Nine-Element Nonpoint Source Implementation Strategic Plan (NPS-IS plan)

Blanchard River:
City of Findlay Riverside Park-Blanchard River Watershed
(04100008 02 05)

Version 1.0

Approved: February 20, 2019

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Acknowledgements

The Blanchard River Watershed Partnership would like to thank the Findlay-Hancock Community Foundation, Hancock Wood Electric Cooperative and the City of Findlay for providing the funding for the creation of this NPS-IS Plan. The Partnership would also like to thank Hancock County Soil and Water Conservation District and the City of Findlay for their technical support and advice in developing the Best Management Practices outline in this NPS-IS Plan. Finally, special thanks to Elaine Reynolds for all the GIS maps that she created. This NPS-IS Plan will help to secure funding to address the nonpoint source impairments in the **City of Findlay Riverside Park-Blanchard River HUC-12** watershed of the Blanchard River Watershed.

Chapter 1 Introduction

The **City of Findlay Riverside Park-Blanchard River HUC-12** (04100008 02 05) watershed covers10,168 acres or 15.89 square miles (Map 1.1). Unlike most of the HUC-12 watersheds in the Blanchard River watershed, agriculture use only covers 4,604 acres or 45.27%. Over 41% of the land use in the watershed involves land that has been developed.

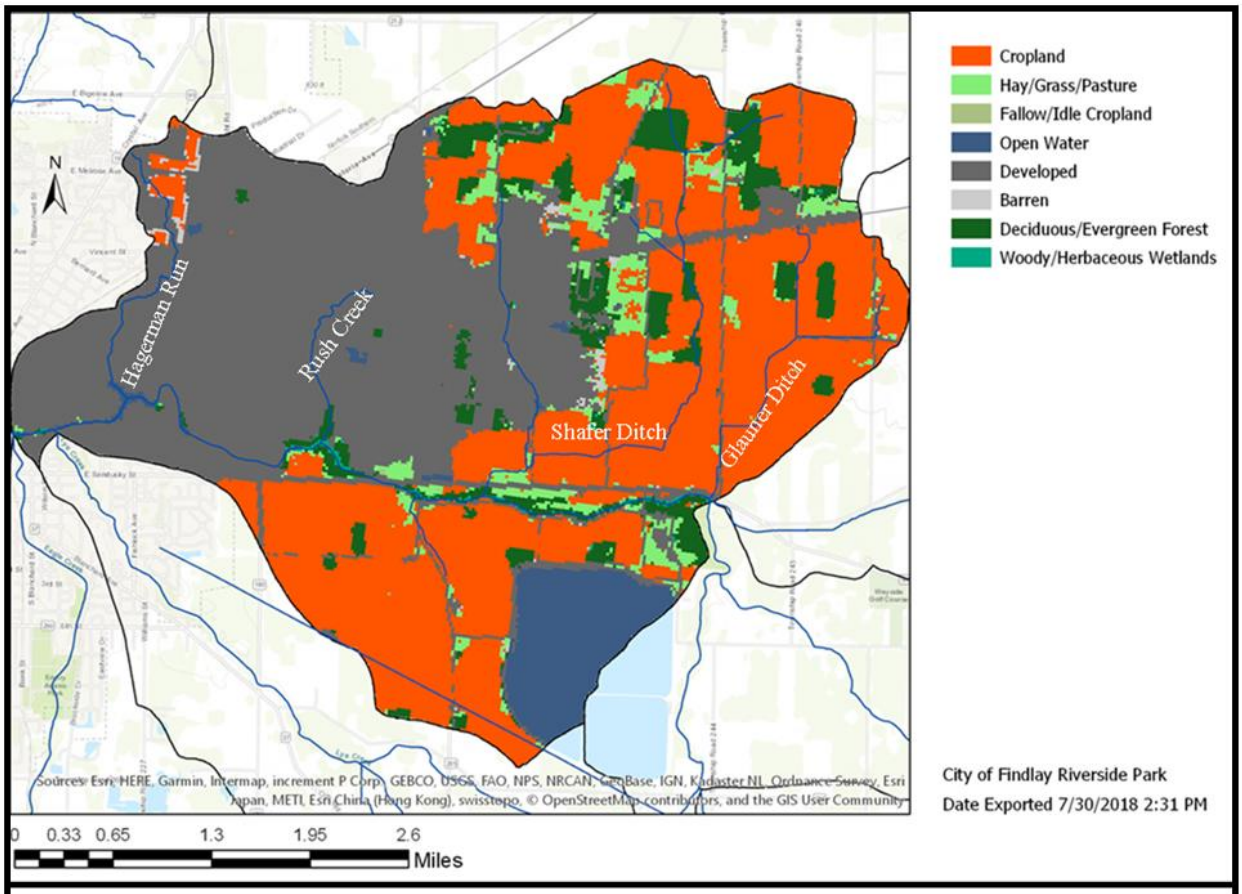
Map 1.1: City of Findlay Riverside Park-Blanchard River Watershed

The watershed starts (RM 63.63) where the Blanchard River makes a 90 degree turn to the west at the mouth of The Outlet in Riverbend Park east of Findlay. The drainage area for Blanchard River becomes >200 square miles which meets the criteria for defining a small river at the start of **City of Findlay Riverside Park-Blanchard River HUC-12** watershed. The river flows towards Findlay for approximately 5.3 miles where the watershed ends at the mouth of Lye Creek. Map 1.2 on the next page shows the land use for the **City of Findlay Riverside Park-Blanchard River HUC-12.** As shown on the map, most of the agriculture use is on the east side of the watershed. The west side land use involves the development of land for the City of Findlay. Most of this development is residential areas. The Tall Timbers Industrial Park is located east of Bright Road in the northwest portion of the watershed. Another Industrial area lies just north and west of the Industrial Park. The corridor along both sides of SR 224 is composed mostly of retail stores and the Findlay Village Mall.

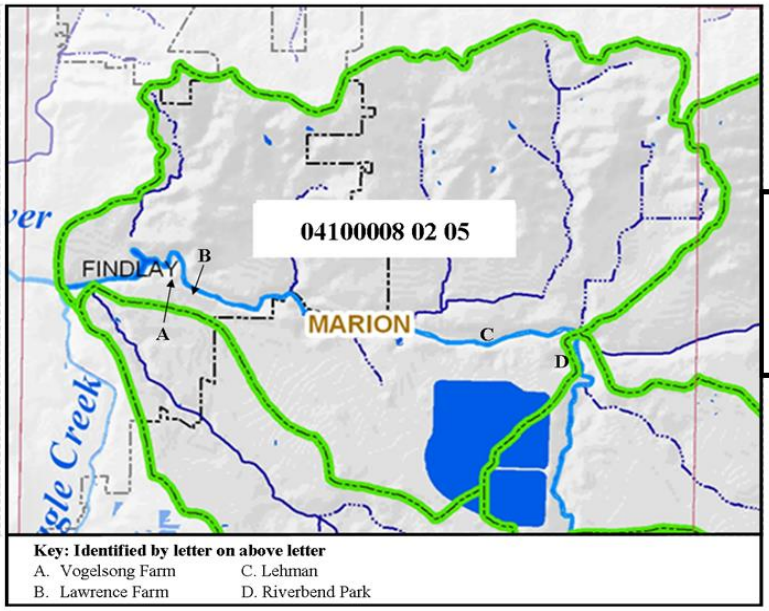
There are several Non-Agricultural Conservation/Conservation Easements under the control of the Hancock Park District in the watershed (See Map 1.3 the next page) These properties are:

A. Vogelsong Farm (22 acres) - located on the south side of the river north of SR 568 and east of Bright Road.
B. Lawrence Farm (12.5 acres) - located on the north side of the river south of SR 568 and the intersection of CR 236.
C. Lehman (6 acres) located on the south side of the river along TR 208 just west of TR 241.
D. Riverbend Park (87 acres) - located along TR 208 just east of TR 241.

The City of Findlay's Riverside Park also lies within the watershed. This park is listed as a historical area by Ohio and has a dam across the river.



Map 1.2: Land Use in City of Findlay Riverside Park-Blanchard River Watershed



Map1.3:

Non-Agricultural Conservation/ Conservation Easements

The federal and state nonpoint source funding opportunities require strategic watershed plans be written at the HUC-12 watershed level using the nine key elements in the *Guide to Developing Nonpoint Source Implementation Strategic Plans in Ohio* developed by the OEPA. The Blanchard River Watershed Partnership (BRWP), with collaboration from local agencies, has started to develop Nine-Element Nonpoint Source Implementation Strategic Plans (NPS-IS plan) for the Blanchard River Watershed based on the 2012 Report Card. The 2012 Report Card was developed using data from the 2009 TMDL study, 2010 Ohio Integrated Assessment Report for the Blanchard River and ODNR's Earth Resources Information Network (ERIN). Each HUC-12 watershed was assigned a letter grade based on the data**. The City of Findlay Riverside Park-Blanchard River HUC-12** received a letter grade of "C+" in the report card.

1.1 Report Background

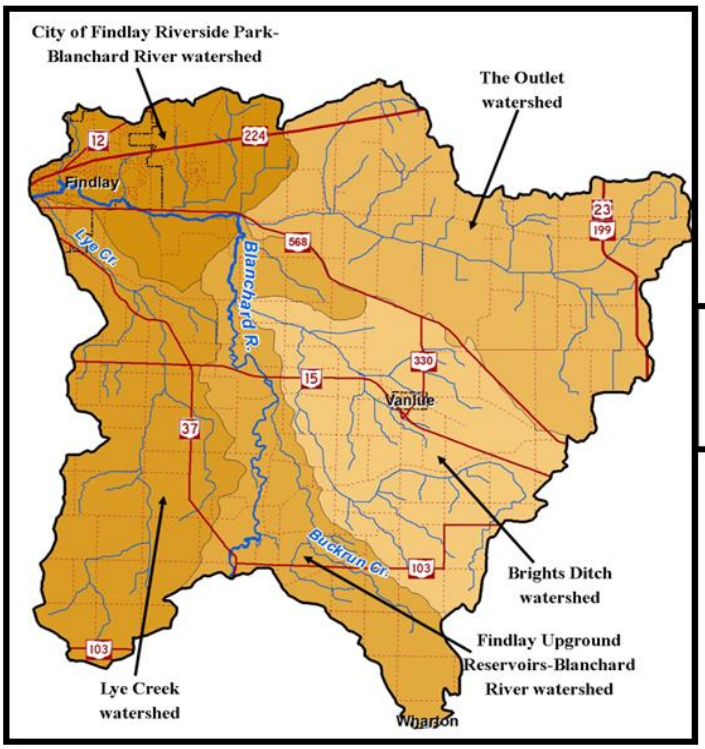
The Blanchard River Watershed Partnership is a community-based volunteer 501(c) (3) organization that seeks to address problems and concerns that affect the health of the Blanchard River Watershed and educate all citizens about the dynamics of the Blanchard River and its tributaries. The BRWP members and Board of Directors include interested citizens, local government agencies, educators, representatives of industry and other stakeholders who have come together with one goal in mind: to improve and maintain water quality within the watershed. One of the main ways to achieve improved water quality was through the development of watershed action plans (WAP). In June 2011, the BRWP received full endorsement of The Outlet/Lye Creek (HUC 04100008 02) WAP. In November 2012, the BRWP received full endorsement of another WAP for the Riley Creek Watershed (HUC 04100008 04). These two action plans were written at the HUC-10 level. Implementation activities in these two watersheds have been occurring since their endorsement. After the endorsement of these two WAPs, designed to outline the process for restoration activities, the BRWP was able to write or assist with grant writing that resulted in the award of over $8,000,000 in funding.

With the new requirement from the U.S. EPA to develop plans that align with the nine-element plans, focus of the partnership is now on developing NPS-IS plans for individual HUC-12 based on their grade in the 2012 Report Card. This NPS-IS plan is being written for the **City of Findlay Riverside Park-Blanchard River HUC-12 (04100008 02 05)** watershed to address nonpoint source causes and sources of impairments that have been specifically identified in the watershed.

