85.9% |
| 02050204 | Bald Eagle | 644 | 459 | 71.3% |
| 02050205 | Pine | 1,010 | 760 | 75.2% |
| 02050206 | Lower West Branch Susquehanna | 2,008 | 1,301 | 64.8% |
| 02050301 | Lower Susquehanna-Penns | 1,772 | 1,013 | 57.2% |
| 02050302 | Upper Juniata | 1,004 | 604 | 60.2% |
| 02050303 | Raystown | 1,165 | 567 | 48.7% |
| 02050304 | Lower Juniata | 1,783 | 891 | 50.0% |
| 02050305 | Lower Susquehanna-Swarta | 1,898 | 906 | 47.7% |
| 02050306 | Lower Susquehanna | 2,540 | 1,268 | 49.9% |
| 02060002 | Chester-Sassafras | 415 | 137 | 33.0% |
| 02060003 | Gunpowder-Patapsco | 1,523 | 630 | 41.4% |
| 02060004 | Severn | 51 | 7 | 13.7% |
| 02060006 | Patuxent | 576 | 155 | 26.9% |
| 02070001 | South Branch Potomac | 1,854 | 775 | 41.8% |
| 02070002 | North Branch Potomac | 1,592 | 832 | 52.3% |
| 02070003 | Cacapon-Town | 1,404 | 437 | 31.1% |
| 02070004 | Conococheague-Opequon | 2,489 | 801 | 32.2% |
| 02070005 | South Fork Shenandoah | 861 | 381 | 44.3% |
| 02070006 | North Fork Shenandoah | 485 | 155 | 32.0% |
| 02070007 | Shenandoah | 353 | 59 | 16.7% |
| 02070008 | Middle Potomac-Catoctin | 1,686 | 609 | 36.1% |
| 02070009 | Monocacy | 1,117 | 568 | 50.9% |
| 02070010 | Middle Potomac-Anacostia-Occoquan | 1,464 | 398 | 27.2% |
| 02070011 | Lower Potomac | 247 | 45 | 18.2% |
| 02080103 | Rapidan-Upper Rappahannock | 689 | 274 | 39.8% |
| 02080106 | Pamunkey | 13 | 0 |  0.0% |
| 02080201 | Upper James | 2,720 | 1,683 | 61.9% |
| 02080202 | Maury | 818 | 395 | 48.3% |
| 02080203 | Middle James-Buffalo | 1,034 | 494 | 47.8% |
| 02080204 | Rivanna | 218 | 132 | 60.6% |
|  | **Totals** | **51,478** | **27,559** | **53.5%** |

Appendix Table III. Level 1 Priority Subwatersheds Containing Wild Brook Trout Only (allopatric) Patches.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **State** | **HUC 12 Code** | **HUC 12 Name** | **HUC 12 Priority Score** | **% of Catchments in HUC 12 w/HQI ≥0.50** | **Amount of HUC 12 Area (km2) Classified as Wild Brook Trout Only**  |
| PA | 020501060202 | Millstone Creek-Schrader Creek | 0.86 | 67.3% | 104.0 |
| PA | 020501061302 | Upper Bowman Creek | 0.87 | 84.6% | 56.8 |
| PA | 020501070401 | Little Nescopeck Creek-Nescopeck Creek | 0.83 | 60.8% | 76.9 |
| PA | 020501070501 | Headwaters Huntington Creek | 0.97 | 92.0% | 32.0 |
| PA | 020501070502 | Kitchen Creek | 0.92 | 75.0% | 26.4 |
| PA | 020501070701 | East Branch Fishing Creek | 0.86 | 100.0% | 48.2 |
| PA | 020501070702 | West Branch Fishing Creek | 0.98 | 100.0% | 26.6 |
| PA | 020502010504 | Cold Stream | 0.89 | 92.0% | 1.4 |
| PA | 020502010505 | Sixmile Run | 0.94 | 100.0% | 12.4 |
| PA | 020502010602 | Gifford Run-Mosquito Creek | 0.88 | 100.0% | 105.8 |
| PA | 020502010702 | Trout Run | 0.88 | 100.0% | 63.9 |
| PA | 020502010704 | Deer Creek | 0.87 | 88.0% | 53.5 |
| PA | 020502010710 | Sterling Run | 0.91 | 90.0% | 28.8 |
| PA | 020502010711 | Birch Island Run | 1.24 | 100.0% | 43.6 |
| PA | 020502010712 | Lower Three Runs-West Branch Susquehanna River | 0.99 | 85.3% | 40.9 |
| PA | 020502010713 | Burns Run-West Branch Susquehanna River | 1.03 | 88.1% | 48.1 |
| PA | 020502020102 | Sinnemahoning Portage Creek-Driftwood Branch  | 1.06 | 95.8% | 32.5 |
| PA | 020502020203 | North Creek | 1.19 | 100.0% | 7.1 |
| PA | 020502020204 | West Creek | 0.99 | 82.8% | 27.5 |
| PA | 020502020205 | Hunts Run | 1.15 | 100.0% | 12.7 |
| PA | 020502020206 | Sterling Run | 1.07 | 100.0% | 40.7 |
| PA | 020502020301 | Upper Bennett Branch Sinnemahoning Creek | 0.84 | 100.0% | 45.6 |
| PA | 020502020302 | Kersey Run | 0.93 | 91.9% | 41.9 |
| PA | 020502020303 | Laurel Run | 1.13 | 91.9% | 77.2 |
| PA | 020502020306 | Spring Run | 0.94 | 100.0% | 30.8 |
| PA | 020502020310 | Hicks Run | 1.19 | 100.0% | 2.9 |
| PA | 020502020311 | Mix Run | 1.13 | 94.7% | 38.1 |
| PA | 020502020312 | Lower Bennett Branch Sinnemahoning Creek | 0.96 | 75.9% | 32.5 |
| PA | 020502020403 | Upper First Fork Sinnemahoning Creek | 0.95 | 89.7% | 11.5 |
| PA | 020502020405 | East Fork Sinnemahoning Creek | 1.20 | 88.5% | 51.6 |
| PA | 020502020406 | Middle First Fork Sinnemahoning Creek | 1.02 | 80.3% | 53.0 |
| PA | 020502020407 | Lower First Fork Sinnemahoning Creek | 1.16 | 78.7% | 48.9 |
| PA | 020502020501 | Wykoff Run | 1.16 | 95.5% | 46.9 |
| PA | 020502020502 | Sinnemahoning Creek-West Branch Susquehanna R. | 1.13 | 69.2% | 84.5 |
| PA | 020502030101 | Little Kettle Creek | 1.22 | 100.0% | 18.3 |
| PA | 020502030102 | Upper Kettle Creek | 1.12 | 93.5% | 64.5 |
| PA | 020502030103 | Cross Fork | 1.35 | 98.1% | 17.7 |
| PA | 020502030104 | Hammersley Fork | 1.30 | 95.3% | 32.4 |
| PA | 020502030105 | Middle Kettle Creek | 1.17 | 82.5% | 57.5 |
| PA | 020502030106 | Lower Kettle Creek | 1.12 | 88.7% | 65.4 |
| PA | 020502030201 | Cooks Run | 1.28 | 100.0% | 52.7 |
| PA | 020502030202 | Fish Dam Run-West Branch Susquehanna River | 1.05 | 80.0% | 18.2 |

