Division of Natural Resources Department of Park Operations

Cleveland Metroparks 2024 Priority Watershed Assessment

Cleveland Metroparks Technical Report 2024/NR-03

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Introduction

Cleveland Metroparks, established in 1917, has 18 reservations totaling over 25,000 acres in six counties, which are surrounded by land uses ranging from urban core to rural. Cleveland Metroparks is home to three major rivers and several direct Lake Erie tributaries that form the backbones of its reservations. Draining to these major rivers are over one thousand primary headwaters.

The purpose of the priority watershed assessment is to identify watershed characteristics that aid Cleveland Metroparks staff in deciding on appropriate management measures for watersheds and waterways. The report lays out management goals, priority watershed ranking, and watershed details for the highest quality watersheds within the Park District. The report is organized by major watershed from west to east and upstream to downstream by HUC-12 subwatershed. Only high quality subwatersheds (priority watersheds) are summarized. Lower priority HUC-12 summaries can be found in Appendix A.

Generally, all watersheds within the park system can benefit from reduced impervious surfaces, upstream stormwater management, and preservation and creation of high quality forested riparian buffers. The use of management goals and a rating system for priority watersheds help Park District staff to identify where to: a) pursue restoration efforts, b) prioritize active or passive management strategies, and c) aim preservation and acquisition efforts.

This assessment helps inform when a restoration project needs a higher level of expertise before moving forward to prevent degradation to existing high quality biology, or when a watershed only has room for improvement. This assessment helps identify opportunities for fish translocation efforts and areas where biology will never be the goal due to watershed characteristics outside of the Park District's control.

This is an adaptive management report that will change as watershed conditions adapt to ever-changing landscape management and conditions. Several sources of standardized data are collected routinely that support periodic reevaluation. Stream habitats and biotic communities are assessed using standardized methods developed by Ohio EPA, including Headwater Habitat Evaluation Index (HHEI), Headwater Macroinvertebrate Field Evaluation Index (HMFEI), Qualitative Habitat Evaluation Index (QHEI) and Fish Index of Biotic Integrity (IBI). These data help identify areas with healthy habitat and species (fish, amphibians, and macroinvertebrates). Areas with high-quality measured habitat scores that lack high-quality in-stream biology may be targeted for translocation or water quality management. Nearby land use and zone of influence data help prioritize acquisitions and upstream management. Stream survey and erosion datasets identify habitat enhancement and stabilization opportunities. The Natural Resources Index and proximity to priority watersheds help set management priorities. Partner plans and regional planners help identify regional priorities that tie into the Emerald Necklace.

Priority Management Goals

Cleveland Metroparks waterways fall along a spectrum from near pristine to highly urbanized. Watershed prioritization requires consideration of multiple management goals and strategies. The main management goals identified include:

Preservation & Acquisition – To help preserve existing biology and habitat.
Restoration – To help improve areas with potential for better biology and habitat.
Stewardship & Maintenance – To maintain and assess areas, particularly where we have done restoration and landscape management work.
Partner Synergy (Watershed Groups, Communities, NEORSD) – To help partners achieve their watershed management goals.
Flooding & Stormwater – To help address human impacts to waterways and waterway impacts to anthropogenic use.
Landscape Management – To help address land use impacts to the watershed (encroachments, invasives, mowing practices etc.)
Monitoring – Continued data collection to detect changes and prioritize management focus.

Priority Watershed Rating

An Ecosystem Quality Rating was used to identify priority watersheds within the Park District. In addition, a Restoration Potential Rating and Strategic Value Rating were drafted to help prioritize management actions.

Ecosystem Quality Rating

The Ecosystem Quality Rating is based on an analysis of our 2018-2021 cycle primary headwater dataset (HHEI and HMFEI) and National Land Cover Dataset (NLCD) land cover from 2019. The Ecosystem Quality Rating analysis should be repeated every 5 years as new primary headwater sampling sites are added through land acquisitions and census sites are reassessed. These datasets were used to define how spatially variable abiotic, biotic, and consolidated sensitivity are to landscape development across sites during a point in time (2018-2021). We separated out biotic and abiotic habitat, and incorporated estimates of land cover around each HHEI/HMFEI site (using a 2,000 ft buffer), within each subriver subwatershed, and within each HUC-12 subwatershed. In total, we used 16 instream abiotic characteristics and 11 land cover covariates in downstream analyses.

Given the complexity of these land cover, abiotic, and biotic datasets, we summarized variation across primary headwater habitat (PHWH) sites using a multivariate approach called redundancy analysis (RDA), a constrained ordination method that summarizes variation in a response (the biotic dataset) that is explained by predictor variables (the

abiotic and land cover datasets). After removing land cover and abiotic covariates that were highly correlated ($|r| > 0.6$), we chose to use biotic composition as the response and instream characteristics and buffered land cover as predictor variables. The first axis of this ordination model met 72% of explainable variation in the biotic dataset and contrasted streams in more developed landscapes from streams in less developed landscapes and was thus used as our ranking index. With this index, more positive values correspond to being more associated with development; negative corresponds to less associated with development. The results of this index were broken down into four categories from 1 to 4 with 1 being the highest quality/least impacted and 4 being the lowest quality/most impacted, using an equal number of data points for each category (an equal count quantile approach) at the site level (Table 4). The rating index analysis was also completed using an average rating of site level data at the sub river level (Table 3) and HUC-12 subwatershed level. The equal count quantile approach was then applied at the sub river level and HUC-12 subwatershed level to assign categories from 1 to 4 (Figure 1 and Table 1). Categories 1 and 2 are considered priority watersheds for the Park District.

Every HUC-12 with primary headwater site data within the Park District was assessed with the Ecosystem Quality Priority Rating Index calculated using the methodology described above and is included in this report (lower ranked HUC-12 information can be found in Appendix A). Subriver level data was only utilized to assess subwatershed areas without specific site level data. If multiple ecosystem quality ratings are observed in a subwatershed, the best rating is used for ranking in the priority watershed assessment. IBI and Miwb data collected by the Park District, NEORSD, and OEPA were used to add priority headwater and large river watersheds to the priority watershed assessment if no primary headwater data was available to calculate an ecosystem rating. Future iterations of this assessment will consider how to apply the Ecosystem Quality Priority Rating Index at the headwater and large river watershed level using a similar analysis of biotic, abiotic, and land cover relationships applied to the IBI and QHEI datasets.

1: Top Tier Quantile Ranked Sites: High quality area requiring active protection to maintain and/or prevent degradation (indicative of low development, good biology, rare or pollution intolerant species, high species diversity)
2: Second Tier Quantile Ranked Sites: Moderate quality area that could benefit from further protection and/or restoration (indicative of low to moderate development, moderately good biology, pollution intolerant species, or good diversity)
3: Third Tier Quantile Ranked Sites: Moderately to severely degraded area that could be improved or protected from further impact (indicative of developed landscape, low existing biological value)
4: Lowest Tier Quantile Ranked Sites: Severely degraded and developed area. Not a Cleveland Metroparks (CMP) priority, but supportive of partner efforts where feasible.

Restoration Potential Rating

The restoration potential rating is based on institutional knowledge and is intended to change over time as restoration potential changes or project opportunities arise. If multiple restoration ratings are available for a subwatershed, the best restoration rating is used in the priority watershed assessment. In addition to noting the restoration potential of the watershed, a note about internal or external is included to indicate if restoration can be done by the Park District (internal) or if it would require outside partner efforts (external).

1: Moderately impacted area that could be restored to high quality (areas with habitat or biology trending downwards)
2: High quality area that would benefit from more active management and is at a lower risk for degradation (good biology, rare or pollution intolerant species, species diversity, minor ecological threats)
3: Area that could be restored, but has limited potential for improvement due to already highly developed watershed (low existing biological value) OR impacted area where restoration would create more disturbance, and the amount of uplift does not outweigh the predicted impacts
4: Highly impacted area with minimal potential for improvement/uplift. Not a CMP priority, but supportive of partner efforts where feasible.

Internal = Park District led
External = Outside partner led

Strategic Value Rating

The strategic value rating is based on institutional knowledge, the Natural Resources Index as well as partner watershed and stormwater management plans. These ratings may change over time as priorities shift or new opportunities become available. Future analysis should include an identification of areas where connectivity opportunities exist and where existing connectivity needs to be preserved to provide biotic connectivity at broader scales. If a subwatershed has multiple strategic value ratings, the best rating is used in the priority watershed assessment.

1: Area in strategic high priority location (subwatershed, watershed, reservation, region)
2: Area in a moderate priority location
3: Area in a low priority location
4. Area is not a CMP priority, but supportive of partner efforts where feasible.

Priority Watershed Assessment

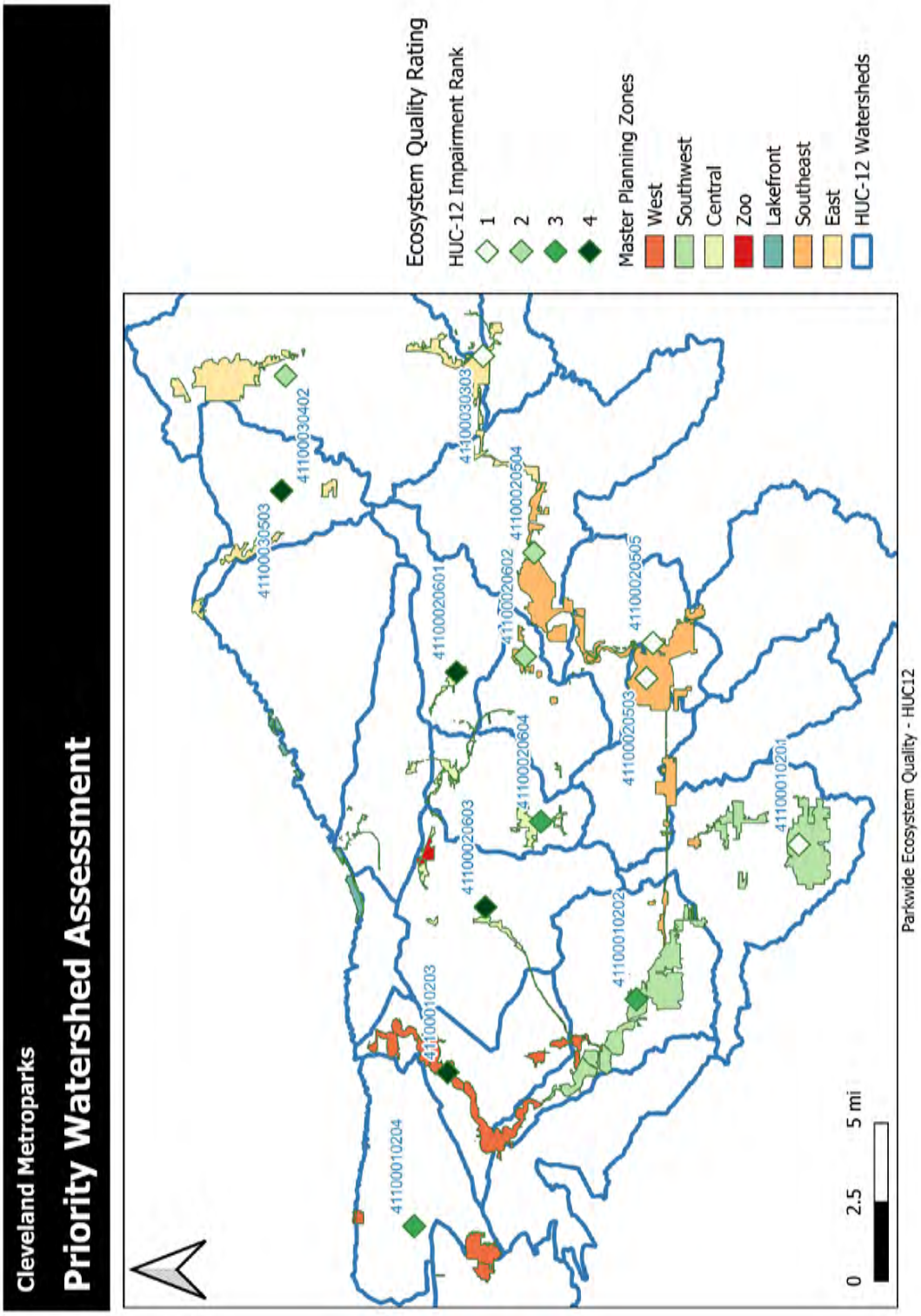

Figure 1. Park District HUC-12 priority watershed assessment and planning zones

Rocky River Watershed

The Rocky River is a large watershed draining approximately 294 square miles. The Rocky River flows along the western boundaries of Cleveland Metroparks through Hinckley, Mill Stream Run and Rocky River Reservations. The Rocky River consists of the mainstem, the East Branch, the West Branch, and several major tributary streams (RRWC, 2010).

HUC: 041100010201 – Headwaters East Branch Rocky River

The Headwaters East Branch Rocky River consists of the most upstream headwaters to the Rocky River watershed with the heart of the HUC heart running through Cleveland Metroparks Hinckley Reservation and Rising Valley Park. In addition, the watershed includes Medina County Park District's Allardale Reservation. While these areas of the HUC are managed primarily for natural resources conservation and passive recreation, the watershed does have 31% developed land concentrated primarily around the northernmost portions of the watershed in Cuyahoga County (Cuyahoga SWCD, 2017). Efforts have been made to address orphan wells in the watershed and remove these potential pollution sources.

Statistical analysis of the biotic, abiotic and land use data for this HUC rank this watershed as the **least impacted** in Cleveland Metroparks (see Figure 1 and Table 1).

Percent of HUC in CMP:	13.3
Reservation:	Hinckley Mill Stream Run
Planning Zone:	Southwest
Priority Goals:	Preservation & Acquisition Restoration Stewardship & Maintenance Partner Synergy
Ecosystem Quality Rating:	1
Restoration Potential Rating:	1 – Internal, External
Strategic Value Rating:	1

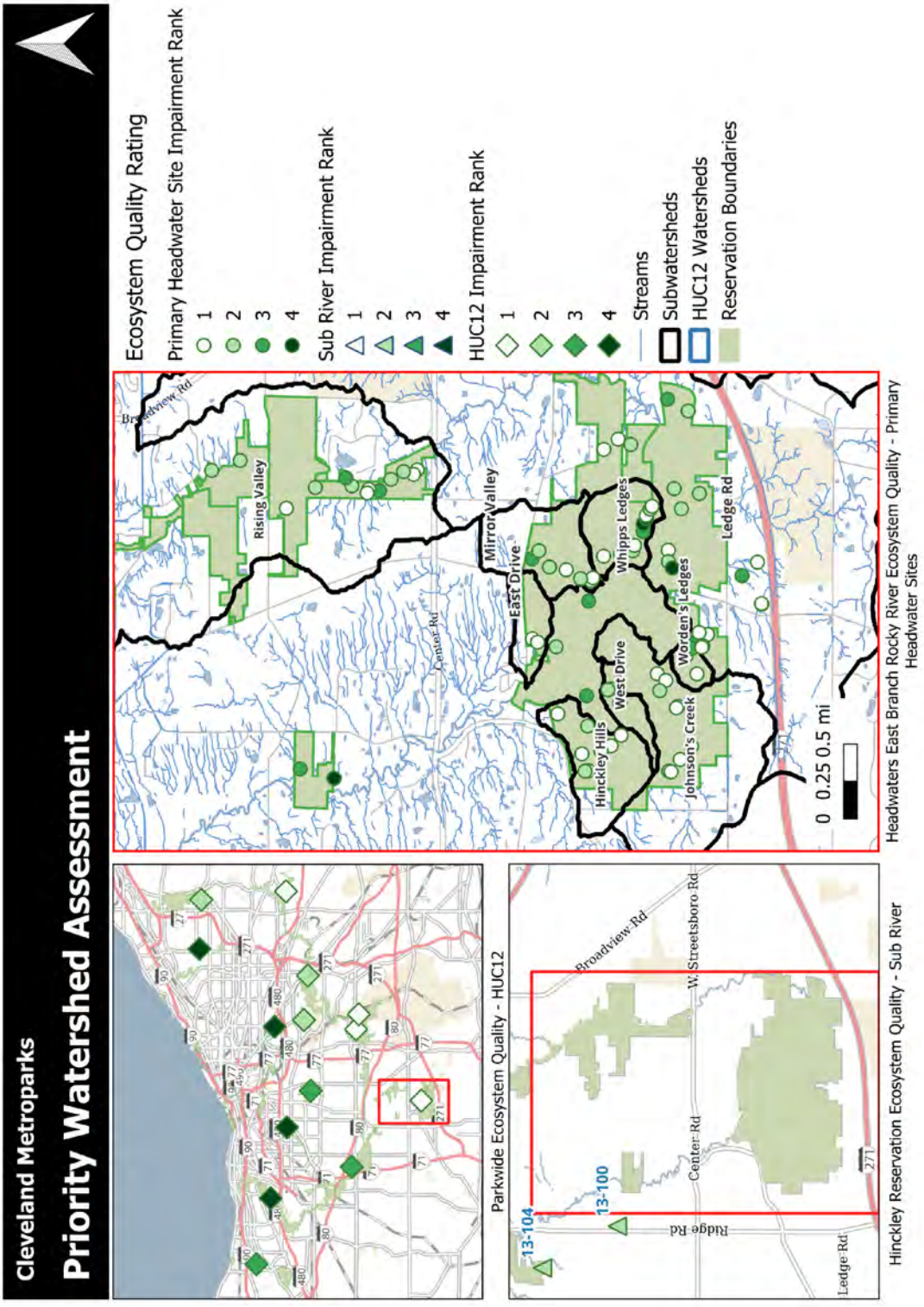

Figure 2. 041100010201 – Headwaters East Branch Rocky River priority watershed assessment – Hinckley Reservation

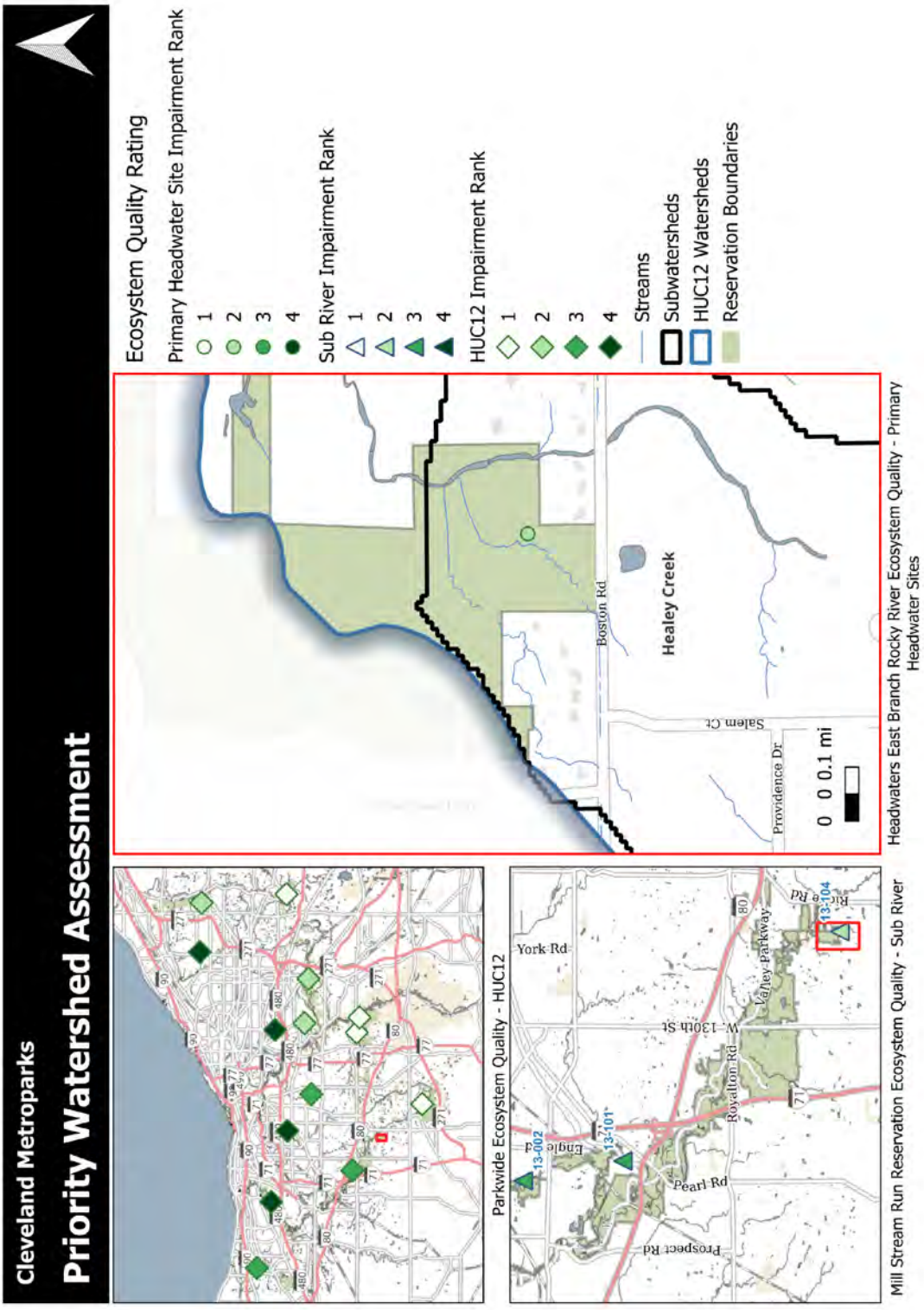

Figure 3. 041100010201 – Headwaters East Branch Rocky River priority watershed assessment – Mill Stream Run Reservation

Rising Valley (13-100-29.80 through 32.35)

Percent of watershed in CMP:	14.9
Reservations:	Hinckley Mill Stream Run
Planning Zone:	Southwest
Priority Goals:	Preservation & Acquisition Restoration Partner Synergy
Ecosystem Quality Rating:	1
Restoration Potential Rating:	1 – Internal, External
Strategic Value Rating:	1

The Rising Valley area is a complex of high-quality wetlands, small rheocrene (spring-fed) streams, and a stretch of the East Branch Rocky River that together provide habitat for a variety of sensitive aquatic biota. This area is threatened by invasive plants, sedimentation, and continued development along its borders. Continued acquisition of land from the southern edge of Mill Stream Run to the headwaters of the East Branch around Hinckley Reservation is recommended to protect and enhance numerous small streams, wetlands, and the river itself.

Working with adjacent residential landowners to implement onsite stormwater retention BMPs is also worthy of consideration. Consider how to support parts of the watershed in Summit and Medina counties outside of Cleveland Metroparks properties.

Johnson's Creek (13-100-23.72)

Percent of watershed in CMP:	43.7
Reservation:	Hinckley
Planning Zone:	Southwest
Priority Goals:	Preservation & Acquisition Restoration (Translocation) Stewardship & Maintenance Monitoring
Ecosystem Quality Rating:	1
Restoration Potential Rating:	1 – Internal, External
Strategic Value Rating:	1

Johnson's Creek is an extremely high-quality catchment that is almost entirely contained within Hinckley Reservation. Protection of the furthest reaches of its subwatershed is critical to maintaining its quality. Restoration projects to improve the riparian/floodplain zone near the picnic area and a large-scale restoration to improve fish passage and bridle trail crossings at West Drive have occurred. Ongoing monitoring of the subwatershed to document the efficacy of these efforts and their effects on stream habitat and biota are a high priority.

Worden's Ledges (13-100-24.71)

Percent of watershed in CMP:	99.9
Reservation:	Hinckley
Planning Zone:	Southwest
Priority Goals:	Preservation & Acquisition Restoration
Ecosystem Quality Rating:	1
Restoration Potential Rating:	3 – Internal
Strategic Value Rating:	1

The Sharon conglomerate sandstone ledges in Hinckley Reservation have resulted in small, high-quality streams fed by groundwater seeps. These streams are narrow, shallow, and have fine substrates, which makes them easily impacted by trail use. They are host to high quality aquatic communities including northern red salamanders and tiger spiketail dragonflies, a state listed species of concern. These streams should be protected by minimizing access and trail networks in the ledge areas. Efforts to decommission unsanctioned trails have occurred and should be continued.

Ledge Road Subwatersheds: Allard Creek and Judges West (13-100-24.84, 25.50, 26.50, 26.78, & 26.80)

Percent of watershed in CMP:	20.0
Reservation:	Hinckley
Planning Zone:	Southwest
Priority Goals:	Preservation & Acquisition Partner Synergy Stewardship & Maintenance
Ecosystem Quality Rating:	1
Restoration Potential Rating:	3 – Internal, External
Strategic Value Rating:	1

Two large headwater stream catchments originate outside of Hinckley Reservation to the south of Ledge Road, extending into largely agricultural areas. These subwatersheds are at risk of nutrient enrichment, impoundment, channelization, culverting, and removal of riparian forests outside of the Park District. Internally, these streams appear to be moderately stressed in some areas by erosion, sedimentation, and stream crossings by trails. Working with landowners to restore or protect stream corridors, as well as easements or further land acquisitions are critical components to preserving the high quality of these subwatersheds and protecting the East Branch of the Rocky River downstream. Medina County Park District has increased its holding of the upper reaches of the Allard Creek catchment and should be coordinated with for that headwater.

Whipps Ledges (13-100-24.35, 24.50, 24.60, 25.00, 25.10, 25.15, 25.16, & 25.20)

Percent of watershed in CMP: 99.9
Reservation: Hinckley
Planning Zone: Southwest
Priority Goals: Preservation & Acquisition
Stewardship & Maintenance
Ecosystem Quality Rating: 1
Restoration Potential Rating: Needs Further Assessment – Internal
Strategic Value Rating: 1

Like Worden's Ledges, the Whipps Ledges Subwatersheds lie in the Sharon conglomerate sandstone ledges of Hinckley Reservation. These high-quality streams are also fed by groundwater seeps and are easily impacted by trail use. The high-quality aquatic communities utilizing these tributaries warrant protection by minimizing access and trail networks in the ledge areas.

Hinckley Hills Area (13-100-22)

Percent of watershed in CMP: 76.3
Reservation: Hinckley
Planning Zone: Southwest
Priority Goals: Preservation & Acquisition
Monitoring
Ecosystem Quality Rating: 1
Restoration Potential Rating: 3 – Internal, External
Strategic Value Rating: 2

This priority watershed includes several small creeks at the northwest side of Hinckley Reservation draining to Bellus Rd. Priorities in this watershed should be to monitor trail interactions with the high-quality streams.

West Drive (13-100-23.70)

Percent of watershed in CMP: 100.0
Reservation: Hinckley
Planning Zone: Southwest
Priority Goals: Preservation & Acquisition
Restoration
Monitoring
Ecosystem Quality Rating: 1
Restoration Potential Rating: 1 – Internal
Strategic Value Rating: 2

The culvert on West Drive frequently experiences clogging and silts up the riparian area. Improving and re-sizing this culvert could improve downstream water quality.

East Drive (13-100-23.20)

Percent of watershed in CMP: 57.8
Reservation: Hinckley
Planning Zone: Southwest
Priority Goals: Preservation & Acquisition
Restoration
Monitoring
Ecosystem Quality Rating: 1
Restoration Potential Rating: Needs Further Assessment – Internal, External
Strategic Value Rating: 2

This priority watershed includes two small creeks draining to East Drive along Bellus Rd. There is a history of trash dumped behind houses along this stretch.

Mirror Valley (13-100-24.19)

Percent of watershed in CMP: 58.4
Reservation: Hinckley
Planning Zone: Southwest
Priority Goals: Preservation & Acquisition
Restoration
Monitoring
Ecosystem Quality Rating: 1
Restoration Potential Rating: 1– Internal, External
Strategic Value Rating: 2

Mirror Valley is a unique subwatershed fed almost entirely by springs and home to a number of rare taxa, including northern red salamanders and a diverse aquatic macroinvertebrate community. It is the only stream in Cleveland Metroparks that was home to the endangered native Ohio brook trout. This stream could be considered for reintroduction of other coldwater native fish species including redside dace. If erosion is addressed and the habitat is restored reintroduction of Ohio brook trout could be considered. This catchment is one of the highest priority areas to protect, both within the park to prevent any future impacts to the streams, as well as outside of the park where the stream originates to the north of Bellus Road.

Healey Creek (13-104)

Percent of watershed in CMP: 0.7
Reservation: Mill Stream Run
Planning Zone: Southwest
Priority Goals: Restoration
Partner Synergy
Ecosystem Quality Rating: 1*
Restoration Potential Rating: 1– Internal, External
Strategic Value Rating: 3

**Ecosystem Quality Rating assigned by Exceptional IBI sampling score downstream and not by EQR model*

Although only a short stretch of this creek runs through Cleveland Metroparks in the Timberlane Farm area of Mill Stream Run, it is of high quality and in full attainment of its WWH use designation (Exceptional IBI). This area should be monitored for continued development outside of the reservation, including a planned housing project just east of Park District boundaries. Additionally, restoration of the former pastures along Healey Creek could offer additional protection from stormwater and improve riparian habitat.

Mainstem: East Branch Rocky River Corridor

Percent of watershed in CMP:	15.8
Reservation:	Hinckley Mill Stream Run
Planning Zone:	Southwest
Priority Goals:	Preservation & Acquisition Partner Synergy
Ecosystem Quality Rating:	1
Restoration Potential Rating:	2 – Internal, External
Strategic Value Rating:	1

The East Branch of the Rocky River is a healthy stretch of stream that is in full attainment of its aquatic life uses.

Large tracts of undeveloped land are still available, but under threat of development with suburban sprawl and the loss of farms. Continued acquisition of land from the southern edge of Mill Stream Run to the headwaters of the East Branch around Hinckley Reservation is recommended to protect and enhance numerous small streams, wetlands, and the river itself. Working with adjacent residential landowners to implement onsite stormwater retention Best Management Practices (BMPs) is also worthy of consideration. Consideration should be given for how to support parts of the watershed in Summit and Medina counties outside Cleveland Metroparks jurisdiction.

HUC: 041100010202 – Baldwin Creek-East Branch Rocky River

The Baldwin Creek – East Branch Rocky River watershed is the middle HUC of the East Branch of Rocky River and drains 36.6 square miles including the upstream Headwaters East branch HUC-12 This watershed is over 64% developed, but mostly low intensity development. High density areas are primarily around I-71, Royalton Road, Pearl Road, and Bagley Road (Cuyahoga SWCD, 2019).

The East Branch of the Rocky River lies mostly within Mill Stream Run Reservation in HUC 041100010202. Several small segments of Baldwin Creek flow through Big Creek and Mill Stream Run Reservations.