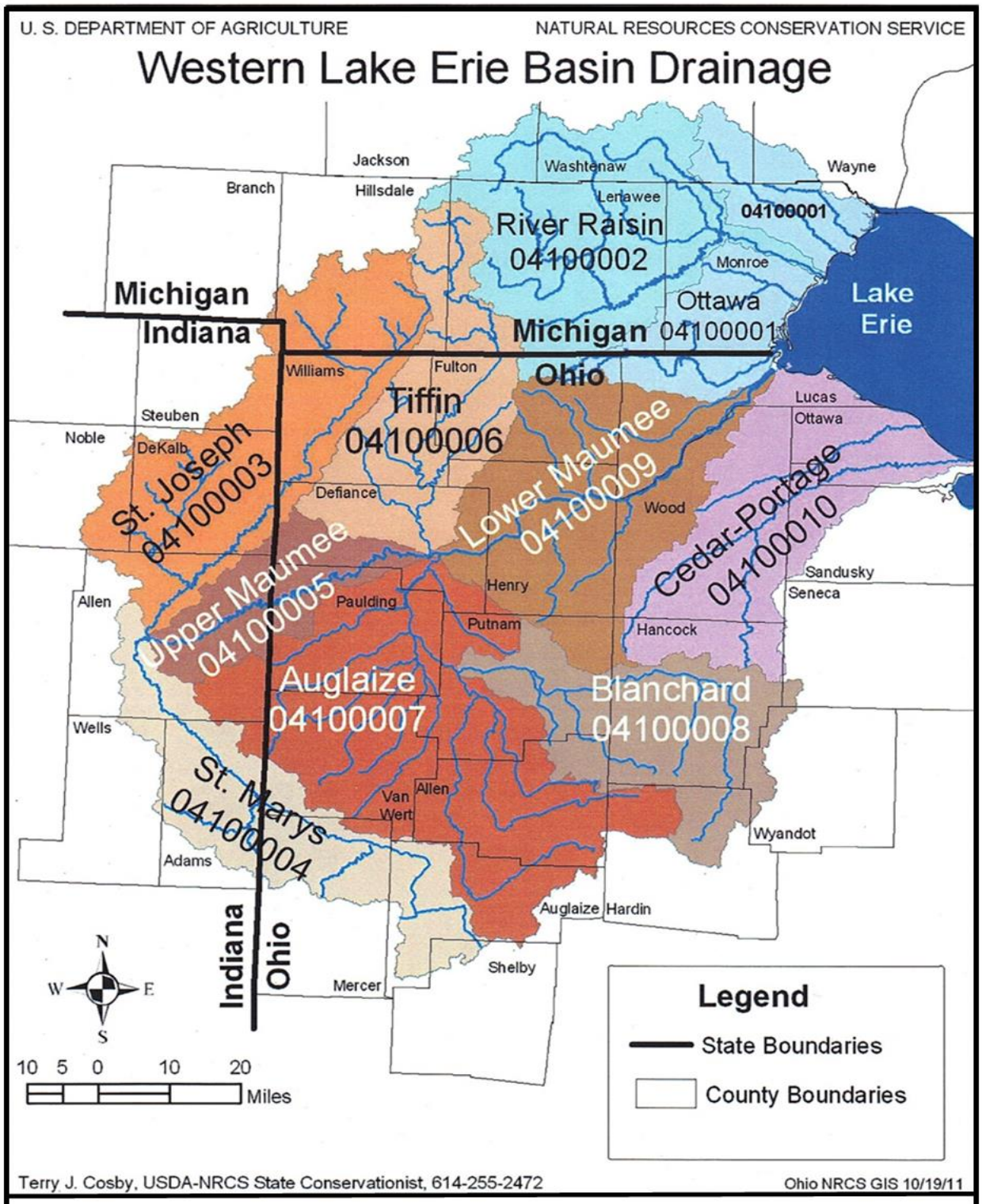
Removal of nonpoint source impairments in the **City of Findlay Riverside Park-Blanchard River HUC-12** will address nonpoint source impairment and allow for step-wise improvement toward achieving attainment of water quality standards. In addition, nutrient load reductions achieved through implementation of projects in this watershed will address Western Lake Erie Basin load reduction goals as described in the Ohio Domestic Action Plan for Ohio in accordance with the Annex 4 agreement.

1.2 Watershed Profile & History

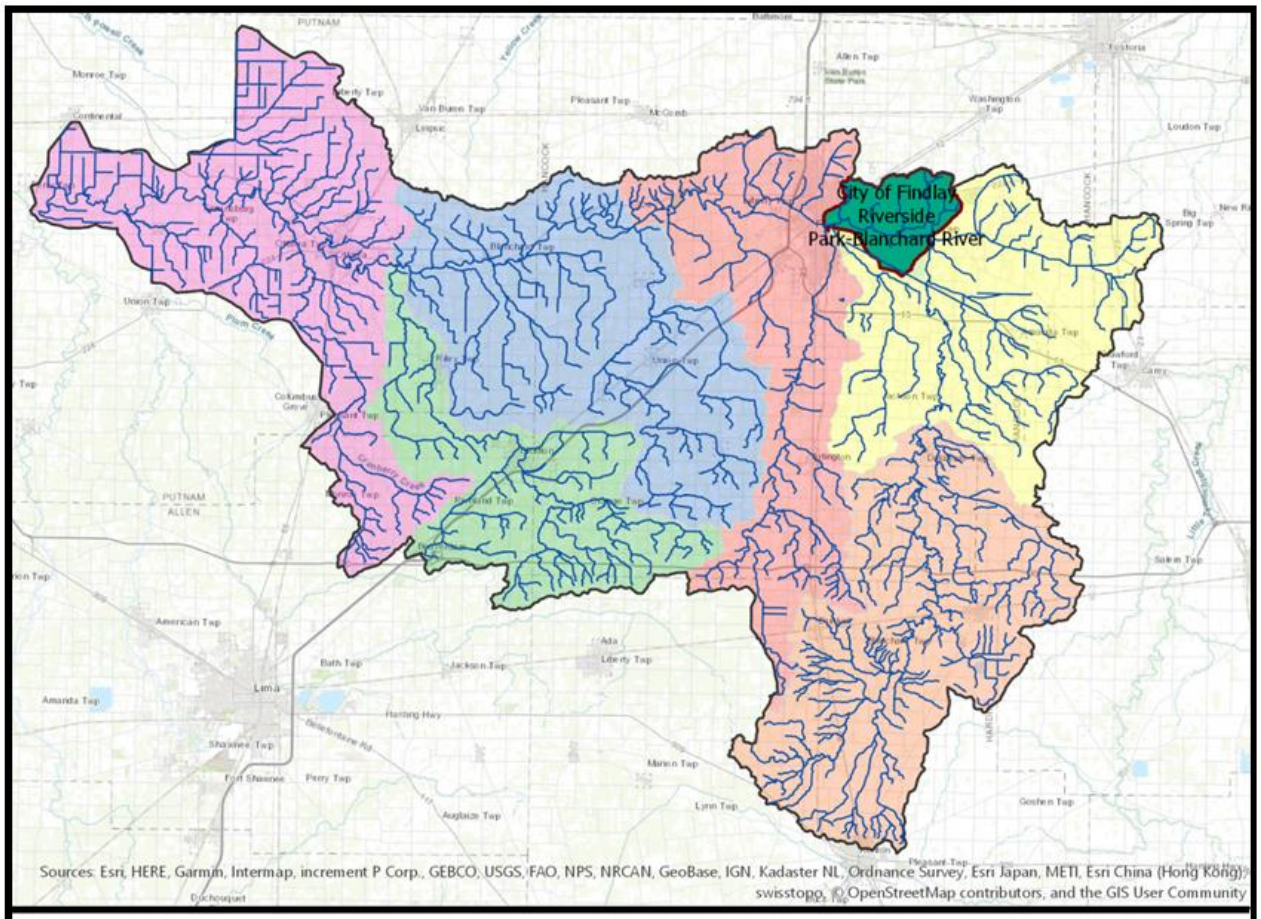
The Blanchard River Watershed is identified using an 8-digit Hydrological Unit Code (HUC), 04100008. There are six subwatersheds within the Blanchard River Watershed. Each of these subwatersheds is identified using an HUC-10. The Outlet/Lye Creek watershed HUC-10 is 04100008 02. There are five smaller HUC-12 watersheds located in The Outlet/Lye Creek watershed. Map 1.4 below shows the HUC-10 subwatersheds in The Outlet/Lye Creek watershed. The Blanchard River Watershed covers 493,434-acres (771 square miles) and drains into the Auglaize River west of the Village of Dupont in Putnam County. From here, the water flows into the Maumee River at Defiance and eventually into Lake Erie at Toledo. Map 1.5 the next page shows the location of the Blanchard River Watershed in the Western Lake Erie Basin. Map 1.6 on page 1-6 shows the location of the **City of Findlay Riverside Park-Blanchard River HUC-12 w**atershed in the Blanchard River Watershed.



Map 1.4: The Outlet/Lye Creek Watershed (HUC 04100008 02) with the HUC-12 subwatersheds



Map 1.5: Location of the Blanchard River Watershed in the Western Lake Erie Basin



Map 1.6: Location of the City of Findlay Riverside Park-Blanchard River Watershed in the Blanchard River Watershed

Prior to European immigrant settlement in the 1800's, wetlands were common and, based on soil survey information, made up about 42 percent of the watershed. Due to the clearing of swamp forest and the subsequent drainage of the land, most of the wetlands have been artificially drained. Wetlands, occurring in cropland, currently constitute less than 1 percent of the watershed and wooded wetlands constitute about 3.2 percent of the watershed.

In addition to addressing the impairments in the **City of Findlay Riverside Park-Blanchard River HUC-12,** this NPS-IS plan will have a cross benefit to meet phosphorus load reduction goals in the Western Lake Erie Basin described in the Ohio Domestic Action Plan for Ohio in accordance with the Annex 4 agreement.

1.3 Public Participation and Involvement

The initial planning process for developing a Nine-Element Nonpoint Source Implementation Strategic Plan (NPS-IS) was conducted by the Blanchard River Watershed Partnership (BRWP). Partners were contacted to inform them of the plan. These partners included the City of Findlay, Hancock Soil & Water Conservation District (HSWCD), Hancock Public Health Department, Hancock Park District and Hancock County Commissioners. The BRWP formed an East-Central Community Advisory Committee in 2017. This group also provided input for the plan.

The watershed was scouted by doing a road-by-road observation and inspection of the conditions of the waterways, agricultural fields, and other features that would be useful in developing the **City of Findlay Riverside Park-Blanchard River HUC-12 NPS-IS** plan.

The BRWP met with the Findlay Hancock County Community Foundation to investigate interest on their part for funding the project. After meeting with representatives, they agreed to give $2,500 towards the writing of the plan. The BRWP also met with Hancock Wood Electric Cooperative about pursing an "Operation Round-up" grant. The board approved providing $2,500 for the writing of the plan. A letter was sent to the City of Findlay's Council outline the need for the NPS-IS Plan and the grant The City of Findlay's Council approved a letter of support for the plan and grant. A letter was also sent to the Hancock Park District concerning the grant. They also present a letter of support for the plan and grant.

The City of Findlay's safety Service director met with Streamside Systems, Inc. from Findlay. Streamside Systems, Inc. presented the city with a three-part plan to modify the dam, remove the debris and sediment from behind the dam and old reservoir and to re-establish the benthic community and aquatic habitat of the area. This plan and previous studies and data were used to write the NPS-IS Plan. After identifying the Critical Areas, goals and objectives were developed for each Critical Area. Mr. Martin met with the City of Findlay's Engineer to review the objectives and make any changes needed. The engineer met with the Mayor and Safety Service Director for the City of Findlay to discuss the objectives. After the meeting, the engineer sent an email stating the City of Findlay was on board with the objectives presented. Mr. Martin also met with the HSWCD to review the plan. The HSWCD suggest Best Management Practices they thought would work for the NPS-IS Plan.

Once the goals, objectives and project sheets for each Critical Area were completed, they were sent to the appropriate agency for review and suggested changes. The final changes and suggestion comprised were included in the plan.

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Chapter 2: The Outlet-Blanchard River Watershed

Characterization and Assessment Summary

2.1 Summary of Watershed Characterization for The Outlet-Blanchard River HUC-12

2.1.1 Physical and Natural Features

The Blanchard River enters the City of Findlay Riverside Park-Blanchard River watershed at RM 63.63. The river makes a 90 degree turn to the west and flows in a westerly direction to RM 58.38 where it enters the Howards Run-Blanchard Run HUC-12 watershed. There are four main tributaries that flow into the Blanchard River in the watershed. The mouth of Glauner Ditch starts at RM 63.62. Glauner Ditch runs in a north direction for approximately 2.3 miles and drains mainly cropland. Shafer Ditch enters the river at RM 62.02. The ditch runs in a north direction and drains mainly cropland, but also drains some residential area. Rush Creek enters the Blanchard River at RM 60.75. The creek runs in a north direction and drains an urban area. Hagerman's Run enters the Blanchard River at RM 58.97. The waterway runs northeast and drains only urban areas. The entire watershed covers about 15.89 square miles and drains 10,168 acres. Land Use within the watershed includes development comprised of low to high intensity development (28.7%) and land for agricultural purposes (45.3%). Table 2.1, on the next page, summarizes the land use in the watershed.

The entire watershed lies within the Eastern Corn Belt Plains (ECBP) ecoregion. In an ECBP a clay-enriched B horizon and the predominant land use is cropland. In addition, the predominant forest type is beech/maple forest and the primary land use is agriculture. (Knowlton, OSU)

Both Glauner Ditch and Shafer Ditch in the **City of Findlay Riverside Park-Blanchard River HUC-12** are under maintenance by the Hancock SWCD based on the Ohio Drainage Law petition and maintenance procedures.