Appendix Table III. (cont.)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **State** | **HUC 12 Code** | **HUC 12 Name** | **HUC 12 Priority Score** | **% of Catchments in HUC 12 w/HQI ≥0.50** | **Amount of HUC 12 Area (km2) Classified as Wild Brook Trout Only**  |
| PA | 020502030203 | Drury Run | 0.80 | 100.0% | 21.4 |
| PA | 020502030205 | Hall Run-West Branch Susquehanna River | 1.22 | 61.8% | 67.4 |
| PA | 020502030301 | Left Branch Young Womans Creek | 1.34 | 100.0% | 5.0 |
| PA | 020502030302 | Young Womans Creek-West Branch Susquehanna R. | 1.35 | 100.0% | 19.1 |
| PA | 020502030401 | Hyner Run | 1.35 | 100.0% | 36.5 |
| PA | 020502030402 | Rattlesnake Run-West Branch Susquehanna River | 1.18 | 56.5% | 60.5 |
| PA | 020502030404 | Baker Run | 1.20 | 100.0% | 7.8 |
| PA | 020502030405 | North Fork Tangascootack Creek | 0.94 | 100.0% | 27.8 |
| PA | 020502030408 | Ferney Run-West Branch Susquehanna River | 1.17 | 55.2% | 20.6 |
| PA | 020502030409 | Queens Run | 0.99 | 100.0% | 35.4 |
| PA | 020502040201 | South Fork Beach Creek | 0.96 | 83.3% | 10.0 |
| PA | 020502050101 | Lyman Run | 1.06 | 100.0% | 9.7 |
| PA | 020502050102 | Wetmore Run-West Branch Pine Creek | 1.12 | 91.3% | 42.6 |
| PA | 020502050201 | Ninemile Run | 0.89 | 100.0% | 11.7 |
| PA | 020502050203 | Genesee Forks | 0.87 | 100.0% | 2.2 |
| PA | 020502050205 | Phoenix Run | 0.98 | 92.3% | 14.3 |
| PA | 020502050208 | Lick Run-Pine Creek | 0.84 | 32.1% | 28.9 |
| PA | 020502050506 | Little Pine Creek-Pine Creek | 0.82 | 87.1% | 87.7 |
| PA | 020502050601 | Trout Run-Pine Creek | 0.92 | 38.6% | 103.3 |
| PA | 020502050602 | Cedar Run | 1.12 | 96.6% | 31.3 |
| PA | 020502050603 | Slate Run | 1.33 | 94.3% | 18.4 |
| PA | 020502050604 | Mill Run-Pine Creek | 1.11 | 69.4% | 45.2 |
| PA | 020502050605 | Trout Run | 1.28 | 100.0% | 7.2 |
| PA | 020502060101 | Second Fork Larrys Creek | 0.81 | 94.1% | 20.0 |
| PA | 020502060102 | First Fork Larrys Creek | 0.81 | 85.7% | 4.8 |
| PA | 020502060203 | Rock Run | 0.81 | 92.9% | 20.1 |
| PA | 020502060204 | Pleasant Stream | 0.87 | 94.3% | 22.4 |
| PA | 020502060205 | Grays Run | 0.86 | 75.0% | 28.2 |
| PA | 020502060302 | Glass Creek-Loyalsock Creek | 0.82 | 74.7% | 111.3 |
| PA | 020502060304 | Little Loyalsock Creek-Loyalsock Creek | 0.95 | 79.6% | 59.3 |
| PA | 020502060503 | Ogdonia Creek-Loyalsock Creek | 0.87 | 54.9% | 35.2 |
| PA | 020502060504 | Plunketts Creek | 0.91 | 100.0% | 29.6 |
| PA | 020502061201 | White Deer Creek-Lower West Branch Susquehanna R. | 0.83 | 95.5% | 4.2 |
| PA | 020503010902 | Rattling Creek | 0.84 | 100.0% | 27.6 |
| PA | 020503020701 | Laurel Run | 0.80 | 78.9% | 8.2 |
| WV | 020700010102 | Big Run | 0.81 | 100.0% | 73.5 |
| VA | 020700010104 | Headwaters Seneca Creek | 0.83 | 96.9% | 38.2 |
| VA | 020700010105 | Outlet Seneca Creek | 0.91 | 84.2% | 67.8 |
| WV | 020700010309 | Briggs Run-South Branch Potomac River | 0.82 | 29.4% | 16.2 |
| WV | 020700010107 | Zeke Run-North Fork South Branch Potomac River | 0.91 | 38.1% | 27.3 |
| MD | 020700020207 | Piney Swamp Run-North Branch Potomac River | 0.91 | 46.7% | 26.9 |
| VA | 020700050102 | Buffalo Branch-Middle River | 1.37 | 40.0% | 60.3 |
| VA | 020700050103 | Jennings Branch | 0.93 | 50.0% | 45.5 |
| VA | 020700050703 | Inch Branch-Back Creek | 0.95 | 83.5% | 76.1 |
| VA | 020700050801 | Big Run-South Fork Shenandoah River | 0.82 | 45.2% | 64.0 |

Appendix Table III. (cont.)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **State** | **HUC 12 Code** | **HUC 12 Name** | **HUC 12 Priority Score** | **% of Catchments in HUC 12 w/HQI ≥0.50** | **Amount of HUC 12 Area (km2) Classified as Wild Brook Trout Only**  |
| VA | 020700050805 | South Branch-Naked Creek | 1.10 | 81.3% | 83.3 |
| VA | 020700051001 | Jeremys Run-South Fork Shenandoah River | 1.24 | 0.0% | 48.0 |
| VA | 020700051002 | Brown Hollow Run-South Fork Shenandoah River | 1.19 | 12.1% | 48.4 |
| VA | 020700051003 | Gooney Run | 1.17 | 40.0% | 70.7 |
| VA | 020801030102 | Jordan River | 1.10 | 28.6% | 60.0 |
| VA | 020801030301 | Piney River-Thornton River | 1.30 | 42.9% | 76.7 |
| VA | 020801030302 | Covington River | 1.31 | 0.0% | 107.8 |
| VA | 020801030401 | Hughes River | 1.10 | 46.2% | 33.2 |
| VA | 020801030402 | Sams Run-Hazel River | 1.16 | 33.3% | 41.3 |
| VA | 020801030701 | Garth Run-Rapidan River | 1.21 | 84.2% | 88.0 |
| VA | 020801030702 | Conway River | 1.16 | 72.7% | 15.4 |
| VA | 020801030703 | South River-Rapidan River | 0.84 | 65.0% | 25.1 |
| VA | 020801030901 | Rose River-Robinson River | 1.24 | 75.0% | 38.6 |
| VA | 020802010102 | Bolar Run-Jackson River | 1.02 | 60.0% | 148.4 |
| VA | 020802010103 | Warm Springs Run-Jackson River | 1.11 | 73.3% | 24.2 |
| VA | 020802010202 | Jim Dave Run-Back Creek | 0.93 | 77.8% | 121.9 |
| VA | 020802010203 | Little Back Creek | 0.92 | 66.7% | 70.4 |
| VA | 020802010302 | Cove Run-Dunlap Creek | 1.19 | 73.5% | 31.5 |
| VA | 020802010401 | South Fork Potts Creek-North Fork Potts Creek | 0.93 | 92.3% | 19.2 |
| VA | 020802010403 | Mill Branch-Potts Creek | 1.13 | 61.5% | 49.5 |
| VA | 020802010404 | Cast Steel Run-Potts Creek | 1.12 | 54.8% | 35.6 |
| VA | 020802010405 | Hays Creek-Potts Creek | 1.04 | 62.5% | 4.1 |
| VA | 020802010501 | Hot Springs Run-Cedar Creek | 1.08 | 84.2% | 77.9 |
| VA | 020802010502 | Falling Spring Creek-Jackson River | 0.99 | 45.8% | 28.3 |
| VA | 020802010503 | Indian Draft-Jackson River | 1.04 | 41.5% | 45.1 |
| VA | 020802010505 | Karnes Creek-White Rock Creek | 1.04 | 76.9% | 40.3 |
| VA | 020802010506 | Wilson Creek | 1.16 | 88.5% | 42.1 |
| VA | 020802010507 | Smith Creek-Jackson River | 1.29 | 59.3% | 32.5 |
| VA | 020802010603 | Benson Run-Cowpasture River | 1.02 | 100.0% | 23.2 |
| VA | 020802010605 | Crab Run-Bullpasture River | 0.93 | 61.5% | 113.1 |
| VA | 020802010703 | Thompson Creek-Cowpasture River | 1.13 | 45.5% | 42.4 |
| VA | 020802010704 | Lick Run-Stuart Run | 1.13 | 100.0% | 24.0 |
| VA | 020802010801 | Mill Creek-Cowpasture River | 1.15 | 58.8% | 43.2 |
| VA | 020802010802 | Pads Creek | 1.09 | 72.6% | 11.4 |
| VA | 020802010902 | Sinking Creek | 1.04 | 80.0% | 27.9 |
| VA | 020802010903 | Smith Branch-Mill Creek | 0.98 | 86.4% | 9.0 |
| VA | 020802011101 | Upper Johns Creek | 1.01 | 84.8% | 50.8 |
| VA | 020802011102 | Lower Johns Creek | 1.09 | 91.5% | 28.9 |
| VA | 020802011202 | Barbours Creek | 1.14 | 92.3% | 51.6 |
| VA | 020802011203 | Mill Creek-Craig Creek | 1.03 | 53.6% | 51.4 |
| VA | 020802011502 | North Creek-Jennings Creek | 0.94 | 76.9% | 12.2 |
| VA | 020802020102 | Ramseys Draft | 0.84 | 100.0% | 55.6 |
| VA | 020802020103 | Holloway Draft-Calfpasture River | 1.09 | 66.7% | 82.0 |
| VA | 020802020105 | Fridley Branch-Calfpasture River | 1.12 | 36.4% | 84.2 |
| VA | 020802020106 | Cabin Creek-Mill Creek | 1.13 | 67.9% | 61.7 |