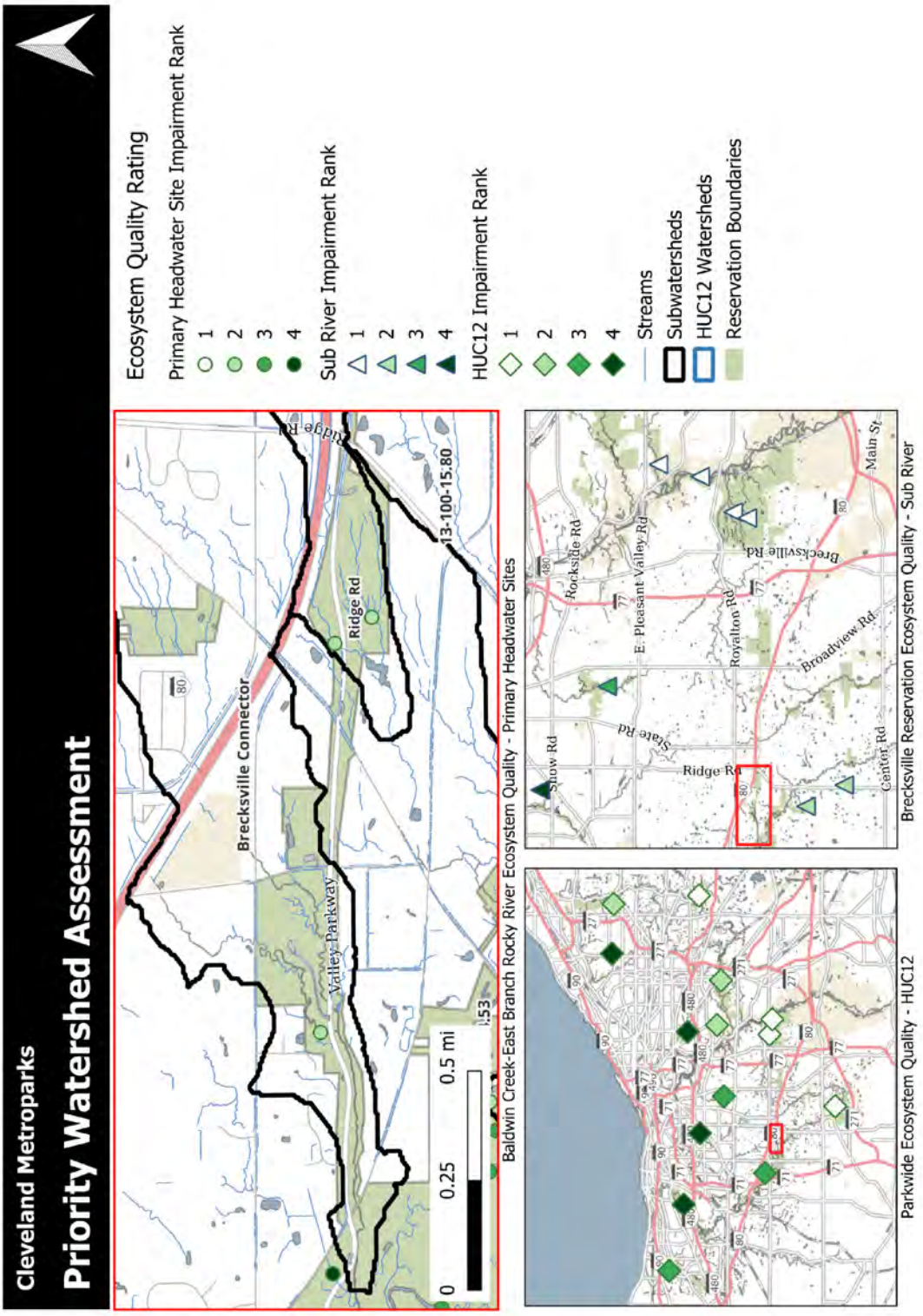

Figure 4. 041100010202 – Baldwin Creek-East Branch Rocky River priority watershed assessment – Brecksville Reservation

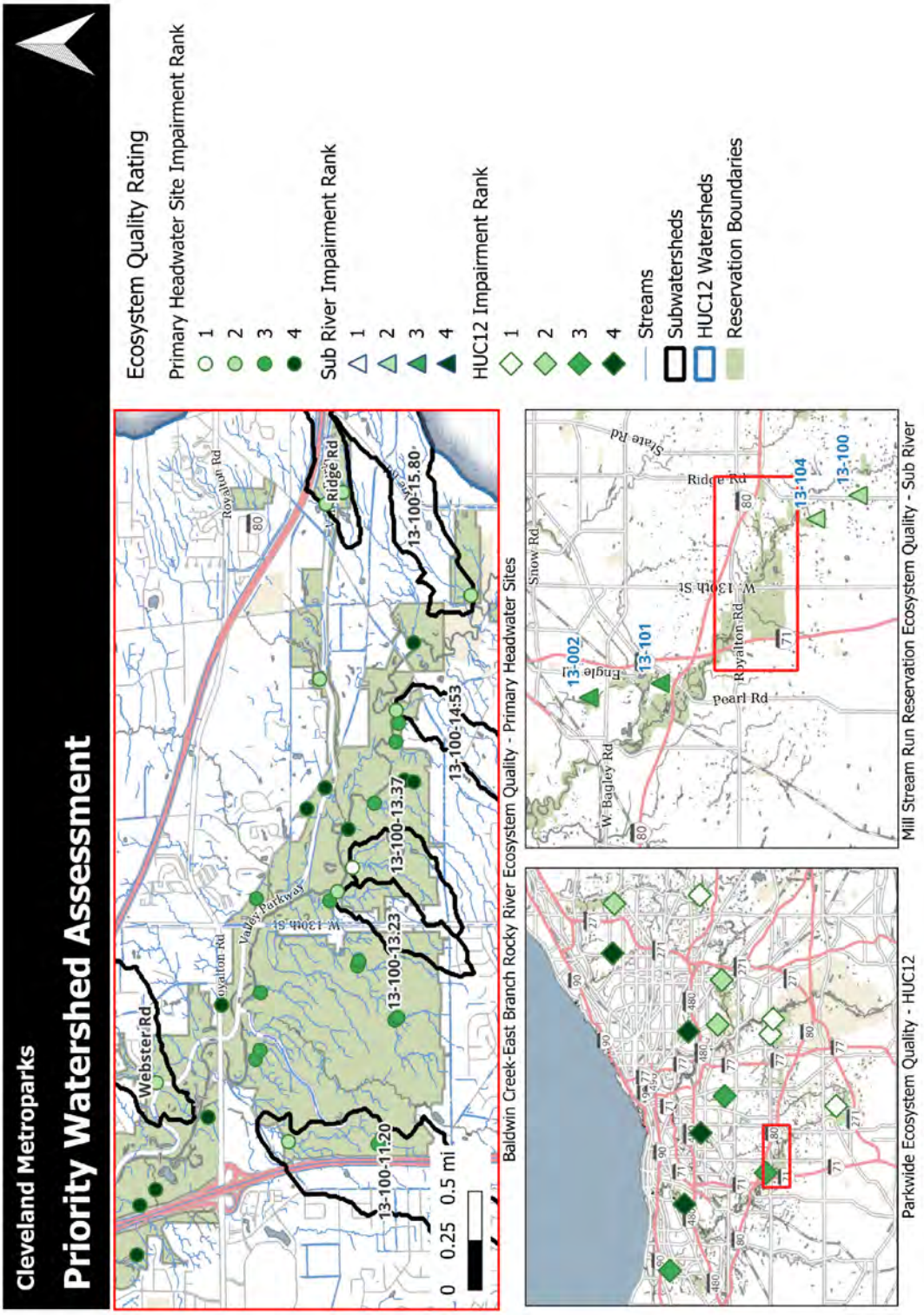

Figure 5. 041100010202 – Baldwin Creek-East Branch Rocky River priority watershed assessment – Mill Stream Run Reservation

Southern Mill Stream Run Subwatersheds (13-100-11.20 through 15.80)

Percent of watershed in CMP:	23.3
Reservation:	Mill Stream Run
Planning Zone:	Southwest
Priority Goals:	Flooding & Stormwater Partner Synergy Landscape Management
Ecosystem Quality Rating:	1
Restoration Potential Rating:	1– Internal, External
Strategic Value Rating:	1

While mostly urban, the southernmost block of Mill Stream Run contains most of the high-quality streams in the reservation, such as the Royalview mainstem, including the only streams that were home to stoneflies (Plecoptera). This area is subject to a number of issues impacting stream quality, including illicit ATV trails, stormwater from surrounding suburban areas, seasonal thermal pollution from wetland water level modification, and failing septic systems. Remediation of these issues could help improve water quality in several streams that exhibit excellent habitat and compromised biology. Working with adjacent residential landowners to implement onsite stormwater retention BMPs is also worthy of consideration.

The Royalview stream runs through the Royalview picnic and mountain bike trail area at the southern edge of Mill Stream Run Reservation and, despite the development in the upper reaches of its watershed, retains both quality stream habitat and biological communities in WWH attainment (IBI very good, QHEI excellent). Impacts from recreational use within the Park District should be minimized and additional external development and stormwater input should be discouraged.

The Camp Cheerful (doing business as (dba) Achievement Centers for Children) stream flows in and out of the Park District on its way to its namesake. Despite the development in the upper reaches of its watershed, the stream retains both quality stream habitat and biological communities (IBI – very good, QHEI – Good). The Park District should seek opportunities to partner with Achievement Centers for Children staff to ensure proper manure management and pursue enhanced riparian buffers along intermittent swales.

Webster Road Subwatersheds (13-100-11.10)

Percent of watershed in CMP:	22.2
Reservation:	Mill Stream Run
Planning Zone:	Southwest
Priority Goals:	Flooding & Stormwater
Ecosystem Quality Rating:	2
Restoration Potential Rating:	4– Internal, External
Strategic Value Rating:	1

Several streams are being negatively impacted by new housing developments in the Webster Road area in Strongsville. Sedimentation from poor or lacking BMPs, encroachment onto park land by residents, increased stormwater runoff, and destruction of stream channels off property by channelization, culverting, and impoundment are just some of the issues noted by Natural Resources staff. While the area is now completely developed, outreach to upstream landowners to help mitigate stormwater runoff is worthy of consideration.

Ridge Road (13-100-15.25)

Percent of watershed in CMP:	20.7
Reservation:	Brecksville
Planning Zone:	South
Priority Goals:	Preservation & Acquisition Partner Synergy
Ecosystem Quality Rating:	2
Restoration Potential Rating:	Needs Further Assessment – Internal, External
Strategic Value Rating:	4

This focus area includes small creeks along Valley Parkway near Stuhr Picnic area draining runoff from Ridge Road and I-80. Northern two-lined salamander larvae were observed in this subwatershed in June 2023. Hydropsychidae and Polycentropodidae caddisfly and Baetidae mayfly were abundant. While most of the central part of the watershed lies outside of Cleveland Metroparks boundaries and is mainly suburban development, there is opportunity for property acquisition.

Brecksville Connector (13-100-13.57)

Percent of watershed in CMP:	18.6
Reservation:	Brecksville
Planning Zone:	Southeast
Priority Goals:	Partner Synergy
Ecosystem Quality Rating:	2
Restoration Potential Rating:	Needs Further Assessment – Internal, External
Strategic Value Rating:	4

The Brecksville Connector lies along Valley Parkway at the border of Brecksville and Mill Stream Run. The site has received good IBI scores and good QHEI scores in past monitoring efforts. The stream drains Akins and York Rd development and lower quality primary headwater streams. The Park District acquired new parcels between 2020-2023 in this subwatershed that is very entrenched and eroded.

Cuyahoga River Watershed

The Lower Cuyahoga River flows through Summit and Cuyahoga counties in Northeast Ohio on its way to Akron, Cleveland, and it's ultimate outlet to Lake Erie. The Cuyahoga River watershed has a history of pollution from the heavy industrial and urban centers between Akron and Cleveland (Ohio EPA. 2003). Due to historic pollution and the impairment of aquatic life and beneficial uses, the Cuyahoga River is one of the designated Great Lakes Areas of Concern (AOC) (Cuyahoga River AOC, 2024).

Cleveland Metroparks is an active partner in the Vision for the Valley effort to re-imagine the Cuyahoga River Valley through water quality improvements and mindful acquisition and development that bring the community out to connect with the Cuyahoga River waterfront (NOACA, 2021). The Cleveland Metroparks director of Natural Resources sits on the Cuyahoga AOC committee and has been the chair of said committee for about ten years.

Cleveland Metroparks utilizes strategic partnerships along the Cuyahoga River and has helped with efforts to stabilize the shoreline and provide "habitat for hard places." While there is limited ability for Cleveland Metroparks to do wholesale restoration along the Cuyahoga River, there is potential to continue to provide connection to the river and partner to provide preservation and restoration where feasible in line with the Vision for the Valley planning study.

HUC: 041100020405 – Boston Run – Cuyahoga River Watershed

The Boston Run – Cuyahoga River Watershed (HUC 04110002 04 05) watershed has a drainage area of approximately 46.44 square miles and drains subwatersheds from both Summit and Cuyahoga County into the east and west banks of the Cuyahoga River. This watershed comprises many primary, named tributaries to the Cuyahoga River (Summit Metro Parks, 2020). The Park District maintains a small area at the most downstream portion of this HUC that borders the Cuyahoga River on the west.

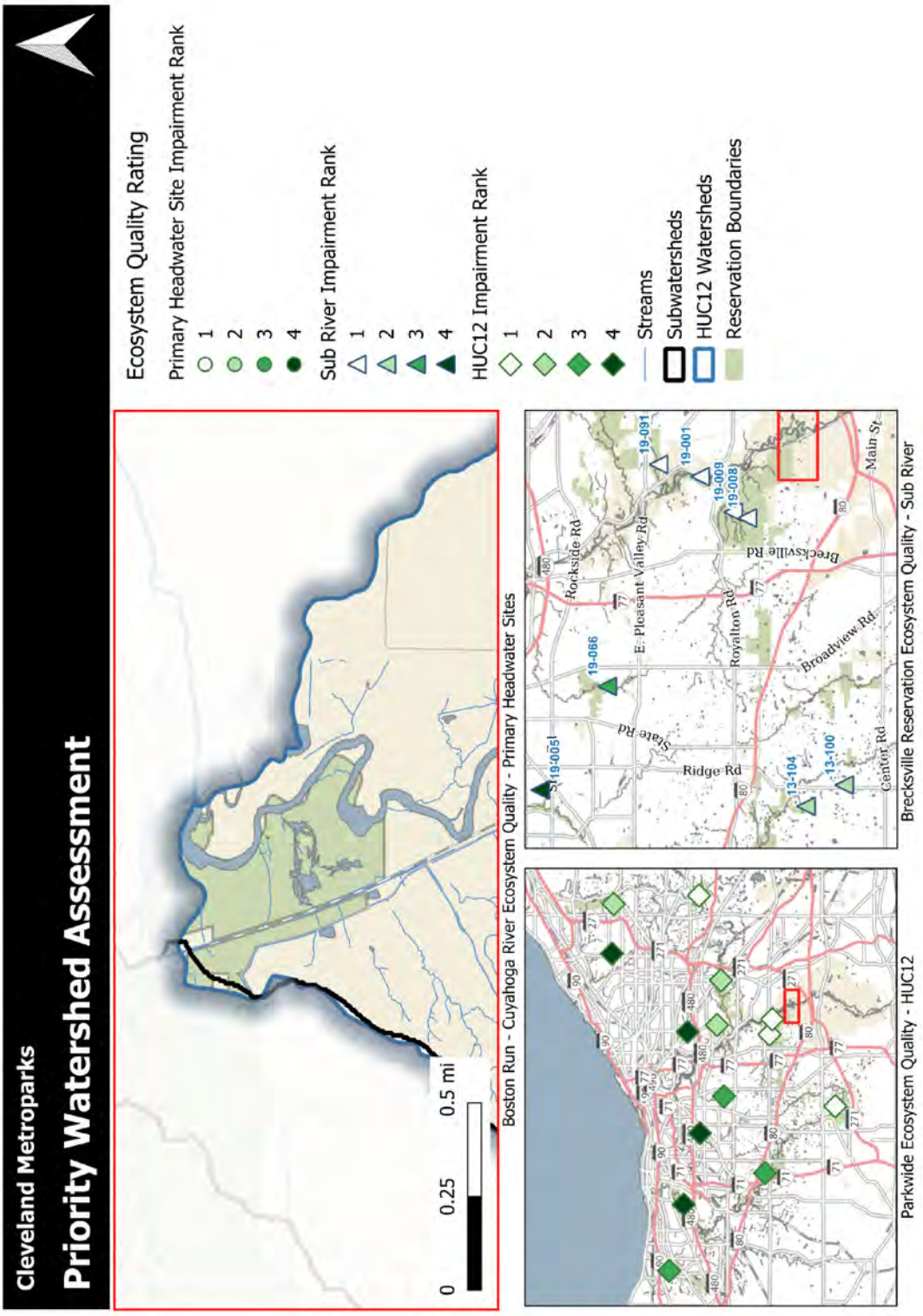

Figure 6. 041100020405 – Boston Run - Cuyahoga River priority watershed assessment – Brecksville Reservation

Cuyahoga River Mainstem

Percent of HUC in CMP:	0.5
Reservations:	Brecksville
Planning Zone:	Southeast
Priority Goals:	Preservation & Acquisition Restoration Partner Synergy
Ecosystem Quality Rating:	2*
Restoration Potential Rating:	3 – Internal, External
Strategic Value Rating:	1

**Ecosystem Quality Rating set to 2 based on Cuyahoga Valley National Park Headwater Stream Inventory observing fish community worthy of coldwater habitat designation* (Anderson et al. 2024)

The most downstream section of the Cuyahoga River in this HUC 12 flows through Brecksville Reservation near Vaughn Rd. Cuyahoga Valley National Park and the United States Army Corps of Engineers have a project planned on Cleveland Metroparks property to create additional habitat and add additional length to the Cuyahoga River through the creation of an extended meander bend south of Vaughn Road where Brandywine Creek drains to the Cuyahoga. This project is one of the Cuyahoga AOC management actions to address beneficial use impairment.

HUC: 041100020505 – Willow Lake- Cuyahoga River

The Willow Lake sub-watershed drains 24.23-square miles including 9-miles of the Cuyahoga River mainstem. This HUC-12 is host to Sagamore Creek, a perennial tributary to the Cuyahoga River that flows north into Bedford Reservation. The watershed is made up mostly of land protected for natural resource management and passive recreation, much of which lies within the Cuyahoga Valley National Park. This HUC-12 has been a high focus area in the process to "delist" the Cuyahoga River as an Area of Concern (AOC) (CVE, 2020).

Statistics analysis of the biotic, abiotic and land use data for this HUC rank this watershed as the fourth least impacted in Cleveland Metroparks (see Figure 1 and Table 1).

Percent of HUC in CMP:	14.1
Reservations:	Bedford Brecksville
Planning Zone:	Southeast
Priority Goals:	Preservation & Acquisition Partner Synergy
Ecosystem Quality Rating:	1
Restoration Potential Rating:	Needs further assessment – Internal, External
Strategic Value Rating:	1

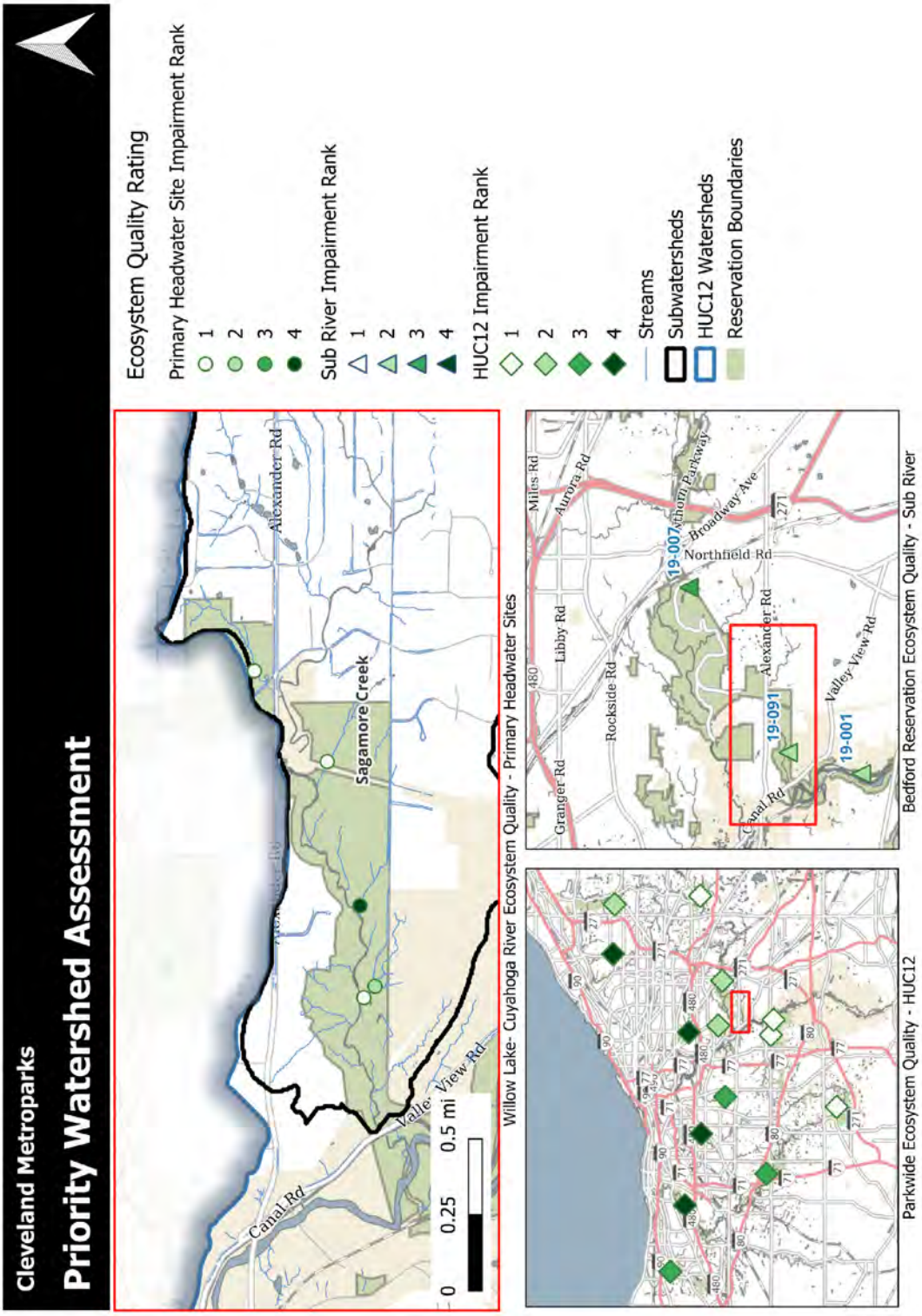

Figure 7. 041100020505 – Willow Lake- Cuyahoga River priority watershed assessment – Bedford Reservation

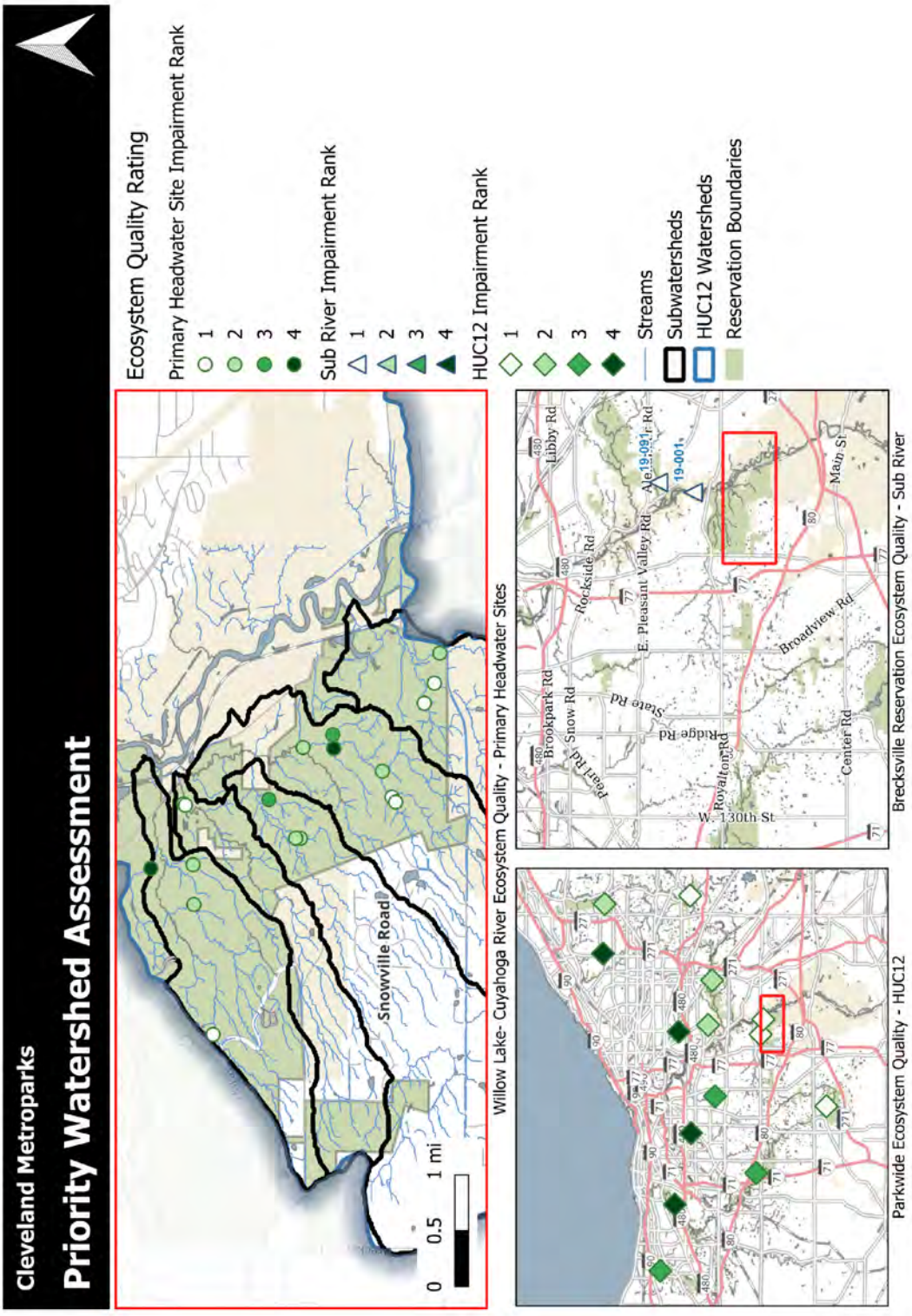

Figure 8. 041100020505 – Willow Lake- Cuyahoga River priority watershed assessment – Brecksville Reservation

Sagamore Creek (19-001-18.08)

Percent of watershed in CMP:	7.5
Reservation:	Bedford
Planning Zone:	Southeast
Priority Goals:	Preservation & Acquisition Restoration Partner Synergy
Ecosystem Quality Rating:	1
Restoration Potential Rating:	2 – Internal, External
Strategic Value Rating:	1

Sagamore Creek is a coldwater habitat (CWH) within Cleveland Metroparks and its subwatershed contains many quality primary headwaters, including a number of rheocrene (spring-fed) streams. This stream maintains a high-quality native fish population (IBI – Very Good). Continued property acquisition in this subwatershed is necessary to maintain and/or enhance water quality due to the limited number of undeveloped parcels in the surrounding area. Working with adjacent landowners to implement onsite stormwater retention BMPs is also worthy of consideration.

Snowville Road Subwatersheds (19-001-21.70, 19-001-20.90, 19-001-23.74)

Percent of watershed in CMP:	34.4
Reservation:	Brecksville
Planning Zone:	Southeast
Priority Goals:	Preservation & Acquisition Partner Synergy
Ecosystem Quality Rating:	1
Restoration Potential Rating:	3 – Internal, External
Strategic Value Rating:	2

A large headwater catchment originates in the Snowville Road area to the south of Brecksville Reservation. It is a high quality subwatershed with excellent habitat and healthy biological communities, including both redside and southern redbelly dace. The southern redbelly dace is listed by the Ohio EPA as a cool-water minnow species that is declining statewide. The Cuyahoga Valley National Park headwater stream inventory performed in 2022 also found this area to represent the highest quality headwater stream network within their study area, warranting special consideration with respect to resource protection. Numerous water quality issues have originated in the Snowville Road area outside of the Park District that threaten to degrade the quality of these streams, and additional development is anticipated within this catchment. Action is needed to protect these areas to prevent potential issues such as stormwater and sedimentation from development from degrading these streams.

HUC: 041100020503 – Headwaters Chippewa Creek

The Headwaters Chippewa Creek HUC is an urbanizing watershed that drains 17.8 square miles of Broadview Heights and Brecksville Ohio. Cleveland Metroparks Brecksville Reservation hosts Chippewa Creek as it winds through a glacially carved gorge at the State Rd 82 entrance before dropping into its alluvial valley near its confluence with the Cuyahoga River as Chippewa Creek flows from Brecksville Reservation to Cuyahoga National Valley Park at Riverview Road (CVE, March 2020).

Statistical analysis of the biotic, abiotic, and land use data for this HUC rank this watershed as the **second least impacted** in Cleveland Metroparks (see Figure 1 and Table 1).