Soil analysis shows that 43.7% of the soil is from the Blount-Pewamo series with a slope of less than 5%. These two soil series are both silty clay loam that drain slowly. The parent material for both varieties is glacial till. The over-all Base Sediment Delivery for the soils in the watershed is 2,563.8 tons. /yr. or 0.2803 tons/ac./yr. The Nitrogen Associated with sediment is 9,557.7 lbs. /yr. or 1.0451 lbs./ac./yr. The Phosphorus Associated with sediment is 4,222.9 lbs. /yr. or 0.4618 lbs./ac./yr.

City of Findlay Riverside Park-Blanchard River (04100008 02 05			
Land Use Classification	**Area (ac.)**	**Area (mi^2)**	**% Watershed Area**
Crop Land	3,904	6.10	38.39
Hay/Pasture	700	1.09	6.88
Deciduous Forest	686	1.07	6.75
Fallow/Idle Cropland	8	0.01	0.08
Barren	54	0.08	0.53
Herbaceous Wetlands	32	0.05	0.31
Developed, High Intensity	401	0.63	3.94
Developed, Medium Intensi-ty	813	1.27	8.00
Developed, High Intensity	1,709	2.67	16.80
Developed, Open Space	1,316	2.06	12.95
Water	545	0.86	5.37
Total	**10,168**	**15.89**	**100.00**

Table 2.1: Land Use Classification for the City of Findlay Riverside Park-Blanchard River Watershed (Reynolds)

2.1.2 Land Use and Protection

As shown in Table 2-1 above, 45.27% of the **City of Findlay Riverside Park-Blanchard River HUC-12** is used for agricultural purposes. As with most of the agricultural area in the Blanchard River Watershed, corn and soybeans are the two dominant crops being grown. (USDA 2015) There is also 2,923 acres, or 29.23% of the watershed being used for residential, retail, and manufacturing. The only school building located in the watershed is Wilson Vance Intermediate on 601 Bristol Ave. The corridor along SR 224 involves mostly retail stores. North of SR 12 on Bright Rd on the northeast side of Findlay is the Tall Timbers Industrial Park. Owens Community College is also located along Bright Road at the intersection with CR 212 on the north side

There are several areas in the **City of Findlay Riverside Park-Blanchard River HUC-12** that are under conservation easements. All 131.5 acres are under the control of the Hancock Park District.

The EPA's National Pollutant Discharge Elimination System (*NPDES*) requires a permit for all facilities discharging pollutants from a point source to a water of the state. There are 39 Construction NOI Storm Water General Permit on the Ohio EPA website. A table showing these permits can be found in the Appendix section of the plan.

The main transportation corridor in the watershed includes SR 12 that leads into the watershed from Fostoria on the northeast side. US 224 leads into the watershed from Tiffin on the east side and SR 568 lead into the watershed from Carey on the southeast side. No railroad tracks run through the watershed. These transportation corridors present areas of potential stormwater pollution from normal spills and droppings.

There are two lowhead dams in the watershed. The first lowhead dam is located at RM 62.40 at the water intake for the City of Findlay Reservoir. The second lowhead dam is located at RM 58.76 in the Riverside Park. Riverside Park has been designated as a historical area by the State of Ohio. The Ohio EPA in the TMDL Report stated, "The combined effect of removing both the Liberty Street and Riverside Park dams will very likely allow the river to attain WWH use designation." The Liberty Street dam was removed by the City Of Findlay as a part of a flood mitigation project in the fall of 2018. Because of it attachment to the historical Riverside Park, there is no interest in removable of the dam at Riverside Park. Modification of the dam will be pursued. Attainment of WWH is a goal of the 319 program.

2.2 Summary of Biological Trends for the City of Findlay Riverside Park-Blanchard River HUC-12

The City of Findlay Riverside Park-Blanchard River HUC-12 was sampled starting in 2005 and reported in 2007 and 2009 as a part of the Ohio EPA's *2007 Technical Support Data Report* and the *Total Maximum Daily Load Report (2009)* respectively. These two documents were used extensively in preparation of the **City of Findlay Riverside Park-Blanchard River HUC-12**. The habitat and biological data presented in this plan is from these two reports.

According to the 2009 TMDL Report, on page 47, the biological community in The Outlet/Lye Creek HUC 10, in which the **City of Findlay Riverside Park-Blanchard River HUC-12** is located, was impacted by a combination of factors related to:

- agriculture practices,
- inadequate water treatment from several of the small communities,
- hydromodification due to channelization which altered instream habitat and natural flow,
- riparian vegetation limited to grasses and low growing bushes,

- elevated nutrient levels,
- low dissolved oxygen and
- high temperature.

According to the 303(d) list in the OEPA 2018 Integrated Report, overall the **City of Findlay Riverside Park-Blanchard River HUC-12** is impaired due to temperature, nutrient/eutrophication biological indicators and organic enrichment (sewage) biological indicators. The source of the impairments was crop production with subsurface drainage.

2.2.1 Sediment and stream habitat

The 2005 TMDL Study did not report any impaired sites with sedimentation and siltation. As a result, a quantification of sediment induced and habitat induced causes of impairment was not included in the TMDL Report. There was only one site in the watershed that was studied during the 2005 TMDL Study. The site was located on the Blanchard River at RM 61.9 upstream of the water intake for the City of Findlay on Twp. Rd. 208. The TMDL Report did note that other habitat impairments included impounded flows from the Riverside Park lowhead dam and sedimentation. Removal of the dam or modification would immediately and permanently eliminates the source and associated causes of impairment. The TMDL Report stated the mainstream of the river is negatively affected by the reservoir impoundment behind Riverside Dam. The Riverside Park dam serves as an emergency reservoir pool for drinking water, however it is recommended that the dam be considered for modification or removal to improve the stream habitat and provide storage for flood water."

Data from the 2005 TMDL Study reported no sampling site showing causes of either habitat alteration or flow alteration (or both). As a result, there was no characterization of the habitat TMDL using QHEI metrics for the watershed reported.

2.2.2 Macroinvertebrates (Invertebrate Community Index [ICI])

According to the 2009 TMDL report, the macroinvertebrate community in the **HUC-12** reflects an impaired aquatic resource. Table 2.2 on the next page summarizes the data collected during the 2005 TMDL study. There was only one site studied during the 2005 TMDL Study. The site was located on the Blanchard River adjacent to TR 208 at RM 61.70. The Blanchard River Watershed Partnership has continuously monitored this in the spring and fall since 2008.

Table 2.2: Macroinvertebrates Results from the 2009 TMDL Report

Macroinvertebrates in the City of Findlay Riverside Park-Blanchard River HUC-12 (04100008 02 05) 2009 TMDL Study				
RM (Drain Area mi^2)	**No. Qualitative Taxa**	**Total Taxa**	**ICI[b]**	**Quality EPT**
Blanchard River RM 61.70 (238.0 mi.^{2})	35	58	48	23

b - A narrative evaluation of the qualitative sample based on attributes such as community composition, EPT taxa richness and number of sensitive taxa was used when quantitative data were not available or considered unreliable due to current velocities less than 0.3 fps flowing over artificial substrates.

Map 2.1 shows the attainment status for aquatic life use at the only site studied during the 2005 TMDL study. The site at RM 61.7 was in partial attainment.

Map 2.1: Map of Attainment Status for Aquatic Life Use

2.2.3 Habitat (via Qualitative Habitat Evaluation Index [QHEI])

Table 2.3: Summary of Aquatic Assessment Score for the City of Findlay Riverside Park-Blanchard River HUC - 12 (04100008 02 05)

Aquatic life use attainment status in the City of Findlay Riverside Park-Blanchard River HUC-12 (04100008 02 05) 2009 TMDL Study							
RM (Drain Area mi^2)	**IBI**	**Mlw-b[a]**	**ICI[b]**	**Status[c]**	**QHEI**	**Causes**	**Sources**
Blanchard River RM 61.70 (238.0)	36^{ns}	7.2*	48	Partial	62.5	Organic enrichment, nutrients, thermal modification	Crop Production

a - Mlwb is applicable to headwater streams with drainage areas ≤ 20 mi^2
b - A narrative evaluation of the qualitative sample based on attributes such as community composition, EPT taxa richness and number of sensitive taxa was used when qualitative data were not available or considered unreliable due to current velocities less than 0.3 fps flowing artificial substrates.
c - Attainment status based on a single organism group is parenthetically expressed.
ns - Nonsignificant departure from biocriteria ($\leq$4 IBI or ICI units, or $\leq$0.5 Mlwb units). Underlined scores are in the Poor or Very Poor Range.

The Ohio EPA sampling teams collected data related to water quality and habitat characteristics during the 2005 study. The only other site studied was on the Blanchard River at RM 61.7. As shown in Table 2.2 page 2-4 and Table 2.3 above. The site had a Quality EPT score of 23 that exceeds the threshold metric.

2.2.4 Fishes (modified Index of Well-Being [Mlwb] & Index of Biotic Integrity [IBI]

Table 2.4: Summary of the Fish Study from the TMDL Study

Summary of Fish Population - City of Findlay Riverside Park-Blanchard River HUC-12							
River/ Stream	**River Mile**	**Number Species**	**Tolerance to Pollution by Species**				
			T	**MT**	**M**	**MI**	**I**
Blanchard River	61.9	21	7	2	8	2	2

T - tolerant MT - moderately tolerant M - intermediate MI - moderately intolerant
I - intolerant

The fish population study was conducted at one site on the Blanchard River on October 6, 2005 as a part of the TMDL Study. Table 2.4 above summarizes the results of the study based on their tolerance to pollution. The sampling at RM 61.9 showed 21 species present. Nine or 42.9% of the species were either tolerant or moderately tolerant to pollution. There were only two species that were intolerant to pollution and only two species were moderately intolerant.

The TMDL noted that hydromodification, as a result of the streams being maintained primarily to remove excess water from the surrounding landscape, was reflective of an excess of nutrients and a dissolved oxygen deficit.

2.3 Summary of NPS Pollution Causes and Associate Sources for the City of Findlay Riverside Park-Blanchard River HUC-12

Table 2.3, on page 2-5 provides a summary of the IBI, ICI, Mlwb, status of the site, QHEI, causes and sources of Impairments at each site during the 2005 TMDL study. The 2018 Integrated Water Quality Monitoring and Assessment Report published by the Ohio EPA reported that the aquatic life use impairments in the **City of Findlay Riverside Park-Blanchard River HUC-12** were temperature (water), nutrient/eutrophication biological indicators and organic enrichment (sewage) biological indicators. The listed source for the impairments was crop production with subsurface drainage. The site was designated as WWH. The site was in partially attainment.

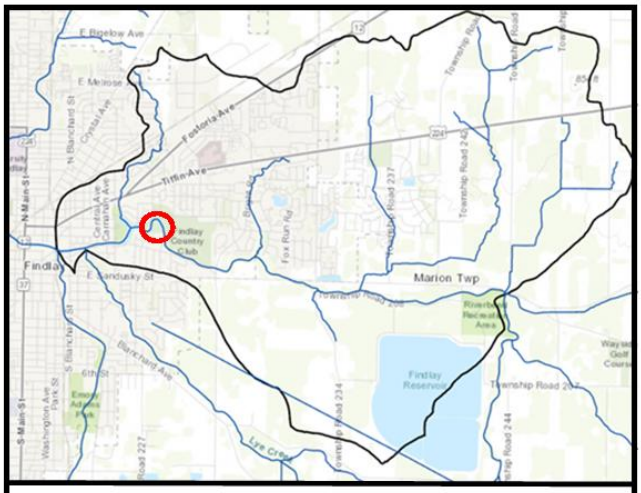
The TMDL report indicates that Recreational Use Attainment in the watershed is impaired due to bacteria. The City of Findlay's water intake is located in the **City of Findlay Riverside Park-Blanchard River HUC-12** watershed at RM 62.43. The water is pumped into upground reservoir #2 which covers 645 acres and has a capacity of 5 billion gallons.

Chapter 3: Conditions & Restoration Strategies for The City of Findlay Riverside Park-Blanchard River HUC-12 Critical Areas

3.1 Overview of Critical Areas

According to the 2018 Ohio EPA Integrated Water Quality Report, the impairments in the **City of Findlay Riverside Park-Blanchard River HUC-12** ***"are related to crop production with subsurface drainage."*** Over the years, one of the major problems that have occurred because of the crop production has been the accumulation of debris and sediment behind the Riverside Dam. As a result of the estimated 97,000 cubic yards of debris and sediments that has accumulated behind the dam, the aquatic habitat and recreational use has been greatly hindered. Removal or modification of the Riverside Dam, along with the removal of the sediment and debris behind the dam will re-establish the aquatic habitat and recreational use in the area. In-stream sediment collectors and use of Best Management Practices on the agricultural fields will help prevent the sediment from accumulating again.