Appendix Table III. (cont.)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **State** | **HUC 12 Code** | **HUC 12 Name** | **HUC 12 Priority Score** | **% of Catchments in HUC 12 w/HQI ≥0.50** | **Amount of HUC 12 Area (km2) Classified as Wild Brook Trout Only**  |
| VA | 020802020107 | Brattons Run | 1.08 | 93.0% | 50.5 |
| VA | 020802020108 | Guys Run-Calfpasture River | 1.03 | 69.4% | 19.9 |
| VA | 020802020201 | Upper Little Calfpasture River | 1.03 | 80.0% | 93.9 |
| VA | 020802020202 | Lower Little Calfpasture River | 1.00 | 36.8% | 4.4 |
| VA | 020802020403 | Irish Creek | 0.93 | 75.0% | 62.1 |
| VA | 020802020502 | South Buffalo Creek | 0.94 | 37.5% | 1.7 |
| VA | 020802030101 | Otter Creek-James River | 0.93 | 51.3% | 37.8 |
| VA | 020802030201 | Lynchburg Reservoir-Pedlar River | 0.96 | 64.5% | 43.5 |
| VA | 020802030202 | Browns Creek-Pedlar River | 1.02 | 60.3% | 29.3 |
| VA | 020802030501 | South Fork Tye River-North Fork Tye River | 1.03 | 97.5% | 80.9 |
| VA | 020802030502 | Cub Creek-Tye River | 1.07 | 61.3% | 47.2 |
| VA | 020802030505 | Little Piney River-Piney River | 1.07 | 78.6% | 83.7 |
| VA | 020802030601 | North Fork Buffalo River-Buffalo River | 1.06 | 39.7% | 37.6 |
| VA | 020802040104 | Doyles River | 0.88 | 81.5% | 29.7 |

Appendix Table IV. Level 2 Priority Subwatersheds Containing Wild Brook Trout Only (allopatric) Patches.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **State** | **HUC 12 Code** | **HUC 12 Name** | **% of Catchments in HUC 12 w/HQI ≥0.50** | **Amount of HUC 12 Area (km2) Classified as Wild Brook Trout Only**  |
| NY | 020501010201 | Pleasant Brook | 81.8% | 58.4 |
| NY | 020501010202 | Upper Cherry Valley Creek | 80.0% | 60.0 |
| NY | 020501010301 | Upper Schenevus Creek | 69.4% | 31.6 |
| NY | 020501010302 | Elk Creek | 82.1% | 23.9 |
| NY | 020501010401 | Center Brook | 100.0% | 41.1 |
| NY | 020501010403 | Upper Charlotte Creek | 77.6% | 96.3 |
| NY | 020501010404 | Kortright Creek | 100.0% | 72.7 |
| NY | 020501010501 | West Branch Otego Creek | 63.2% | 3.5 |
| NY | 020501010502 | Upper Otego Creek | 62.5% | 26.7 |
| NY | 020501010504 | Lower Otego Creek | 66.7% | 73.1 |
| NY | 020501010604 | Red Creek-Susquehanna River | 66.7% | 76.7 |
| NY | 020501010802 | Middle Butternut Creek | 60.7% | 93.0 |
| NY | 020501010803 | Lower Butternut Creek | 69.8% | 105.9 |
| NY | 020501010906 | Center Brook | 92.3% | 59.8 |
| NY | 020501010907 | Great Brook | 90.0% | 66.9 |
| NY | 020501011001 | Upper Ouleout Creek | 100.0% | 25.0 |
| NY | 020501011002 | Treadwell Creek | 95.0% | 25.6 |
| NY | 020501011004 | Handsome Brook | 84.0% | 9.9 |
| NY | 020501011101 | Otsdawa Creek | 100.0% | 28.7 |
| NY | 020501011103 | Sand Hill Creek-Susquehanna River | 61.9% | 28.1 |
| NY | 020501011104 | Carrs Creek | 92.3% | 11.4 |
| NY | 020501011201 | Bennettsville Creek | 82.2% | 69.4 |
| NY | 020501011202 | Kelsey Brook | 77.1% | 2.8 |
| NY | 020501011204 | Wylie Brook | 90.3% | 56.5 |
| NY | 020501011207 | Ouaquaga Creek-Susquehanna River | 60.6% | 45.0 |
| PA | 020501011301 | Shadigee Creek | 62.1% | 19.6 |
| PA | 020501011303 | Middle Starrucca Creek | 87.5% | 6.5 |
| PA | 020501011304 | Lower Starrucca Creek | 71.9% | 31.3 |
| NY | 020501011307 | Trowbridge Creek | 100.0% | 29.1 |
| PA | 020501011309 | Silver Creek | 62.5% | 16.1 |
| NY | 020501020302 | Mud Creek | 66.7% | 5.3 |
| NY | 020501020306 | Merrill Creek | 80.0% | 43.2 |
| NY | 020501020405 | Culver Creek-Dudley Creek | 83.3% | 27.2 |
| NY | 020501020502 | Middle Sangerfield River | 61.5% | 26.5 |
| NY | 020501020601 | Pleasant Brook | 69.2% | 3.6 |
| NY | 020501020609 | Turner Creek-Fly Meadow Creek | 79.3% | 4.9 |
| NY | 020501020702 | Upper Genegantslet Creek | 60.0% | 10.6 |
| NY | 020501030304 | Middle Catatonk Creek | 60.6% | 14.3 |
| NY | 020501030401 | Headwaters East Branch Owego Creek | 96.8% | 28.6 |
| NY | 020501030405 | Upper West Branch Owego Creek | 80.0% | 28.8 |
| PA | 020501030501 | Apalachin Creek | 66.0% | 4.1 |
| NY | 020501030603 | Upper Cayuta Creek | 62.2% | 5.4 |
| PA | 020501030701 | Upper Wappasening Creek | 60.0% | 37.5 |
| NY | 020501040101 | McHenry Valley Creek | 100.0% | 30.6 |