Percent of HUC in CMP:	14.2
Reservation:	Brecksville
Planning Zone:	Southeast
Priority Goals:	Preservation & Acquisition Restoration
Ecosystem Quality Rating:	1
Restoration Potential Rating:	1– Internal, External
Strategic Value Rating:	3

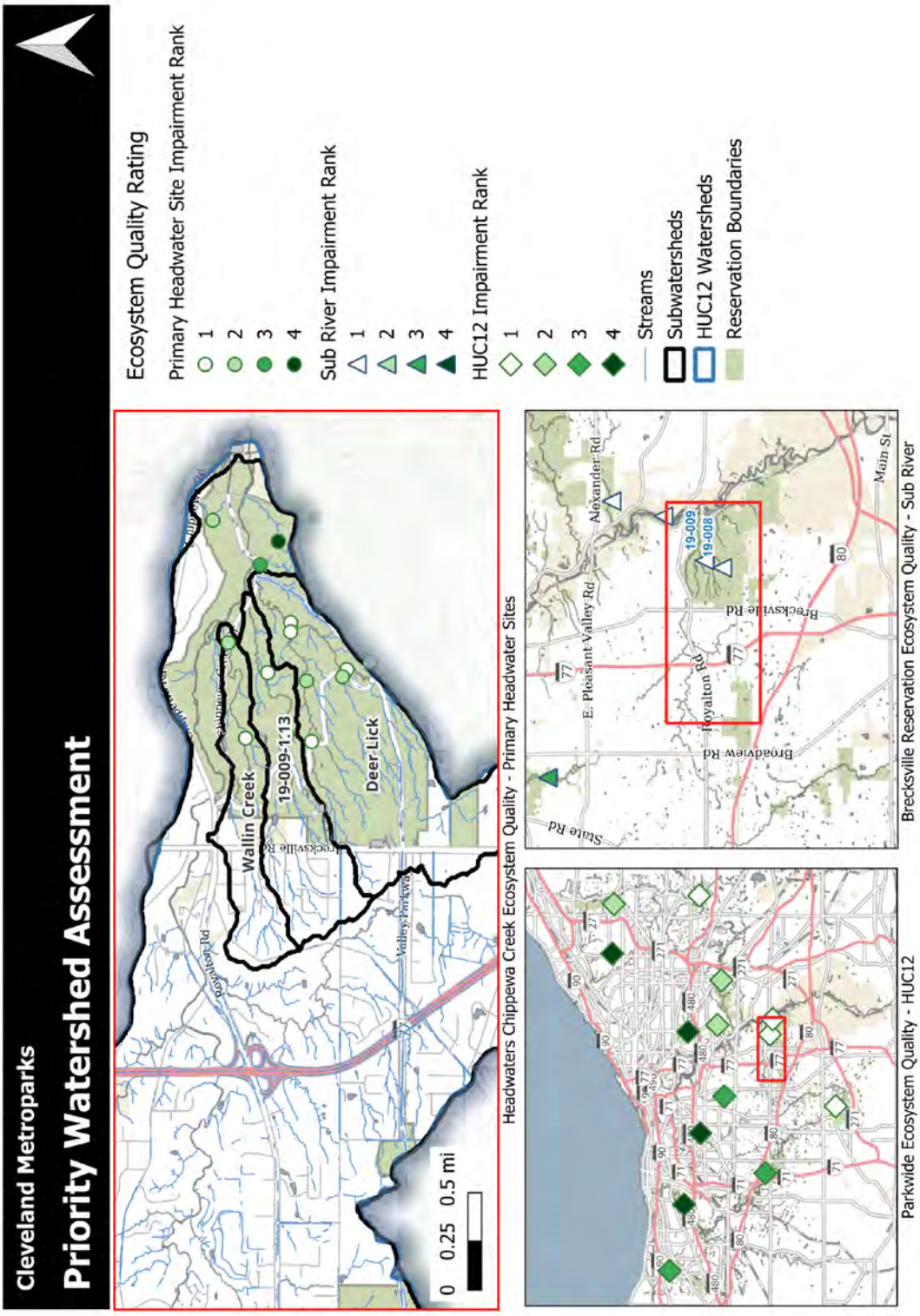

Figure 9. 041100020503 – Headwaters Chippewa Creek priority watershed assessment

Tributaries to Chippewa Creek (19-009-1.31, 19-009-1.13, 19-009-0.80)

Percent of watershed in CMP: 64.1
Reservation: Brecksville
Planning Zone: Southeast
Priority Goals: Preservation & Acquisition
Restoration
Ecosystem Quality Rating: 1
Restoration Potential Rating: 1– Internal, External
Strategic Value Rating: 1

Wallin Creek is a tributary to Chippewa Creek that runs through the northern side of Brecksville Reservation. The stream is exhibiting bank erosion, including at the mouth along a trail crossing.

19-009-1.13: This unnamed tributary to Chippewa Creek runs through the center of Brecksville Reservation. The stream is exhibiting bank erosion, including at the mouth trail crossing.

19-009-0.80: This unnamed tributary to Chippewa Creek runs through the center of Brecksville Reservation and is home to redside dace, a coldwater indicator and declining species in Ohio. The stream is exhibiting heavy bank erosion, especially along the bridle trail, and is subject to bootlegging (unauthorized trails) in the Deer Lick Cave area. Efforts by Park District trails and park operations staff have addressed bootlegged areas by the road and trailhead, but a few remain on the lower loop trail to the north of the cave. An area of erosion along the bridle trail was addressed in 2023 with an in-house streambank stabilization project and movement of the trail away from the creek.

Because most of the drainage area of these watersheds are within the Park District, focus should be on protecting habitat and reducing impacts from trail crossings and run-off from developed areas such as parking lots and Sleepy Hollow golf course.

Chippewa Creek (19-009)

Percent of watershed in CMP: 14.2
Reservation: Brecksville
Planning Zone: Southeast
Priority Goals: Restoration
Ecosystem Quality Rating: 1
Restoration Potential Rating: 1– Internal, External
Strategic Value Rating: 1

Chippewa Creek is a direct tributary to the Cuyahoga River and has maintained a relatively healthy fish and macroinvertebrate population historically. The ford at Chippewa Creek Drive is a priority for removal and replacement with a bridge to address sediment imbalance, wildlife passage, frequent road closures and bank erosion. The Northeast Ohio Regional Sewer District has contracted sediment removal from this area

on multiple occasions. Creek restoration should follow ford removal to reestablish historic instream habitat diversity.

HUC: 041100020504 – Town of Twinsburg – Tinkers Creek

The Tinker's Creek watershed drains 96.4 square miles. Tinkers Creek is the largest tributary to the Cuyahoga River at approximately 30 miles long. The Tinker's Creek Town of Twinsburg HUC-12 contains Tinkers Creek headwaters. (CVE, 2017).

This watershed falls in the middle of the range of watersheds within Cleveland Metroparks based on the statistical analysis of the biotic, abiotic, and land use data at the HUC level (see Figure 1 and Table 1).

Percent of HUC in CMP:	7.9
Reservations:	Bedford South Chagrin
Planning Zone:	Southeast, East
Priority Goals:	Preservation & Acquisition Partner Synergy Flooding & Stormwater
Ecosystem Quality Rating:	2
Restoration Potential Rating:	1– Internal, External
Strategic Value Rating:	1

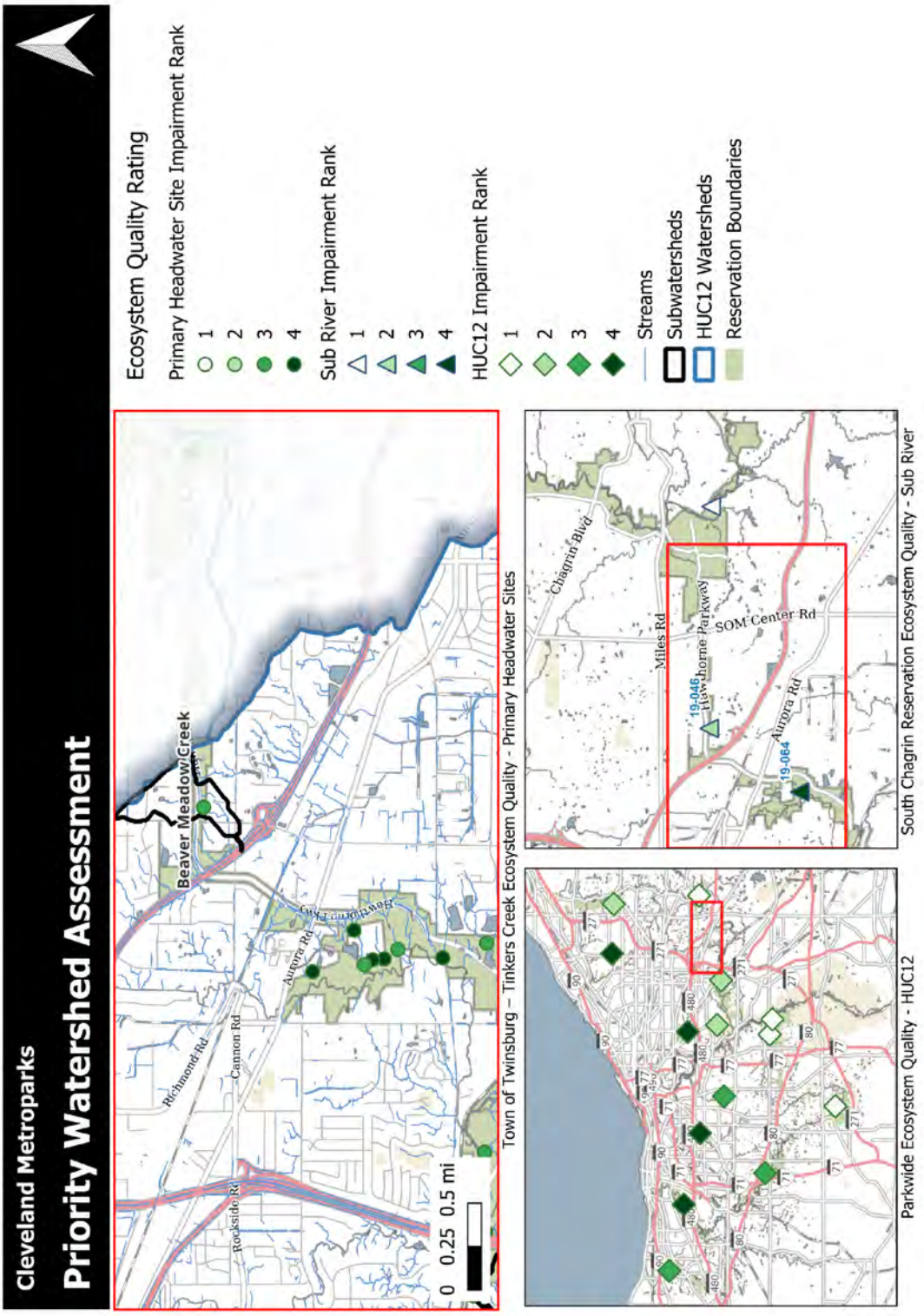

Figure 10. 041100020504 – Town of Twinsburg – Tinkers Creek priority watershed assessment – South Chagrin Reservation

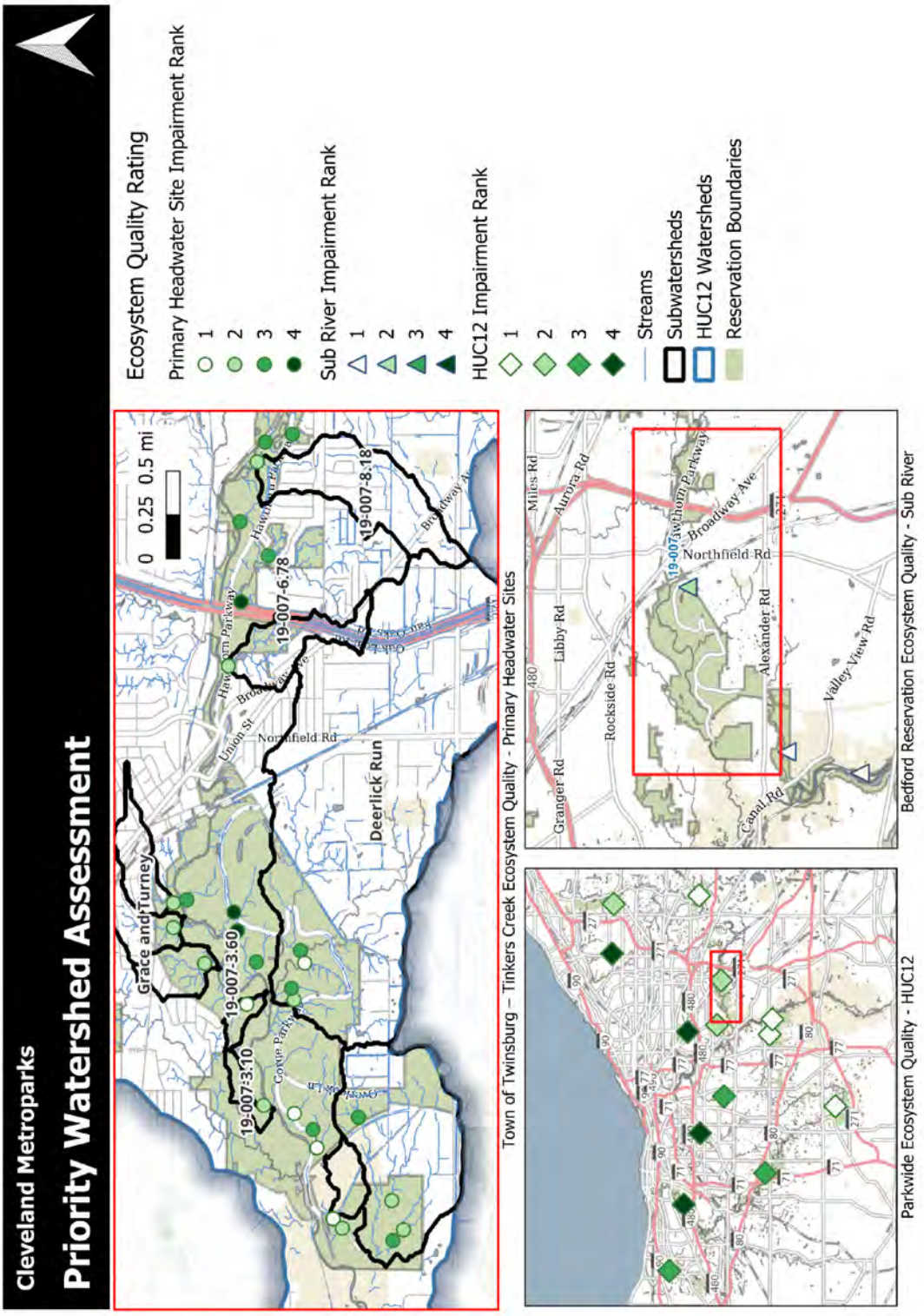

Figure 11. 041100020504 – Town of Twinsburg – Tinkers Creek priority watershed assessment – Bedford Reservation

Beaver Meadow Creek (19-046)

Percent of watershed in CMP:	14.3
Reservation:	South Chagrin
Planning Zone:	East
Priority Goals:	Preservation & Acquisition Partner Synergy Flooding & Stormwater
Ecosystem Quality Rating:	2
Restoration Potential Rating:	3 – Internal, External
Strategic Value Rating:	3

Beaver Meadow Creek is surrounded by suburban development and has been extensively modified. It flows briefly through South Chagrin Reservation when it crosses Hawthorn Parkway. This area retained a cool-coldwater habitat, evidenced by a breeding population of northern red salamanders that have not been detected for several years and indicate this stream may be struggling. Protection is needed to retain and enhance this unique aquatic habitat and working with adjacent residential landowners to implement onsite stormwater retention BMPs is also worthy of consideration.

Deerlick Run (19-048 or 19-007-3.72)

Percent of watershed in CMP:	14.0
Reservation:	Bedford
Planning Zone:	Southeast
Priority Goals:	Preservation & Acquisition Partner Synergy Flooding & Stormwater
Ecosystem Quality Rating:	1
Restoration Potential Rating:	3– Internal, External
Strategic Value Rating:	1

Deerlick Run is one of the largest headwater catchments in Bedford Reservation and retains high quality habitat. The watershed has one primary headwater site ranked in the top quarter quartile sites for the Park District, though the biological community is compromised in some areas with one site in the second tier and two in the third tier. As much of the subwatershed is developed with either houses or commercial areas, stormwater mitigation and restoration projects to improve water quality may be feasible. Work in this subwatershed by partners would further enhance the water quality of Tinkers Creek.

Astorhurst (19-007)

Percent of watershed in CMP:	43.8
Reservation:	Bedford
Planning Zone:	Southeast
Priority Goals:	Partner Synergy Preservation & Acquisition Flooding & Stormwater
Ecosystem Quality Rating:	2
Restoration Potential Rating:	2– Internal, External
Strategic Value Rating:	3

Astorhurst's location on lower Tinker's Creek makes it a key area for riparian buffer restoration. A tributary stream in the middle area of the parcel may also be targeted for daylighting of a culverted section, but the deep nature of the valley and the volume of fill make it a challenging project.

Northside of Tinkers Gorge (19-007-4.41, 4.88 and 4.94, 19-007-3.10, 19-007-3.60)

Percent of watershed in CMP:	42.6
Reservation:	Bedford
Planning Zone:	Southeast
Priority Goals:	Restoration Monitoring
Ecosystem Quality Rating:	1 and 2
Restoration Potential Rating:	Needs Further Assessment – Internal, External
Strategic Value Rating:	1

Comprised of three Tinker's Creek tributaries along Grace, Turney and Button Road with ecosystem quality ratings of 2. While upstream is developed with residential and commercial use, a sizable portion of each watershed is protected near the mouth within Bedford Reservation.

19-007-3.10 – Small tributary to Tinker's creek with a small sliver of residential development in the headwaters with an ecosystem rating of 2.

19-007-3.60 – Small tributary to Tinker's creek with a small sliver of residential development in the headwaters along Button Rd with an ecosystem rating of 1.

Gorge Parkway (19-007-2.55 and 19-007-2.69)

Percent of watershed in CMP:	94.1
Reservation:	Bedford
Planning Zone:	Southeast
Priority Goals:	Preservation & Acquisition
Ecosystem Quality Rating:	1
Restoration Potential Rating:	2 - Internal
Strategic Value Rating:	3

Two small spring-fed tributaries along Gorge Parkway received ecosystem quality ratings of 1. Both are entirely within Bedford Reservation. 19-007-2.69 is an ephemeral gravelly clay stream with a forested riparian buffer, very little understory vegetation and a lot of large woody debris are characteristic of this stream. 19-007-2.55 is fed by culverted flow from the bridle trail as it moves downstream through a forested landscape into a wetland complex with more herbaceous riparian vegetation. Headcuts and ditching at the downstream end of this tributary offer opportunities for restoration.

Unnamed (19-007-6.78)

Percent of watershed in CMP:	24.4
Reservation:	Bedford
Planning Zone:	Southeast
Priority Goals:	Preservation & Acquisition Partner Synergy Monitoring
Ecosystem Quality Rating:	2
Restoration Potential Rating:	Needs Further Assessment – Internal, External
Strategic Value Rating:	3

Watershed along major interstate. The eastern side of the watershed is protected within Bedford Reservation, but likely affected by highway runoff. The western half of the watershed is residential development, but with opportunity for forest protection in places. An old inline pond lays between the two areas managed by the Park District.

Unnamed (19-007-8.18)

Percent of watershed in CMP:	7.6
Reservation:	Bedford
Planning Zone:	Southeast
Priority Goals:	Preservation & Acquisition
Ecosystem Quality Rating:	2
Restoration Potential Rating:	Needs Further Assessment – Internal, External
Strategic Value Rating:	3

Unnamed Tinkers' Creek tributary, downstream of developed area. Cleveland Metroparks owns the area at the mouth. It appears there is still opportunity to preserve/enhance the riparian corridor in many places upstream.

HUC: 041100020602 – Village of Independence-Cuyahoga River

The Village of Independence HUC-12 drains 16.97-square miles. This subwatershed includes almost 5-miles of the mainstem Cuyahoga River. (CVE, March 2020).

Statistical analysis of the biotic, abiotic and land use data for this HUC rank this watershed as the **5th least impacted** in Cleveland Metroparks (see Figure **1** and Table 1).

Percent of HUC in CMP:	3.4
Reservations:	Bedford Brecksville
Planning Zone:	Southeast
Priority Goals:	Restoration Partner Synergy Flooding & Stormwater
Ecosystem Quality Rating:	2
Restoration Potential Rating:	Needs Further Assessment – Internal, External
Strategic Value Rating:	4

Figure 12. 041100020602 – Village of Independence-Cuyahoga River priority watershed assessment

Dunham Park (19-001-15)

Percent of watershed in CMP:	25.5
Reservation:	Bedford
Planning Zone:	Southeast
Priority Goals:	Restoration Flooding & Stormwater
Ecosystem Quality Rating:	1
Restoration Potential Rating:	1– Internal, External
Strategic Value Rating:	Needs Further Assessment

Several small creeks run through Dunham Park, of particular interest are a few small tributaries that had ecosystem quality ratings of 1 and 2. This area is inundated with trash from stormwater runoff. There is an abandoned culvert that can be removed to daylight a significant stretch of stream that lies on the border of park land.

East Pleasant Valley Rd (19-001-16)

Percent of watershed in CMP:	4.2
Reservation:	Brecksville
Planning Zone:	Southeast
Priority Goals:	Preservation & Acquisition Partner Synergy Restoration
Ecosystem Quality Rating:	1
Restoration Potential Rating:	Needs Further Assessment – Internal, External
Strategic Value Rating:	4

Two unnamed bedrock streams run through this property with high ecosystem quality ratings just upstream of the Cuyahoga Valley National Park. While the park area is heavily forested, most of the upstream watershed is residential development and light commercial land use. A utility corridor runs through the northern/downstream portion of the watershed.

Chagrin River Watershed

The Chagrin River is the only scenic river in the Park District. The watershed drains 267 square miles from four northeast Ohio Counties including Cuyahoga, Geauga, Lake, and Portage. The watershed is being increasingly impacted by urban and suburban development which has increased issues with flooding, erosion, and water quality (CRWP, 2023).

Statistical analysis of the biotic, abiotic, and land use data is not available at this time for large rivers, however the primary headwater dataset is currently being used to tell the story of the wider watershed health.

HUC: 041100030303 – McFarland Creek – Aurora Branch

This HUC-12 drains 20.42 square miles and is home to several rare, threatened, and endangered species. The watershed is being rapidly developed, which has led to increased stormwater runoff, loss of vegetated landscapes and an increase in streambank erosion. (CRWP, 2017). Cleveland Metroparks owns a small portion of the HUC near the mouth.

Statistical analysis of the biotic, abiotic, and land use data for this HUC rank this watershed as the **third least impacted** in Cleveland Metroparks (see Figure 1 and Table 1).

Percent of HUC in CMP:	3.3
Reservation:	South Chagrin
Planning Zone:	East
Priority Goals:	Preservation & Acquisition Partner Synergy Restoration
Ecosystem Quality Rating:	1
Restoration Potential Rating:	Needs Further Assessment - External
Strategic Value Rating:	2

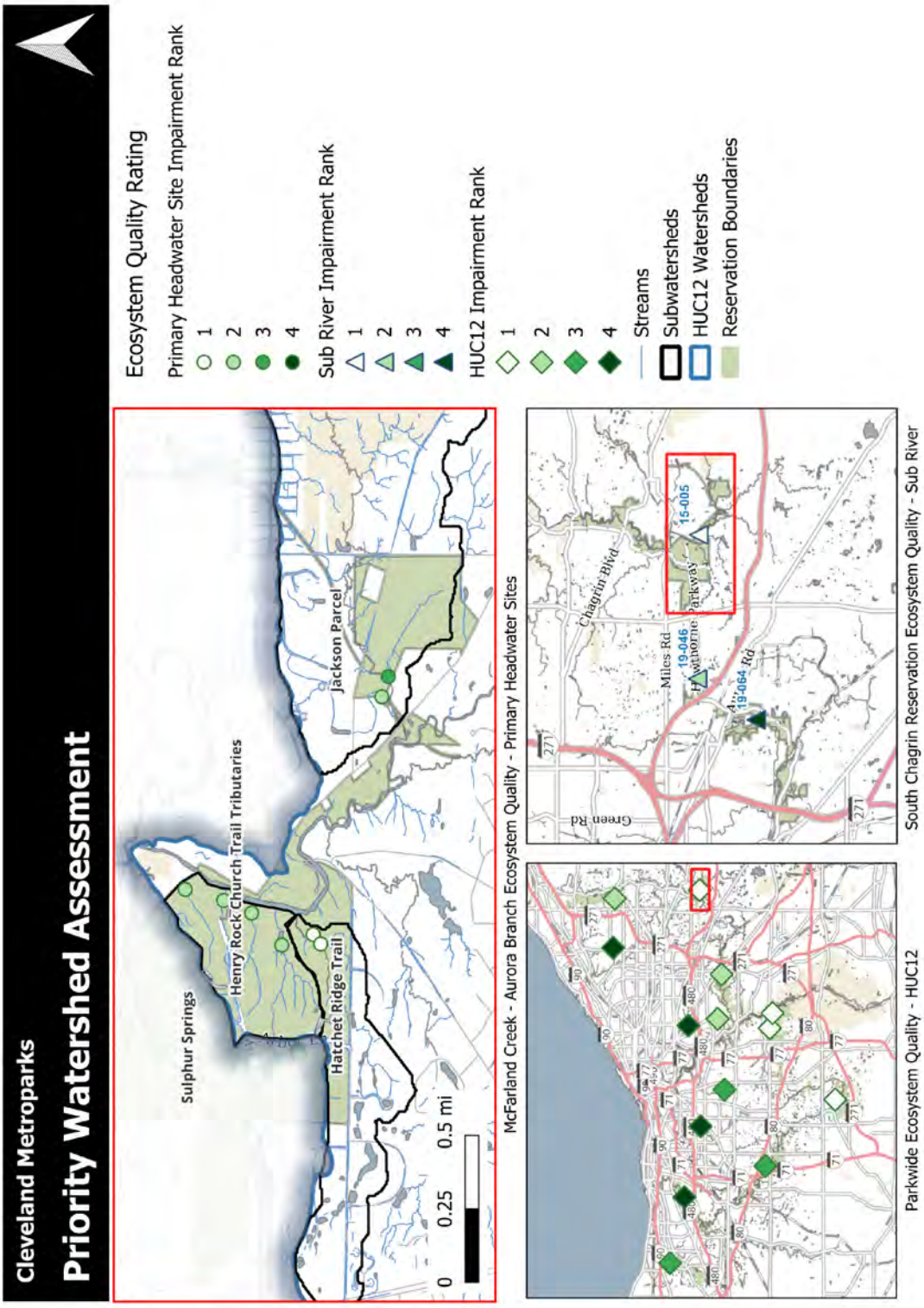

Figure 13. 041100030303 – McFarland Creek – Aurora Branch Chagrin River priority watershed assessment- South Chagrin Reservation

Jackson Parcel/Chagrin Trib (15-005-1.92)

Percent of watershed in CMP:	8.8
Reservation:	South Chagrin
Planning Zone:	East
Priority Goals:	Preservation & Acquisition Restoration Partner Synergy
Ecosystem Quality Rating:	2
Restoration Potential Rating:	Needs Further Assessment – Internal, External
Strategic Value Rating:	2

Small tributary to the Aurora Branch with unusually high turbidity. One of a handful of subwatersheds within Cleveland Metroparks with southern redbelly dace, a declining coldwater species. Ohio EPA designated this stream a WWH due to Cleveland Metroparks data showing a presence of dace indicating coldwater influence.

Hatchet Ridge Trail (15-005-0.79)

Percent of watershed in CMP:	27.3
Reservation:	South Chagrin
Planning Zone:	East
Priority Goals:	Preservation & Acquisition Partner Synergy Monitoring
Ecosystem Quality Rating:	1
Restoration Potential Rating:	Needs Further Assessment - External
Strategic Value Rating:	2

Hatchet Ridge Trail has a small tributary to the Aurora Branch that received an ecosystem rating of 1. The upstream watershed is developed, but with several inline retention basins and larger wooded lots. To maintain the current high ecosystem quality rating observed it is important to encourage proper maintenance and use of upstream stormwater control measures and preservation of wooded acreage through purchase or easements. A stormwater basin retrofit analysis may be beneficial to prevent future downstream erosion. The stewardship of this watershed will rely on upstream neighbors.

Henry Church Rock Trail Tributaries (15-005-0.72, 15-005-0.58, 15-005-0.44, 15-005-0.28)

Percent of watershed in CMP: 100.0
Reservation: South Chagrin
Planning Zone: East
Priority Goals: Preservation & Acquisition
Monitoring
Ecosystem Quality Rating: 2
Restoration Potential Rating: Needs Further Assessment – Internal
Strategic Value Rating: 2

The eastern terminus of Hawthorne Parkway has four small tributaries to the Chagrin River to the north and south of Hawthorne Parkway that lie completely within South Chagrin Reservation with ecosystem ratings of 2. These tributaries drain to Henry Church Rock Picnic Area and Henry Church Rock areas. Beaver have recently taken up residence in the scout pond along 15-005-0.72. The tributaries all appear to have an elevated level of erosion, but there is ample large woody debris supply and good gravel/cobble substrate in areas assessed during the primary headwater monitoring. All 4 tributaries have steep plunges at their downstream end to the Aurora Branch of Chagrin River.

Chagrin River Corridor

Percent of watershed in CMP: 3.6
Reservation(s): South Chagrin
Planning Zone: East
Priority Goals: Preservation & Acquisition
Partner Synergy
Flooding & Stormwater
Ecosystem Quality Rating: 1
Restoration Potential Rating: Varies - Internal, External
Strategic Value Rating: 1

Continued property acquisitions and easements along the Chagrin River, as well as along the Aurora Branch, will protect the water quality of the river itself, as well as quality of restorable small stream networks along it. Much of the land along this corridor still exists in forested, undeveloped/low development tracts. Working with adjacent residential landowners to implement on-site stormwater retention BMPs is also worthy of consideration.

HUC: 041100030304 – Beaver Creek – Chagrin River

This HUC-12 drains 48 square miles and is home to several rare, threatened, and endangered species including the native Ohio brook trout and American brook lamprey (CRWP, 2021). Cleveland Metroparks owns a few small parcels in the HUC near the mouth.

Statistical analysis of the biotic, abiotic and land use data for this HUC is not available for this subwatershed.