This area will be Critical Area 1. Map 3.1 below shows the location of the critical area 1 in the watershed.



Map 3.1: Map of Critical Area 1 in the City of Findlay Riverside Park-Blanchard River Watershed

Critical Area 2 will focus on preventing additional sediment from crop production from entering the river. Specific restoration strategies and projects will focus on the reduction of the nutrients, especially phosphorus, and sediment loading along the Blanchard River, Shafer Ditch and Glauner Ditch. Section 10.3.4 of the U.S EPA' s 2008, *Handbook for Developing Watershed Plans to Restore and Protect Our Water,* states that, "In general, management practices are implemented immediately adjacent to the waterbody or upland to address the source pollutant loads." Using this rationale, Critical Area 2 will include cropland acreage within the HUC-12 according to a hierarchy of priorities. Map 3.2 on page 3-7 shows the location of Critical Area 2 with the priority areas.

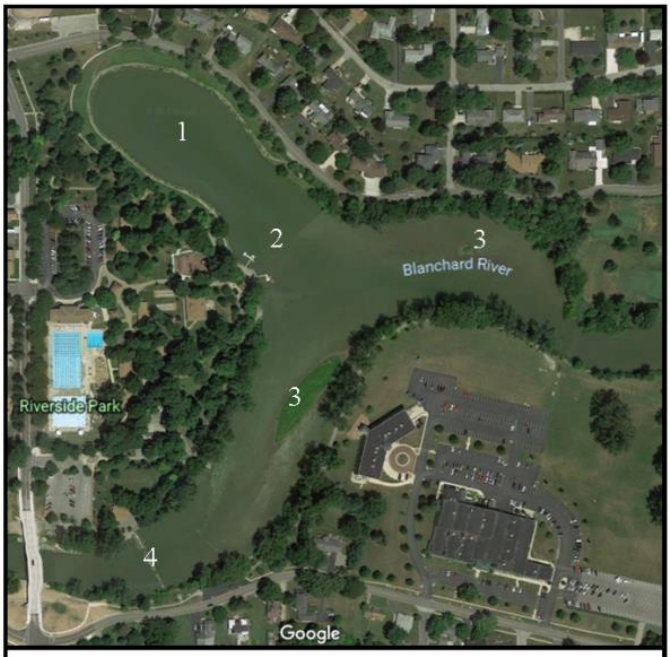
Although the 2018 Integrated Water Quality Report does not list phosphorus as was of the impairments in the **City of Findlay Riverside Park-Blanchard River HUC-12**, the 2009 TMDL Report does list total phosphorus as impairment in The Outlet/Lye Creek watershed HUC-10. Table 3.2 on page 3-6 shows an Annualized summary of the seasonal phosphorus loadings into the **City of Findlay Riverside Park-Blanchard River HUC-12** extrapolated from

data in the 2005 TMDL Study. The table also includes the suggested seasonal and annual reduction needed to meet the reduction goal for the entire watershed. Table 3.2 also shows the 40% reduction goal established in the Domestic Action Plan created by the International Joint Commission.

3.2 Critical Area 1: Conditions, goals and objectives for the City of Findlay Riverside Park-Blanchard River HUC - 12

3.2.1 Detailed Characterization

The City of Findlay's Riverside Park is located at RM 58.76. The area has been designated an historical site by the State of Ohio. The Riverside Dam is located at the south end of the park. Picture 3.1 shows and aerial view of Critical Area 1 with the main areas numbered. Number 1 denotes the old reservoir for City of Findlay. Study of the debris in this area shows that it is mainly comprised of organic material. The wall, denoted by 2, separates the reservoir from the main flow of the river. Area 1was an excellent fishing area at one time, but now has an average depth of 3 feet. The two number 3s show the location of two sediment islands that have developed in the area. Both of these sediment islands are close enough to the shore that kids can wade across the water to them during low water and play, creating a potential dangerous situation. Number 4 shows the location of the Riverside Dam. Because of the location of the dam next to the historical Riverside Park, there is no public or city interest in removing the dam.



Picture 3.1: Aerial View of Critical Area 1

As a result of the 2012 endorsed watershed action plan for The Outlet/Lye Creek watershed, the City of Findlay and the Hancock County Commissioners in 2016 hired Hull & Associates from Toledo to do a Sediment Management Assessment Study of how to best remove the debris and sediment from behind the dam. The study notes that ***"the area of the river in the vicinity of the park is impaired by sediment accumulation behind the Riverside Dam, which was constructed in the 1800s, and within the adjacent Old Reservoir Area. Aquatic habitat has declined as a result, and the ability to navigate canoes or kayaks in this area is being hampered by the***

resulting shallower depth. Sediment must be dredged from behind the Riverside Dam and within the Old Reservoir Area to provide better recreational access to the river and improve habitat."

3.2.2 Detailed Causes and Sources

The Riverside dam across the Blanchard River has allowed sediment to collect behind the dam for the last several decades. The estimated 70,000 cubic yards (CY) of accumulated sediment covers roughly 11 acres of surface area. In addition, there is another estimated 27,000 CY of mostly organic debris collected in the roughly 4 surface acres of the old reservoir for the City of Findlay on the north side of Riverside Park. There is a wall the separates the river and the reservoir. (See map 3.1 on page 3-2) According to the Assessment Study Report from Hull and Associates, the area of the river in the vicinity of the park is impaired by sediment accumulation behind the Riverside Dam, Aquatic habitat has declined as a result, and the ability to navigate canoes or kayaks in this area is being hampered by the resulting shallower depth. Sediment must be dredged from behind the Riverside Dam and within the Old Reservoir Area to provide better recreational access to the river and improve habitat. The City of Findlay does maintain a back-up water intake site (RM 58.80) for drinking water in this area. The sediment threatens the ability to use this back-up site. The BRWP have the sediment analyzed in 2017 for phosphorus. Picture 3.2 shows the sites where sediment was collected. Table 3.1, shows the results of the testing of the sediment for phosphorus in 2017. Although no monitoring sites were done in this area during the 2005 TMDL Study, The final report did state that removal or modification of the dam will very likely result in the river being able to attain a WWH status.

Table 3.1 Phosphorus in Sediment

Site Number	Total P (g P/kg)	ppm	Error
1	0.273	273	0.002
2	0.304	304	0.0001
3	0.277	277	0.061
4	0.265	265	0.011
5	0.131	131	0.012
6	0.197	197	0.018
7	0.161	161	0.068
8	0.131	130	0.001
9	0.244	244	0.001
IS	0.083	83	0.017

Picture 3.2: Sediment Collection Sites Critical Area 1

3.2.3 Outline Goals and Objectives for Critical Area 1

The Assessment Study Report from Hull and Associates suggested the over-all project be divided into three sections: 1. modification of the dam, 2. removal of the approximate 4 acres of sediment and debris that is located behind the wall in the old reservoir area and 3. removal of the approximate 11 acres sediment in the main stem of the river behind the dam.

The overall goals for any Critical Area 1 are to improve the QHEI, IBI, and ICI scores to achieve full attainment of the WWH designated aquatic life use for the area. Specific goals applicable to Critical Area 1 are:

Goals for Critical Area 1 -

- Goal 1: Restore Critical Area 1 to a QHEI score of at least 60 between RM 61.7 and 57.8. Presently the QHEI is 62.5 at RM 61.7 and 46.0 at RM 57.8.

- Goal 2: Achieve IBI score of at least 42 between RM 61.7 and 57.8. Presently the IBI is 36 at RM 61.7 and 36 at RM 57.8.

- Goal 3: Achieve ICI score of at least 42 at between RM 61.7 and 57.8. Presently the ICI is 48 at RM 61.7 and 12 at RM 57.8.

Objectives for Critical Area 1

- Objective 1: To modify or remove one dam to allow for the movement of fish pass the dam.

- Objective 1a: To modify one dam that will allow the water level in the river to be adjusted during the year.

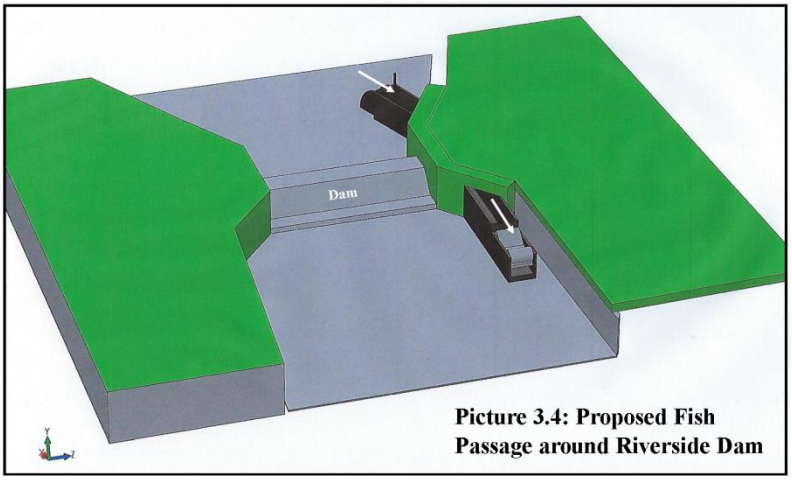
- Objective 2: To remove the 27,000 cubic yards of organic debris and sediment that has built up in the “old reservoir”

- Objective 4: To remove the estimated 70,000 cubic yards of sediment and other debris that has built up behind the dam.

Picture 3.3: Sediment Island across from Riverside Park and upstream of the dam

Narrative of Objectives

Objective 1 will focus on installing a passage way around the bottom of the dam on the south side which will allow the fish to migrate upstream and downstream of the Riverside Dam. A control gate will also be included to maintain water flow. Picture 3.4 shows a diagram of the passage way.



Picture 3.4: Proposed Fish Passage around Riverside Dam

Objective 1a will focus on installing a "Weir type" gate in the Riverside Dam that will allow the water flow to be adjusted during the year. The gate will allow the area to be used for flood water storage during high rain events. This will help to lower the damage to the habitat around Critical Area 1 caused by flooding.

Objective 3 will focus on removing the estimated 27,000 cubic yards organic debris and sediment from the old reservoir area. The removal will allow the aquatic habitat, benthic community and recreational use of the area to be restored.

Objective 4 will focus on removing the estimated 70,000 cubic yards of sediment and debris that has accumulated behind Riverside Dam in the main stem of the Blanchard River. The removal will allow the aquatic habitat and recreational use of the river to be restored.