Appendix Table IV. (cont.)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **State** | **HUC 12 Code** | **HUC 12 Name** | **% of Catchments in HUC 12 w/HQI ≥0.50** | **Amount of HUC 12 Area (km2) Classified as Wild Brook Trout Only**  |
| NY | 020501040103 | Upper Canacadea Creek | 80.0% | 50.7 |
| NY | 020501040202 | Upper Bennetts Creek | 100.0% | 34.6 |
| PA | 020501040801 | Headwaters Cowanesque River | 80.0% | 84.0 |
| PA | 020501040804 | Jemison Creek | 80.0% | 20.6 |
| PA | 020501040901 | Headwaters Tioga River | 96.8% | 43.2 |
| PA | 020501040904 | Upper Tioga River | 64.6% | 24.8 |
| NY | 020501050102 | Twelvemile Creek | 84.2% | 10.0 |
| NY | 020501050104 | Reynolds Creek-Cohocton River | 66.7% | 28.8 |
| NY | 020501050402 | Cutler Creek-Chemung River | 60.0% | 23.7 |
| NY | 020501050502 | Upper Newtown Creek | 71.1% | 13.7 |
| PA | 020501060201 | Little Schrader Creek | 83.3% | 96.3 |
| PA | 020501060303 | South Branch Towanda Creek | 69.0% | 70.7 |
| PA | 020501060702 | Gaylord Creek | 66.7% | 48.1 |
| PA | 020501060703 | North Branch Wyalusing Creek | 66.7% | 40.4 |
| PA | 020501060901 | Upper Mehoopany Creek | 75.0% | 84.1 |
| PA | 020501060903 | Lower Mehoopany Creek | 88.6% | 61.9 |
| PA | 020501061001 | Upper East Branch Tunkhannock Creek | 89.5% | 41.0 |
| PA | 020501061102 | Lower South Branch Tunkhannock Creek | 64.1% | 16.0 |
| PA | 020501061201 | Upper Tunhannock Creek | 69.0% | 61.0 |
| PA | 020501061202 | Butler Creek | 60.0% | 50.8 |
| PA | 020501061203 | Nine Partners Creek | 65.4% | 21.7 |
| PA | 020501061204 | Middle Tunkhannock Creek | 60.0% | 26.4 |
| PA | 020501061207 | Horton Creek | 76.9% | 37.8 |
| PA | 020501061408 | Gardner Creek | 80.0% | 2.3 |
| PA | 020501070102 | East Branch Lackawanna River | 64.7% | 19.4 |
| PA | 020501070104 | Rush Brook-Lackawanna River | 73.7% | 24.3 |
| PA | 020501070107 | Roaring Brook | 70.3% | 25.7 |
| PA | 020501070108 | Spring Brook | 66.7% | 26.8 |
| PA | 020501070110 | Lackawanna River-Susquehanna River | 81.8% | 4.6 |
| PA | 020501070202 | City of Wilkes-Barre-Mill Creek | 77.1% | 53.6 |
| PA | 020501070204 | Sugar Notch Run-Solomon Creek | 78.6% | 47.2 |
| PA | 020501070301 | Harveys Lake-Harveys Creek | 83.6% | 42.5 |
| PA | 020501070302 | Hunlock Creek | 76.7% | 27.7 |
| PA | 020501070402 | Black Creek | 72.7% | 154.4 |
| PA | 020501070503 | Pine Creek | 68.4% | 8.1 |
| PA | 020501070704 | Raven Creek | 71.2% | 4.9 |
| PA | 020501070801 | Little Catawissa Creek | 86.7% | 7.7 |
| PA | 020501070802 | Tomicken Creek | 90.5% | 46.9 |
| PA | 020501070803 | Messers Run-Catawissa Creek | 78.3% | 95.8 |
| PA | 020501070901 | Mugser Run-South Branch Roaring Creek | 62.1% | 9.5 |
| PA | 020502010101 | Upper Chest Creek | 94.3% | 6.6 |
| PA | 020502010103 | Lower Chest Creek | 84.2% | 29.0 |
| PA | 020502010201 | Upper Anderson Creek | 100.0% | 68.8 |
| PA | 020502010202 | Lower Anderson Creek | 90.9% | 22.6 |
| PA | 020502010303 | Glendale Dam-Beaverdam Run | 65.7% | 18.5 |
| PA | 020502010304 | Upper Clearfield Creek | 91.8% | 117.4 |

Appendix Table IV. (cont.)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **State** | **HUC 12 Code** | **HUC 12 Name** | **% of Catchments in HUC 12 w/HQI ≥0.50** | **Amount of HUC 12 Area (km2) Classified as Wild Brook Trout Only**  |
| PA | 020502010305 | South Witmer Run-North Witmer Run | 88.1% | 66.8 |
| PA | 020502010306 | Muddy Run | 100.0% | 5.9 |
| PA | 020502010307 | Middle Clearfield Creek | 70.0% | 44.9 |
| PA | 020502010308 | Lower Clearfield Creek | 92.7% | 42.4 |
| PA | 020502010309 | Little Clearfield Creek | 97.6% | 20.0 |
| PA | 020502010310 | Morgan Run-Lower Clearfield Creek | 94.2% | 40.0 |
| PA | 020502010401 | Headwaters West Branch Susquehanna River | 100.0% | 56.7 |
| PA | 020502010403 | Beaver Run-West Branch Susquehanna River | 94.4% | 13.6 |
| PA | 020502010404 | Bear Run | 100.0% | 5.0 |
| PA | 020502010405 | Bell Run | 100.0% | 15.1 |
| PA | 020502010406 | Deer Run-West Branch Susquehanna River | 79.6% | 31.3 |
| PA | 020502010407 | Montgomery Creek | 85.7% | 6.9 |
| PA | 020502010408 | Curwensville Dam-West Branch Susquehanna River | 76.2% | 38.1 |
| PA | 020502010502 | Upper Moshannon Creek | 100.0% | 35.9 |
| PA | 020502010503 | Laurel Run | 92.3% | 9.6 |
| PA | 020502010506 | Middle Moshannon Creek | 71.9% | 15.1 |
| PA | 020502010507 | Black Moshannon Creek | 85.1% | 58.5 |
| PA | 020502010601 | Headwaters Mosquito Creek | 88.9% | 28.7 |
| PA | 020502010701 | Lick Run | 100.0% | 56.9 |
| PA | 020502010703 | Moravian Run | 100.0% | 30.0 |
| PA | 020502010705 | Sandy Creek | 100.0% | 24.4 |
| PA | 020502010707 | Millstone Run-West Branch Susquehanna River | 74.5% | 15.0 |
| PA | 020502010708 | Upper Three Runs | 93.3% | 43.9 |
| PA | 020502020207 | Driftwood Branch Sinnemahoning Creek | 75.4% | 12.6 |
| PA | 020502020304 | Medix Run | 100.0% | 44.5 |
| PA | 020502020305 | Middle Bennett Branch Sinnemahoning Creek | 90.8% | 26.9 |
| PA | 020502020308 | Dents Run | 100.0% | 24.1 |
| PA | 020502020309 | East Branch Hicks Run | 100.0% | 8.0 |
| PA | 020502020401 | Big Moores Run | 100.0% | 9.3 |
| PA | 020502020402 | South Woods Branch | 96.3% | 8.4 |
| PA | 020502020404 | Freeman Run | 100.0% | 23.9 |
| PA | 020502030406 | Tangascootack Creek | 100.0% | 42.1 |
| PA | 020502030410 | McElhattan Creek | 60.7% | 6.7 |
| PA | 020502030411 | Chatham Run | 85.7% | 36.7 |
| PA | 020502040202 | North Fork Beach Creek | 100.0% | 54.1 |
| PA | 020502040203 | Sandy Run-Beech Creek | 100.0% | 33.4 |
| PA | 020502040204 | Big Run | 100.0% | 5.8 |
| PA | 020502040205 | Beech Creek-Bald Eagle Creek | 92.5% | 56.9 |
| PA | 020502040301 | Bull Run-Fishing Creek | 77.6% | 12.5 |
| PA | 020502040302 | Little Fishing Creek | 77.3% | 16.1 |
| PA | 020502040305 | Cherry Run-Fishing Creek | 65.9% | 27.5 |
| PA | 020502040401 | Laurel Run-Bald Eagle Creek | 95.9% | 2.0 |
| PA | 020502040402 | Dicks Run-Bald Eagle Creek | 79.6% | 5.5 |
| PA | 020502050204 | West Branch Pine Creek-Pine Creek | 100.0% | 39.8 |