Percent of HUC in CMP:	0.1
Reservation:	South Chagrin
Planning Zone:	East
Priority Goals:	Preservation & Acquisition Partner Synergy
Ecosystem Quality Rating:	N/A
Restoration Potential Rating:	Needs Further Assessment – Internal, External
Strategic Value Rating:	4

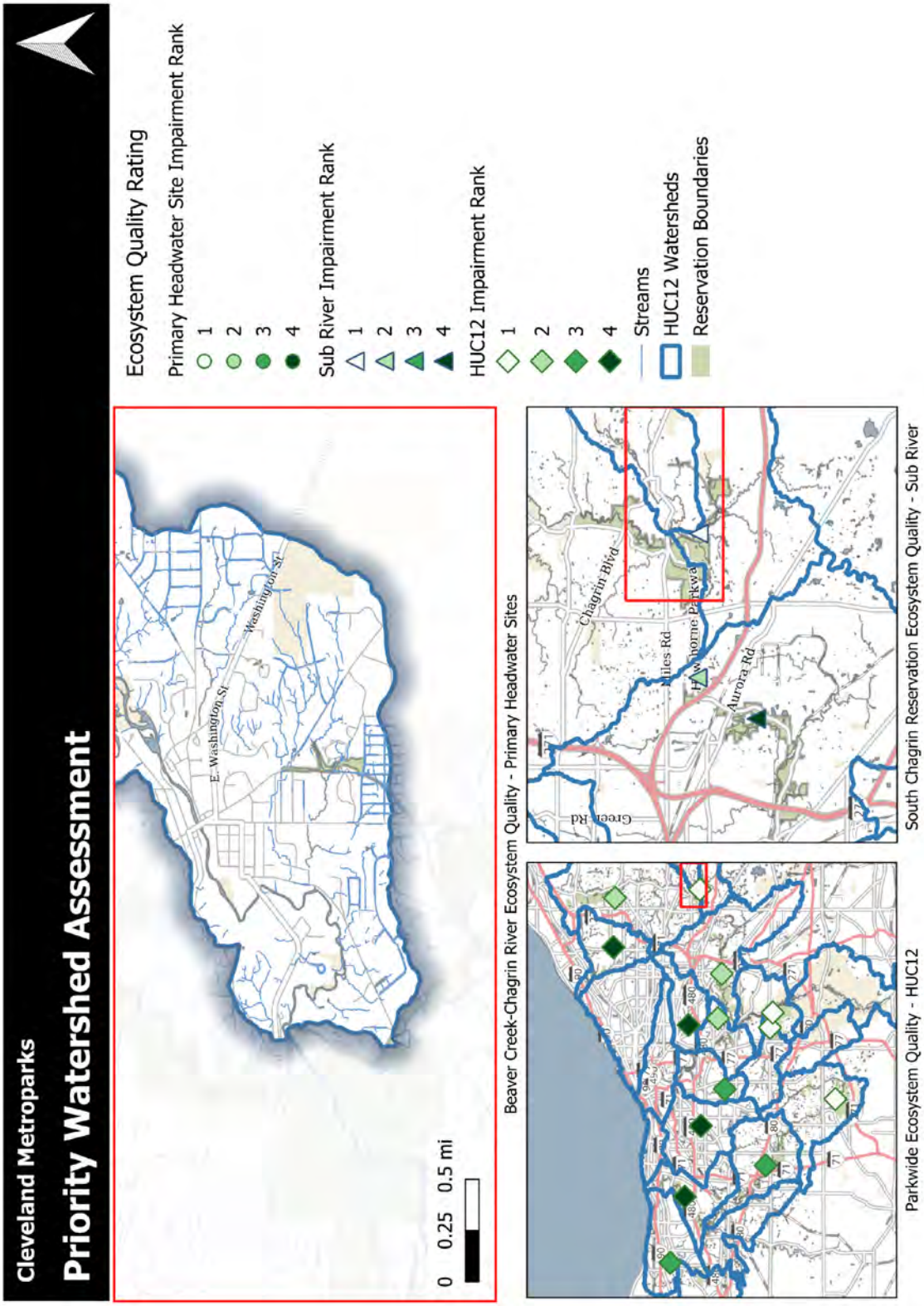

Figure 14. 041100030304 – Beaver Creek –Chagrin River priority watershed assessment- South Chagrin Reservation

HUC: 041100030402 - Griswold Creek-Chagrin River

The Griswold Creek-Chagrin River HUC-12 drains 76.54 square miles. This HUC-12 includes several named tributaries including Sulphur Springs, Willey Creek, Beecher's Brook, and Foster's Run as well as numerous unnamed tributaries. This HUC has experienced a significant loss of wetland habitat (61.5%). Development pressures lie mostly along the west-most edge of the subwatershed, while the main riparian areas remain deciduous forest (CRWP, 2023).

This watershed falls in the middle of the range of watersheds within Cleveland Metroparks based on the statistical analysis of the biotic, abiotic and land use data at the HUC level (see Figure 1 and Table 1).

Percent of HUC in CMP:	6.3
Reservation(s):	North Chagrin South Chagrin
Planning Zone:	East
Priority Goals:	Preservation & Acquisition Restoration Stewardship & Maintenance Partner Synergy Flooding & Stormwater
Ecosystem Quality Rating:	2
Restoration Potential Rating:	1 – Internal, External
Strategic Value Rating:	1

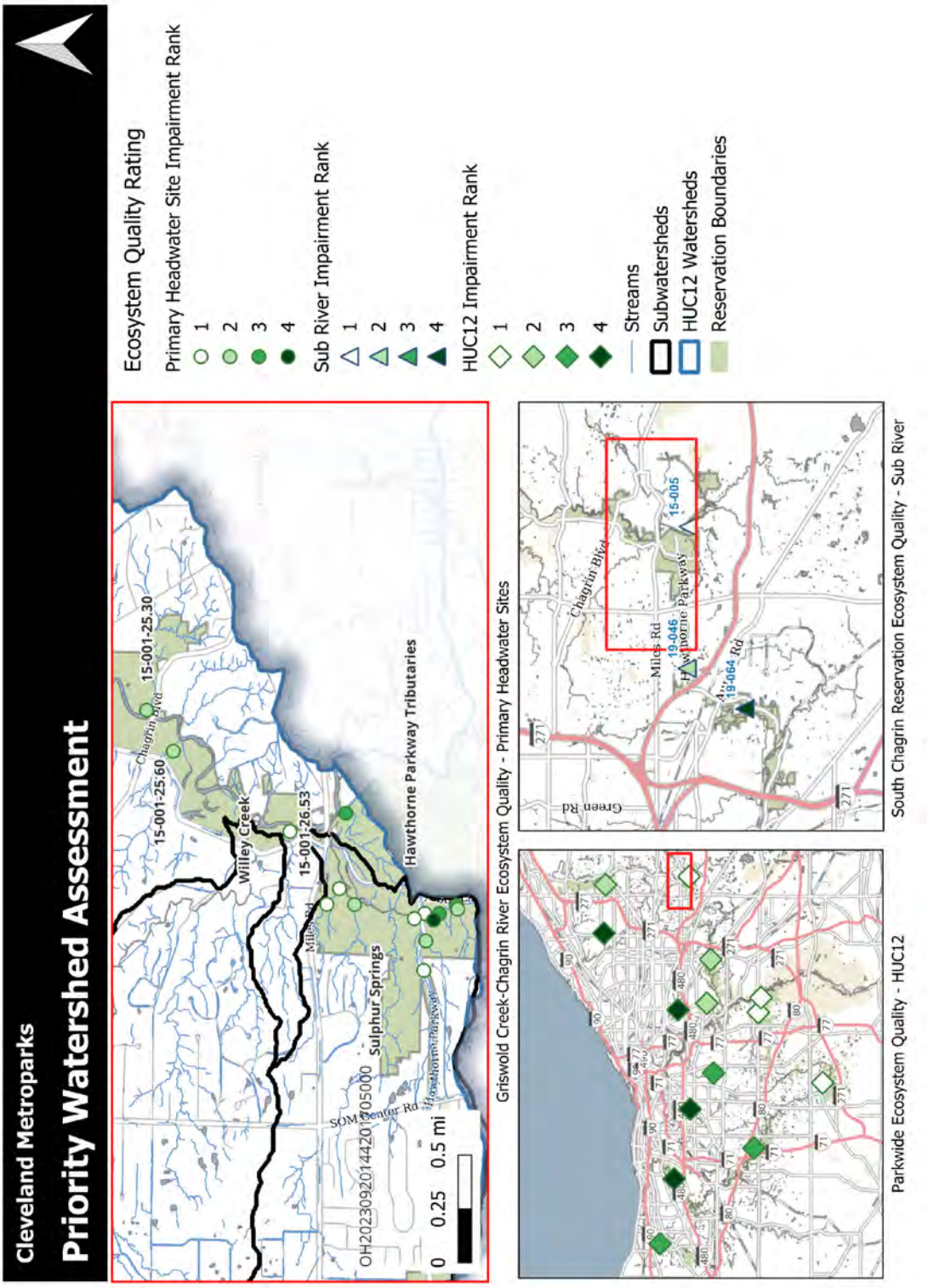

Figure 15. 041100030402 - Griswold Creek-Chagrin River priority watershed assessment – South Chagrin Reservation

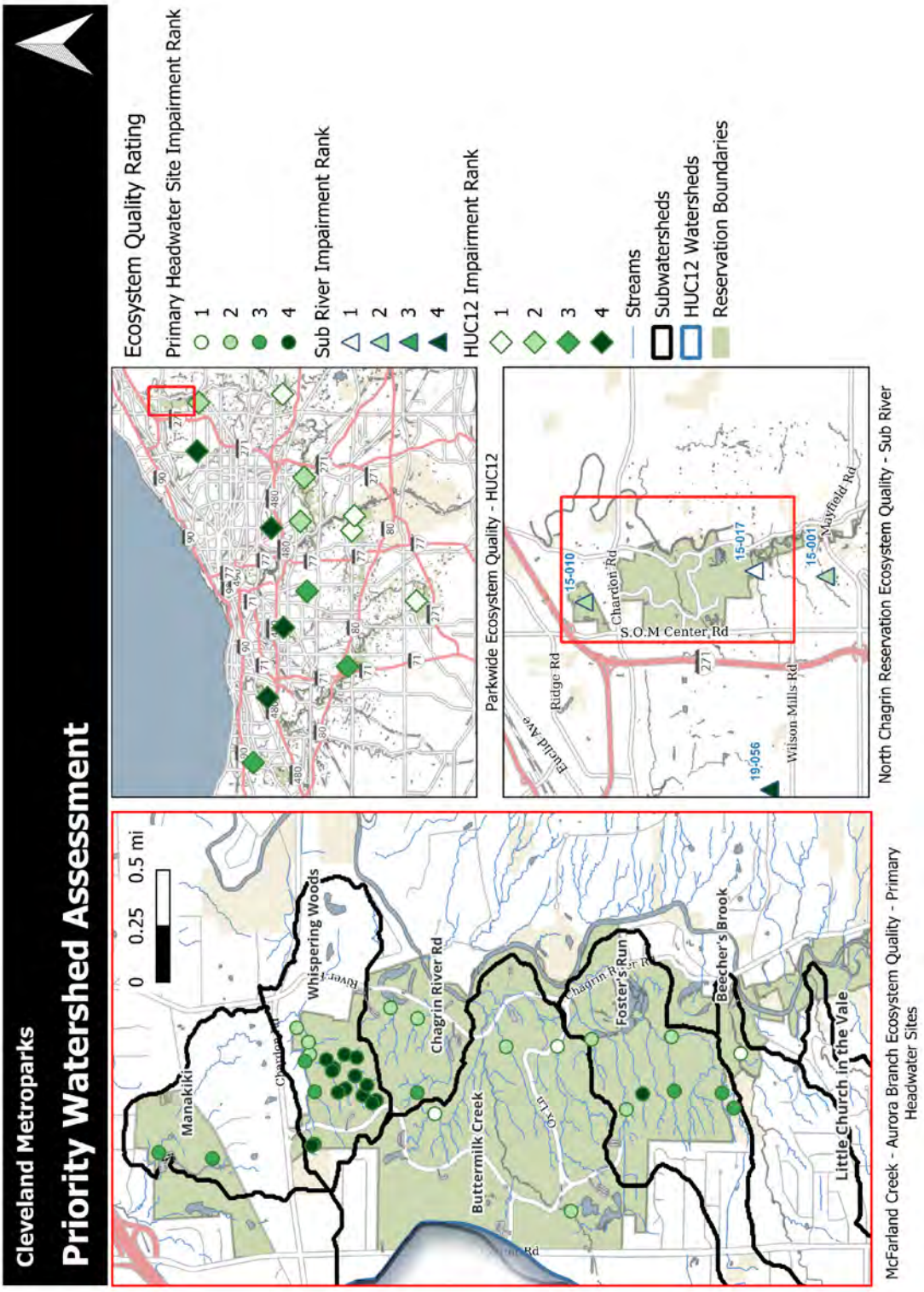

Figure 16. 041100030402 - Griswold Creek-Chagrin River priority watershed assessment – North Chagrin Reservation

Willey Creek (15-004 or 15-001-26.31, & 15-001-26.53)

Percent of watershed in CMP:	0.8
Reservation:	South Chagrin
Planning Zone:	East
Priority Goals:	Preservation & Acquisition Restoration Partner Synergy Monitoring
Ecosystem Quality Rating:	1*
Restoration Potential Rating:	1 - External
Strategic Value Rating:	1

**Ecosystem Quality Rating set to 1 based on Exceptional IBI score and not the modeled EQR*

Approximately 500 feet of excellent quality (Exceptional IBI and Excellent QHEI) designated CWH Wiley Creek runs through CMP property. Much of the land in the Willey Creek corridor still exists in forested, undeveloped tracts. While Willey is in attainment for its fish community within Cleveland Metroparks, an upstream segment monitored by NEORSD is in non-attainment and a natural waterfall barrier to upstream migration is present, likely preventing any improvement without translocation efforts.

Just south of Willey Creek, approximately 500 feet of an unnamed tributary runs through CMP property with similar upstream conditions to Willey Creek, but a smaller subwatershed.

Working with adjacent residential landowners to implement onsite stormwater retention BMPs is worthy of consideration to help protect the excellent quality of these downstream areas.

Sulphur Springs (15-001-26.68)

Percent of watershed in CMP:	24.1
Reservation:	South Chagrin
Planning Zone:	East
Priority Goals:	Restoration Preservation & Acquisition Monitoring
Ecosystem Quality Rating:	1
Restoration Potential Rating:	1 – Internal, External
Strategic Value Rating:	2

Sulphur Springs is a high-quality area with multiple land acquisitions, grant-funded research, and restoration projects completed in collaboration with Chagrin River Watershed Partners and Western Reserve Land Conservancy. The stream maintains a high-quality macroinvertebrate population with the required number of coldwater taxa to be a designated CWH. The fish community in Sulphur Springs is limited by multiple

natural waterfalls along the downstream reaches from just above the confluence with Chagrin River up to Sulphur Springs picnic area. These natural barriers prevent many fish from migrating upstream unassisted.

Expanding Park District ownership of land within the watershed is a high priority to prevent further development. This stream is targeted for watershed-wide restoration that could be a potential reintroduction site for state-threatened native Ohio brook trout. While some in-house projects have been completed to address sediment and temperature impairment, additional replacement of road culverts along Hawthorn Parkway, and additional long-term monitoring of water quality are needed. Working with adjacent residential landowners to implement onsite stormwater retention BMPs is also worthy of consideration.

Chagrin Blvd Tributaries (15-001-25.60, 15-001-25.30)

Percent of watershed in CMP:	12.5
Reservation:	South Chagrin
Planning Zone:	East
Priority Goals:	Preservation & Acquisition Partner Synergy Monitoring
Ecosystem Quality Rating:	2
Restoration Potential Rating:	Needs further assessment – Internal, External
Strategic Value Rating:	3

Two tributaries to the north and south of Chagrin Blvd in highly forested watersheds with light residential development outside of the riparian zone. Parcel acquisition efforts have occurred in 2022-2023 adding to preserved land in 15-001-25.30. Upstream riparian protections/setbacks are key to maintaining stream function and aquatic life use.

Little Church in the Vale (15-001-15.44)

Percent of watershed in CMP:	0.7
Reservation:	North Chagrin
Planning Zone:	East
Priority Goals:	Preservation & Acquisition Partner Synergy Monitoring
Ecosystem Quality Rating:	1*
Restoration Potential Rating:	Needs Further Assessment - External
Strategic Value Rating:	4

**Ecosystem Quality Rating set to 1 based on Exceptional IBI score and not the modeled EQR*

While no primary headwater data was available to perform the ecosystem quality rating on this subwatershed, headwater data show that this stream has good habitat and a healthy fish population (Exceptional IBI, good QHEI). The Park District owns the most downstream area of this subwatershed and upstream land use is mostly residential development and includes a small community wastewater treatment effort.

Beecher's Brook (15-017 or 15-001-14.88)

Percent of watershed in CMP:	6.7
Reservation:	North Chagrin
Planning Zone:	East
Priority Goals:	Preservation & Acquisition Stewardship & Maintenance Flooding & Stormwater Monitoring
Ecosystem Quality Rating:	1
Restoration Potential Rating:	4 - External
Strategic Value Rating:	1

Beecher's Brook flows through a highly developed area to the west of SOM Center Road. Areas of forested stream channel to the east of SOM Center Road have been acquired by Cleveland Metroparks and continued acquisitions would serve to further protect the high-quality reaches of this headwater system. This watershed is home to historic eastern hemlock forests along ravines and cool, moist slopes. Natural resources staff have made focused efforts to monitor and treat hemlocks for two invasives pests: Elongate hemlock scale and Hemlock woolly adelgid, to try and preserve these unique habitats that lend to high quality CWH. The removal of the culvert structure beneath the parking lot off Wilson Mills Road has helped to enhance the fish community by allowing upstream migration. It will be important to monitor this project and see how the fish population responds to this effort and upstream work by NEORSD. Working with adjacent residential landowners to implement onsite stormwater retention BMPs is also worthy of consideration.

Foster's Run (15-001-13.50)

Percent of watershed in CMP:	58.7
Reservation:	North Chagrin
Planning Zone:	East
Priority Goals:	Preservation & Acquisition Restoration Stewardship & Maintenance Flooding & Stormwater Monitoring
Ecosystem Quality Rating:	2
Restoration Potential Rating:	2 – Internal, External
Strategic Value Rating:	2

This subwatershed has been the focus of two major stream restoration projects over the past 25+ years and ongoing monitoring of these efforts should be a priority. There is potential for upgrading culverts along the all-purpose trail to improve connectivity and connect the completed restoration efforts. This watershed is home to historic eastern hemlock forests along ravines and cool, moist slopes. Natural resources staff have made focused efforts to monitor and treat hemlocks for two invasives pests: Elongate hemlock scale and Hemlock woolly adelgid, to try and preserve these unique habitats that lend to high quality CWH.

Buttermilk Creek (15-001-12.69)

Percent of watershed in CMP:	46.4
Reservation:	North Chagrin
Planning Zone:	East
Priority Goals:	Preservation & Acquisition Monitoring
Ecosystem Quality Rating:	1
Restoration Potential Rating:	2 – Internal, External
Strategic Value Rating:	2

Buttermilk Creek and its subwatershed is a moderate to high quality stream network, with the mainstem in full WWH attainment based on the most recent Cleveland Metroparks surveys. While the bulk of the streams are within Park District boundaries, portions of the watershed are impacted by stormwater and potential nutrient enrichment via its Sunset Pond-Sanctuary Marsh and Strawberry Pond connections near the top of the drainage network.

Chagrin River Road Tributaries (15-001-12.50, 15-001-12.30)

Percent of watershed in CMP:	97.8
Reservation:	North Chagrin
Planning Zone:	East
Priority Goals:	Preservation & Acquisition Monitoring
Ecosystem Quality Rating:	2
Restoration Potential Rating:	Needs Further Assessment - Internal
Strategic Value Rating:	1

This small primary headwater stream network is located at the northern end of the main body of North Chagrin Reservation along Chagrin River Road and has been protected from most development by the steep topography its streams flow through. Efforts to preserve the high stream quality within the Park District boundaries and prevent degradation from any Park District activities should be made.

Whispering Woods (15-001-11.83)

Percent of watershed in CMP:	42.1
Reservation:	North Chagrin
Planning Zone:	East
Priority Goals:	Preservation & Acquisition Monitoring
Ecosystem Quality Rating:	2
Restoration Potential Rating:	2 - Internal
Strategic Value Rating:	3

This small primary headwater stream network is located at the extreme northern end of the main body of North Chagrin Reservation and has been protected from most development by the steep topography its streams flow through. Impervious surfaces have been removed from this watershed with the removal of a parking lot and picnic area. Land acquisitions have added protection to the northern edge of its watershed and efforts to protect its small streams both within and outside Park District boundaries should be considered. This watershed is home to historic eastern hemlock forests along ravines and cool, moist slopes. Natural resources staff have made focused efforts to monitor and treat hemlocks for two invasives pests: Elongate hemlock scale and Hemlock woolly adelgid, to try and preserve these unique habitats that lend to high quality CWH.

Manakiki (15-010)

Percent of watershed in CMP:	28.8
Reservation:	North Chagrin
Planning Zone:	East
Priority Goals:	Preservation & Acquisition Monitoring
Ecosystem Quality Rating:	2
Restoration Potential Rating:	Needs Further Assessment – Internal, External
Strategic Value Rating:	4

While the tributary 15-010-3.01 received an Ecosystem Quality Ranking of 3, the Subwatershed received an Ecosystem Quality Ranking of 2. This tributary is in the Deer Creek/Gully Brook Subwatershed of Chagrin River and is impacted by urban stormwater runoff and channel instability. The Park District maintains the Manakiki Golf Course which offers an opportunity to enhance the stream corridor and use best practices to enhance water quality in this Subwatershed. In 2017 the Park District worked with Chagrin River Watershed Partners to restore and vegetate 160 linear feet of tributary stream to Deer Creek/Gully Brook and convert an existing 40,000 square foot in-line pond to a wetland. The stream restoration reduced erosion and sediment loading downstream by re-contouring and stabilizing the stream banks with native vegetation and natural channel design with rock riffle structures and a stilling basin. An old irrigation pond was restored to a wetland complex with deep pools, transition zones, shallow water

areas, temporary inundation zones, and upper bank areas to increase pollutant removal and provide better aquatic and upland wildlife habitat.

Chagrin River Corridor

Percent of watershed in CMP:	3.6
Reservation(s):	North Chagrin South Chagrin
Planning Zone:	East
Priority Goals:	Preservation & Acquisition Partner Synergy Flooding & Stormwater
Ecosystem Quality Rating:	2
Restoration Potential Rating:	Varies - Internal, External
Strategic Value Rating:	1

Continued property acquisitions and easements along the Chagrin River corridor between North and South Chagrin Reservations will protect water quality of the river itself, as well as quality or restorable small stream networks along it. Working with adjacent residential landowners to implement on-site stormwater retention BMPs is also worthy of consideration.

Tables

Table 1. HUC-12 Summary Table

HUC-12 Digit	Subwatershed Name	2024 Ecosystem Quality Rating Index	2024 Ecosystem Quality Rating	Related Watershed Plans
41100010201	Headwaters East Branch Rocky River	-0.374154639	1	NPSIS, SWMP
41100020503	Headwaters Chippewa Creek	-0.356722915	1	NPSIS, SWMP
41100030303	McFarland Creek – Aurora Branch	-0.301356872	1	NPSIS, SWMP
41100020505	Willow Lake- Cuyahoga River	-0.254080605	1	NPSIS, SWMP
41100020602	Village of Independence-Cuyahoga River	-0.00887543	2	NPSIS, SWMP
41100030402	Griswold Creek-Chagrin River	0.078775219	2	NPSIS, SWMP
41100020504	Town of Twinsburg – Tinkers Creek	0.116905008	2	NPSIS, SWMP
41100020604	Town of Cuyahoga Heights-Cuyahoga River	0.283962224	3	NPSIS, SWMP
41100010202	Baldwin Creek-East Branch Rocky River	0.3262862	3	NPSIS, SWMP
41100010204	Cahoon Creek-Frontal Lake Erie	0.441949507	3	NPSIS
41100030503	Euclid Creek	0.508020895	4	NPSIS, SWMP
41100020603	Big Creek	0.628093231	4	NPSIS, SWMP
41100010203	Rocky River	0.630257101	4	WAP, SWMP
41100020601	Mill Creek	0.675660155	4	NPSIS, SWMP
41100010601	French Creek	No data available	N/A	N/A
41100010108	Baker Creek – West Branch Rocky River	No data available	N/A	NPSIS, SWMP
41100020403	Furnace Run	No data available	N/A	Draft NPSIS
41100020405	Boston Run - Cuyahoga River Watershed	No data available	N/A	NPSIS, SWMP
41100020605	City of Cleveland-Cuyahoga River	No data available	N/A	NPSIS, SWMP
41100030504	Doan Brook-Frontal Lake Erie	No data available	N/A	NPSIS, SWMP
41100030304	Beaver Creek – Chagrin River	No data available	N/A	NPSIS, SWMP

Table 2. Priority Watershed Assessment Summary Table

Name	Large River	HUC	Primary Headwater Subwatershed	Reservations	Planning Zone	Priority Goals*	Ecosystem Quality Rating	Restoration Potential Rating**	Strategic Value Rating	Percent in Park	Location of Watershed Ownership***	Primary Upstream Land use
French Creek	Black River	41100010601		BW	West	P&A	N/A	Needs Further Assessment - I	2	1.8	US	Forested Wetland
Cahoon Creek-Frontal Lake Erie	Cahoon Creek-Frontal Lake Erie	41100010204		HU, BW	West	PS, LM	3	3 - I, E	4	2.3	DS	Low Intensity/Open Space Development
East Branch Rocky River Corridor	Rocky River	41100010201, 41100010202		HI, MSR	Southwest	P&A, PS	1	2 - I, E	1	15.8	Floodplain, DS	Forest
Main Branch Rocky River Corridor	Rocky River	41100010203		RR	West	PS	4	2 - I, E	2	14.1	Floodplain, DS	Developed, Low and Medium Intensity
Headwaters East Branch Rocky River	Rocky River	41100010201		HI, MSR	Southwest	P&A, R, S&M	1	1 - I, E	1	13.3	Floodplain, DS	Forest
Rising Valley	Rocky River	41100010201	13-100-29.80 through 32.35	HI, MSR	Southwest	P&A, R, PS	1	1 - I, E	1	14.9	Floodplain, DS	Low Intensity/Open Space Development
Johnson's Creek	Rocky River	41100010201	13-100-23.72	HI	Southwest	P&A, S&M, M	1	1 - I, E	1	43.7	DS	Pasture/Hay
Worden's Ledges	Rocky River	41100010201	13-100-24.71	HI	Southwest	P&A, R	1	3 - I	1	99.9	All	Forest
Ledge Road Subwatersheds: Allard Creek and Judges West	Rocky River	41100010201	13-100-24.84, 25.50, 26.50, 26.78, & 26.80	HI	Southwest	P&A, PS, S&M	1	3 - I, E	1	20.0	DS	Forest, Pasture/Hay
Whipps Ledges	Rocky River	41100010201	13-100-24.35, 24.50, 24.60, 25.00, 25.10, 25.15, 25.16, & 25.20	HI	Southwest	P&A, S&M	1	Needs Further Assessment - I	1	99.9	DS	Forest
Hinckley Hills Area	Rocky River	41100010201	13-100-22	HI	Southwest	P&A, M	1	3 - I, E	2	76.3	MS	Forest
West Drive	Rocky River	41100010201	13-100-23.70	HI	Southwest	P&A, R, M	1	1 - I	2	100.0	All	Forest
East Drive	Rocky River	41100010201	13-100-23.20	HI	Southwest	P&A, R, M	1	Needs Further Assessment - I, E	2	57.8	Own lower half	Forest
Mirror Valley	Rocky River	41100010201	13-100-24.19	HI	Southwest	P&A, R, M	1	1 - I, E	2	58.4	DS	Forest
Healey Creek	Rocky River	41100010201	13-104	MSR	Southwest	R, PS	1	1 - I, E	3	0.7	DS	Developed, Low Intensity
Baldwin Creek-East Branch Rocky River	Rocky River	41100010202		MSR, BC, RR, BR	Central, Southwest, West, South	P&A, R, PS, LM	3	1 - I, E	2	18.6	Floodplain, DS	Developed, Low Intensity
Southern Mill Stream Run	Rocky River	41100010202	13-100-11.20 through 15.80	MSR	Southwest	F&S, PS, LM	1	1 - I, E	1	23.3	DS	Developed, Low Intensity
Webster Road Subwatersheds	Rocky River	41100010202	13-100-11.10	MSR	Southwest	F&S	2	4 - I, E	1	22.2	DS	Developed, Low Intensity

Name	Large River	HUC	Primary Headwater Subwatershed	Reservations	Planning Zone	Priority Goals*	Ecosystem Quality Rating	Restoration Potential Rating**	Strategic Value Rating	Percent in Park	Location of Watershed Ownership***	Primary Upstream Land use
Ridge Road	Rocky River	41100010202	13-100-15.25	BR	South	PS	2	Needs Further Assessment - I, E	4	20.7	MS	Low Intensity/Open Space Development
Brecksville Connector	Rocky River	41100010202	13-100-13.57	BR	South	PS	2	Needs Further Assessment - I, E	4	18.6	DS	Developed, Low Intensity
Baldwin Creek	Rocky River	41100010202	13-101	BC, MSR	Central, Southwest	P&A, R, PS	3	1 - I, E	1	3.8	DS	Developed, Low Intensity
Baker Creek-West Branch Rock River	Rocky River	41100010108		RR	West	R, F&S, PS	N/A	Needs Further Assessment - I, E	3	0.6	DS	Developed, Low Intensity
Rocky River	Rocky River	41100010203		RR	West	P&A, R, F&S, PS	4	3 - I, E	4	14.1	Floodplain, DS	Developed, Low and Medium Intensity
Upper Abram Creek (Lake-to-Lake Trail area)	Rocky River	41100010203	13-002	BC	Central	P&A, R	3	4 - E	4	1.1	DS	Developed, Medium Intensity
Coe Creek (aka Bain Creek)	Rocky River	41100010203	13-001	RR	West	R, F&S, PS	4	3	4	4.4	Floodplain, DS	Developed, Medium and Low Intensity
Cuyahoga River Mainstem	Cuyahoga River	41100020403, 41100020503, 41100020504, 41100020505, 41100020601, 41100020602, 41100020603, 41100020604		OEC, LF	Central	P&A, R, PS	Varies	3 - I, E	1	4.4	Floodplain	Developed, Medium and High Intensity
Boston Run - Cuyahoga River Watershed	Cuyahoga River	41100020405		BR	Southeast	PS	2****	3 - I, E	1	0.5	Floodplain, DS	Forest
Willow Lake - Cuyahoga River	Cuyahoga River	41100020505		BE, BR	Southeast, South	P&A, PS	1	Needs Further Assessment - I, E	1	14.1	Floodplain, DS	Low Intensity/Open Space Development
Sagamore Creek	Cuyahoga River	41100020505	19-001-18.08	BE	Southeast	P&A, R, PS	1	2 - I, E	1	7.5	DS	Low Intensity/Open Space Development
Snowville Road Subwatersheds	Cuyahoga River	41100020505	19-001-21.70, 19-001-20.90, 19-001-23.74	BR	South	P&A, PS	1	3 - I, E	2	34.4	DS	Forest
Headwaters Chippewa Creek	Cuyahoga River	41100020503	19-009	BR	South	P&A, R	1	1 - I, E	3	14.2	DS	Low Intensity/Open Space Development
Tributaries to Chippewa Creek	Cuyahoga River	41100020503	19-009-0.80, 19-009-1.13, 19-009-1.31	BR	South	P&A, R	1	1 - I, E	1	64.1	DS	Developed, Low Intensity
Chippewa Creek	Cuyahoga River	41100020503	19-009	BR	South	R	1	1 - I, E	1	14.2	DS	Low Intensity/Open Space Development
Town of Twinsburg – Tinkers Creek	Cuyahoga River	41100020504		BE, SC	East, Southeast	P&A, PS, F&S	2	1 - I, E	1	7.9	Floodplain, DS	Developed, Low Intensity