3.3 Critical Area 2: Conditions, goals and objectives for the City of Findlay Riverside Park-Blanchard River HUC - 12

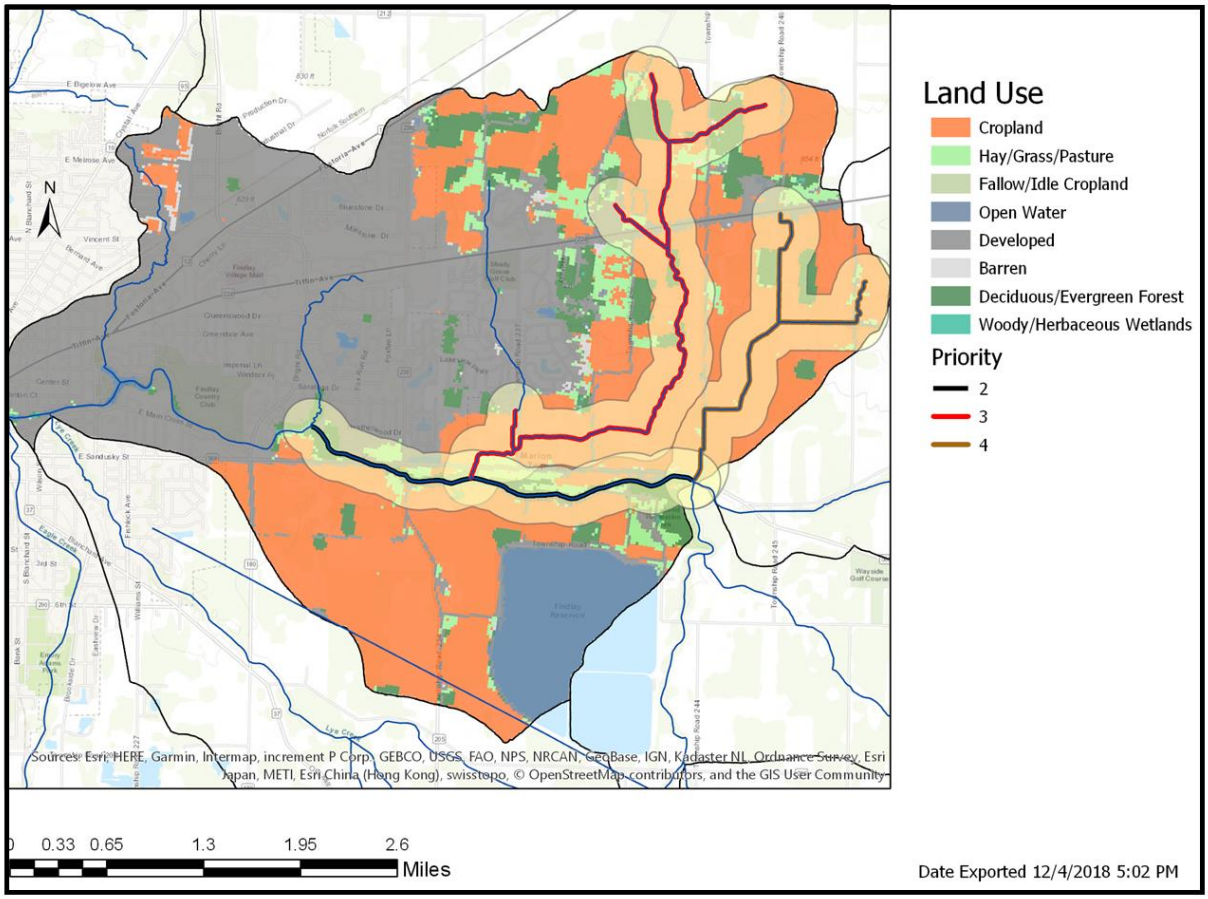
3.3.1 Detailed Characterization

The area defined in the **City of Findlay Riverside Park-Blanchard River HUC-12** as Critical Area 2 will include all the crop land (3,904 acres). (See Map 3.2 on the next page.) According to the 2009 TMDL report, the cropland acres of **City of Findlay Riverside Park-Blanchard River HUC-12** are contributing the most significant load of phosphorus and sediment; and are causing most of the documented water quality impairments in the watershed. Since the phosphorus loading will not be equal throughout the watershed, Critical Area 2 will be prioritized as follows:

- **Priority 1:** Fields with documented high Soil Test Phosphorus levels (e.g., above 150 ppm. Mehlich-3).
- **Priority 2**: Crop parcels (fields) along the Blanchard River that lack an edge-of-field conservation practice(s). (approximately 500 acres).
- **Priority 3:** Crop parcels (fields) adjacent to the main stem of Shafer Ditch (approximately 2,200 acres).
- **Priority 4:** Crop parcels (fields) adjacent to the main stem of Glauner Ditch (approximately 1,200 acres).
- **Priority 5:** All remaining crop parcels (fields) in the watershed not found in priorities 2-4.

Table 3.2 Annualized Summary of the 2005 TMDL Seasonal Phosphorus Loading	
Existing (2005) P Load Annual (TMDL)	3,336.2 kg
TMDL - Annual	371.9 kg
Difference (Annual P Load - Target P Load) to meet watershed TMDL P-target	2,964.3 kg
Domestic Action Plan (reduce 40% of existing P load) to meet Western Lake Erie Basin goal	1,185.7 kg

Map 3.2 Critical Area 2 Priority Areas



Both The Ohio State University and the National Center for Water Quality Research (NCWQR) at Heidelberg University have conducted studies that show incorporation of nutrients can reduce phosphorus runoff by 90%. Based on these results a performance based incentive to farmers will be used to help meet the phosphorus reduction needed to meet the TMDL goal. This approach will allow the Hancock SWCD and other agencies working in the watershed to help the farmers conduct a more thorough analysis of how nutrients are being applied to and lost from their fields.

In addition to the performance based incentive for incorporation of nutrients, other NPS pollution leaving the cropland from surface run-off and/or subsurface drainage will also be addressed using appropriate Best Management Practices (BMPs).

These BMPs will focus on:

- Reducing the rate and amount of surface runoff,
- Reducing phosphorus loading from tile drainage, via treatment, volume reduction, and discharge controls,
- Drainage management systems, and
- Soil test for phosphorus reduction.

3.3.2 Detailed Causes and Associated Sources

The 2009 TMDL Report reports that impairments in the **City of Findlay Riverside Park-Blanchard River HUC-12** watershed are related to agricultural uses. The contributing causes and sources associated with crop production in Critical Area 2 are:

Table 3.3: Causes and Sources of Impairments in Critical Area 2		
River Mile	**Causes**	**Sources**
61.7/61.9	Organic enrichment, nutrients, thermal modification	Crop Production

3.3.3 Outline Goals and Objectives for Critical Area 2

As noted above, Critical Area 2 is mainly impaired by organic enrichment, nutrient loading, and thermal modification due to agriculture uses. Therefore, the focus in developing goals to address these impairments in Critical Area 2 will be to:

1. Soil test fields that have not been tested within the last two years and are directly adjacent to a waterway.
2. Once the results of the soil tests are known, those fields with the highest phosphorus levels will be addressed first using acceptable Best Management Practices (BMPs).
3. The remaining fields in Critical Area 2 will be soil tested and acceptable BMPs will be used to reduce phosphorus loads.
   NOTE: Soil testing is not eligible for funding under the EPA 319 program. Funding will be sought from other sources.
4. Edge of field conservation practices, such as cover crops, conservation tillage, filter strips and buffers, will be used to reduce sediment loading during runoff and drainage events.
5. Soluble phosphorus loading that occurs through drainage tile will be addressed using Controlled Drainage Structures and Phosphorus Filters.

Goals for Critical Area 2 - Phosphorus Load Reduction from Cropland

- Goal 1: To reduce phosphorus loading from cropland in the watershed from 3,336.2 kg. annually to 371.9 kg. annually (a reduction of 2,964.3 kg. per year).

- Goal 1a: To reduce total phosphorus loading from cropland in the watershed from 3,336.2 kg. annually to 1,185.7 kg. annually, a reduction of 2,150.5 kg. per year, to achieve a 40% reduction goal consistent with Ohio's Domestic Action Plan.

NOTE: Although there was no goal for reduction of sediment in the TMDL Report, efforts will be made to prevent sediment loading which will than accumulate behind the Riverside Dam in Critical Area 1.

Objectives for Critical Area 2

In order to achieve the goals listed above for nonpoint source load reduction for phosphorus in the **City of Findlay Riverside Park-Blanchard River HUC-12** watershed, the following objectives that address nutrient loading need to be achieved in Critical Area 2. These objectives are prioritized to achieve the greatest results in Critical Area 2.

- Objective 1: To establish Control Drainage Water Management Systems to manage water draining 100 acres. (5 structures averaging 20 acres per structure. (NCRS 554)

- Objective 2: To install a phosphorus filter on two main drain outlets tile leading from fields that are more than 1000 feet from the main stem or a tributary to capture dissolved reactive phosphorus (DRP). (NRCS 782) ***Phosphorus Filter could be placed in Shafer Ditch and Glauner Ditch if approved by Hancock County Engineer and HSWCD.***

- Objective 3: Enroll 1,250 acres of cropland in a precision nutrient management plan that includes cover crops, conservation tillage, soil test for phosphorus and soil organic material (SOM) and proper placement of fertilizer. (590)

- Objective 4: Soil test 90% of the acres or 3,514 acres in Critical Area 2.

- Objective 5: Enroll 1,500 acres per year of cropland in cover crops. (NRCS 340)

- Objective 6: Enroll 1,500 acres per year of cropland in conservation tillage. (NRCS 329

Narrative of Objectives

Objective 1 will involve controlling water from surface and tile runoff by establishing control drainage management systems to manage 100 acres of drainage area. An estimated 5 structures will be installed average 20 acres per structure. By controlling base flow conditions and water management the BMPs will result in a load reduction of 30 kg./year or 66 lbs./year of phosphorus and 50 lbs./year of nitrogen.

Objective 2 will involve the installation of a phosphorus filter on two main drain outlets leading from fields that are more than 1000 feet from the main stem of the Blanchard River or a tributary to capture dissolved reactive phosphorus (DRP). Dr. Chad Penn, from USDA-ARS, reports the estimated load reduction of DRP has been projected to be between 30 - 50% based on available information. Assuming that each filter is draining a 40 acre field, the estimated reduction of phosphorus will be 181 kg./yr. or 400 lbs./yr. ***Phosphorus Filter could be placed in Shafer Ditch and Glauner Ditch if approved by Hancock County Engineer and HSWCD.***

Objective 3 will focus on getting Precision Nutrient Management Plan (PNMP) developed and implemented for 1,250 acres closest to a waterway. The Natural Resource Conservation Service (NRCS) offers an incentive under their Environmental Quality Incentives Program (EQIP) program, This ***Nutrient Management (590)*** plan allows a "producer to be able to improve efficiency and effectiveness of nutrients by utilizing precision techniques and tools, maintain or increase yields, and minimize nutrient losses from fields, thus helping protect surface and ground water supplies.
Precision nutrient management techniques ensure that the 4 R's (Right rate, Right source, Right application method, and Right application timing) provide proper amount of nutrients to the crop where it is needed." (NRCS 2014) By developing precision nutrient management plan on 1250 acres of cropland in Critical Area 1, there will be a loading reduction an estimated 419 kg./yr. or 924 lbs./yr. of phosphorus, 500 tons/year of sediment and 1200 lbs./year of nitrogen.

Objective 4 will focus on soil testing 90% of the acres or 3,514 acres in Critical Area 2. Only by soil testing can we know the level of phosphorus and soil organic matter present in the soil. The results of each soil will allow the farmer to meet the "Right Rate" of the 4 R's program. ***Soil testing is not eligible for funding through the EPA. Another funding source will need to be found for this objective.***

Objectives 5 will focus on establishing cover crops on 1,500 acres of cropland that are not enrolled in a Precision Nutrient Management Plan. By establishing cover crops on 1,500 acres, there will be an estimated loading reduction of 385.5 kg./yr. or 850 lbs./year of phosphorus, 450 tons/year of sediment and 1,300 lbs./year of nitrogen.

Objective 6 will focus on establishing 1,500 acres of cropland in conservation tillage that are not enrolled in a Precision Nutrient Management Plan. By establishing conservation tillage, there will be an estimated loading reduction of 116 kg./year or 255 lbs./year of phosphorus, 150 tons/year of sediment and 390 lbs./year of nitrogen.

NOTE: Objectives 5 & 6 are one year Best Management Practices. Although cover crops and conservation tillage are easy BMPs to get farmers to use when there is a cost share payment involved, there is a concern in whether the farmers will do these practices without the payment. Additional outreach and education to the farmer could be needed to get the farmer to continue the practices. Webinar, handouts, newsletters and meetings with farmers on the benefits of cover crops and conservation tillage have on soil health and financial benefits should be held.

As these objectives are implemented, chemical testing should be conducted near the mouth of Shafer Ditch and Glauner Ditch during rain events and/or at least once a month to measure the phosphorus and nitrogen levels. The data will provide an idea of the progress towards meeting the listed goals. All objectives will be reevaluated yearly to see if any modifications are needed.

When reevaluating the restoration efforts, the participating agencies and individuals will look at the BMPs being used, the interest of the farmers, and the data that has been collected to see if there should be a modification to the goals and/or objectives. The group will use the Ohio EPA Nonpoint Source Management Plan Update (Ohio EPA 2014) as a reference for possible modifications.

Chapter 4: Projects and Implementation Strategy for the City of Findlay Riverside Park-Blanchard River HUC-12

4.1 Overview Tables and Project Sheets for Critical Areas

As noted in Chapter 2, the **City of Findlay Riverside Park-Blanchard River HUC-12** watershed impairments are mainly due to the agriculture activities in the watershed. This chapter will discuss the projects and evaluations needed to be done to restore the watershed as much as possible.

On the following pages are the projects and guidelines believed to be needed to improve the conditions in the **City of Findlay Riverside Park-Blanchard River HUC-12** watershed to meet the goals of the TMDL Study for nutrient reduction and for removing the impairment status for the watershed. It will be necessary to periodically reevaluate the status of the critical areas to determine if the projects are sufficient to reach the goals outlined by the TMDL Report. There may be a need to use other BMPs than those listed in the projects. When the need for a specific BMP is found a new project sheet with be created and submitted to the EPA for approval.

For the **City of Findlay Riverside Park-Blanchard River HUC-12** watershed, there are two Critical Areas identified. Project and Implementation Strategy Overview Tables have been created for each area (subsections 4.2 and 4.3).

Project Summary Sheets (PSS) provide the nine elements adopted by the OEPA for the projects that have been developed and in need of funding. If during implementation additional problems are identified, additional tables/projects will be developed. Any new PSS will be submitted to the OEPA for verification and funding eligibility.

4.2 Critical Area 1: Overview Table and Project Sheets for the City of Findlay Riverside Park-Blanchard River HUC-12

Table 4.1 on the next page summarizes the Project and Implementation Strategy Overview Table for Critical Area 1. The table summarizes the projects needed for restoration of the nonpoint source impairments identified in the TMDL Report for the **City of Findlay Riverside Park-Blanchard River HUC-12** watershed. Only the projects listed in the Project Summary Sheets will be eligible for state and federal funding.