Appendix Table IV. (cont.)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **State** | **HUC 12 Code** | **HUC 12 Name** | **% of Catchments in HUC 12 w/HQI ≥0.50** | **Amount of HUC 12 Area (km2) Classified as Wild Brook Trout Only**  |
| PA | 020502050206 | Elk Run | 95.5% | 8.4 |
| PA | 020502050302 | Asaph Run | 90.9% | 22.0 |
| PA | 020502050401 | Headwaters Babb Creek | 69.8% | 71.7 |
| PA | 020502050403 | East Branch Stony Fork | 61.5% | 18.1 |
| PA | 020502050405 | Long Run-Babb Creek | 62.5% | 31.3 |
| PA | 020502050502 | Texas Creek | 77.8% | 29.8 |
| PA | 020502050504 | Blockhouse Creek | 70.6% | 27.5 |
| PA | 020502050505 | Otter Run | 100.0% | 58.4 |
| PA | 020502050606 | Upper Pine Bottom Run-Pine Creek | 79.2% | 29.4 |
| PA | 020502060103 | Larrys Creek-West Branch Susquehanna River | 94.6% | 32.0 |
| PA | 020502060202 | Mill Creek-Lycoming Creek | 62.5% | 35.0 |
| PA | 020502060207 | Hoagland Run | 87.5% | 21.1 |
| PA | 020502060301 | Lopez Creek | 81.0% | 51.5 |
| PA | 020502060303 | Birch Creek | 66.7% | 6.1 |
| PA | 020502060401 | Lick Creek | 84.2% | 9.3 |
| PA | 020502060402 | Black Creek-Little Loyalsock Creek | 76.2% | 15.1 |
| PA | 020502060501 | Porter Creek-Hoagland Branch | 95.2% | 12.9 |
| PA | 020502060502 | Elk Creek | 61.8% | 15.4 |
| PA | 020502060506 | Wallis Run | 94.3% | 18.9 |
| PA | 020502060508 | Mill Creek-West Side of Loyalsock Creek | 90.5% | 12.4 |
| PA | 020502060509 | Little Bear Creek-Loyalsock Creek | 68.7% | 15.1 |
| PA | 020502060601 | Antes Creek | 77.5% | 27.1 |
| PA | 020502060702 | Big Run | 68.5% | 4.2 |
| PA | 020502060801 | Big Run-Muncy Creek | 92.3% | 53.8 |
| PA | 020502061001 | North Branch Buffalo Creek | 77.8% | 8.7 |
| PA | 020502061002 | Rapid Run | 92.9% | 22.3 |
| PA | 020502061102 | Upper Branches Chillisquaque Creek | 64.8% | 16.8 |
| PA | 020503010202 | Voneida Run-Pine Creek | 86.0% | 19.3 |
| PA | 020503010303 | North Branch Middle Creek | 79.2% | 5.0 |
| PA | 020503010304 | Beaver Creek-Middle Creek | 73.8% | 5.2 |
| PA | 020503010401 | Colyer Lake-Sinking Creek | 66.7% | 2.6 |
| PA | 020503010402 | Headwaters Penns Creek | 66.7% | 2.0 |
| PA | 020503010403 | Upper Penns Creek | 72.9% | 13.5 |
| PA | 020503010501 | Upper Mahanoy Creek | 76.1% | 6.6 |
| PA | 020503011005 | Powell Creek | 67.6% | 18.1 |
| PA | 020503020201 | Blair Gap Run | 73.5% | 16.7 |
| PA | 020503020502 | Upper Little Juniata River | 76.6% | 21.2 |
| PA | 020503030202 | Bobs Creek-Dunning Creek | 82.0% | 14.9 |
| PA | 020503030702 | Great Trough Creek | 69.2% | 10.1 |
| PA | 020503030801 | Shoup Run | 100.0% | 24.2 |
| PA | 020503030802 | Sixmile Run-Raystown Branch Juniata River | 76.3% | 7.4 |
| PA | 020503040101 | Saddler Creek | 61.1% | 48.1 |
| PA | 020503040201 | Upper Sideling Hill Creek | 67.6% | 13.7 |
| PA | 020503040403 | Three Springs Creek | 60.5% | 2.5 |
| PA | 020503040601 | Treaster Run | 84.4% | 1.9 |
| PA | 020503050102 | Bull Run | 78.6% | 24.9 |
| PA | 020503050105 | Laurel Run | 78.6% | 2.5 |

Appendix Table IV. (cont.)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **State** | **HUC 12 Code** | **HUC 12 Name** | **% of Catchments in HUC 12 w/HQI ≥0.50** | **Amount of HUC 12 Area (km2) Classified as Wild Brook Trout Only**  |
| PA | 020503050301 | Thompson Creek-Burd Run | 71.4% | 51.6 |
| PA | 020503050602 | Good Spring Creek-Upper Swatara Creek | 78.1% | 10.1 |
| PA | 020503050603 | Lower Little Swatara Creek | 79.4% | 12.3 |
| PA | 020503050604 | Mill Creek | 82.4% | 37.1 |
| PA | 020503050702 | Upper Little Swatara Creek | 73.0% | 4.5 |
| PA | 020503051003 | Stony Creek | 92.0% | 39.5 |
| PA | 020503060301 | Latimore Creek | 85.7% | 23.2 |
| PA | 020503060801 | Upper Chickies Creek | 60.0% | 4.6 |
| PA | 020503060901 | Little Cocalico Creek-Cocalico Creek | 72.7% | 11.7 |
| MD | 020503061603 | Middle Deer Creek | 63.3% | 14.4 |
| MD | 020600030301 | South Branch Gunpowder Falls-Gunpowder Falls | 74.1% | 35.6 |
| MD | 020600030401 | Little Falls | 79.1% | 5.6 |
| MD | 020600031004 | Piney Branch-South Branch Patapsco River | 64.9% | 13.2 |
| VA | 020700010101 | Laurel Fork-North Fork South Branch Potomac River | 91.8% | 77.9 |
| WV | 020700010103 | Red Lick Run-North Fork South Branch Potomac River | 68.4% | 11.4 |
| WV | 020700010201 | Headwaters Lunice Creek | 67.3% | 15.0 |
| VA | 020700010301 | Frank Run-South Branch Potomac River | 60.0% | 9.2 |
| VA | 020700010302 | Strait Creek | 100.0% | 69.7 |
| WV | 020700010304 | Whitehorn Creek-Thorn Creek | 86.7% | 118.4 |
| MD | 020700020101 | Upper Savage River | 91.2% | 107.0 |
| MD | 020700020102 | Crabtree Creek | 90.9% | 44.5 |
| MD | 020700020103 | Lower Savage River | 89.5% | 105.9 |
| MD | 020700020201 | Shields Run-North Branch Potomac River | 89.5% | 43.9 |
| WV | 020700020202 | Mount Storm Lake-Stony River | 70.9% | 125.9 |
| MD | 020700020203 | Buffalo Creek-North Branch Potomac River | 91.1% | 48.7 |
| WV | 020700020204 | Abram Creek | 86.7% | 58.1 |
| MD | 020700020205 | Lostland Run-North Branch Potomac River | 96.8% | 57.4 |
| MD | 020700020206 | Bloomington Lake-North Branch Potomac River | 75.6% | 52.7 |
| MD | 020700020301 | Upper Georges Creek | 97.0% | 41.1 |
| MD | 020700020302 | Lower Georges Creek | 74.2% | 37.2 |
| PA | 020700020502 | Laurel Run | 84.2% | 23.3 |
| PA | 020700020503 | Little Wills Creek | 67.6% | 11.0 |
| PA | 020700020504 | Gladdens Run | 63.6% | 34.5 |
| PA | 020700020505 | Jennings Run | 90.3% | 25.1 |
| MD | 020700020507 | Braddock Creek-Wills Creek | 66.7% | 27.5 |
| WV | 020700030601 | Meadow Run-North River | 60.6% | 5.9 |
| PA | 020700040801 | Rocky Mountain Creek | 89.5% | 42.8 |
| PA | 020700040802 | Headwaters Conococheague Creek | 61.1% | 29.8 |
| VA | 020700050401 | Skidmore Fork-North River | 76.9% | 72.8 |
| VA | 020700050402 | Little River | 87.5% | 65.7 |
| VA | 020700050501 | Skidmore Fork-Dry River | 79.6% | 100.6 |
| VA | 020700050502 | Black Run-Dry River | 84.6% | 88.5 |
| VA | 020700050902 | Pitt Spring Run-Cub Run | 100.0% | 39.8 |
| VA | 020700060104 | Little Dry River | 84.8% | 64.3 |
| VA | 020700060601 | Paddy Run-Cedar Creek | 69.0% | 71.3 |
| VA | 020802010101 | Dry Branch-Jackson River | 100.0% | 125.2 |
| VA | 020802010205 | Lake Moomaw-Jackson River | 63.0% | 27.5 |

Appendix Table IV. (cont.)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **State** | **HUC 12 Code** | **HUC 12 Name** | **% of Catchments in HUC 12 w/HQI ≥0.50** | **Amount of HUC 12 Area (km2) Classified as Wild Brook Trout Only**  |
| VA | 020802010604 | Davis Run-Bullpasture River | 88.9% | 148.6 |
| VA | 020802010702 | Dry Run | 100.0% | 69.8 |
| VA | 020802011504 | Spring Gap Creek-Cedar Creek | 94.1% | 8.8 |
| VA | 020802020101 | Chair Draft-Calfpasture River | 66.7% | 58.1 |
| VA | 020802020104 | Hamilton Branch | 100.0% | 32.7 |
| VA | 020802020401 | Saint Marys River | 94.7% | 40.8 |
| VA | 020802030902 | South Fork Rockfish River | 68.6% | 33.8 |
| VA | 020802040103 | North Moormans River-Moormans River | 100.0% | 20.2 |
| VA | 020802040301 | Lynch River-North Fork Rivanna River | 70.0% | 31.2 |
| VA | 020802040302 | Swift Run | 62.9% | 36.7 |