Name	Large River	HUC	Primary Headwater Subwatershed	Reservations	Planning Zone	Priority Goals*	Ecosystem Quality Rating	Restoration Potential Rating**	Strategic Value Rating	Percent in Park	Location of Watershed Ownership***	Primary Upstream Land use
Beaver Meadow Creek	Cuyahoga River	41100020504	19-046	SC	East	P&A, PS, F&S	2	3 - I, E	3	14.3	MS	Developed, Low Intensity
Deerlick Run	Cuyahoga River	41100020504	19-048 or 19-007-3.72	BE	Southeast	P&A, PS, F&S	1	3 - I, E	1	14.0	DS	Developed, Medium and Low Intensity
Astorhurst	Cuyahoga River	41100020504	19-007	BE	Southeast	P&A, PS, F&S	2	2 - I, E	3	43.8	DS	Forest, Developed, Open Space
North Side of Tinker's Gorge	Cuyahoga River	41100020504	19-007-4.41, 4.88 and 4.94, 19-007-3.10, 19-007-3.60	BE	Southeast	P&A, R, M	1	Needs Further Assessment - I, E	1	42.6	DS	Developed, Low Intensity
Gorge Parkway	Cuyahoga River	41100020504	19-007-2.55 and 19-007-2.69	BE	Southeast	P&A	1	2 - I	3	94.1	All	Forest
Unnamed	Cuyahoga River	41100020504	19-007-6.78	BE	Southeast	P&A, PS, M	2	Needs Further Assessment - I, E	3	24.4	DS	Developed, Medium Intensity
Unnamed	Cuyahoga River	41100020504	19-007-8.18	BE	Southeast	P&A	2	Needs Further Assessment - I, E	3	7.6	DS	Developed, Low Intensity
Village of Independence-Cuyahoga River	Cuyahoga River	41100020602		BE, BR	Southeast	R, PS, F&S	2	Needs Further Assessment - I, E	4	3.4	MS	Developed, Low Intensity
Dunham Park	Cuyahoga River	41100020602	19-001-15	BE	Southeast	R, F&S	1	1 - I, E	Needs Further Assessment	25.5	MS	Developed, Low Intensity
East Pleasant Valley Rd	Cuyahoga River	41100020602	19-001-16	BR	South	P&A, R	1	Needs Further Assessment - I, E	4	4.2	MS	Developed, Low Intensity
Furnace Run	Cuyahoga River	41100020403		BR	South	PS	N/A	3 - I	4	2.4	US	Developed, Open Space
Town of Cuyahoga Heights-Cuyahoga River	Cuyahoga River	41100020604		WC, OEC	Central	P&A, R, PS, F&S	3	3 - I, E	1	7.1	Floodplain, US	Developed, Low Intensity
Upper West Creek	Cuyahoga River	41100020604	19-066	WC	Central	P&A, R, PS, F&S	3	3 - I, E	1	15.8	Floodplain, US	Developed, Low Intensity
Unnamed West Creek Trib	Cuyahoga River	41100020604	19-066-6.40I	WC	Central	P&A, R, PS, F&S				3.9		
Big Creek	Cuyahoga River	41100020603	19-005	BC, BS, Zoo	Central	PS, F&S	4	3 - I, E	4	2.5	Floodplain, MS	Developed, Low and Medium Intensity
Mill Creek	Cuyahoga River	41100020601	19-006	GP, OEC	Central	PS, F&S	4	3 - I, E	4	2.0	Floodplain, MS	Developed, Low and Medium Intensity

Name	Large River	HUC	Primary Headwater Subwatershed	Reservations	Planning Zone	Priority Goals*	Ecosystem Quality Rating	Restoration Potential Rating**	Strategic Value Rating	Percent in Park	Location of Watershed Ownership***	Primary Upstream Land use
Wolf Creek	Cuyahoga River	41100020601	19-006-4.63	GP	Central	S&M, PS, F&S	3	3 - I, E	1	5.6	DS	Developed, Low and Medium Intensity
City of Cleveland-Cuyahoga River	Cuyahoga River	41100020605		LF,WA,OEC	Central	PS, LM	N/A	3 - I, E	2	0.8	Floodplain, MS	Developed, Medium and High Intensity
Euclid Creek	Euclid Creek	41100030503		EC, AC	East	R, S&M, PS, F&S, LM	4	3 - I, E	3	4.7	DS	Developed, Low and Medium Intensity
Doan Brook	Doan Brook	41100030504		LF	Central	PS	N/A	3 - E	4	0.3	DS	Developed, Medium and High Intensity
Chagrin River Corridor	Chagrin River	41100030303, 41100030402		NC, SC	East	P&A, PS, F&S	1	Varies - I,E	1	3.6	Floodplain, mostly DS	Forest, Low Intensity/Open Space Development
McFarland Creek – Aurora Branch	Chagrin River	41100030303		SC	East	P&A, PS, R	1	Needs Further Assessment - E	2	3.3	Floodplain, mostly DS	Low Intensity/Open Space Development
Jackson Parcel/Chagrin Trib	Chagrin River	41100030303	15-005-1.92	SC	East	P&A, R, PS	2	Needs Further Assessment - I, E	2	8.8	DS	Forest, Low Intensity/Open Space Development
Hatchet Ridge Trail	Chagrin River	41100030303	15-005-0.79	SC	East	P&A, PS, M	1	Needs Further Assessment - E	2	27.3	DS	Low Intensity/Open Space Development
Henry Church Rock Trail Tributaries	Chagrin River	41100030303	15-005-0.72, 15-005-0.58, 15-005-0.44, 15-005-0.28	SC	East	P&A, M	2	Needs Further Assessment - I	2	100.0	All	Forest
Beaver Creek - Chagrin River	Chagrin River	41100030304		SC	East	P&A, PS	N/A	Needs Further Assessment - I, E	4	0.1	DS	Forest, Pasture/Hay
Griswold Creek-Chagrin River	Chagrin River	41100030402		NC, SC	East	P&A, R, S&M, PS, F&S	2	1 - I, E	1	6.3	Floodplain, mostly DS	Forest, Low Intensity/Open Space Development
Willey Creek	Chagrin River	41100030402	15-004 or 15-001-26.31, 15-001-26.53	SC	East	P&A, R, PS, M	1	1 - E	1	0.8	DS	Low Intensity/Open Space Development
Sulphur Springs	Chagrin River	41100030402	15-001-26.68	SC	East	P&A, R, M	1	1 - I, E	2	24.1	DS	Low Intensity/Open Space Development
Chagrin Blvd Tributaries	Chagrin River	41100030402	15-001-25.60, 15-001-25.30	SC	East	P&A, PS, M	2	Needs Further Assessment - I, E	3	12.5	DS	25.60- Forest, 25.30 - Forest, Low Intensity/Open Space Development
Little Church in the Vale	Chagrin River	41100030402	15-001-15.44	NC	East	P&A, PS, M	1*	Needs Further Assessment - E	4	0.7	DS	Developed, High and Medium Intensity
Beecher's Brook	Chagrin River	41100030402	15-017 or 15-001-14.88	NC	East	P&A, S&M, F&S, M	1	4 - E	1	6.7	DS	Low Intensity/Open Space Development

Name	Large River	HUC	Primary Headwater Subwatershed	Reservations	Planning Zone	Priority Goals*	Ecosystem Quality Rating	Restoration Potential Rating**	Strategic Value Rating	Percent in Park	Location of Watershed Ownership***	Primary Upstream Land use
Foster's Run	Chagrin River	41100030402	15-001-13.50	NC	East	P&A, R, S&M, F&S, M	2	2 - I, E	2	58.7	DS	Developed, Low and Medium Intensity
Buttermilk Creek	Chagrin River	41100030402	15-001-12.69	NC	East	P&A, M	1	2 - I, E	2	46.4	DS	Developed, Low and Medium Intensity
Chagrin River Rd Tributaries	Chagrin River	41100030402	15-001-12.50, 15-001-12.30	NC	East	P&A, M	2	Needs Further Assessment - I	1	97.8	US	Forest
Whispering Woods	Chagrin River	41100030402	15-001-11.83	NC	East	P&A	2	2 - I	3	42.1	US	Forest
Manakiki	Chagrin River	41100030402	15-010	NC	East	P&A, M	2	Needs Further Assessment - I, E	4	28.8	DS	Forest

*		**		***	
Preservation & Acquisition:	P&A	Internal:	I	Downstream:	DS
Restoration:	R	External:	E	Middle of Watershed:	MS
Stewardship & Maintenance:	S&M			Upstream:	US
Partner Synergy:	PS				
Flooding & Stormwater:	F&S				
Landscape Management:	LM				
Monitoring:	M				

*****Ecosystem Quality Rating assigned by biotic sampling score and not by EQR model*

Table 3. Ecosystem Quality Rating Table at Sub River level

Stream Name	2024 Ecosystem Quality Rating Index	2024 Ecosystem Quality Rating
15-017	-0.578549145	1
19-009	-0.351429547	1
15-005	-0.301356872	1
19-001	-0.195556041	1
19-091	-0.15913072	1
19-008	-0.155618941	1
13-100	-0.106891836	2
13-104	-0.02241457	2
15-001	0.084478663	2
19-007	0.085949696	2
19-046	0.198064663	2
15-010	0.247740966	2
19-066	0.283962224	3
13-101	0.333332667	3
13-004	0.424817431	3
13-002	0.438165123	3
13-003	0.459081583	3
19-056	0.478066661	4
19-041	0.547959874	4
19-064	0.618043157	4
19-005	0.628093231	4
13-001	0.646689451	4
19-006	0.675660155	4

Table 4. Ecosystem Quality Rating Table at Site Level

Stream Name	2024 Ecosystem Quality Rating Index	2024 Ecosystem Quality Rating
19-001-20.90IV-2III	-1.064971652	1
19-007-3.72IV-8II	-0.95555611	1
19-001-21.70IV-3II	-0.94440915	1
13-100-22.88IV-3I	-0.931753415	1
19-001-21.70IV-3III	-0.915519417	1
13-100-23.20II-5I	-0.872109788	1
13-100-29.80I	-0.870829325	1
13-100-23.72IV-9I	-0.865442036	1
13-100-26.80II-2I	-0.831732625	1

Stream Name	2024 Ecosystem Quality Rating Index	2024 Ecosystem Quality Rating
19-009-1.00IV-2III	-0.812619466	1
13-100-23.20II	-0.807668224	1
19-009-1.13III	-0.792315733	1
13-100-24.84IV-1I	-0.777599598	1
13-100-24.84IV-16I	-0.771118784	1
13-100-24.71III-2II	-0.769930918	1
13-100-24.84IV-2II	-0.754218863	1
13-100-24.84IV-19I	-0.753669858	1
13-100-24.84IV-7II	-0.749042459	1
13-100-13.37II	-0.743833691	1
13-100-25.20II-2I	-0.741604266	1
13-100-23.72IV-5II	-0.737212937	1
13-100-23.72IV-7II	-0.736031468	1
15-001-26.53III	-0.72818673	1
19-009-1.00IV-6II	-0.721349311	1
13-100-24.50II	-0.720739082	1
13-100-22.88IV	-0.713044218	1
15-005-0.79III	-0.71129155	1
19-001-21.70IV-4II	-0.709498323	1
13-100-30.40II	-0.706854592	1
13-100-22.88IV-2II	-0.705983091	1
13-100-22.88IV-3II	-0.69993228	1
18-009-1.00IV-1III	-0.69301397	1
13-100-30.45II	-0.68846393	1
13-100-24.35II-1I	-0.685797512	1
13-100-22.88IV-2III	-0.683219904	1
13-100-25.00I	-0.669487594	1
13-100-24.71III-9I	-0.668557311	1
13-100-24.84IV	-0.666982018	1
15-001-12.69III-4II	-0.664942931	1
13-100-23.72IV-1III	-0.663165192	1
13-100-24.84IV-2I	-0.649422141	1
13-100-24.19III	-0.642455663	1
13-100-24.19III-12I	-0.633006877	1
19-001-16.60III-2II	-0.625288441	1
19-001-1.00IV-1II	-0.621347296	1
13-100-23.72IV-4II	-0.621160246	1

Stream Name	2024 Ecosystem Quality Rating Index	2024 Ecosystem Quality Rating
13-100-24.19III-11I	-0.618396856	1
19-001-20.90IV-6II	-0.610391285	1
19-001-20.90IV	-0.609696483	1
15-001-26.68IV-9II	-0.602811195	1
19-001-15.10III-5I	-0.584138041	1
13-100-22.88IV-4II	-0.582667433	1
15-005-0.79III-1I	-0.581205417	1
15-017-0.40III-1II	-0.578549145	1
19-001-23.74IV-4III	-0.577887827	1
13-100-24.84IV-18I	-0.571209182	1
15-001-26.68IV-3III	-0.56986292	1
13-100-25.17I	-0.559880696	1
19-007-2.10II-1I	-0.554056668	1
19-007-2.69I	-0.548872552	1
19-001-18.08IV-4III	-0.547731366	1
19-009-1.13III-1II	-0.546044916	1
19-007-2.55I	-0.535476026	1
13-100-23.72IV-3III	-0.533755489	1
19-007-3.60II	-0.521094976	1
13-100-23.72IV-3II	-0.513862364	1
15-001-26.68IV-1III	-0.513533978	1
19-001-23.74IV	-0.506486947	1
13-100-31.50I	-0.502155908	1
13-100-29.81I	-0.498308993	1
13-100-23.70III-2II	-0.482100309	1
15-001-13.47III	-0.481845319	1
15-001-26.68IV-1II	-0.474413687	1
13-100-23.72IV-6II	-0.473448423	1
1t-001-26.68IV-1III	-0.466136137	1
19-009-1.31III-1II	-0.456106637	1
19-001-18.08IV-44I	-0.455087424	1
13-100-26.80II-1I	-0.454196983	1
19-001-18.08IV-3II	-0.450105561	1
13-100-31.10III-1II	-0.448743672	2

Stream Name	2024 Ecosystem Quality Rating Index	2024 Ecosystem Quality Rating
19-001-21.70IV-2III	-0.448059439	2
19-007-3.10II	-0.423201463	2
15-001-12.69III-1II	-0.420758477	2
15-001-26.68IV-2III	-0.420045687	2
15-005-0.72III	-0.410826069	2
15-001-13.50III	-0.404881074	2
13-100-25.50IV-1III	-0.404518397	2
13-100-24.19III-1II	-0.403160272	2
13-100-22.88IV-5II	-0.396049927	2
15-001-25.30IV	-0.392359287	2
13-100-26.78I	-0.38330236	2
15-005-0.44I	-0.378129631	2
13-100-24.19III-2II	-0.372181439	2
19-007-3.69II	-0.369948754	2
19-001-15.10III-2II	-0.351984028	2
13-100-29.98I	-0.350031236	2
13-100-32.15II	-0.3323563	2
15-001-26.68IV-2II	-0.327714283	2
13-100-24.84IV-3III	-0.31632004	2
13-100-15.25III-6I	-0.315493655	2
19-001-20.90IV-1II	-0.309596237	2
13-100-24.19III-8I	-0.30790873	2
19-001-20.90IV-1III	-0.292892114	2
13-100-26.50II	-0.280206283	2
13-100-30.20I	-0.273093062	2
13-100-24.71III	-0.260986105	2
15-001-11.83III-1I	-0.256347072	2
15-005-0.28I	-0.256020099	2
15-001-12.50III-3II	-0.248885569	2
13-100-32.35I	-0.248705865	2
19-009-1.31III	-0.237501382	2
13-100-25.50IV-1II	-0.222595791	2
13-100-23.70III-12I	-0.221317083	2
15-001-12.69III-6I	-0.217411597	2
13-100-22.88IV-1III	-0.216010612	2

Stream Name	2024 Ecosystem Quality Rating Index	2024 Ecosystem Quality Rating
19-007-1.50III-2II	-0.215043259	2
19-001-16.60III-3II	-0.208033831	2
15-001-13.49II	-0.205813897	2
15-001-13.49II-2I	-0.196431474	2
13-100-25.20II-1I	-0.195852107	2
13-100-15.25III-5II	-0.178325008	2
19-009-1.00IV-4II	-0.177005356	2
15-005-0.58I	-0.172756718	2
19-007-4.94II	-0.168212426	2
15-001-11.83III-19I	-0.161442171	2
19-091-18.08IV-15II	-0.15913072	2
19-001-23.74IV-1III	-0.15735575	2
13-100-11.20III	-0.155740717	2
19-008-1.00IV-2III	-0.155618941	2
13-100-14.58III	-0.154795851	2
15-001-12.30I	-0.15033672	2
19-007-8.18III	-0.139859487	2
19-007-1.50III-10I	-0.139813922	2
13-100-23.70III	-0.134610238	2
13-100-15.80I	-0.129102054	2
13-100-13.23II	-0.127984055	2
19-007-4.41III	-0.116956518	2
15-001-25.60IV	-0.110855163	2
19-001-21.70-IV-8II	-0.108734578	2
13-100-11.10III	-0.10050564	2
19-001-21.70IV-6II	-0.074898453	2
19-007-6.78III	-0.065122321	2
15-001-11.83III	-0.064643888	2
13-100-30.50I	-0.046950192	2
13-100-24.60I	-0.042906536	2
19-007-4.88II	-0.026461762	2
13-104-0.57I	-0.02241457	2
19-001-15.10III-1I	-0.0172311	2
19-066-6.40I	0.002703718	2
19-001-21.70IV-2II	0.007817809	2
13-100-23.45II	0.009116806	2
19-009-0.60I	0.029957496	2
13-100-25.50IV-	0.036338736	2

Stream Name	2024 Ecosystem Quality Rating Index	2024 Ecosystem Quality Rating
60I		
15-005-1.92III-1I	0.039713989	2
13-100-13.57III-1II	0.04688499	2
15-001-26.68IV-4I	0.050952441	2
19-007-2.10II-2I	0.051862837	2
13-100-12.88III	0.05562183	3
15-001-13.50III-1I	0.0567451	3
15-005-1.92III-17I	0.059660519	3
13-100-24.10II	0.076570292	3
13-100-26.57I	0.079259262	3
13-100-12.35II	0.082335067	3
13-100-0.57II	0.084521016	3
15-001-11.83III-13I	0.084638049	3
13-100-12.88III-7I	0.089708227	3
19-066-6.59II	0.094057732	3
13-100-24.71III-7I	0.095767456	3
13-100-30.70I	0.099989706	3
15-001-26.68IV-3I	0.100228047	3
15-010-3.01IV	0.104450588	3
19-007-8.40III	0.111398259	3
19-066-6.34III	0.114738724	3
13-100-19.70IV	0.116745211	3
19-007-3.72IV	0.11730343	3
13-100-25.10I	0.120324598	3
13-100-30.28I	0.132369963	3
13-100-11.20III-2II	0.136354439	3
19-056-3.31III-5I	0.150718536	3
13-100-23.46II	0.158120544	3
15-001-11.83III-3II	0.165401544	3
19-001-15.10III-3I	0.176725198	3
13-100-13.89III	0.177237932	3
19-007-3.97II	0.178330393	3
19-007-1.45II	0.179587356	3
13-100-24.84IV-3I	0.181486527	3
15-001-13.50III-2I	0.19050649	3
13-100-8.24III-1II	0.197131699	3
19-046-4.67II	0.198064663	3
19-001-21.70IV-7II	0.235206396	3
13-100-12.88III-2I	0.239415419	3
13-100-24.71III-6I	0.242193255	3

Stream Name	2024 Ecosystem Quality Rating Index	2024 Ecosystem Quality Rating
19-007-4.89II	0.246542966	3
15-001-26.88II	0.268293637	3
19-007-1.50III-3II	0.272874837	3
19-001-15.10III-1II	0.274415497	3
19-009-0.32I	0.28334192	3
13-100-11.99II	0.283650295	3
15-001-26.68IV-6I	0.290858822	3
19-001-15.10III-2I	0.293311989	3
13-100-11.20III-1II	0.293764859	3
19-001-15.10III-7I	0.298729253	3
19-066-6.88II	0.300375752	3
13-100-2.14II	0.308655749	3
19-007-7.56II	0.310566978	3
19-066-6.26I	0.313287305	3
13-100-12.88III-3II	0.318067314	3
13-101-2.60I	0.333332667	3
19-066-6.50I	0.339280602	3
19-007-2.81I	0.339699921	3
19-066-5.20III-1II	0.347908389	3
15-001-13.50III-6I	0.349356528	3
19-066-6.10II	0.354957126	3
19-001-21.70IV-1II	0.355102723	3
19-007-7.00IV-1III	0.355963171	3
19-007-3.70I	0.358477827	3
13-100-11.99II-1I	0.367921008	3
13-100-16.27II	0.374913409	3
13-100-13.20II	0.378119573	3
13-100-14.46III	0.378327055	3
19-007-1.80III-2II	0.388251272	3
15-001-12.50III-1II	0.390953056	3
15-010-3.01IV-4II	0.391031344	3
19-056-3.31III-6I	0.392161674	3
19-007-8.49I	0.403579422	3
13-100-14.53II	0.405914489	3
13-100-12.92II	0.407537855	3
13-100-24.19III-7I	0.417700461	3
13-004-5.70	0.424817431	3
13-002-4.46II	0.438165123	3
19-007-8.40II	0.438910137	3
19-066-2.30II	0.441245204	3
13-100-7.74II	0.456849929	3

Stream Name	2024 Ecosystem Quality Rating Index	2024 Ecosystem Quality Rating
19-007-1.50III-II	0.457194089	3
19-007-2.34I	0.458447839	3
13-003-0.50I	0.459081583	4
15-001-11.83III-16I	0.459259387	4
13-100-13.57III	0.463791646	4
13-100-11.59III	0.4652619	4
19-041-3.80II	0.466831136	4
19-066-5.65II-2I	0.469644463	4
15-001-13.49II-1I	0.475937183	4
13-100-10.29II	0.479401607	4
15-001-11.83III-6I	0.496981771	4
15-001-11.83III-2II	0.50570756	4
19-066-5.65II	0.50991045	4
19-007-4.13II	0.51049327	4
13-100-14.09II-1I	0.519016497	4
19-005-8.26II	0.520009624	4
13-100-6.10II	0.524375343	4
13-100-7.00I	0.526194683	4
13-100-25.16I	0.530746094	4
19-041-8.47I	0.548649606	4
13-100-13.57III-1I	0.549777148	4
13-100-24.84IV-8II	0.551736071	4
13-100-25.15I	0.552678623	4
13-001-8.09II	0.553245448	4
19-064-1.80III-2II	0.555979044	4
13-100-3.46II	0.559081265	4
13-100-10.39II-2I	0.561906974	4
13-001-6.51III-1I	0.569273998	4
19-007-7.00IV-8II	0.570267986	4
13-001-3.69II	0.570956697	4
13-100-7.80III	0.573291765	4
13-001-11.20I	0.582844782	4
15-001-11.83III-12I	0.606198277	4
13-100-10.39II-1I	0.611608299	4
15-001-11.83III-10I	0.614294563	4
19-005-1.60II-2I	0.615472974	4
15-001-11.83III-5I	0.620525486	4
13-100-10.60II	0.624100761	4
13-100-13.60I	0.624100761	4

Stream Name	2024 Ecosystem Quality Rating Index	2024 Ecosystem Quality Rating
19-056-3.31III-4I	0.626426448	4
19-041-8.70I	0.62839888	4
19-006-4.10II	0.63316166	4
19-007-1.60I	0.641069113	4
19-007-4.63I	0.64829739	4
13-001-12.00I	0.652404137	4
19-001-15.10III-6I	0.654739205	4
13-100-2.25I	0.673017182	4
13-100-6.92III	0.674457932	4
15-001-11.83III-9I	0.678596113	4
19-064-1.30I	0.68010727	4
13-100-9.91II	0.683697742	4
13-001-9.58II	0.685032172	4
13-100-10.10II	0.689190732	4
19-009-0.13II-2I	0.697818519	4
15-001-11.83III-11I	0.698286199	4
13-001-3.56II	0.701320558	4
15-001-26.68IV-7I	0.704123306	4
15-001-11.83III-7I	0.714192973	4
15-001-11.83III-8I	0.716528041	4
15-001-11.83III-1II	0.717571006	4
13-100-11.15I	0.718158649	4
19-006-4.63II-3I	0.718158649	4
13-100-1.90I	0.720446207	4
15-001-11.83III-3I	0.722365147	4
15-001-11.83III-15I	0.725356989	4
13-001-5.66I	0.741874656	4
13-100-1.81II	0.741874656	4
19-056-0.08III-2II	0.742959987	4
13-100-14.09II	0.74673494	4
13-100-15.24I	0.748797093	4
13-100-20.00I	0.748797093	4
15-001-11.83III-2I	0.748797093	4
19-001-18.08IV-14II	0.748797093	4
19-001-20.90IV-8II	0.748797093	4
19-001-21.70IV-5II	0.748797093	4
19-005-9.59I	0.748797093	4
19-007-1.70I	0.748797093	4
13-001-8.21II	0.763252607	4

Stream Name	2024 Ecosystem Quality Rating Index	2024 Ecosystem Quality Rating
15-001-11.83III-14I	0.765444462	4
15-001-11.83III-4I	0.765444462	4

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Abbreviations and Acronyms

AOC - Great Lakes Areas of Concern
BCC - Big Creek Connects
BMPs - Best Management Practices
CMP - Cleveland Metroparks
CRWP - Chagrin River Watershed Partners
CSOs - Combined Sewer Overflows
CVE - Chagrin Valley Engineering
CWH – Coldwater habitat
Dba - Doing business as
DBWP - Doan Brook Watershed Partnership
EPA - Environmental Protection Agency
HHEI - Headwater Habitat Evaluation Index
HMFEI - Headwater Macroinvertebrate Field Evaluation Index
HUC - Hydrologic Unit Code
IBI - Fish Index of Biotic Integrity
NEORSD - Northeast Ohio Regional Sewer District
NLCD - National Land Cover Dataset
NOACA - Northeast Ohio Areawide Coordinating Agency
PHWH – Primary headwater habitat
RDA - Redundancy analysis
RRWC - Rocky River Watershed Council
SWCD - Soil & Water Conservation District
TCWP - Tinkers Creek Watershed Partners
QHEI - Qualitative Habitat Evaluation Index

Appendix A: Additional Park District HUC-12 Summaries

Black River Watershed

The Black River watershed drains 470 square miles into Lake Erie's Central Basin and is characterized by flat, gently rolling terrain. The watershed has both agricultural and highly urbanized land use. The Black River mainstem has its headwaters in Medina County near Lodi, where the West Fork joins the East Fork of the East Branch and flows northward towards Lake Erie (Ohio EPA, 2008).

The Park District is home to a small portion of the Black River watershed with several small unnamed tributaries to French Creek lying in Bradley Woods Reservation. None of these primary headwaters were part of the ecosystem quality rating analysis due to a lack of data.

HUC: 041100010601 – French Creek

The French Creek watershed drains 38.4 square miles. The Park District owns a small piece of the watershed in its headwaters in Bradley Woods Reservation. The French Creek subwatershed is undergoing a period of rapid development (Ohio EPA, 2008) and it is important to maintain protection of the headwaters and reduce impervious surface runoff.

Statistical analysis of the biotic, abiotic and land use data for this HUC is not available for this subwatershed as the only waterways in the Park District are very flat and do not have defined channels to survey.

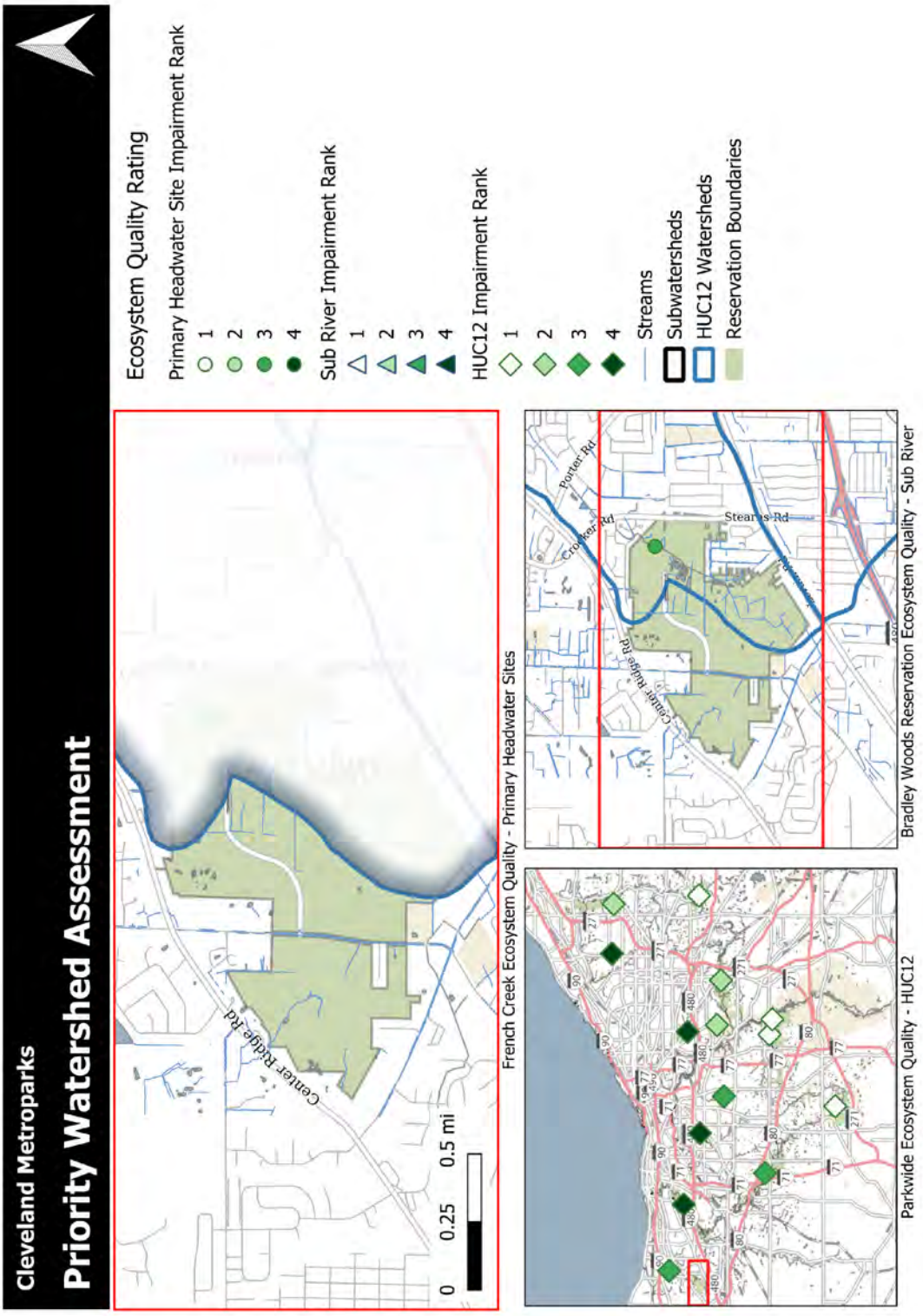

Figure 17. 041100010601 – French Creek priority watershed assessment – Bradley Woods Reservation

Percent of HUC in CMP:	1.8
Reservation:	Bradley Woods
Planning Zone:	West
Priority Goals:	Preservation & Acquisition
Ecosystem Quality Rating:	No Data Available
Restoration Potential Rating:	Needs Further Assessment – Internal
Strategic Value Rating:	2

Direct Lake Erie Tributaries - West

HUC: 041100010204 – Cahoon Creek-Frontal Lake Erie

The Cahoon Creek-Frontal Lake Erie HUC-12 has two lobes to the west and east of the Rocky River watershed in the northwestern corner of Cuyahoga County. Several named tributaries flow through the western lobe of this HUC including Cahoon Creek and Porter Creek. The eastern lobe of the HUC has been highly developed and all streams have been buried (Cuyahoga SWCD, Oct 2023).