Table 4.1: Critical Area 1: Project Overview Table for the City of Findlay Blanchard River HUC - 12 (04100008 02 05)							
Goal	**Objective**	**Project #**	**Project Title** (EPA Criteria g)	**Lead Organization** (Criteria d)	**Time Frame** (EPA Criteria f)	**Estimated Cost** (EPA Criteria d)	**Potential/Actual Funding Source** (EPA Criteria d)
Urban Sediment and Nutrient Reduction Strategies							
Altered Stream and Habitat Restoration Strategies							
1, 2, 3	1	1	Gated Bypass Structure to Allow Fish Passage	City of Findlay	Short Term (1-3 yr.)	$650,000	WRRSP, GLRI, USFWS
1, 2, 3	2	2	Riverside Park Dam Control Gate	City of Findlay	Short Term (1-3 yr.)	$400,000	WRRSP, GLRI, USFWS
1, 2, 3	3	3	Removal of Organic Debris / Sediment from Old Reservoir	City of Findlay	Short Term (1-3 yr.)	$900,000	WRRSP, GLRI, USFWS
1, 2, 3	4	4	Riverside Park Dam Pool Area - Mussel Relocation	City of Findlay	Short Term (1-3 yr.)	$333,000	WRRSP, GLRI, USFWS
1, 2, 3	5	5	Removal of Sediment from Riverside Dam Basin Area	City of Findlay	Short Term (1-3 yr.)	$550,000	WRRSP, EPA 319, GLRI, USFWS
Agricultural Nonpoint Source Reduction Strategies							
High Quality Waters Production Strategies							
Other NPS Causes and Associated Sources of Impairment							

4.2.1 Critical Area 1 Project Summary Sheets

The section presents the Project Summary Sheets that were developed based on the actions needed to minimize the nutrient and sediment loadings from cropland in the **City of Findlay Riverside Park-Blanchard River HUC-12** watershed. These projects are the logical next steps or priority/short term projects needed to be accomplished in order to begin the restoration activities needed to address the impairments and to prevent the transport of the sediment and nutrients further down the watershed and eventually to Lake Erie. Medium and longer term projects will not have a project summary sheet, as these projects are not ready for implementation. As a project comes to an end, an evaluation of the progress will be done to see if the project needs to be continued.

Table 4.2: Project Summary Sheet Critical Area 1 Project 1: Gated Bypass Structure for Fish Movement around Riverside Dam

Nine Element Criteria	Information needed	Explanation
n/a	Title	Gated Bypass Structure to Allow Fish to move around Riverside Dam
criteria d	Project Lead Organization & Partners	City of Findlay, Hancock County Engineer, Hancock SWCD, and BRWP
criteria c	HUC-12 and Critical Area	City of Findlay Riverside Park-Blanchard River HUC-12 (04100008 02 05) Riverside Dam
criteria c	Location of Project	City of Findlay Riverside Park-Blanchard River HUC-12, Riverside Park, Findlay, OH
n/a	Which strategy is being addressed by this project?	Altered Stream and Habitat Restoration Strategies
criteria f	Time Frame	Short Term (1-3years)
criteria g	Short Description	The lowhead Riverside Dam prevents the upstream movement of fish and other aquatic organism thus preventing limiting the aquatic habitat both above and below the dam.

criteria g	Project Narrative	The TMDL Report for the Blanchard River watershed states that the "dam removal or modification immediately and permanently eliminates the source and associated causes of impairment." The preliminary design will construct a passage way for fish and other aquatic life around the dam at the bottom of the dam on the south end. The concrete passage way will be approximately 8' to 10' wide, traveling around the South End Embankment. The passageway will have a "Rubicon Gate", at the upstream end to control the reservoir level. The preliminary design will improve the existing conditions by allowing for the movement of fish and other aquatic life pass the dam. This project will help to: • Improve water quality • Provide fish passage • Re-establish some of the natural flow of the river. The material remove from the dam will be used to fill-in the area cut out by the water below the dam.
criteria d	Estimated Total Cost	$650,000
criteria d	Possible Funding Source	WRRSP Grant, GLRI, and USFWS
criteria a	Identified Causes & Sources	Causes of impairments • Direct habitat alterations • Nutrients • Flow alteration • Sedimentation Sources of impairments • Crop production • Urban runoff/storm water • Land development/suburbanization
criteria b & h	Part 1: How much improvement is needed to remove the NPS impairment for the whole Critical Area?	The goal is to achieve a QHEI score of 60, IBI score of 42 and ICI score of 42 that will allow the area to attainment the status of a WWH habitat in Critical Area 1.

criteria b& h	Part 2: How much of the needed improvement for the whole Critical Area is estimated to be	Modification of the dam by installing a fish passage will allow for 5% of the goal to be reached.
criteria b & h	Part 3: Load Reduced?	No Load Reduction from installing the fish passage.
criteria i	How will the effectiveness of this project in addressing the NPS impairment be measured?	OEPA watershed-wide monitoring is scheduled to be conducted in the summer of 2020 with the TMDL being scheduled for 2023.
criteria e	Information and Education	This project will be promoted to stakeholders and officials, using news releases articles, social media and personal contacts from the City of Findlay and the BRWP to stakeholders well.

Table 4.3 Project Summary Sheet Critical Area 1 Project 2: Riverside Park Dam Control Gate

Nine Element Criteria	Information needed	Explanation
n/a	Title	Riverside Park Dam Control Gate
criteria d	Project Lead Organization & Partners	City of Findlay, Hancock County Engineer, Hancock SWCD, and BRWP
criteria c	HUC-12 and Critical Area	City of Findlay Riverside Park-Blanchard River HUC-12 (04100008 02 05) Riverside Dam Critical Area 1
criteria c	Location of Project	City of Findlay Riverside Park-Blanchard River HUC-12, Riverside Park, Findlay, OH
n/a	Which strategy is being addressed by this project?	Altered Stream and Habitat Restoration Strategies
criteria f	Time Frame	Short Term (1-3years)
criteria g	Short Description	The lowhead Riverside Dam creates an approximately 11 acre pool of water behind the dam. A control gate will allow the level of water in the pool to be adjusted during the year.

criteria g	Project Narrative	The TMDL Report for the Blanchard River watershed states that the "dam removal or modification immediately and permanently eliminates the source and associated causes of impairment." By modifying the dam by installing control gate, the City of Findlay will be able adjust the level in the river during the year. Lowering the gate during the winter season will create a lower level that will increase the retention pool capacity by approximately 32,000,000 gallons during a storm event. The Blanchard River usually experiences a "winter thaw" that creates flooding in the area. By increasing the retention pool behind the dam, the effects of the stormwater runoff during a high-water event to the riparian area and aquatic habitat will be slightly decreased.
criteria d	Estimated Total Cost	$400,00.00
criteria d	Possible Funding Source	WRRSP Grant, GLRI, and USFWS
criteria a	Identified Causes & Sources	Causes of impairments • Direct habitat alterations • Nutrients • Flow alteration • Sedimentation Sources of impairments • Crop production • Urban runoff/storm water • Land development/suburbanization
criteria b & h	Part 1: How much improvement is needed to remove the NPS impairment for the whole Critical Area?	The goal is to achieve a QHEI score of 60, IBI score of 42 and ICI score of 42 that will allow the area to attainment the status of a WWH habitat in Critical Area 1.
criteria b & h	Part 2: How much of the needed improvement for the whole Critical Area is estimated to be accomplished by this project?	Modification of the dam will allow for about 5% of the goal to be reached.
criteria b & h	Part 3: Load Reduction	No Load Reduction from installing the control gate.

criteria i	How will the effectiveness of this project in addressing the NPS impairment be measured?	EPA watershed-wide monitoring is scheduled to be conducted again In the summer of 2020 with the TMDL being scheduled for 2023.
criteria e	Information and Education	This project will be promoted to stakeholders and officials, using news releases articles, social media and personal contacts from the City of Findlay and the BRWP to stakeholders well.

Table 4.4 Project Summary Sheet Critical Area 1 Project 3: Removal of Organic Debris / Sediment from the Old Reservoir

Nine Element Criteria	Information needed	Explanation
n/a	Title	Removal of Organic Debris / Sediment from Old Reservoir
criteria d	Project Lead Organization & Partners	City of Findlay, Hancock County Engineer, Hancock SWCD, and BRWP
criteria c	HUC-12 and Critical Area	City of Findlay Riverside Park-Blanchard River HUC-12 (04100008 02 05) Riverside Dam Critical Area 1
criteria c	Location of Project	City of Findlay Riverside Park-Blanchard River HUC-12, Riverside Park, Findlay, OH
n/a	Which strategy is being addressed by this project?	Altered Stream and Habitat Restoration Strategies
criteria f	Time Frame	Short Term (1-3years)
criteria g	Short Description	The City of Findlay would like remove the estimated 27,000 cubic yards of organic debris / sediment from the old reservoir area of Critical Area 1

criteria g	Project Narrative	The organic debris and sediment that has collect in the old reservoir portion of Critical Area 1 has slowly destroyed the aquatic habitat and lowered the recreational use value of the area. A sediment analysis of the old reservoir showed an average depth of 10 feet with an average material depth of 6 feet. Removal of the debris and sediment will improve the existing conditions by: • Improving water quality • Removing organic / sediment from the reservoir • Allowing for the re-establishment of the fish community • Allowing for the re-establishment of the Bethnic Community • Restore the recreational use of the area
criteria d	Estimated Total Cost	$900,000
criteria d	Possible Funding Source	WRRSP Grant, GLRI, and USFWS
criteria a	Identified Causes & Sources	Causes of impairments • Direct habitat alterations • Nutrients • Flow alteration • Sedimentation Sources of impairments • Crop production • Urban runoff/storm water • Land development/suburbanization
criteria b & h	Part 1: How much improvement is needed to remove the NPS impairment for the whole Critical Area?	The goal is to achieve a QHEI score of 60, IBI score of 42 and ICI score of 42 that will allow the area to attainment the status of a WWH habitat in Critical Area 1.

criteria b & h	Part 2: How much of the needed improvement for the whole Critical Area is estimated to be accomplished by this project?	Removal of the estimated 27,000 cubic yards of organic debris and sediment along with the re-establishment of the benthic community should lead to meeting the WWH by increasing the QHEI, IBI, and ICI scores to the attainment level. The project would reach an estimated 33 percentage of the goal. There will be a lag time associated with this project and any measured response in the area. The next scheduled TMDL study in the Blanchard River watershed is during the summer of 2020.
criteria b & h	Part 3: Load Reduced?	Based on the measurements and chemical test that have been done, the estimated load reduction will be: · **Sediment with organic debris - 27,000 cubic yards** In determining the P load, the sediment was collected at three sites and tested for total P, The average P was 280 ppm or 280 gm/liter. The 27,000 cubic yards is equal to 2,064,981 liters. Based on this result, the calculated total P load would be: 0.280 gm/liter x 2,064,981 Liters = 578,195 grams = 1,273 pounds or 577 kg. of Phosphorus · **Phosphorus - 1,273 pounds or 577 kg.** Removing the 1,273 pounds or 577 kg. of Phosphorus would equal 19.5% of the yearly goal.
criteria i	How will the effectiveness of this project in addressing the NPS impairment be measured?	OEPA watershed-wide monitoring is scheduled to be conducted again in the summer of 2020 with the TMDL being scheduled for 2023.
criteria e	Information and Education	This project will be promoted to stakeholders and officials, using news releases articles, social media and personal contacts from the City of Findlay and the BRWP to stakeholders well.