Appendix Table V. Level 3 Priority Subwatersheds Containing Wild Brook Trout Only (allopatric) Patches.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **State** | **HUC 12 Code** | **HUC 12 Name** | **% of Catchments in HUC 12 w/HQI ≥0.50** | **Amount of HUC 12 Area (km2) Classified as Wild Brook Trout Only**  |
| NY | 020501010102 | Herkimer Creek-Canadarago Lake | 17.5% | 22.0 |
| NY | 020501010103 | Oaks Creek | 44.8% | 50.7 |
| NY | 020501010203 | Middle Cherry Valley Creek | 56.0% | 51.5 |
| NY | 020501010204 | Lower Cherry Valley Creek | 48.1% | 51.5 |
| NY | 020501010303 | Middle Schenevus Creek | 44.8% | 37.6 |
| NY | 020501010304 | Lower Schenevus Creek | 52.9% | 38.9 |
| NY | 020501010402 | Middle Brook | 40.0% | 91.5 |
| NY | 020501010405 | Middle Charlotte Creek | 30.8% | 92.7 |
| NY | 020501010406 | Lower Charlotte Creek | 25.0% | 35.2 |
| NY | 020501010503 | Middle Otego Creek | 35.7% | 18.2 |
| NY | 020501010602 | Shadow Brook | 44.0% | 7.3 |
| NY | 020501010603 | Hayden Creek-Ostego Lake | 29.1% | 6.8 |
| NY | 020501010605 | Goodyear Lake-Susquehanna River | 47.4% | 51.3 |
| NY | 020501010606 | Oneonta Creek-Susquehanna River | 41.7% | 20.2 |
| NY | 020501010701 | Upper Wharton Creek | 36.8% | 36.5 |
| NY | 020501010702 | Middle Wharton Creek | 53.6% | 68.6 |
| NY | 020501010703 | Lower Wharton Creek | 57.7% | 82.9 |
| NY | 020501010801 | Upper Butternut Creek | 50.0% | 66.7 |
| NY | 020501010902 | West Branch Unadilla River | 50.0% | 8.6 |
| NY | 020501010903 | Headwaters Unadilla River | 40.5% | 33.1 |
| NY | 020501010904 | Beaver Creek | 44.4% | 43.8 |
| NY | 020501010905 | Upper Unadilla River | 56.0% | 86.6 |
| NY | 020501010908 | Middle Unadilla River | 41.7% | 130.7 |
| NY | 020501010910 | Lower Unadilla River | 48.1% | 44.0 |
| NY | 020501011005 | Lower Ouleout Creek | 40.0% | 1.8 |
| NY | 020501011102 | Brier Creek-Susquehanna River | 35.7% | 70.3 |
| NY | 020501011203 | Yaleville Brook-Susquehanna River | 44.2% | 8.8 |
| NY | 020501011205 | Cornell Creek-Susquehanna River | 46.3% | 24.2 |
| NY | 020501011206 | Belden Brook-Susquehanna River | 41.5% | 9.3 |
| PA | 020501011305 | Canawacta Creek-Susquehanna River | 46.3% | 9.1 |
| PA | 020501011308 | Mitchell Creek-Susquehanna River | 56.3% | 42.6 |
| NY | 020501020102 | Upper East Branch Tioughnioga Creek | 51.8% | 13.5 |
| NY | 020501020105 | Cheningo Creek | 25.9% | 6.4 |
| NY | 020501020106 | Lower East Branch Tioughnioga Creek | 57.1% | 17.7 |
| NY | 020501020205 | Dry Creek-West Branch Tioughnioga River | 34.6% | 11.8 |
| NY | 020501020301 | Headwaters Otselic River | 54.8% | 2.5 |
| NY | 020501020303 | Upper Otselic River | 51.0% | 31.8 |
| NY | 020501020401 | Trout Brook | 56.1% | 95.2 |
| NY | 020501020403 | Upper Tioughnioga River | 31.9% | 5.5 |
| NY | 020501020501 | Upper Sangerfield River | 40.9% | 17.4 |
| NY | 020501020503 | Lower Sangerfield River | 38.5% | 23.9 |
| NY | 020501020504 | Callahan Brook-Chenango River | 23.5% | 13.0 |
| NY | 020501020505 | Payne Brook | 28.6% | 5.1 |
| NY | 020501020506 | Eaton Brook-Chenango River | 28.6% | 18.4 |

Appendix Table V. (cont.)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **State** | **HUC 12 Code** | **HUC 12 Name** | **% of Catchments in HUC 12 w/HQI ≥0.50** | **Amount of HUC 12 Area (km2) Classified as Wild Brook Trout Only**  |
| NY | 020501020508 | Crooked Brook-Pleasant Brook | 59.1% | 59.2 |
| NY | 020501020509 | Stone Mill Brook-Chenango River | 36.8% | 21.5 |
| NY | 020501020602 | Handsome Brook | 53.8% | 28.7 |
| NY | 020501020603 | Mad Brook-Chenango River | 42.9% | 46.3 |
| NY | 020501020605 | Fly Creek-Chenango River | 19.0% | 26.1 |
| NY | 020501020607 | Thompson Creek-Chenango River | 56.3% | 19.5 |
| NY | 020501020703 | Middle Genegantslet Creek | 50.6% | 19.3 |
| NY | 020501020804 | Wheeler Brook-Chenango River | 28.2% | 26.2 |
| NY | 020501020805 | Spring Brook-Chenango River | 57.5% | 3.8 |
| NY | 020501030303 | Willseyville Creek | 53.3% | 25.8 |
| NY | 020501030407 | Doolittle Creek | 59.3% | 25.7 |
| NY | 020501030408 | Lower West Branch Owego Creek | 53.3% | 28.5 |
| NY | 020501030409 | Lower East Branch Owego Creek-Owego Creek | 31.9% | 8.5 |
| NY | 020501030502 | Little Nanticoke Creek | 48.7% | 8.6 |
| NY | 020501040102 | Karr Valley Creek | 33.3% | 40.9 |
| NY | 020501040104 | Lower Canacadea Creek | 25.0% | 7.6 |
| NY | 020501040203 | Middle Bennetts Creek | 56.3% | 13.7 |
| NY | 020501040401 | Lime Kiln Creek | 33.3% | 15.0 |
| NY | 020501040403 | Seeley Creek | 53.8% | 10.3 |
| PA | 020501040602 | Norris Brook | 66.7% | 22.4 |
| PA | 020501040608 | Lower Crooked Creek | 53.3% | 18.5 |
| PA | 020501040703 | Painter Run-Mill Creek | 42.1% | 9.3 |
| PA | 020501040805 | Upper Cowanesque River | 51.5% | 60.7 |
| PA | 020501040902 | Johnson Creek | 52.0% | 30.4 |
| PA | 020501040903 | Elk Run | 51.6% | 24.1 |
| PA | 020501040907 | Middle Tioga River | 37.7% | 4.1 |
| NY | 020501050101 | Punky Hollow-Cohocton River | 54.2% | 6.4 |
| NY | 020501050103 | Neils Creek | 40.0% | 18.3 |
| NY | 020501050105 | Goff Creek | 50.0% | 17.6 |
| NY | 020501050106 | Tenmile Creek-Cohocton River | 43.8% | 46.7 |
| NY | 020501050204 | Campbell Creek | 33.3% | 39.7 |
| NY | 020501050305 | Dry Run | 42.9% | 31.1 |
| NY | 020501050306 | Meads Creek | 37.5% | 27.5 |
| PA | 020501060803 | Thomas Creek-Meshoppen Creek | 51.9% | 7.5 |
| PA | 020501060902 | North Branch Mehoopany Creek | 53.7% | 42.0 |
| PA | 020501061208 | Lower Tunkhannock Creek | 46.6% | 17.3 |
| PA | 020501061303 | Lower Bowman Creek | 57.8% | 36.9 |
| PA | 020501061401 | Sugar Run | 44.4% | 92.1 |
| PA | 020501061402 | Sugar Run Creek | 55.2% | 51.1 |
| PA | 020501061409 | Obendoffers Creek-Susquehanna River | 50.0% | 1.8 |
| PA | 020501070101 | West Branch Lackawanna River | 57.1% | 19.5 |
| PA | 020501070103 | Lees Creek-Lackawanna River | 57.1% | 56.8 |
| PA | 020501070106 | Grassy Island Creek-Lackawanna River | 56.3% | 6.9 |
| PA | 020501070109 | City of Scranton-Lackawanna River | 53.1% | 29.9 |
| PA | 020501070201 | Abrahams Creek | 45.5% | 4.4 |
| PA | 020501070205 | City of Wilkes-Barre-Susquehanna River | 35.0% | 3.2 |