The Park District manages a small area of the Cahoon and Porter Creek watersheds within the western lobe of this HUC-12 in Bradley Woods and Huntington Reservations, respectively. Edgewater Park lies within the eastern lobe of this HUC-12, but has no above ground water resources.

This HUC-12 watershed ranks in the middle of the range of watersheds within Cleveland Metroparks based on the statistical analysis of the biotic, abiotic, and land use data at the HUC level (see Figure 1 and Table 1).

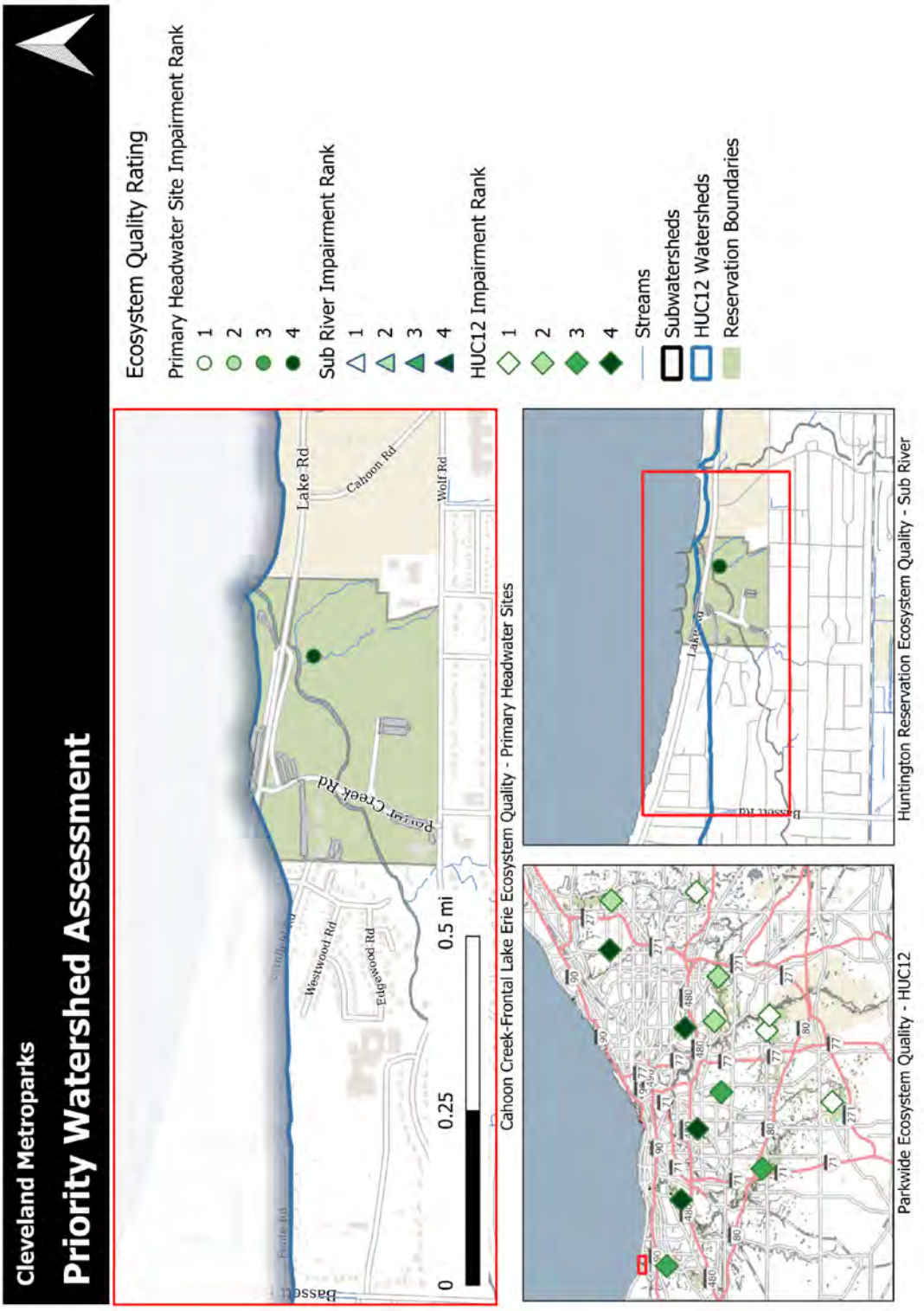

Figure 18. 041100010204 – Cahoon Creek-Frontal Lake Erie priority watershed assessment – Huntington Reservation

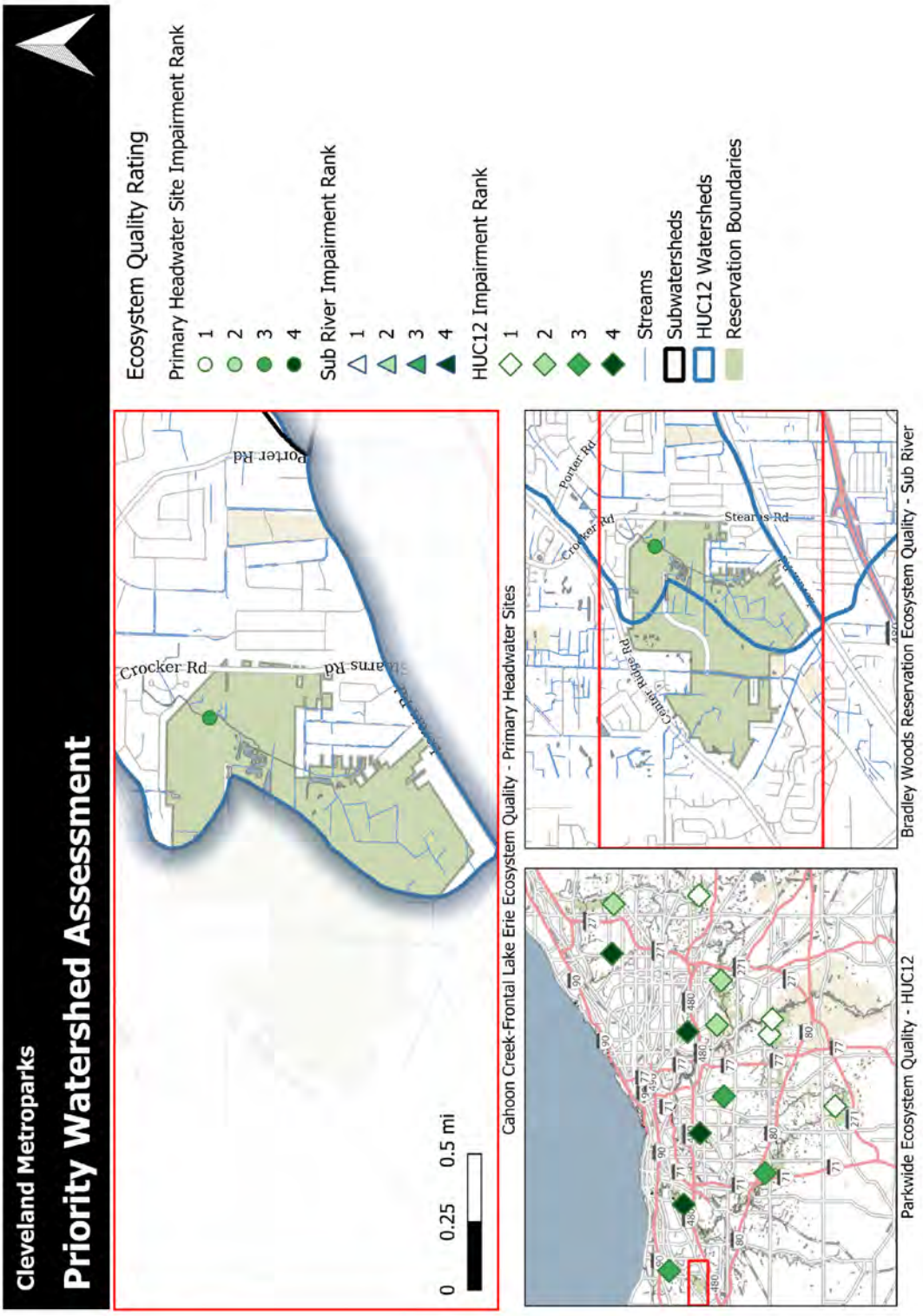

Figure 19. 041100010204 – Cahoon Creek-Frontal Lake Erie priority watershed assessment – Bradley Woods Reservation

Percent of HUC in CMP:	2.3
Reservations:	Huntington Bradley Lakeshore (Edgewater)
Planning Zone:	West, Lakeshore
Priority Goals:	Partner Synergy Landscape Management
Ecosystem Quality Rating:	3
Restoration Potential Rating:	3 – Internal, External
Strategic Value Rating:	4

HUC: 041100010202 – Baldwin Creek-East Branch Rocky River

This watershed falls in the middle of the range of watersheds within Cleveland Metroparks based on the statistical analysis of the biotic, abiotic, and land use data at the HUC level (see Figure 1 and Table 1).

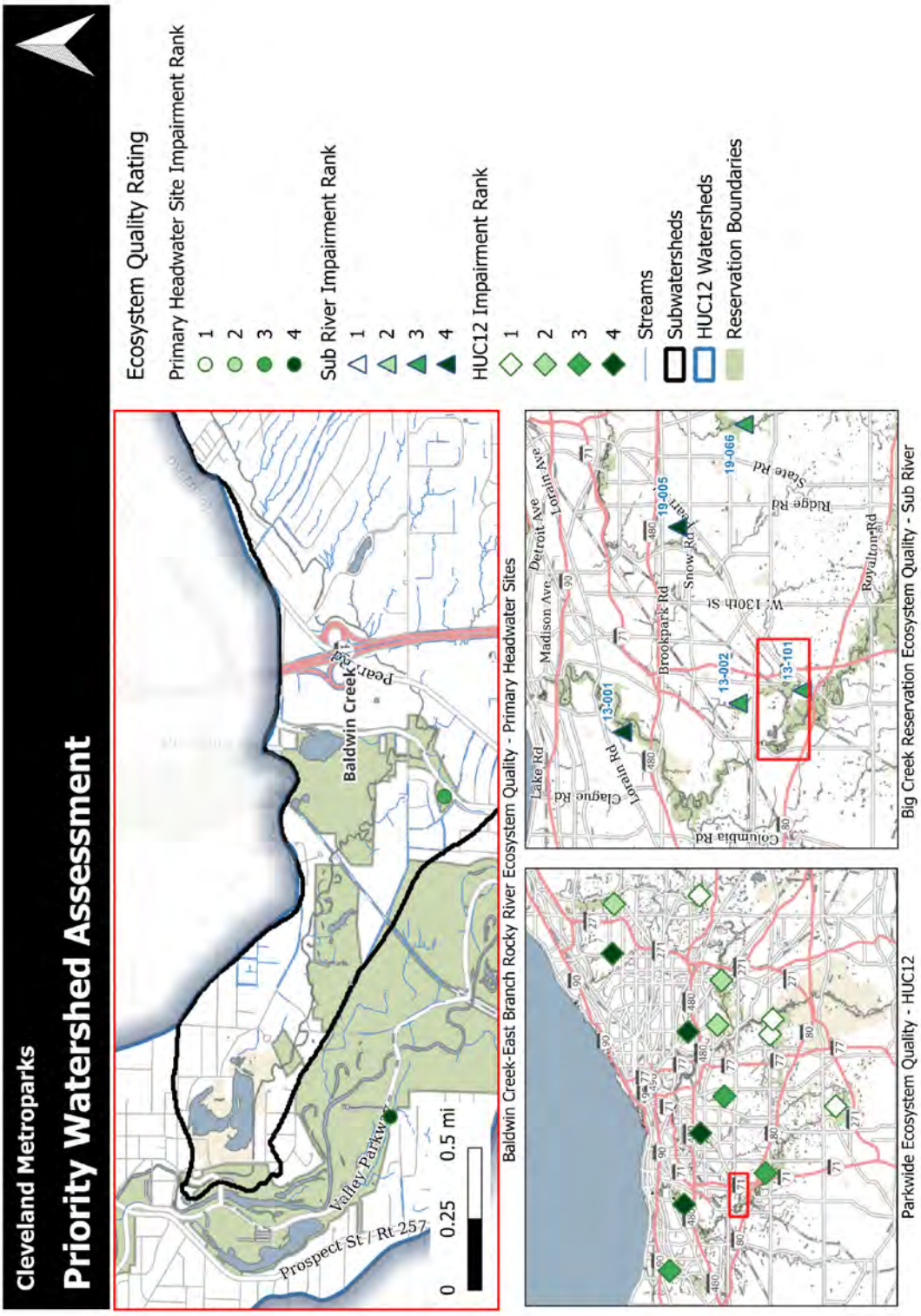

Figure 20. 041100010202 – Baldwin Creek-East Branch Rocky River priority watershed assessment – Big Creek Reservation

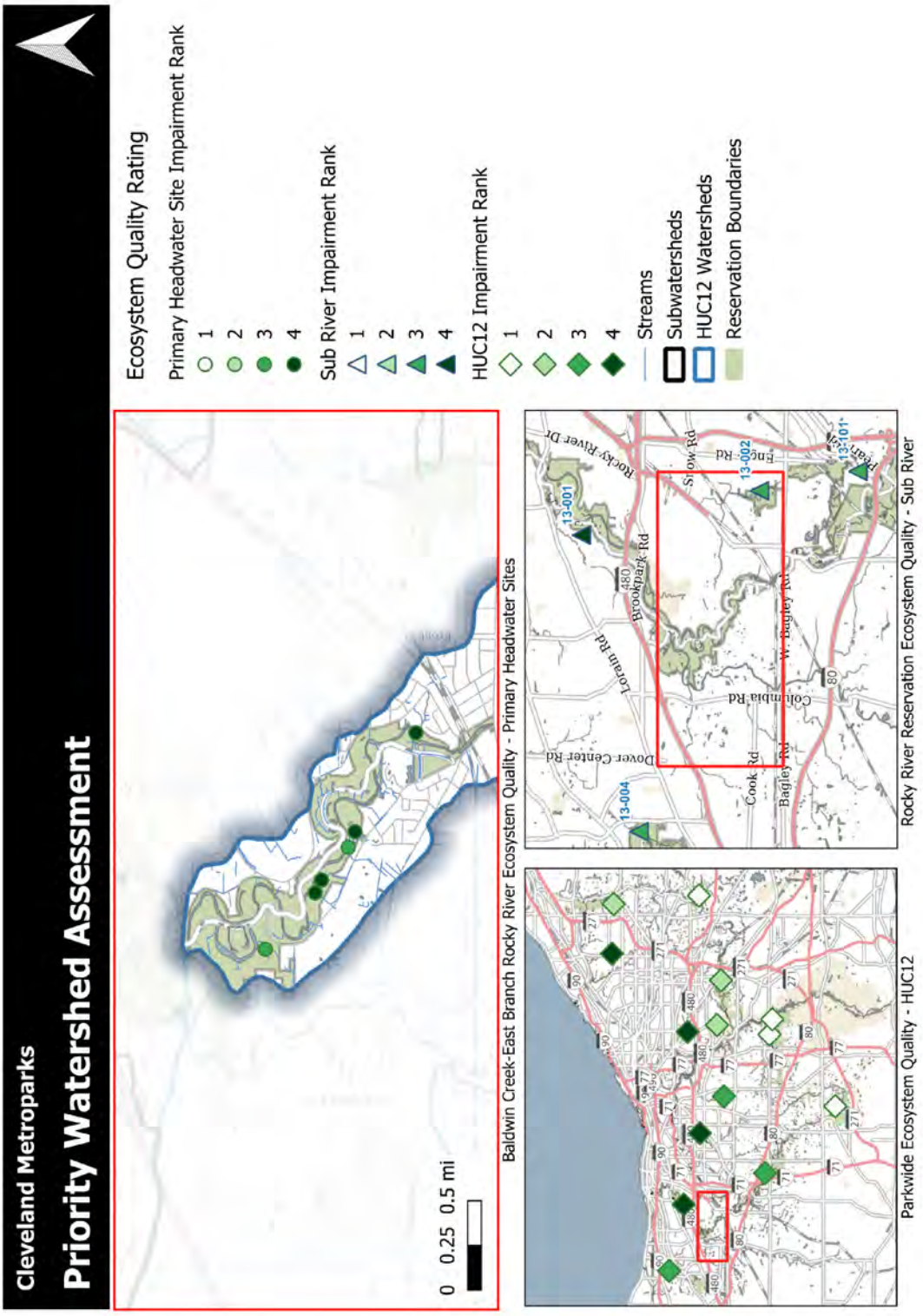

Figure 21. 041100010202 – Baldwin Creek-East Branch Rocky River priority watershed assessment – Rocky River Reservation

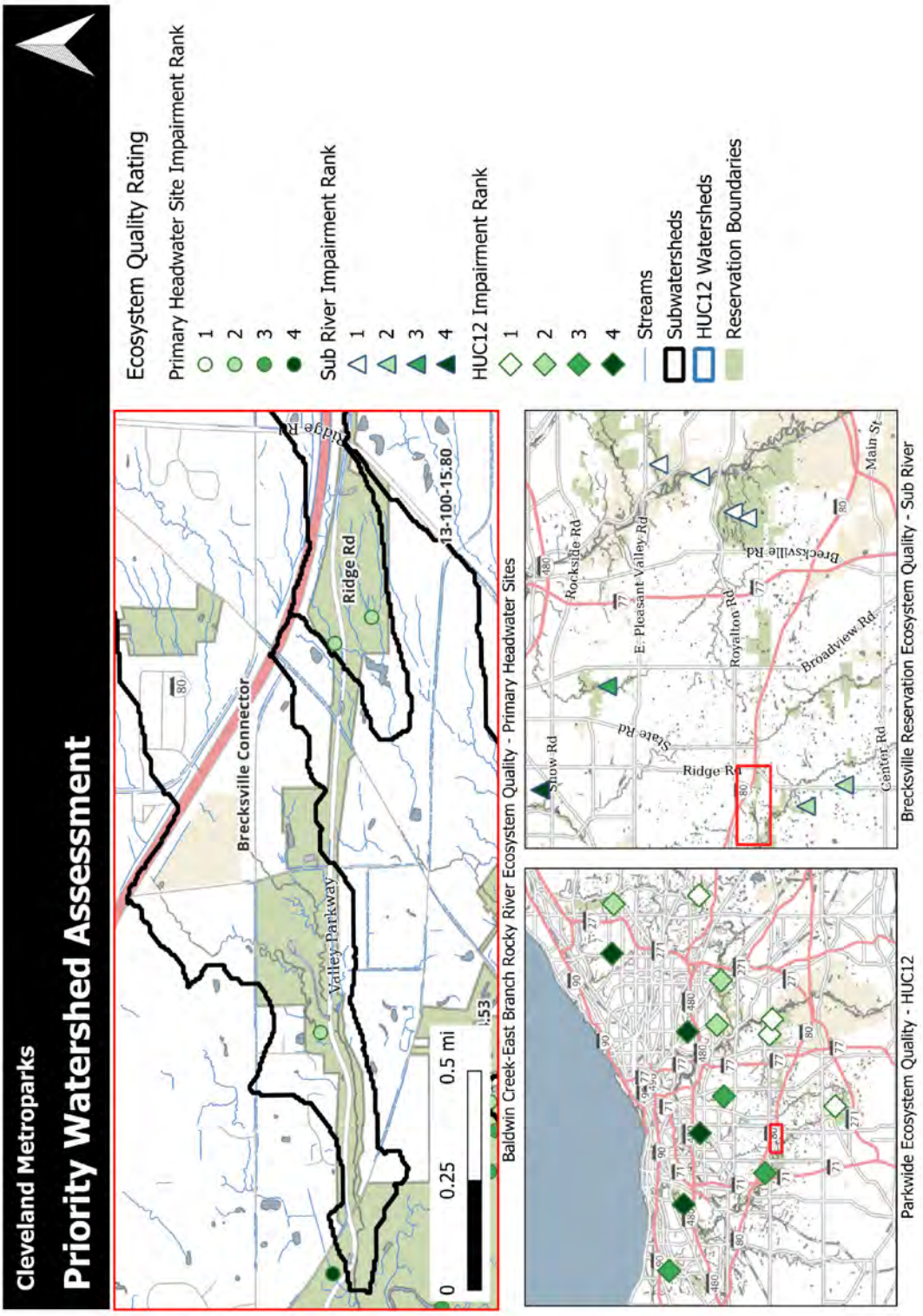

Figure 22. 041100010202 – Baldwin Creek-East Branch Rocky River priority watershed assessment – Brecksville Reservation

Percent of HUC in CMP:	18.6
Reservations:	Mill Stream Run Big Creek Rocky River Brecksville
Planning Zone:	Southwest, West, Central, Southeast
Priority Goals:	Preservation & Acquisition, Restoration Partner Synergy Landscape Management
Ecosystem Quality Rating:	3
Restoration Potential Rating:	1– Internal, External
Strategic Value Rating:	2

Baldwin Creek (13-101)

Percent of watershed in CMP:	3.8
Reservation:	Big Creek Mill Stream Run
Planning Zone:	Central, Southwest
Priority Goals:	Restoration Preservation & Acquisition Partner Synergy
Ecosystem Quality Rating:	3
Restoration Potential Rating:	1– Internal, External
Strategic Value Rating:	1

Baldwin Creek has been the recipient of several dam removal projects and continues to be a focus for partner organizations including the Rocky River Watershed Council. Cleveland Metroparks holdings along the stream are limited but have increased slightly over the past few years within Big Creek Reservation and Mill Stream Run. Cleveland Metroparks is currently working on a dam removal that will get rid of one of the last barriers in Baldwin Creek in 2025.

Rocky River Watershed

HUC: 041100010203 – Rocky River

Rocky River HUC-12 041100010203 is the most downstream HUC-12 in the Rocky River watershed. The Rocky River and Abrams Creek are the main waterbodies in this Subwatershed. Much of the mainstem flows through Cleveland Metroparks Mill Stream Run and Rocky River Reservations with protected riparian corridors. Development outside of the floodplain and along small stream corridors has negatively impacted stream function. Much of Abram Creek has been piped or modified to accommodate development (RRWC, 2010). Working with adjacent residential landowners to implement onsite stormwater retention BMPs is worthy of consideration.

Statistical analysis of the biotic, abiotic, and land use data for this HUC rank this watershed as the **2nd most impacted** in Cleveland Metroparks (see Figure 1 and Table 1).

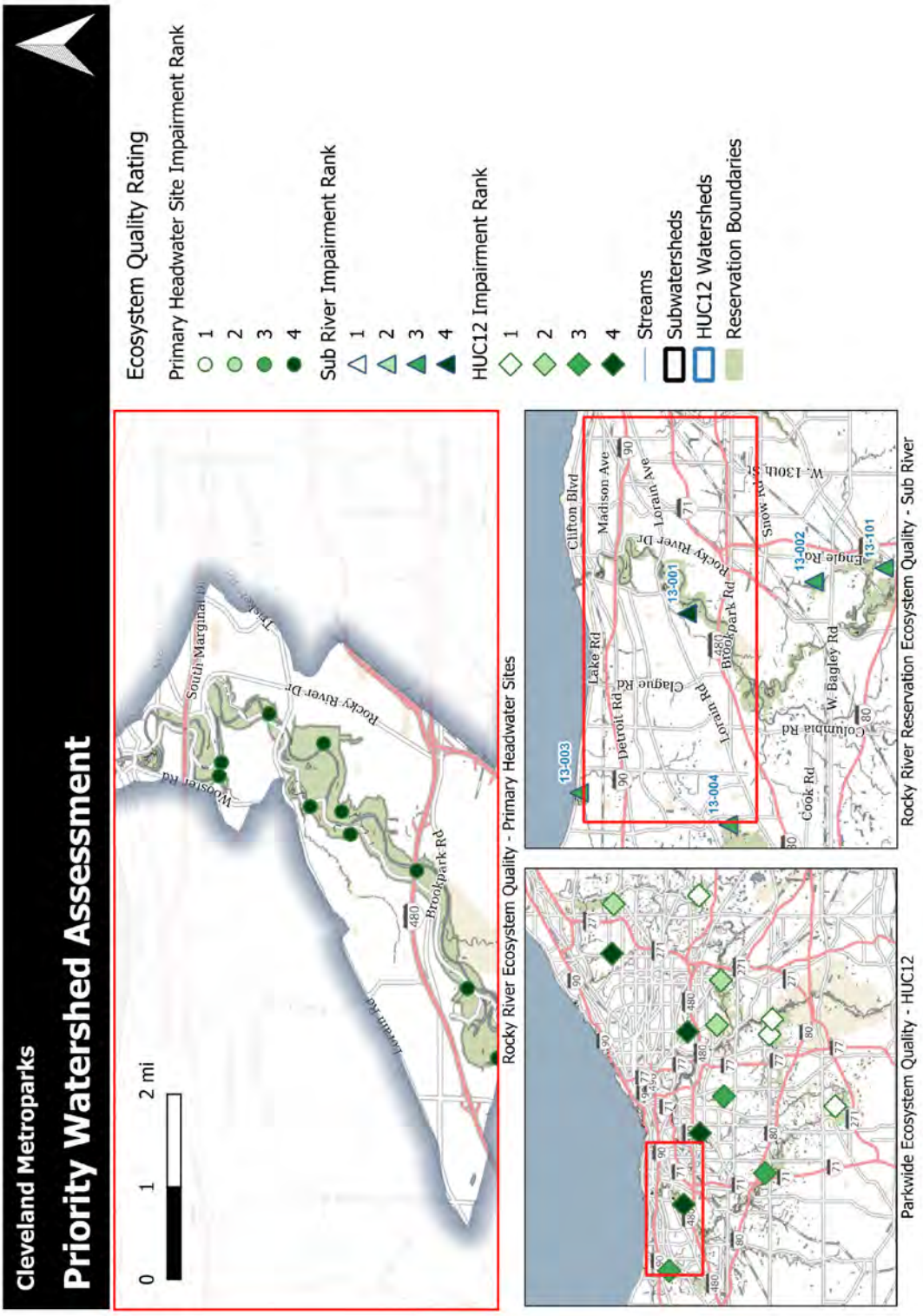

Figure 23. 041100010203 – Rocky River priority watershed assessment – Rocky River Reservation

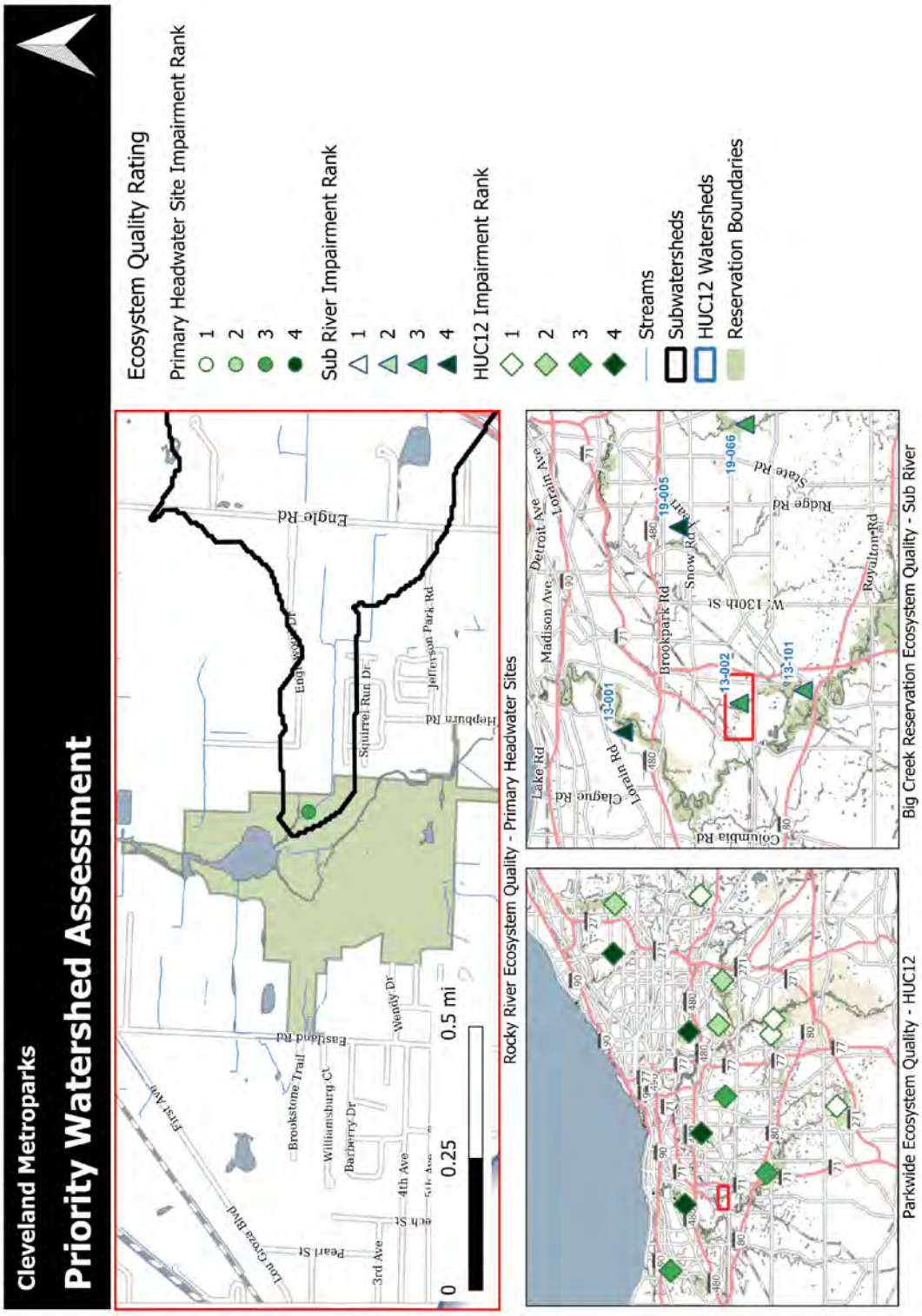

Figure 24. 041100010203 – Rocky River priority watershed assessment – Big Creek Reservation

Percent of HUC in CMP: 14.1
Reservation: Rocky River
Big Creek
Planning Zone: West, Central
Priority Goals: Preservation & Acquisition
Restoration
Flooding & Stormwater
Partner Synergy
Ecosystem Quality Rating: 4
Restoration Potential Rating: 3– Internal, External
Strategic Value Rating: 4

Upper Abram Creek (Lake-to-Lake Trail area) (13-002)

Percent of watershed in CMP: 1.1
Reservation: Big Creek
Planning Zone: West, Central
Priority Goals: Preservation & Acquisition
Restoration
Ecosystem Quality Rating: 3
Restoration Potential Rating: 4– Internal, External
Strategic Value Rating: 4

This watershed had one of the largest wetlands in the park with direct hydrologic connection to the mainstem of Abram Creek. OEPA data reveals this wetland receives among the flashiest changes in water level in the state of Ohio due to stormwater coming from the developed surrounding watershed. This watershed includes Fowles Marsh and Lake Abram Marsh that were once part of an extensive wetland network. Fowles Marsh was historically drained for onion and celery farming. Today it has been restored to a large open marshland with mudflats that are inviting to several species of waterfowl. Lake Abram is the largest remaining glacial wetland in Cuyahoga County. With its surrounding marsh and upland areas, Lake Abram makes up 80 acres of unique and critical wildlife habitat that is home to migratory birds, waterfowl, wild turkey and much more. Public education and working with surrounding landowners to implement onsite stormwater BMPs are also focuses for this area.