Table 4.5 Project Summary Sheet Critical Area 1 Project 4: Riverside Park Dam Pool Area - Mussel Relocation

Nine Element Criteria	Information needed	Explanation
n/a	Title	Riverside Park Dam Pool Area - Mussel Relocation
criteria d	Project Lead Organization & Partners	City of Findlay, Hancock County Engineer, Hancock SWCD, and BRWP
criteria c	HUC-12 and Critical Area	City of Findlay Riverside Park-Blanchard River HUC-12 (04100008 02 05) Riverside Dam Critical Area 1
criteria c	Location of Project	City of Findlay Riverside Park-Blanchard River HUC-12, Riverside Park, Findlay, OH
n/a	Which strategy is being addressed by this project?	Altered Stream and Habitat Restoration Strategies
criteria f	Time Frame	Short Term (1-3years)
criteria g	Short Description	A Mussel Survey was conducted by EnviroScience (ES) in May 2016, of the area above the Riverside Dam. Seventeen sites were surveyed. Seven sites showed the presence of mussels.
criteria g	Project Narrative	As a result of the sediment collecting behind the Riverside Park dam, the habitat in several areas has become suitable for the existence of mussels. As a part of a the replacement of the Osborne Street bridge over the Blanchard River just below the dam, a mussel survey was conducted on the area above the dam by EnviroScience. The result of the survey showed the presence of three species of mussels totaling 19 living mussels. There was no evidence of living federally or state listed endangered species. Before any dredging of the material behind the dam can occur, the identification and relocation of the mussels must occur. The relocation process will require a permit from the Ohio Department of Natural Resources.
criteria d	Estimated Total Cost	**$333,000** The estimated cost associated with the relocation of the mussels would involve 12 people onsite for about three weeks.

criteria d	Possible Funding Source	WRRSP Grant, GLRI, and USFWS
criteria a	Identified Causes & Sources	Causes of impairments • Direct habitat alterations • Nutrients • Flow alteration • Sedimentation Sources of impairments • Crop production • Urban runoff/storm water • Land development/suburbanization
criteria b & h	Part 1: How much improvement is needed to move the NPS impairment for the whole Critical Area?	Removal of the sediment and organic debris from behind the dam and modification of the dam could possible allow the area meet WWH attainment according to the TMDL Report.
criteria b & h	Part 2: How much of the needed improvement for the whole Critical Area is estimated to be accomplished by this project?	Relocation of the mussels is required by ODNR before any of the sediment can be removed. This relocation will be a part of Project 1-5 which will contribute about 47% to meeting the goal needed.
criteria b & h	Part 3: Load Reduced	Although this project does not directly reduce any loadings, it is required before Project 1-5 can be started.
criteria i	How will the effectiveness of this project in addressing the NPS impairment be measured?	OEPA watershed-wide monitoring is scheduled to be conducted again in the summer of 2020 with the TMDL being scheduled for 2023.
criteria e	Information and Education	This project will be promoted to stakeholders and officials, using news releases articles, social media and personal contacts from the City of Findlay and the BRWP to stakeholders well.

Table 4.6 Project Summary Sheet Critical Area 1 Project 5: Removal of Sediment from Riverside Dam Basin Area

Nine Element Criteria	Information needed	Explanation
n/a	Title	Removal of Sediment from the Riverside Dam Basin Area
criteria d	Project Lead Organization & Partners	City of Findlay, Hancock County Engineer, Hancock SWCD, and BRWP
criteria c	HUC-12 and Critical Area	City of Findlay Riverside Park-Blanchard River HUC-12 (04100008 02 05) Riverside Dam Critical Area 1
criteria c	Location of Project	City of Findlay Riverside Park-Blanchard River HUC-12, Riverside Park, Findlay, OH
n/a	Which strategy is being addressed by this project?	Altered Stream and Habitat Restoration Strategies
criteria f	Time Frame	Short Term (1-3years)
criteria g	Short Description	The City of Findlay would like remove the estimated 70,000 cubic yards of sediment from the basin area behind the Riverside Dam in Critical Area 1.
criteria g	Project Narrative	The sediment that has collect in the basin area behind the Riverside Dam in Critical Area 1 has slowly destroyed the aquatic habitat and lowered the recreational use value of the area. A sediment analysis of the old reservoir showed an average depth of 7.3 feet with an average material depth of 5.9 feet. Removal of the sediment will improve the existing conditions by: • Improving water quality • Removing organic / sediment from the reservoir • Allowing for the re-establishment of the fish community • Allowing for the re-establishment of the Bethnic Community • Restore the recreational use of the area
criteria d	Estimated Total Cost	$550,000
criteria d	Possible Funding Source	WRRSP Grant, Section 319 Grant, GLRI, and USFWS

criteria a	Identified Causes & Sources	Causes of impairments • Direct habitat alterations • Nutrients • Flow alteration • Sedimentation Sources of impairments • Crop production • Urban runoff/storm water • Land development/suburbanization
criteria b & h	Part 1: How much improvement is needed to remove the NPS impairment for the whole Critical Area?	The goal is to achieve a QHEI score of 60, IBI score of 42 and ICI score of 42, that will allow the area to attainment the status of a WWH habitat in Critical Area 1.
criteria b & h	Part 2: How much of the needed improvement for the whole Critical Area is estimated to be accomplished by this project?	Removal of the estimated 70,000 cubic yards of sediment along with the re-establishment of the benthic community should lead to meeting the WWH by increasing the QHEI, IBI, and ICI scores to the attainment level. The estimate percentage of the goal is 47%. There will be a lag time associated with this project and any measured response in the area. The next scheduled TMDL study in the Blanchard River watershed is during the summer of 2020 with the report scheduled for 2023.
criteria b & h	Part 3: Load Reduced?	Based on the measurements and chemical test that have been done, the estimated load reduction will be: • **Sediment with organic debris - 70,000 cubic yards** In determining the P load, the sediment was collected at six sites and tested for total P, The average P was 160 ppm or 160 gm/liter. The 70,000 cubic yards is equal to 53,518,840 liters. Based on this result, the calculated total P load would be: 0.160 gm/liter x 53,518,840 Liters = 8,563,014 grams = 18,878 pounds or 8,563 kg. of Phosphorus • **Phosphorus - 18,878 pounds or 8,563 kg.** .
criteria i	How will the effectiveness of this project in addressing the NPS impairment be measured?	OEPA watershed-wide monitoring is scheduled to be conducted again in the summer of 2020 with the TMDL being scheduled for 2023.

criteria e	Information and Education	This project will be promoted to stakeholders and officials, using news releases articles, social media and personal contacts from the City of Findlay and the BRWP to stakeholders well.

4.3 Critical Area 2: Overview Table and Project Sheets for the City of Findlay Riverside Park-Blanchard River HUC-12

Table 4.15 on the next page summarizes the Project and Implementation Strategy Overview Table for Critical Area 2. The table summarizes the projects needed for restoration of the nonpoint source impairments identified in the TMDL Report for the **City of Findlay Riverside Park-Blanchard River HUC-12** watershed. Only the projects listed in the Project Summary Sheets will be eligible for state and federal funding.

4.3.1 Critical Area 2 Project Summary Sheets

The section presents the Project Summary Sheets that were developed based on the actions needed to minimize the nutrient and sediment loadings from cropland in the **City of Findlay Riverside Park-Blanchard River HUC-12** watershed. These projects are the logical next steps or priority/short term projects needed to be accomplished in order to begin the restoration activities needed to address the impairments and to prevent the transport of the sediment and nutrients further down the watershed and eventually to Lake Erie. Medium and longer term projects will not have a project summary sheet, as these projects are not ready for implementation. As a project comes to an end, an evaluation of the progress will be done to see if the project needs to be continued. Table 4.7 on the next page summarizes all the projects for Critical Area 2.

Table 4.7: Critical Area 2: Project Overview Table for the City of Findlay Blanchard River HUC - 12 (04100008 02 05)							
Goal	**Objective**	**Project #**	**Project Title** (EPA Criteria g)	**Lead Organization** (Criteria d)	**Time Frame** (EPA Criteria f)	**Estimated Cost** (EPA Criteria d)	**Potential/Actual Funding Source** (EPA Criteria d)
Urban Sediment and Nutrient Reduction Strategies							
Altered Stream and Habitat Restoration Strategies							
Agricultural Nonpoint Source Reduction Strategies							
1, 1a	1	1	Implementing Controlled drainage management systems to reduce DRP and N	Hancock SWCD	Short Term (1-3 yr.)	$24,000	EQIP, USDA, EPA 319, GLB
1, 1a	2	2	Installing phosphorus filters on the main tile leading to the creek from upland fields	Hancock SWCD	Short Term (1-3 yr.)	$25,000 - 40,000	EQIP, USDA, EPA 319, GLB
1, 1a	3	3	Precision Nutrient Management Plan	Hancock SWCD	Short Term (1-3 yr.)	$625,000	EQIP, USDA, EPA 319, GLB
	4	4	Soil Testing for Phosphorus, Nitrogen and SOM	Hancock SWCD	Short Term (1-3 yr.)	$49,000	EQIP, USDA, GLB
1, 1a	5	5	Establishing Cover Crops to reduce P, N and sediment loading	Hancock SWCD	Short Term (1-3 yr.)	$135,000	EQIP, USDA, GLB
1, 1a	6	6	Establishing Conservation Tillage to reduce P, N and sediment loading	Hancock SWCD	Short Term (1-3 yr.)	$30,000	EQIP, USDA, EPA 319, GLB
High Quality Waters Production Strategies							
Other NPS Causes and Associated Sources of Impairment							

Table 4.8 Project Summary Sheet Critical Area 2 Project 1: Controlled Drainage Water Management

Nine Element Criteria	Information needed	Explanation
n/a	Title	Controlled Drainage Water Management
criteria d	Project Lead Organization & Partners	Hancock County SWCD, NRCS, USDA, BRWP
criteria c	HUC-12 and Critical Area	City of Findlay Riverside Park-Blanchard River HUC-12 (04100008 02 05) Cropland areas
criteria c	Location of Project	City of Findlay Riverside Park-Blanchard River HUC-12, east of Findlay, OH - Cropland areas
n/a	Which strategy is being addressed by this project?	Agricultural Nonpoint Source Reduction Strategy
criteria f	Time Frame	Short Term (1-3years)
criteria g	Short Description	Controlled drainage water management is the practice of using a water control structure on the tiles in a field to raise the depth of the drainage outlet, holding water in the field.
criteria g	Project Narrative	The TMDL Report for the Blanchard River watershed states that the City of Findlay Riverside Park-Blanchard River HUC-12 watershed impairments are related to the agricultural uses in growing crops. Controlled drainage water management uses a water control structure on the tiles in a field to raise the depth of the drainage outlet, holding water in the field which prevents the nutrients from entering the river. The goal is to install 5 water control structures to control 100 acres of cropland
criteria d	Estimated Total Cost	$24,000
criteria d	Possible Funding Source	Ohio EPA 319, Great Lakes Sediment and Nutrient Reduction Program, NRCS EQIP, USDA-CIG
criteria a	Identified Causes & Sources	Cause(s): Nutrient & Sediment loading Sources(s): Crop production
criteria b & h	Part 1: How much improvement is needed to remove the NPS impairment for the whole Critical Area?	The phosphorus loading needs to be reduced by an estimated 2,964 kilograms annually from the watershed.

criteria b & h	Part 2: How much of the needed improvement for the whole Critical Area is estimated to be accomplished by this project?	Controlled drainage water management will be on100 acres. The estimated reduction of dissolved reactive phosphorus (DRP) will be 30 kg./yr. or 66 lbs./yr., or 1.0% of the goal. In addition, there will be an estimated 50 lbs./yr. of nitrogen.
criteria b & h	Part 3: Load Reduced?	Estimated: 30 kg. or 66 lbs. P/year and 50 lbs./year nitrogen
criteria i	How will the effectiveness of this project in addressing the NPS impairment be measured?	OEPA watershed-wide monitoring is scheduled to be conducted again in the summer of 2020 with the TMDL being scheduled for 2023.
criteria e	Information & Education	This project will be promoted to the producers and other stakeholders with public meetings, news releases articles, social media and personal contacts from the Hancock SWCD, NRCS and the BRWP to eligible producers. The overall reduction and improvements will be shared with the public as well.

Table 4.9 Project Summary Sheet Critical Area 2 Project 2: Phosphorus Filter

Nine Element Criteria	Information needed	Explanation
n/a	Title	Phosphorus Filter
criteria d	Project Lead Organization & Partners	Hancock SWCD, NRCS, USDA, BRWP
criteria c	HUC-12 and Critical Area	City of Findlay Riverside Park-Blanchard River HUC-12 (04100008 02 05) Cropland areas
criteria c	Location of Project	City of Findlay Riverside Park-Blanchard River HUC-12, east of Findlay, OH - Cropland areas
n/a	Which strategy is being addressed by this project?	Agricultural Nonpoint Source Reduction Strategy
criteria f	Time Frame	Short Term (1-3 years)
criteria g	Short Description	Dissolved Reactive Phosphorus (DRP) from Critical Area 2 fields that are more than 1000 feet from the main stem will be the greatest source of P loading to the waterways.

criteria g	Project Narrative	The TMDL Report for the Blanchard River watershed states that the City of Findlay Riverside Park-Blanchard River HUC-12 impairments are related to Agricultural uses in growing crops. DRP has been identified as the main source of P flowing into Lake Erie. The cropland fields in Critical Area 2 that are more than 1000 feet from the main stem will have their greatest loss of P from field tile in the form of DRP. ***The filters could be placed in Shafer Ditch and Glauner Ditch if approved by Hancock County Engineer and HSWCD.*** The goal is to install two Phosphorus Filters in the drainage system of two fields. The filters will control at least 80 acres of cropland
criteria d	Estimated Total Cost	**$25-40,000**
criteria d	Possible Funding Sources	Ohio EPA 319, Great Lakes Sediment and Nutrient Reduction Program, NRCS EQIP, USDA-CIG
criteria a	Identified Causes & Sources	Cause(s): Nutrient & Sediment loading Sources(s): Crop production
criteria b & h	Part 1: How much improvement is needed to remove the NPS impairment for the whole Critical Area?	The goal is to reduce the phosphorus loading by 2,964 kilograms annually.
criteria b & h	Part 2: How much of the needed improvement for the whole Critical Area is estimated to be accomplished by this project?	The use of two Phosphorus Filters will reduce the DRP by an estimated 181 kg./yr. or 400 pounds per year. This would be 6.1% of the goal.
criteria b & h	Part 3: Load Reduced?	Estimated: 181 kg or 400 lbs. of P/year
criteria i	How will the effectiveness of this project in addressing the NPS impairment be measured?	OEPA watershed-wide monitoring is scheduled to be conducted again in the summer of 2020 with the TMDL being scheduled for 2023.
criteria e	Information & Education	This project will be promoted to the producers and other stakeholders with public meetings, news releases articles, social media and personal contacts from the Hancock SWCD, NRCS and the BRWP to eligible producers. The overall reduction and improvements will be shared with the public as well.