Appendix Table V. (cont.)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **State** | **HUC 12 Code** | **HUC 12 Name** | **% of Catchments in HUC 12 w/HQI ≥0.50** | **Amount of HUC 12 Area (km2) Classified as Wild Brook Trout Only**  |
| PA | 020501070304 | Little Wapwallopen Creek | 58.5% | 21.2 |
| PA | 020501070403 | Nescopeck Creek-Susquehanna River | 41.1% | 88.2 |
| PA | 020501070804 | Beaver Run-Catawissa Creek | 46.9% | 70.8 |
| PA | 020501070805 | Catawissa Creek-Susquehanna River | 42.9% | 8.8 |
| PA | 020502030412 | Reeds Run-West Branch Susquehanna River | 38.9% | 14.2 |
| PA | 020502040102 | Slab Cabin Run | 40.0% | 16.1 |
| PA | 020502040106 | Spring Creek-Bald Eagle Creek | 34.8% | 13.4 |
| PA | 020502040304 | Long Run | 57.1% | 16.6 |
| PA | 020502040407 | Bald Eagle Creek-West Branch Susquehanna River | 38.5% | 14.3 |
| PA | 020502050303 | Marsh Creek-Pine Creek | 44.1% | 47.2 |
| PA | 020502050404 | Stony Fork | 36.4% | 12.3 |
| PA | 020502050607 | Pine Creek-West Branch Susquehanna River | 52.9% | 19.8 |
| PA | 020502060206 | Trout Run-Lycoming Creek | 55.8% | 47.3 |
| PA | 020502060602 | Quenshukeny Run | 40.8% | 4.2 |
| PA | 020502060604 | Millers Run | 55.9% | 4.6 |
| PA | 020502060802 | Rock Run-Muncy Creek | 56.0% | 4.5 |
| PA | 020502060803 | Gregs Run-Muncy Creek | 47.4% | 8.0 |
| PA | 020502061005 | Buffalo Creek-West Branch Susquehanna River | 19.4% | 11.6 |
| PA | 020503010305 | Middle Creek-Penns Creek | 43.8% | 7.2 |
| PA | 020503010405 | Middle Penns Creek | 38.8% | 1.3 |
| PA | 020503020106 | Oldtown Run-Frankstown Branch Juniata River | 42.1% | 3.5 |
| PA | 020503020202 | Mill Run-Beaverdam Branch | 59.6% | 16.9 |
| PA | 020503020601 | Upper Shaver Creek | 43.8% | 17.7 |
| PA | 020503020703 | East Branch Standing Stone Creek | 57.1% | 11.1 |
| PA | 020503030102 | Headwaters Raystown Branch Juniata River | 46.8% | 31.1 |
| PA | 020503030303 | Lower Dunning Creek | 33.3% | 11.3 |
| PA | 020503030501 | Cove Creek | 45.8% | 9.5 |
| PA | 020503030505 | Sandy Run-Raystown Branch Juniata River | 52.3% | 21.2 |
| PA | 020503030603 | Lower Yellow Creek | 57.7% | 19.8 |
| PA | 020503030701 | Little Trough Creek | 57.4% | 1.4 |
| PA | 020503040202 | Wooden Bridge Creek | 55.2% | 25.2 |
| PA | 020503040302 | Blacklog Creek | 18.2% | 90.6 |
| PA | 020503040401 | North Branch Little Aughwick Creek | 56.5% | 1.6 |
| PA | 020503040906 | East Licking Creek | 54.9% | 6.3 |
| PA | 020503041204 | Juniata River-Susquehanna River | 43.3% | 5.5 |
| PA | 020503050101 | Shultz Creek-Sherman Creek | 58.0% | 42.0 |
| PA | 020503050203 | Trout Run-Conodoguinet Creek | 51.7% | 37.1 |
| PA | 020503050306 | Three Square Hollow Run-Conodoguinet Creek | 57.0% | 3.6 |
| PA | 020503050307 | Doubling Gap Creek | 46.7% | 8.0 |
| PA | 020503050501 | Headwaters Yellow Breeches Creek | 34.6% | 6.6 |
| PA | 020503050504 | Middle Yellow Breeches Creek | 15.5% | 4.5 |
| PA | 020503050605 | Middle Swatara Creek | 56.9% | 26.3 |
| PA | 020503051005 | Fishing Creek-Perry County | 45.5% | 20.5 |
| PA | 020503060502 | Davidsburg Run-Conewago Creek | 59.6% | 1.2 |
| PA | 020503060902 | Middle Creek | 55.6% | 18.0 |
| PA | 020503060903 | Hammer Creek | 45.0% | 2.5 |

Appendix Table V. (cont.)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **State** | **HUC 12 Code** | **HUC 12 Name** | **% of Catchments in HUC 12 w/HQI ≥0.50** | **Amount of HUC 12 Area (km2) Classified as Wild Brook Trout Only**  |
| PA | 020503061103 | Upper Conestoga River | 52.4% | 7.1 |
| PA | 020503061106 | Muddy Run-Mill Creek | 16.9% | 2.4 |
| PA | 020503061201 | Headwaters Pequea Creek | 46.5% | 4.9 |
| PA | 020503061202 | Eshleman Run-Pequea Creek | 38.8% | 6.1 |
| PA | 020503061204 | Climbers Run-Pequea Creek | 57.1% | 17.2 |
| MD | 020503061602 | Upper Deer Creek | 54.5% | 23.5 |
| PA | 020503061708 | Muddy Run-Susquehanna River | 36.4% | 4.2 |
| MD | 020600030302 | Prettyboy Reservoir-Gunpowder Falls | 47.4% | 35.9 |
| MD | 020600030501 | Little Gunpowder Falls | 44.1% | 14.4 |
| MD | 020600030805 | Deep Run-Liberty Lake-North Branch Patapsco River | 59.6% | 6.6 |
| MD | 020600030806 | Falls Run-Liberty Lake-North Branch Patapsco River | 40.0% | 6.7 |
| MD | 020600040201 | Severn Run | 18.4% | 5.8 |
| WV | 020700010106 | Mill Creek-North Fork South Branch Potomac River | 39.6% | 19.2 |
| WV | 020700010108 | Jordan Run-North Fork South Branch Potomac River | 36.8% | 41.0 |
| WV | 020700010310 | Hoglan Run-South Branch Potomac River | 17.6% | 9.4 |
| WV | 020700010501 | Brushy Fork-South Fork South Branch Potomac River | 33.3% | 56.8 |
| WV | 020700010502 | Little Fork-South Fork South Branch Potomac River | 50.0% | 9.9 |
| WV | 020700010505 | Rough Run-South Fork South Branch Potomac River | 35.5% | 25.9 |
| WV | 020700010506 | Kettle Creek-South Fork South Branch Potomac River | 25.8% | 18.0 |
| WV | 020700010607 | McDowell Run-South Branch Potomac River | 30.0% | 11.8 |
| WV | 020700020401 | New Creek | 58.6% | 30.6 |
| MD | 020700020403 | Mill Run-North Branch Potomac River | 28.8% | 4.6 |
| PA | 020700020506 | Shaffers Run-Wills Creek | 40.0% | 11.8 |
| MD | 020700020602 | Rocky Gap Run-Evitts Creek | 23.8% | 5.1 |
| WV | 020700020702 | Middle Fork Patterson Creek-Patterson Creek | 26.5% | 8.5 |
| WV | 020700020703 | Mikes Run | 39.1% | 8.3 |
| WV | 020700020705 | Mill Creek-Patterson Creek | 41.5% | 11.5 |
| PA | 020700030104 | Sweet Root Creek-Town Creek | 37.1% | 27.9 |
| WV | 020700030201 | North Fork-Little Cacapon River | 38.5% | 1.7 |
| WV | 020700030502 | Upper Cove Run-Lost River | 36.4% | 32.1 |
| WV | 020700030504 | Kimsey Run-Lost River | 18.5% | 56.8 |
| WV | 020700030505 | Three Springs Run-Lost River | 34.6% | 8.3 |
| WV | 020700030701 | Trout Run | 54.5% | 48.1 |
| WV | 020700030702 | Waites Run-Cacapon River | 30.2% | 46.1 |
| WV | 020700030703 | Capon Springs Run-Cacapon River | 39.5% | 8.4 |
| WV | 020700030706 | Bloomery Run-Cacapon River | 33.3% | 25.3 |
| WV | 020700030802 | Rockwell Run-Potomac River | 5.8% | 8.0 |
| PA | 020700040101 | Little Tonoloway Creek | 54.0% | 21.5 |
| VA | 020700040201 | Upper Sleepy Creek | 14.1% | 12.2 |
| PA | 020700040603 | Middle West Branch Conococheague Creek | 53.8% | 15.5 |
| PA | 020700040803 | Mountain Creek-Conococheague Creek | 36.1% | 49.4 |
| PA | 020700041002 | East Branch Antietam Creek | 39.2% | 17.8 |
| PA | 020700041003 | West Branch Antietam Creek | 25.9% | 57.2 |
| MD | 020700041004 | Little Antietam Creek | 24.0% | 15.5 |
| VA | 020700050101 | Edison Creek-Middle River | 0.0% | 59.5 |
| VA | 020700050403 | Briery Branch | 54.5% | 103.3 |