Coe Creek (aka Bain Creek) (13-001-6.51)

Percent of watershed in CMP: 4.4
Reservation: Rocky River
Planning Zone: West
Priority Goals: Restoration
Flooding & Stormwater
Partner Synergy
Ecosystem Quality Rating: 4
Restoration Potential Rating: 3

Strategic Value Rating: 4

Bain Creek retains quality stream habitat in areas that have not been seriously altered by human activity. This headwater stream could benefit from restoration to enhance habitat and fish migration where it has been channelized and culverted through Big Met Golf Course. Working with adjacent residential landowners to implement onsite stormwater retention BMPs is also worthy of consideration. Outside of park property much of the stream corridor retains a narrow forested riparian area in the suburbs of Fairview Park and North Olmsted.

HUC: 041100010108 – Baker Creek – West Branch Rocky River

No PHWH data is available to analyze impact to this HUC.

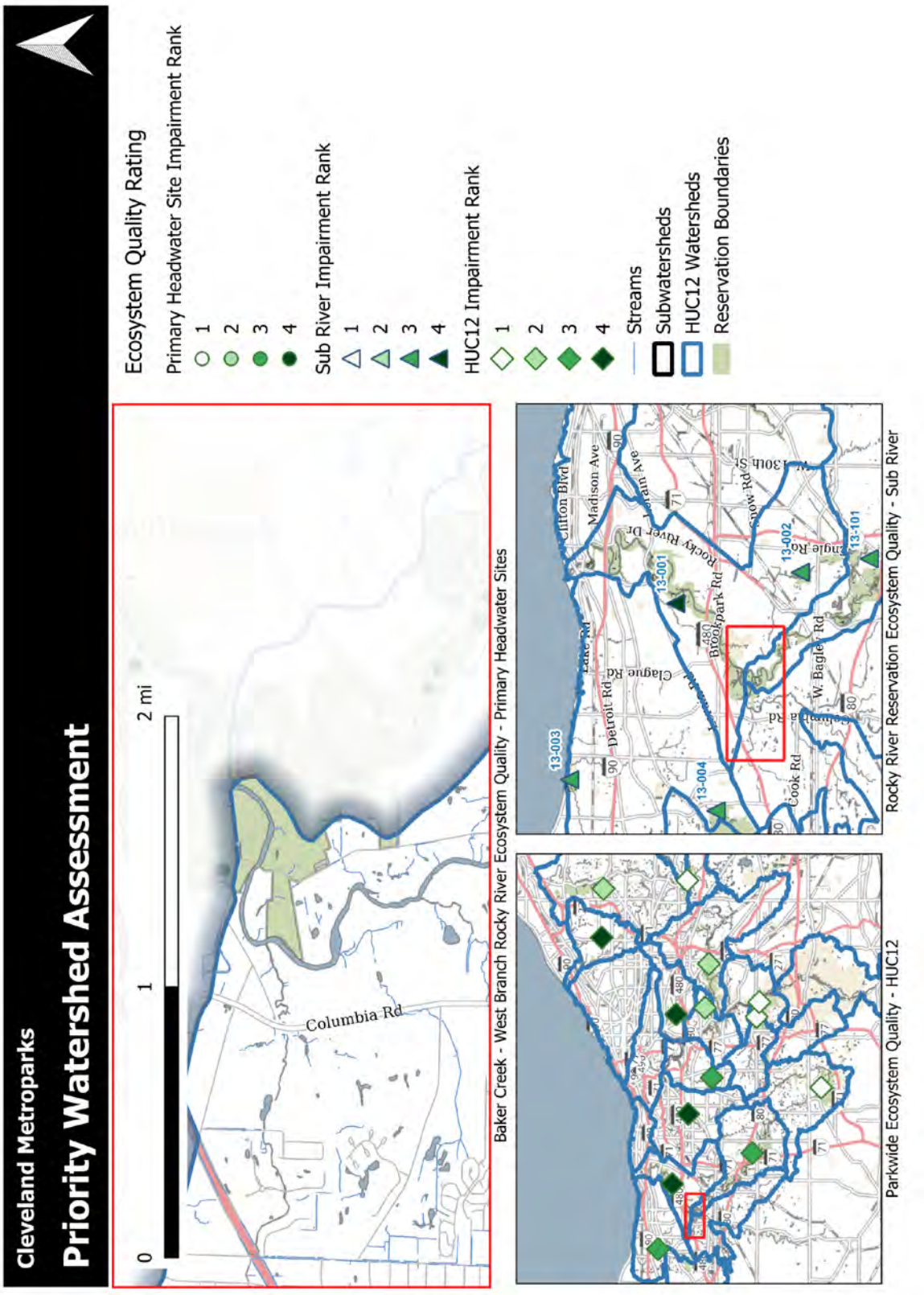

Figure 25. 041100010108 – Baker Creek – West Branch Rocky River Watershed priority watershed assessment – Rocky River Reservation

Percent of HUC in CMP:	0.6
Reservations:	Rocky River
Planning Zone:	West
Priority Goals:	Partner Synergy
Ecosystem Quality Rating:	N/A
Restoration Potential Rating:	Needs Further Assessment – Internal, External
Strategic Value Rating:	3

Cuyahoga River Watershed

HUC: 041100020405 – Boston Run – Cuyahoga River Watershed

No PHWH data is available to analyze impact to this HUC.

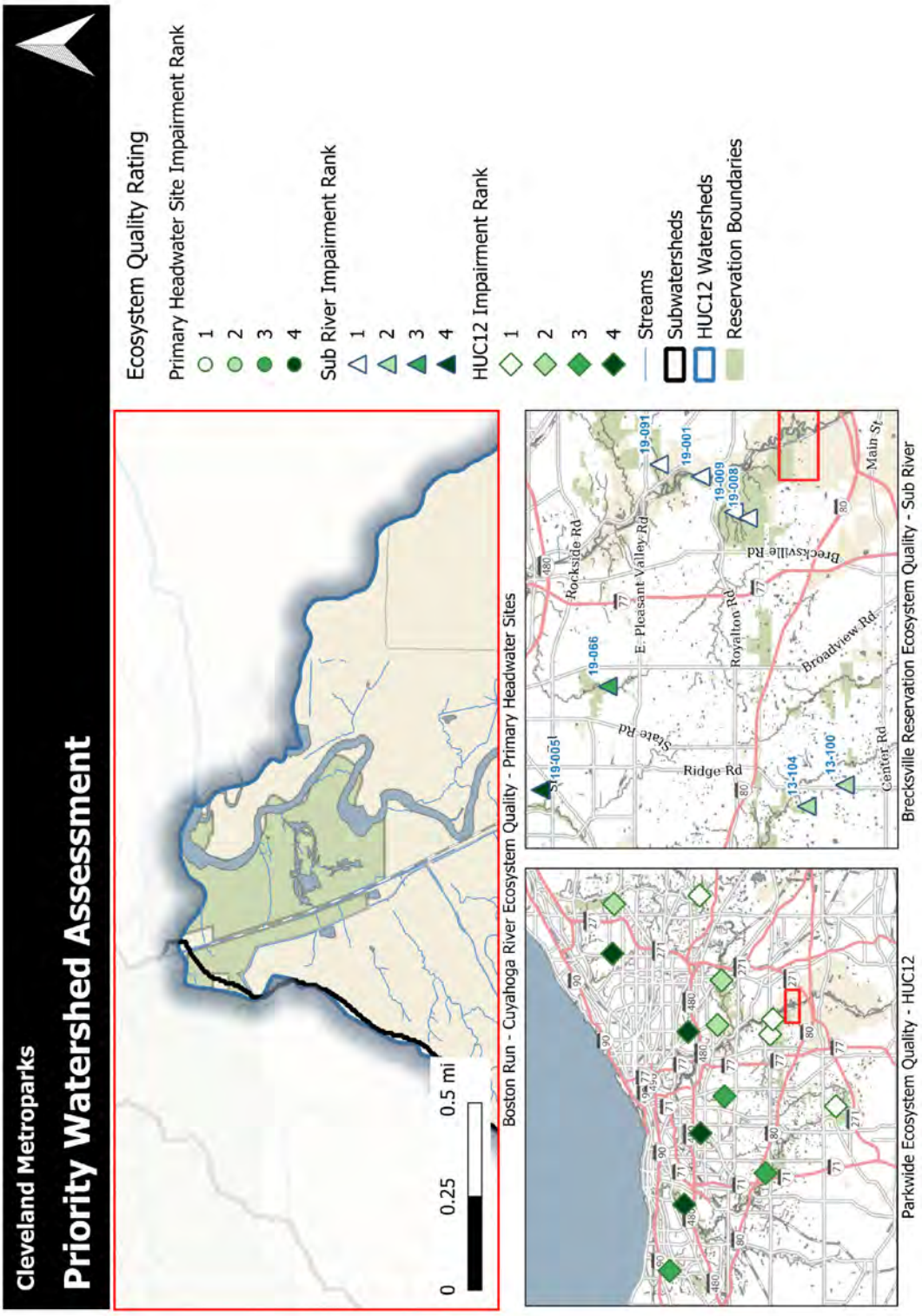

Figure 26. 041100020405 – Boston Run – Cuyahoga River Watershed priority watershed assessment – Brecksville Reservation

Percent of HUC in CMP:	0.5
Reservations:	Brecksville
Planning Zone:	Southeast
Priority Goals:	Partner Synergy
Ecosystem Quality Rating:	N/A
Restoration Potential Rating:	Needs Further Assessment – Internal, External
Strategic Value Rating:	4

HUC: 041100020403 – Furnace Run

The Furnace Run watershed drains 20.34 square miles in northwestern Summit County and a small portion of Cuyahoga County. Seneca Golf Course in Brecksville Reservation is home to headwaters of Furnace Run which eventually flows to Furnace Run Metro Park, owned and operated by Summit Metro Parks. Furnace Run has been acknowledged as one of the healthiest, most intact streams that flow into the Cuyahoga River. Historical data from Ohio EPA in 1991 and 1996 classified this watershed in FULL attainment of biological and water quality standards (Summit SWCD, 2023).

No PHWH data is available to analyze impact to this HUC.

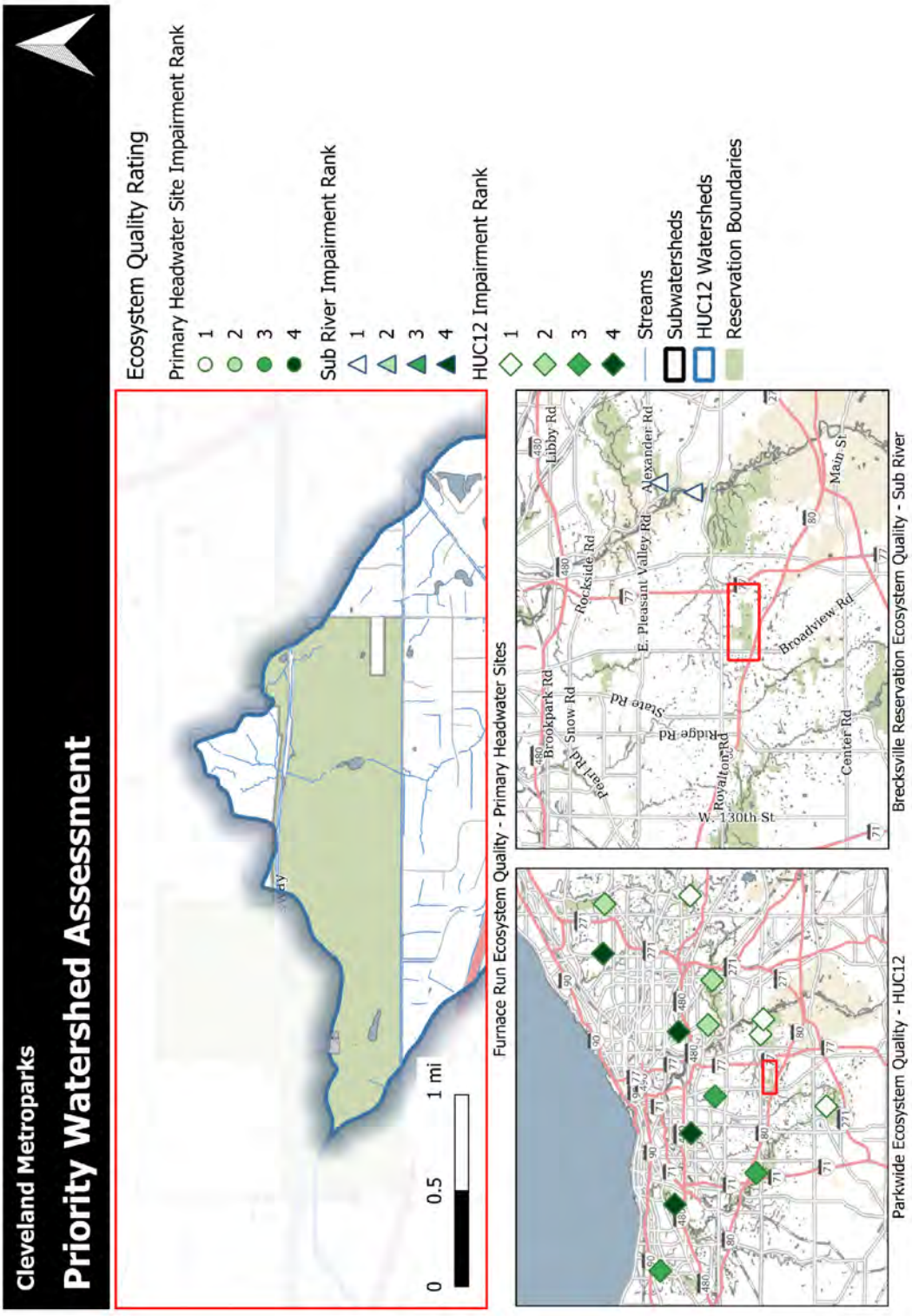

Figure 27. 041100020403 – Furnace Run priority watershed assessment – Brecksville Reservation

Percent of HUC in CMP:	2.4
Reservations:	Brecksville
Planning Zone:	Southeast
Priority Goals:	Partner Synergy
Ecosystem Quality Rating:	N/A
Restoration Potential Rating:	3– Internal
Strategic Value Rating:	4

HUC: 041100020604 – Town of Cuyahoga Heights-Cuyahoga River

The Town of Cuyahoga Heights-Cuyahoga River HUC includes the Cuyahoga River as it moves north towards Lake Erie into Independence, Brooklyn Heights, and Cleveland as well as the West Creek subwatershed. The West Creek subwatershed is 14 square miles, 73 percent of the Town of Cuyahoga Heights-Cuyahoga River HUC. West Creek discharges to the lower Cuyahoga River, within the Cuyahoga River large river assessment unit, within a sequence of HUCs along the Cuyahoga River (Tetra Tech, Inc., 2021).

This watershed falls near the middle of the range of watersheds within Cleveland Metroparks based on the statistical analysis of the biotic, abiotic and land use data at the HUC level (see Figure 1 and Table 1).

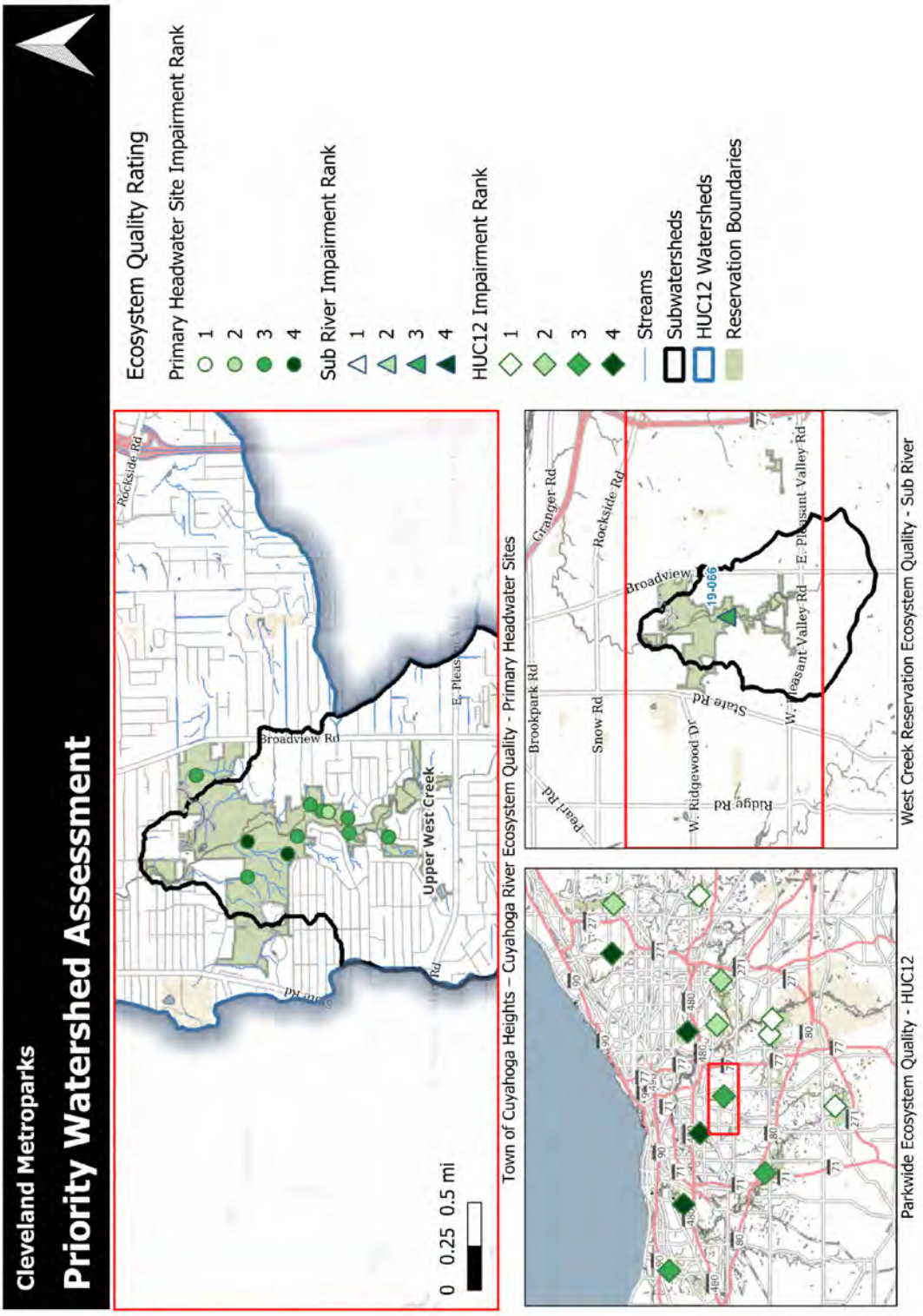

Figure 28. 041100020604 – Town of Cuyahoga Heights-Cuyahoga River priority watershed assessment – West Creek Reservation

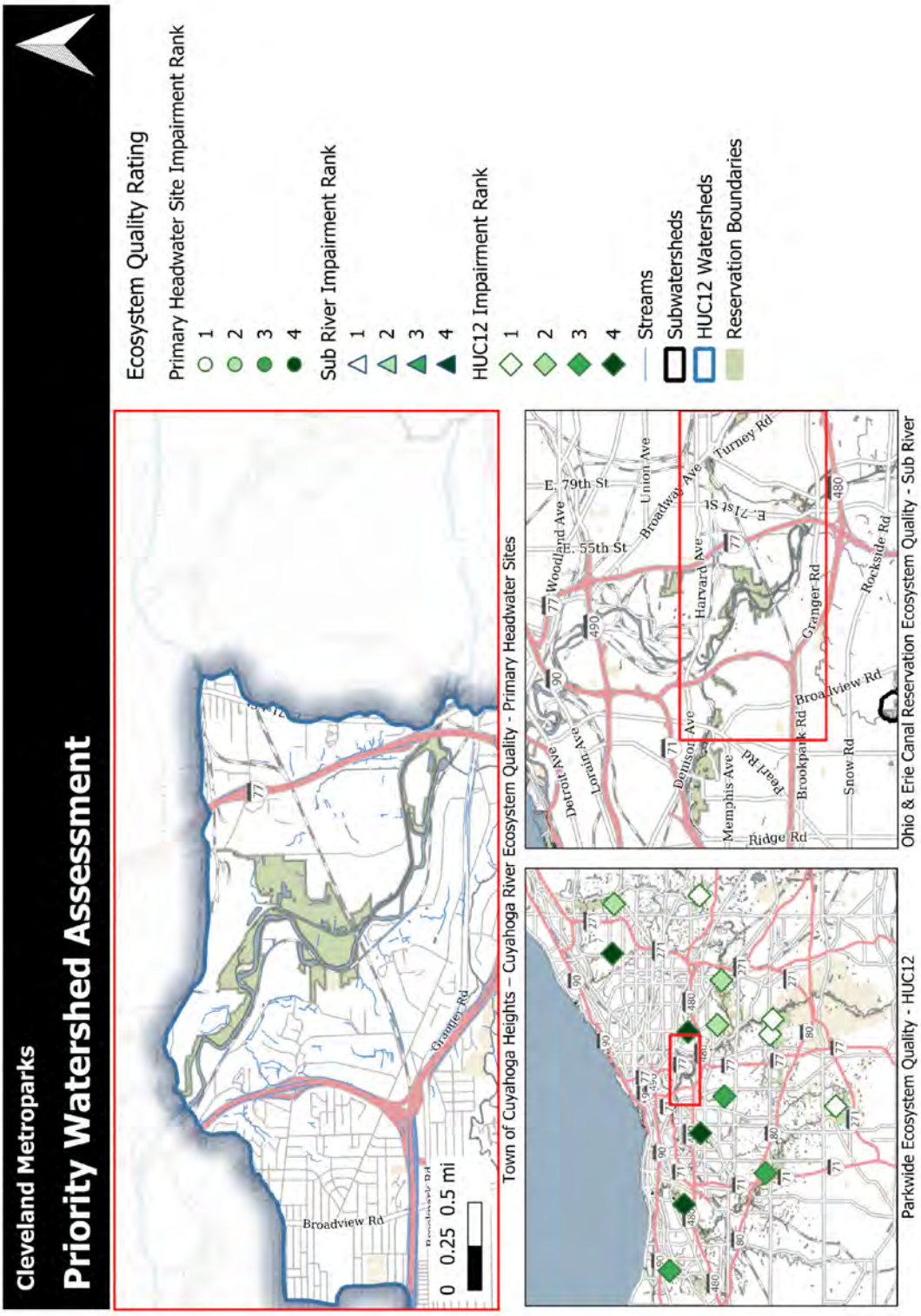

Figure 29. 041100020604 – Town of Cuyahoga Heights-Cuyahoga River priority watershed assessment – Ohio & Erie Canal Reservation

Percent of HUC in CMP:	7.1
Reservations:	West Creek, Ohio & Erie Canal
Planning Zone:	Central
Priority Goals:	Preservation & Acquisition Restoration Partner Synergy Flooding & Stormwater
Ecosystem Quality Rating:	3
Restoration Potential Rating:	3– Internal, External
Strategic Value Rating:	1

Upper West Creek (19-066)

Percent of watershed in CMP:	15.8
Reservation:	West Creek
Planning Zone:	Central
Priority Goals:	Preservation & Acquisition Restoration Partner Synergy Flooding & Stormwater
Ecosystem Quality Rating:	3
Restoration Potential Rating:	3– Internal, External
Strategic Value Rating:	1

West Creek Reservation resulted from a 2006 West Creek Conservancy (WCC) partnership with the City of Parma, and Cleveland Metroparks. The Northeast Ohio Regional Sewer District (NEORSD), Cleveland Metroparks and WCC were collaborators in the 2013 creation and staffing of the Watershed Stewardship Center, a living classroom and laboratory for studying and resolving watershed issues. West Creek Reservation serves as a showcase of stormwater management for urban streams and an area of continuing land acquisition for preservation and connectivity. The partnership between WCC, NEORSD and Cleveland Metroparks continues and is steered by an advisory committee to guide continued stewardship and programming efforts.

One of the efforts to address stormwater at the source was a neighborhood green infrastructure project led by WCC and Cleveland Metroparks. The project encouraged neighbors to West Creek to adopt rain barrels, trees, or streetside bioretention. This project was successfully completed, and Kent State monitoring of the project showed that with treatment of 20-40% of residential runoff, green infrastructure successfully reduced peak flows and brought up base flows in West Creek.

WCC and NEORSD have invested in many restoration projects upstream and downstream of West Creek Reservation including a multimillion-dollar effort known as the West Creek Flume, or Brooklyn Stabilization project. This project restores fish passages, enhances ecologically beneficial habitat, and stabilizes the streambank by removing the concrete flume and applying a raised-bed approach along the main stem of

West Creek. More information about West Creek restoration projects is available on their website: https://westcreek.org/projects/.

Crile Landfill is a former dump site located under Center Park that was used by Crile Veteran's Administration Hospital. This site has a tributary running through it which has caused erosion and leaching of debris from the dump like pottery and glassware into West Creek. Phase II assessments were pursued by Cuyahoga Soil & Water Conservation District in 2005 to define the boundaries of the dump. While the Park District took control of the park in 2006, the dump site is excluded from the lease with City of Parma. This site continues to actively degrade and release trash from the landfill and is a priority for remediation.

West Creek and many of its tributaries within the reservation can continue to be improved or preserved with stream restoration and stormwater management projects within Park District land and in the surrounding neighborhoods, both through ongoing and new opportunities with partners.

HUC: 041100020603 – Big Creek (19-005)

Big Creek is a highly developed/urban watershed with several named tributaries. This watershed is the northwestern most Subwatershed of the Cuyahoga River watershed. The Big Creek watershed has a population of over 170,000 and has a mix of mostly residential land with public open space, retail, and industrial land uses.

Proper conservation of remaining open space like that preserved by Cleveland Metroparks Big Creek and Brookside reservations is a high priority for the watershed. Other priorities include restoration and stormwater management (Tetra Tech, Inc., 2020).

While aquatic life use attainment and water quality are not high in Big Creek, there are opportunities to improve this urban watershed with stormwater management projects. There is a need to monitor streambank stabilization and flood mitigation opportunities in the Brookside Reservation to prevent impacts to park infrastructure.

Statistical analysis of the biotic, abiotic, and land use data for this HUC rank this watershed as the **3rd most impacted** in Cleveland Metroparks (see Figure 1 and Table 1).