Appendix Table V. (cont.)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **State** | **HUC 12 Code** | **HUC 12 Name** | **% of Catchments in HUC 12 w/HQI ≥0.50** | **Amount of HUC 12 Area (km2) Classified as Wild Brook Trout Only**  |
| VA | 020700050504 | Honey Run-Dry River | 0.0% | 13.6 |
| VA | 020700050701 | Stony Run-South River | 47.0% | 13.2 |
| VA | 020700050702 | Canada Run-South River | 45.5% | 24.8 |
| VA | 020700050704 | Porterfield Run-South River | 29.6% | 22.9 |
| VA | 020700050705 | Paine Run-South River | 33.3% | 46.1 |
| VA | 020700050803 | Hawksbill Creek-South Fork Shenandoah River | 54.5% | 75.2 |
| VA | 020700050804 | Boone Run-Elk Run-South Fork Shenandoah River | 53.3% | 63.3 |
| VA | 020700050901 | Fultz Run-South Fork Shenandoah River | 42.1% | 10.6 |
| VA | 020700050904 | Hawksclaw Creek-South Fork Shenandoah River | 42.9% | 8.6 |
| VA | 020700050906 | East Hawksbill Creek-Hawksbill Creek | 0.0% | 84.6 |
| VA | 020700050907 | Pass Run-Hawksbill Creek | 33.3% | 35.9 |
| VA | 020700060101 | German River | 58.8% | 80.6 |
| VA | 020700060102 | Crab Run | 38.5% | 44.9 |
| VA | 020700060103 | Capon Run-North Fork Shenandoah River | 28.6% | 81.0 |
| VA | 020700060105 | Shoemaker River | 56.3% | 64.4 |
| VA | 020700060202 | Mountain Run-Smith Creek | 56.3% | 12.7 |
| VA | 020700060401 | Riles Run-Stony Creek | 15.0% | 109.9 |
| VA | 020700060402 | Yellow Spring Run-Stony Creek | 50.0% | 39.9 |
| VA | 020700060602 | Duck Run-Cedar Creek | 22.2% | 23.8 |
| VA | 020700060603 | Fall Run | 50.0% | 3.2 |
| VA | 020700060702 | Lower Passage Creek | 33.3% | 15.1 |
| VA | 020700070105 | Spout Run | 0.0% | 55.5 |
| MD | 020700080101 | Upper Catoctin Creek | 23.5% | 8.9 |
| PA | 020700090201 | Little Marsh Creek | 36.7% | 15.2 |
| MD | 020700090505 | Hunting Creek | 52.8% | 12.3 |
| MD | 020700090601 | Tuscarora Creek-Monocacy River | 43.4% | 36.7 |
| MD | 020700090703 | Bennett Creek | 55.3% | 3.6 |
| VA | 020802010803 | Simpson Creek-Cowpasture River | 42.1% | 54.2 |
| VA | 020802011205 | Roaring Run-Craig Creek | 38.2% | 0.2 |
| VA | 020802011505 | Elk Creek-James River | 55.6% | 16.0 |
| VA | 020802020402 | Upper South River | 50.0% | 22.7 |
| VA | 020802020501 | Bennetts Run-Maury River | 44.4% | 47.3 |
| VA | 020802020506 | Poague Run-Maury River | 40.9% | 5.0 |
| VA | 020802030901 | North Fork Rockfish River | 33.3% | 19.9 |

Appendix Table VI. Number and percentage of catchments within the Chesapeake Bay watershed with predicted negative effects from climate change, summarized by 8-digit HUCs.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **HUC 8 Code** | **HUC 8 Name** | **Total****Number of Catchments in HUC 8** | **Number of Catchments in HUC 8 with a Predicted Negative Effects from Climate Change** | **Percentage of Catchments in HUC 8 with a Predicted Negative Effects from Climate Change** |
| 02050101 | Upper Susquehanna | 2,280 | 1,543 | 67.7% |
| 02050102 | Chenango | 1,840 | 1,135 | 61.7% |
| 02050103 | Owego-Wappasening | 1,491 | 603 | 40.4% |
| 02050104 | Tioga | 930 | 724 | 77.8% |
| 02050105 | Chemung | 976 | 701 | 71.8% |
| 02050106 | Upper Susquehanna-Tunkhannock | 2,511 | 1,474 | 58.7% |
| 02050107 | Upper Susquehanna-Lackawanna | 1,942 | 950 | 48.9% |
| 02050201 | Upper West Branch Susquehanna | 1,691 | 1,013 | 59.9% |
| 02050202 | Sinnemahoning | 1,548 | 879 | 56.8% |
| 02050203 | Middle West Branch Susquehanna | 836 | 649 | 77.6% |
| 02050204 | Bald Eagle | 644 | 444 | 68.9% |
| 02050205 | Pine | 1,010 | 608 | 60.2% |
| 02050206 | Lower West Branch Susquehanna | 2,008 | 1,220 | 60.8% |
| 02050301 | Lower Susquehanna-Penns | 1,772 | 845 | 47.7% |
| 02050302 | Upper Juniata | 1,004 | 520 | 51.8% |
| 02050303 | Raystown | 1,165 | 372 | 31.9% |
| 02050304 | Lower Juniata | 1,783 | 1,195 | 67.0% |
| 02050305 | Lower Susquehanna-Swarta | 1,898 | 943 | 49.7% |
| 02050306 | Lower Susquehanna | 2,540 | 1,081 | 42.6% |
| 02060002 | Chester-Sassafras | 415 | 116 | 28.0% |
| 02060003 | Gunpowder-Patapsco | 1,523 | 454 | 29.8% |
| 02060004 | Severn | 51 | 3 | 5.9% |
| 02060006 | Patuxent | 576 | 249 | 43.2% |
| 02070001 | South Branch Potomac | 1,854 | 1,292 | 69.7% |
| 02070002 | North Branch Potomac | 1,592 | 781 | 49.1% |
| 02070003 | Cacapon-Town | 1,404 | 424 | 30.2% |
| 02070004 | Conococheague-Opequon | 2,489 | 1,108 | 44.5% |
| 02070005 | South Fork Shenandoah | 861 | 462 | 53.7% |
| 02070006 | North Fork Shenandoah | 485 | 179 | 36.9% |
| 02070007 | Shenandoah | 353 | 172 | 48.7% |
| 02070008 | Middle Potomac-Catoctin | 1,686 | 665 | 39.4% |
| 02070009 | Monocacy | 1,117 | 349 | 31.2% |
| 02070010 | Middle Potomac-Anacostia-Occoquan | 1,464 | 311 | 21.2% |
| 02070011 | Lower Potomac | 247 | 72 | 29.1% |
| 02080103 | Rapidan-Upper Rappahannock | 689 | 268 | 38.9% |
| 02080106 | Pamunkey | 13 | 0 | 0.0% |
| 02080201 | Upper James | 2,720 | 1,614 | 59.3% |
| 02080202 | Maury | 818 | 443 | 54.2% |
| 02080203 | Middle James-Buffalo | 1,034 | 497 | 48.1% |
| 02080204 | Rivanna | 218 | 106 | 48.6% |
|  | **Totals** | **51,478** | **26,464** | **51.4%** |

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