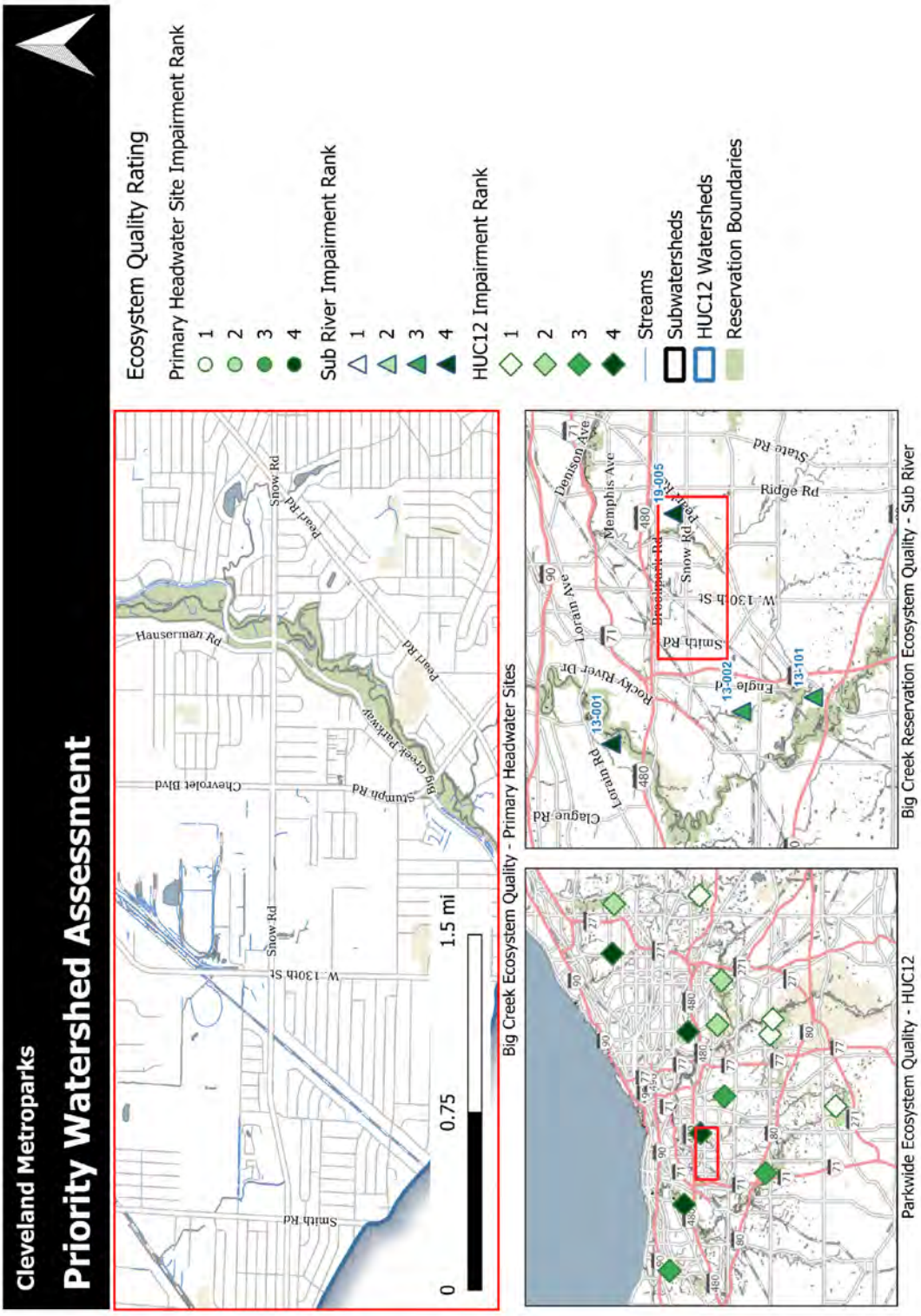

Figure 30. 041100020603 – Big Creek priority watershed assessment – Big Creek Reservation

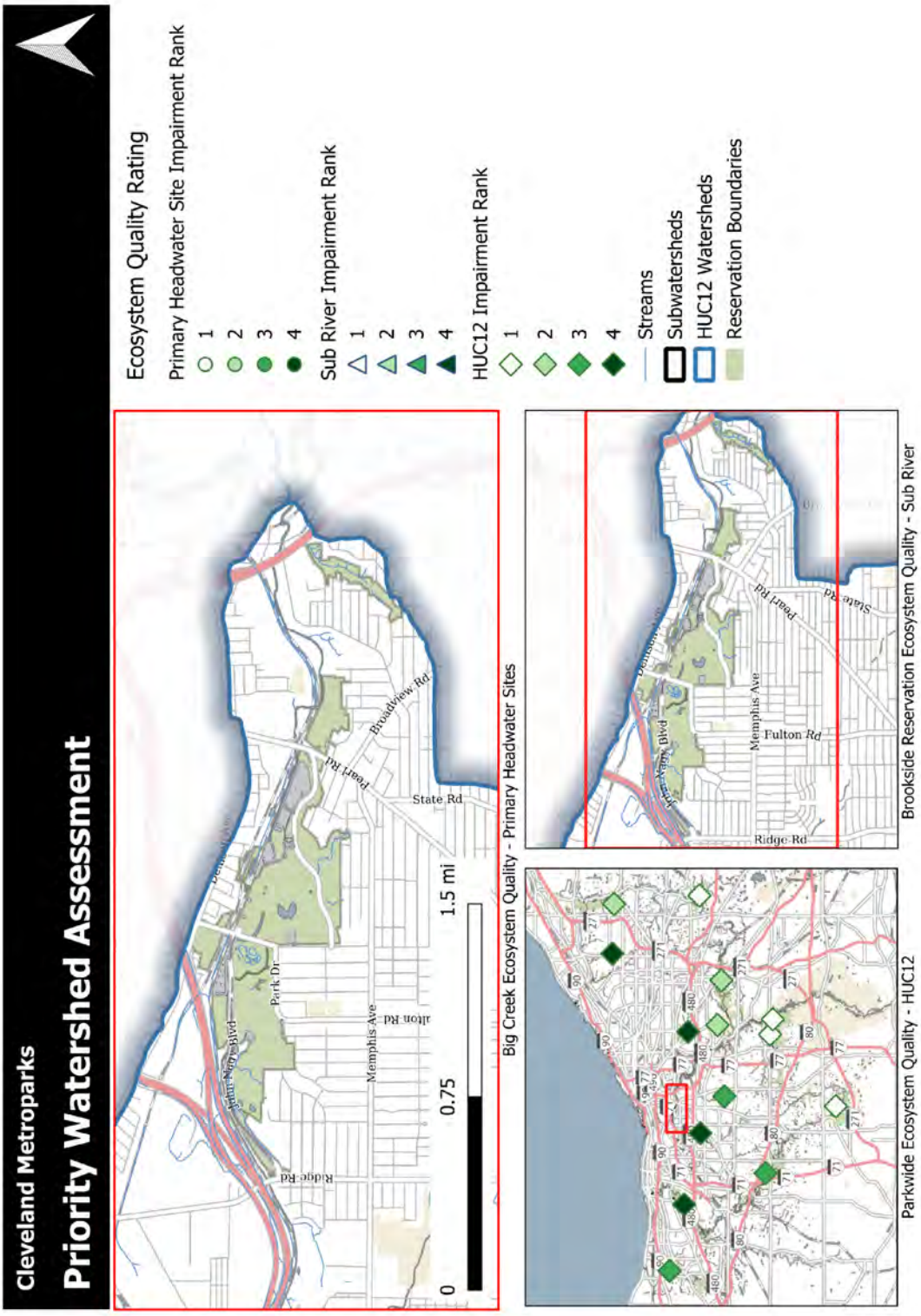

Figure 31. 041100020603 – Big Creek priority watershed assessment – Brookside/Zoo Reservation

Percent of HUC in CMP:	2.5
Reservations:	Big Creek Brookside Zoo
Planning Zone:	Central, Zoo
Priority Goals:	Partner Synergy Flooding & Stormwater
Ecosystem Quality Rating:	4
Restoration Potential Rating:	3– Internal, External
Strategic Value Rating:	4

HUC: 041100020601 – Mill Creek (19-006)

Mill Creek is a heavily developed watershed containing 12.2 miles of mainstem. The stream has a high gradient with an average descent of 53.5 feet per mile. Garfield Park hosts one of the small sections of watershed that remain undeveloped (CVE, 2022).

Statistical analysis of the biotic, abiotic, and land use data for this HUC rank this watershed as **the most impacted** in Cleveland Metroparks (see Figure 1 and Table 1).

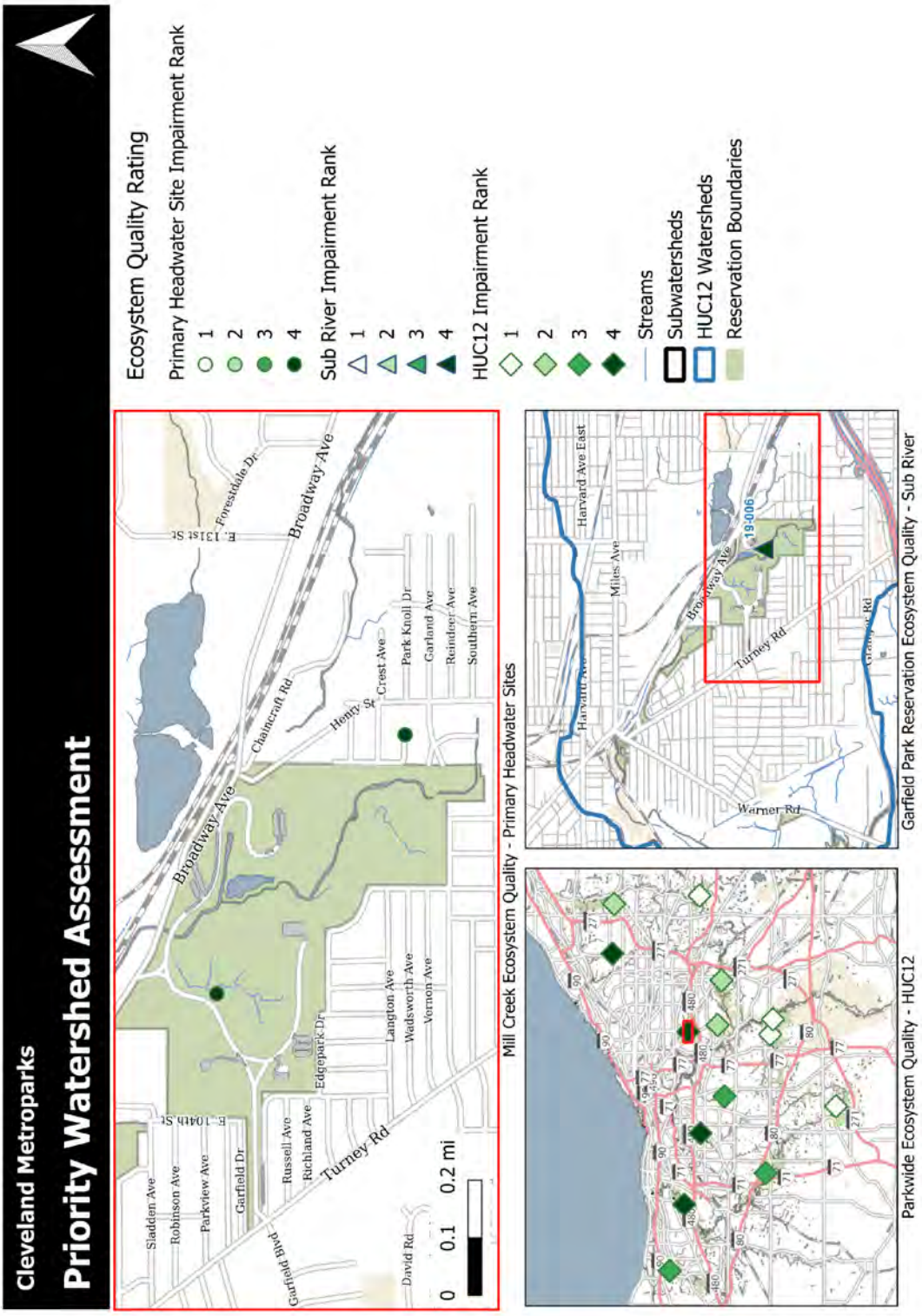

Figure 32. 041100020601 – Mill Creek priority watershed assessment – Garfield Reservation

Figure 33. 041100020601 – Mill Creek priority watershed assessment – Ohio & Erie Canal Reservation

Percent of HUC in CMP:	2.0
Reservations:	Garfield Ohio & Erie Canal
Planning Zone:	Central
Priority Goals:	Partner Synergy Stormwater & Flooding
Ecosystem Quality Rating:	4
Restoration Potential Rating:	3– Internal, External
Strategic Value Rating:	4

Wolf Creek (19-006-4.63)

Percent of watershed in CMP:	5.6
Reservation:	Garfield
Planning Zone:	Central
Priority Goals:	Stewardship & Maintenance Partner Synergy Flooding & Stormwater Monitoring
Ecosystem Quality Rating:	3
Restoration Potential Rating:	3– Internal, External
Strategic Value Rating:	1

While Wolf Creek is a highly urbanized watershed with known Combined Sewer Overflows (CSOs), considerable investment has been made in the watershed to reconnect the stream to its floodplain and take the stream offline from the newly renovated Garfield Park Pond in 2024. Goals for this watershed are to steward the restoration project and monitor water quality as related to recreational activities.

HUC: 041100020605 - City of Cleveland-Cuyahoga River

No PHWH data is available to analyze impact to this HUC.

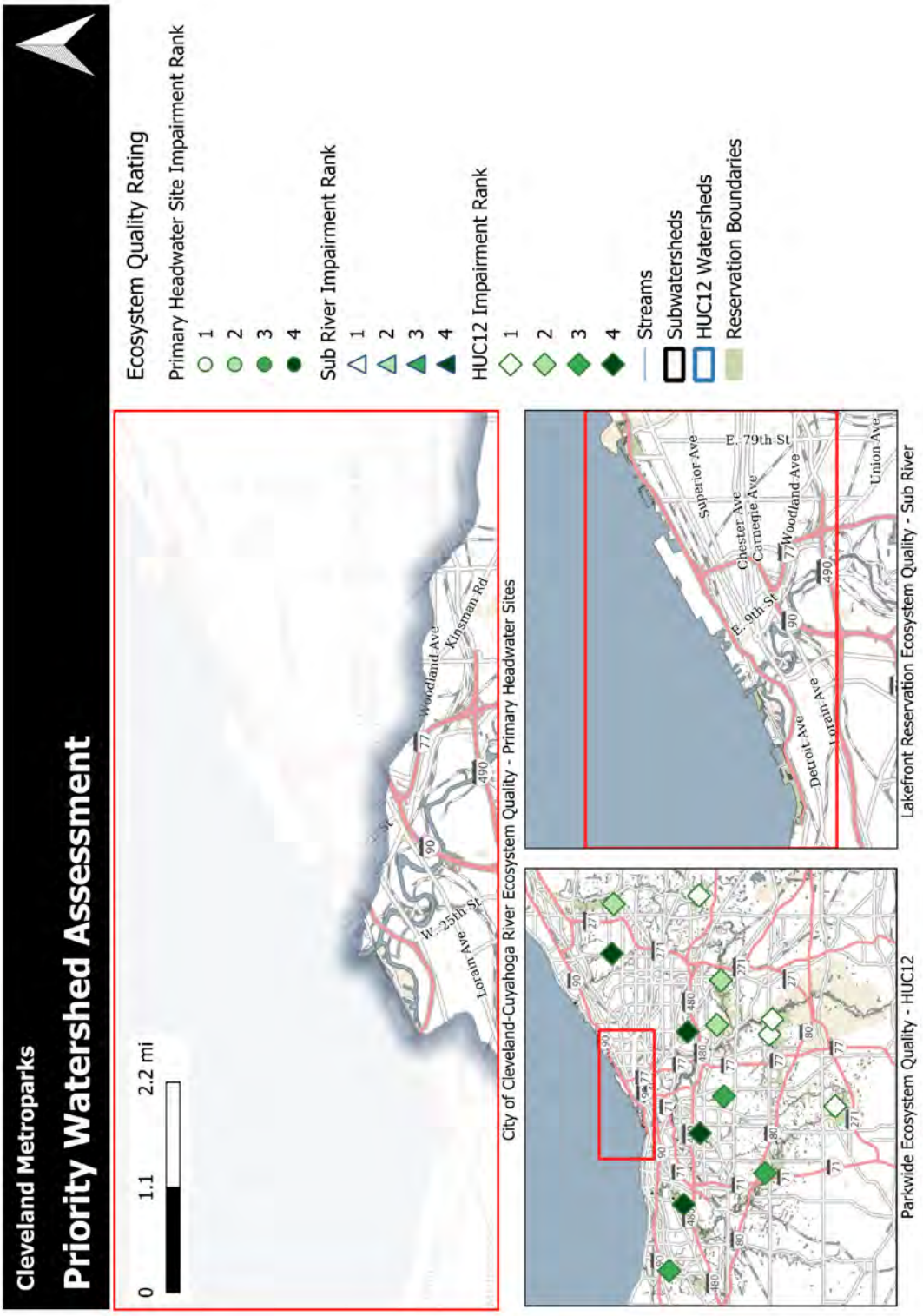

Figure 34. 041100020605 - City of Cleveland-Cuyahoga River priority watershed assessment – Lakefront Reservation

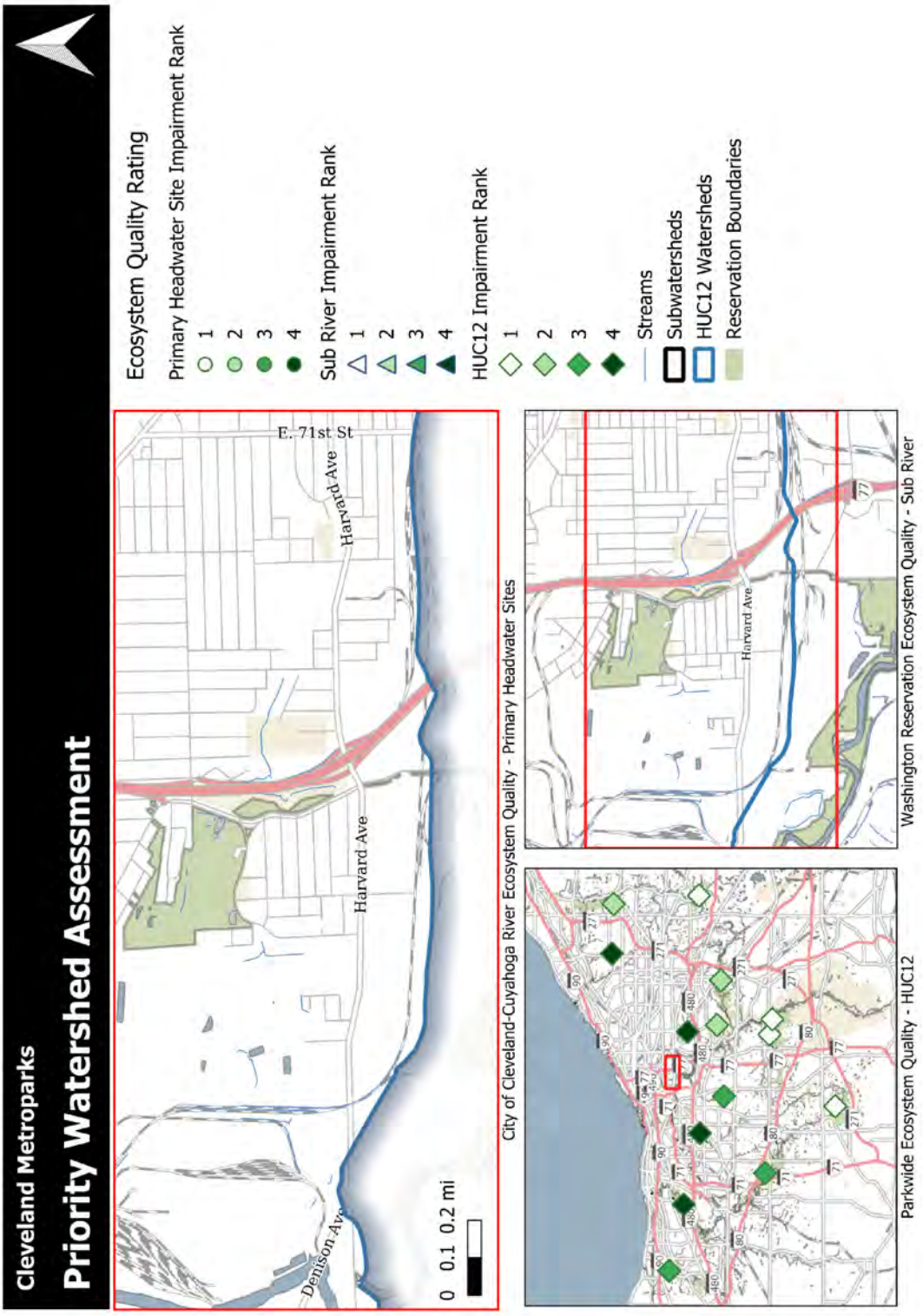

Figure 35. 041100020605 - City of Cleveland-Cuyahoga River priority watershed assessment – Washington Reservation

Percent of HUC in CMP:	0.8
Reservations:	Lakefront Washington Ohio & Erie Canal
Planning Zone:	Central, Lakefront
Priority Goals:	Partner Synergy Landscape Management
Ecosystem Quality Rating:	N/A
Restoration Potential Rating:	3– Internal, External
Strategic Value Rating:	2

Direct Lake Erie Tributaries – East

HUC: 041100030503 – Euclid Creek (19-041)

Euclid Creek has a 23.3 square mile drainage area and is a highly urbanized watershed along the Ohio Lake Erie coastline. Cleveland Metroparks has three properties along Euclid Creek: Acacia, Euclid Creek Reservation and Wildwood Park that make up a sizable portion of protected space in the watershed (649 of 1,400 acres). It is notable that the only station in the watershed that is in full aquatic life use attainment status (Ohio EPA 2018 Integrated Report) is downstream of Acacia Reservation (Cuyahoga SWCD, 2023).

While Euclid Creek does not rank high for water quality or biology, considerable investment has been made at Acacia Reservation, Wildwood Park and Euclid Creek Reservation on stream restoration and stormwater management projects. CMP should continue to work with partners and steward the existing restoration and stormwater projects on property in this highly urbanized watershed. Acacia may have opportunities for fish translocation projects in the future as this site improves water quality in Euclid Creek.

Statistical analysis of the biotic, abiotic and land use data for this HUC rank this watershed as the **4th most impacted** in Cleveland Metroparks (see Figure 1 and Table 1).

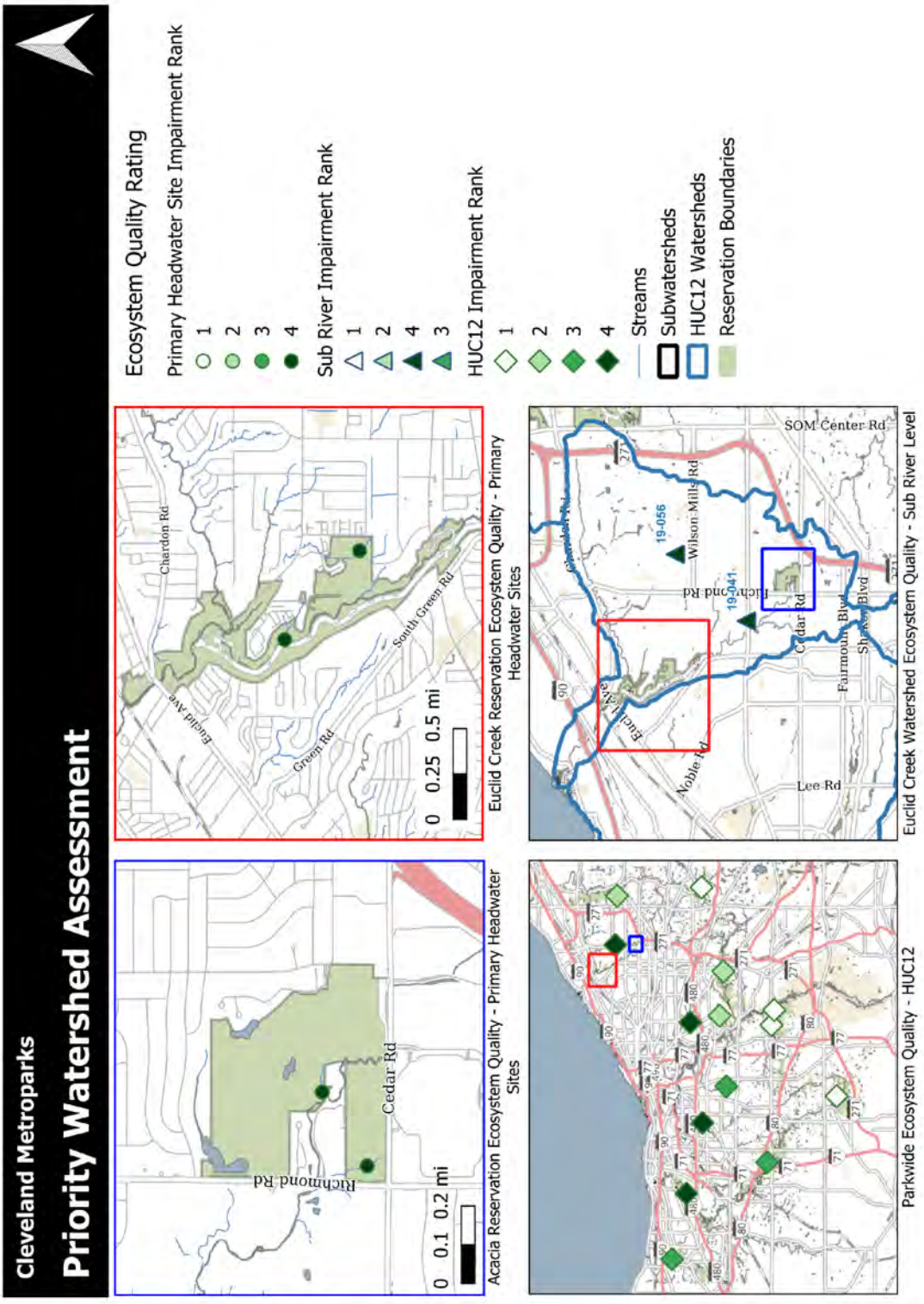

Figure 36. 041100030503 – Euclid Creek priority watershed assessment – Acacia & Euclid Creek Reservations

Percent of HUC in CMP:	4.7
Reservations:	Acacia Euclid Creek
Planning Zone:	East
Priority Goals:	Restoration Stewardship & Maintenance Partner Synergy Flooding & Stormwater Landscape Management
Ecosystem Quality Rating:	4
Restoration Potential Rating:	3 – Internal, External
Strategic Value Rating:	3

HUC: 041100030504 – Doan Brook-Frontal Lake Erie

The Doan Brook-Frontal Lake Erie Watershed covers 44 square miles. The watershed lies fully within Cuyahoga County, including all or parts of 11 Cleveland East Side municipalities. The HUC-12 includes six streams, west to east: Giddings Brook, Doan Brook, Dugway Brook, Shaw Brook, Nine Mile Creek, and Green Creek (DBWP, 2023).

Cleveland Metroparks currently owns a small amount of property in this watershed. If future acquisitions are made within the watershed, a reassessment for watershed priority should be made.

No PHWH data is available to analyze impact to this HUC.

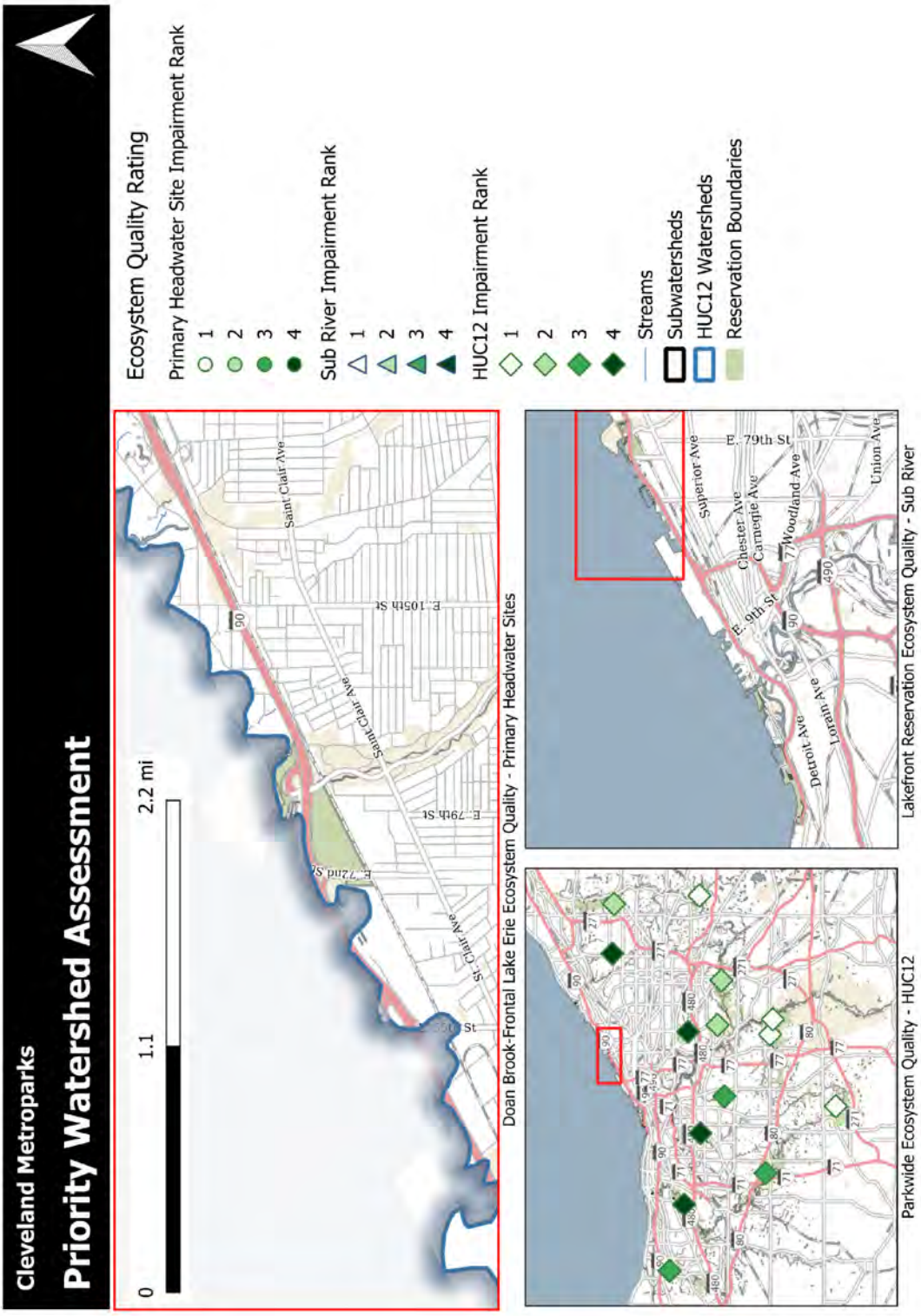

Figure 37. 041100030504 – Doan Brook-Frontal Lake Erie priority watershed assessment – Lakefront Reservation

Percent of HUC in CMP:	0.3
Reservations:	Lakefront
Planning Zone:	Lakefront
Priority Goals:	Partner Synergy
Ecosystem Quality Rating:	N/A
Restoration Potential Rating:	3 - External
Strategic Value Rating:	4