Table 4.10 Project Summary Sheet Critical Area 2 Project 3: Precision Nutrient Management Plan

Nine Element Criteria	Information needed	Explanation
n/a	Title	Precision Nutrient Management Plan
criteria d	Project Lead Organization & Partners	Hancock SWCD, NRCS, USDA, BRWP
criteria c	HUC-12 and Critical Area	City of Findlay Riverside Park-Blanchard River HUC-12 (04100008 02 05) Cropland areas
criteria c	Location of Project	City of Findlay Riverside Park-Blanchard River HUC-12 (04100008 02 05), east of Findlay - Cropland areas
n/a	Which strategy is being addressed by this project?	Agricultural Nonpoint Source Reduction Strategy
criteria f	Time Frame	Short Term (1-3 years)
criteria g	Short Description	By using Precision Nutrient Management Plans, a farmer will be able to better fertilize, grow the crop, and be most cost efficient.
criteria g	Project Narrative	The TMDL Report for the Blanchard River watershed states that the The Outlet-Blanchard River HUC-12 impairments are related to the agricultural uses in growing crops. Precision Nutrient Management Plans (PNMP (NRCS 590) for each field in the watershed would be the ultimate goal. During the first three years of this NPS-IS plan, the objective is to get approximately 2,500 acres enrolled in the plan. According to the NRCS, "by implementing a precision nutrient management plan, producers will be able to improve efficiency and effectiveness of nutrients by utilizing precision techniques and tools, maintain or increase yields, and minimize nutrient losses from fields, thus helping protect surface and ground water supplies. Precision nutrient management techniques ensure that the 4 R's (Right rate, Right source, Right application method, and Right application timing) provide proper amount of nutrients to the crop where it is needed."

criteria d	Estimated Total Cost	**$625,000** The Precision Nutrient Management Plan includes soil testing ($10/ac., year 1 & 3), Precision Fertilizer Application $20.00/ac., Cover Crops $30/ac. and Conservation Tillage $15/ac.). This totals $215/acre over the three years. With a goal have enrolling 2,500 acres that would equal $1,075,000. The remaining $87,500 is an estimated cost of $35/acre to have the plan written by a qualified person.
criteria d	Possible Funding Source	Ohio EPA 319, Great Lakes Sediment and Nutrient Reduction Program, NRCS EQIP, USDA-CIG
criteria a	Identified Causes & Sources	Cause(s): Nutrient & Sediment loading Sources(s): Channelization, Removal of riparian vegetation & non irrigated crop production
criteria b & h	Part 1: How much improvement is needed to remove the NPS impairment for the whole Critical Area?	The goal is to reduce the phosphorus loading by 2,964 kg. per year from the watershed.
criteria b & h	Part 2: How much of the needed improvement for the whole Critical Area is estimated to be accomplished by this project?	The Nutrient Management Plan will include cover crops and conservation tillage on the 2,500 acres for a three year period. The estimated reduction of phosphorus will be 419 kg./yr. or 924 lbs./yr., or 14.1% of the goal. In addition, there will be an estimated sediment reduction of 500 tons/year and a reduction of 1,200 lbs./yr. of Nitrogen.
criteria b & h	Part 3: Load Reduced?	Soil testing will not directly result in any load reduction, but will focus the implementation of BMPs where they are needed the most.
criteria i	How will the effectiveness of this project in addressing the NPS impairment to be measured?	OEPA watershed-wide monitoring is expected to be conducted again in the summer of 2020 with the TMDL being scheduled for 2023.
criteria e	Information and Education	This project will be promoted to the producers and other stakeholders with public meetings, news releases articles, social media and personal contacts from the Hancock SWCD, NRCS and the BRWP to eligible producers. The overall reduction and improvements with be shared with the public as well.

Table 4.11 Project Summary Sheet Critical Area 2 Project 4 Soil Testing

Nine Element Criteria	Information needed	Explanation
n/a	Title	Soil Testing for Phosphorus, Nitrogen & Solid Organic Material(SOM)
criteria d	Project Lead Organization & Partners	Hancock SWCD, NRCS, USDA, BRWP
criteria c	HUC-12 and Critical Area	City of Findlay Riverside Park-Blanchard River HUC-12 (04100008 02 05) - Cropland areas
criteria c	Location of Project	City of Findlay Riverside Park-Blanchard River HUC-12, east of Findlay, OH - Cropland areas
n/a	Which strategy is being addressed by this project?	Agricultural Nonpoint Source Reduction Strategy
criteria f	Time Frame	Short Term (1-3 years)
criteria g	Short Description	By soil testing the fields, the producer will be able to apply nutrients at the right rate and create a baseline for the SOM.
criteria g	Project Narrative	Soil testing at least 90% or 3,514 of the cropland, the producer will know exactly where and how much of each nutrient needs to be applied to achieve his yield goal for each field. In addition, by testing for the SOM in each field, baseline data will be gathered to measure the amount of increase in SOM from use of BMPs. The soil testing will be conducted using a 2.5 acre grid or zone method. The sampling data will be collected and shared with the producer and the agencies involved.
criteria d	Estimated Total Cost	**$49,000**
criteria d	Possible Funding Source	Great Lakes Sediment and Nutrient Reduction Program, NRCS EQIP, USDA-CIG
criteria a	Identified Causes & Sources	Cause(s): Nutrient & Sediment loading Sources(s): Crop production
criteria b & h	Part 1: How much improvement is needed to remove the NPS impairment for the whole Critical Area?	The goal is to reduce the phosphorus loading by 2,964 kilograms annually.

criteria b & h	Part 2: How much of the needed improvement for the whole Critical Area is estimated to be accomplished by this project?	The phosphorus associated with sediment in the watershed based on RUSLE II is 0.4618 lbs./acre/year. If the SOM is raised by 1%, there would be 16,500 more gallons of water held by the soil, instead of running off. This would result in an estimated load reduction of 736 kg. or 1,623 lbs. phosphorus/year or 25% of the goal. In addition, there will be an estimated sediment reduction of 985 tons/year and a reduction of 3,672 lbs./yr. of Nitrogen.
criteria b & h	Part 3: Load Reduced?	Estimated: 736 kg. or 1,623 lbs. if phosphorus per year; 985 tons/year of sediment and 3,672 lbs./yr. of nitrogen.
criteria i	How will the effectiveness of this project in addressing the NPS impairment be measured?	OEPA watershed-wide monitoring is expected to be conducted again in the summer of 2020 with the TMDL being scheduled for 2023.
criteria e	Information and Education	This project will be promoted to the producers and other stakeholders with public meetings, news releases articles, social media and personal contacts from the Hancock SWCD, NRCS and the BRWP to eligible producers. The overall reduction and improvements will be shared with the public as well.

Table 4.12 Project Summary Sheet Critical Area 2 Project 5 Cover Crops

Nine Element Criteria	Information needed	Explanation
n/a	Title	Cover Crops
criteria d	Project Lead Organization & Partners	Hancock SWCD, NRCS, USDA, BRWP
criteria c	HUC-12 and Critical Area	City of Findlay Riverside Park-Blanchard River HUC-12 (04100008 02 05) Cropland areas
criteria c	Location of Project	City of Findlay Riverside Park-Blanchard River HUC-12, east of Findlay, OH - Cropland areas
n/a	Which strategy is being addressed by this project?	Agricultural Nonpoint Source Reduction Strategy
criteria f	Time Frame	Short Term (1-3years)

criteria g	Short Description	Cover crops keep the soil in place and help to prevent nutrients from being lost from the field by tying the nutrients up in the plant material.
criteria g	Project Narrative	The TMDL Report for the Blanchard River watershed states that the City of Findlay Riverside Park-Blanchard River HUC-12 watershed impairments are related to the agricultural uses in growing crops. Cover crops provide a Best Management Practice that keeps growing vegetation on the cropland during the non-growing season. Cover crops also help to prevent erosion and increase nutrient assimilation. Cover Crops also help to increase the SOM in the soil which will further prevent water runoff. The goal is to establish 1,500 acres per year in addition to the acres of cover crops in the Nutrient Management Plans.
criteria b & h	Part 1: How much improvement is needed to remove the NPS impairment for the whole Critical Area?	The goal is to reduce the phosphorus loading by 2,964 kg. per year from the watershed.
criteria b & h	Part 2: How much of the needed improvement for the whole Critical Area is estimated to be accomplished by this project?	The estimated reduction of phosphorus will be 385.5 kg./year or 850 lbs./year., or 13.0 % of the goal. In addition, there will be an estimated sediment reduction of 450 tons/year. and a reduction of 1,300 lbs./year. of nitrogen.
criteria b & h	Part 3: Load Reduced?	Estimated: 385.5 kg/year 850 lbs. P/year, 450 tons/year sediment and 1,300 lbs./year nitrogen
criteria i	How will the effectiveness of this project in addressing the NPS impairment be measured?	OEPA watershed-wide monitoring is scheduled to be conducted again In the summer of 2020 with the TMDL being scheduled for 2023. OSU Extension and other agencies will be contacted for data on how many acres of cover crops have been in this watershed.
criteria e	Information and Education	This project will be promoted to the producers and other stakeholders with public meetings, news releases articles, social media and personal contacts from the Hancock SWCD, NRCS and the BRWP to eligible producers. The overall reduction and improvements will be shared with the public as well.

Table 4.13 Project Summary Sheet Critical Area 2 Project 6 Conservation Tillage

Nine Element Criteria	Information needed	Explanation
n/a	Title	Conservation Tillage
criteria d	Project Lead Organization & Partners	Hancock SWCD, NRCS, USDA, BRWP
criteria c	HUC-12 and Critical Area	City of Findlay Riverside Park-Blanchard River HUC-12 (04100008 02 05) Cropland areas
criteria c	Location of Project	City of Findlay Riverside Park-Blanchard River HUC-12, east of Findlay, OH - Cropland areas
n/a	Which strategy is being addressed by this project?	Agricultural Nonpoint Source Reduction Strategy
criteria f	Time Frame	Short Term (1-3years)
criteria g	Short Description	Conservation Tillage is a BMP that a producer can use to reduce nutrient and sediment loadings by minimizing tillage.
criteria g	Project Narrative	The TMDL Report for the Blanchard River watershed states that the City of Findlay Riverside Park-Blanchard River HUC-12 watershed impairments are related to the agricultural uses in growing crops. Conservation tillage leaves the crop residue on the field before and after planting the next crop thus keeping the soil in place and helping to prevent nutrients from being lost from the field. The Hancock SWCD, NRCS and the BRWP will work with the watershed landowners and farmers to enroll cropland in conservation tillage. The goal is to establish 1,500 acres, besides the acres in conservation tillage.
criteria d	Estimated Total Cost	**$30,000.00**
criteria d	Possible Funding Source	Ohio EPA 319, Great Lakes Sediment and Nutrient Reduction Program, NRCS EQIP, USDA-CIG
criteria a	Identified Causes & Sources	Cause(s): Nutrient & Sediment loading Sources(s): Crop production

criteria b & h	Part 1: How much improvement is needed to remove the NPS impairment for the whole Critical Area?	The goal is to reduce the phosphorus loading by 2,964 kg. per year from the watershed.
criteria b & h	Part 2: How much of the needed improvement for the whole Critical Area is estimated to be accomplished by this project?	The estimated reduction of phosphorus will be 116 kg./yr. or 255 lbs./yr., or 3.9 % of the goal. In addition, there will be an estimated sediment reduction of 150 tons./yr. and a reduction of 390 lbs./yr. of nitrogen.
criteria b & h	Part 3: Load Reduced?	Estimated: 116 kg./year or 255 lbs./year of P, 150 tons/year sediment and 390 lbs./year nitrogen
criteria i	How will the effectiveness of this project in addressing the NPS impairment to be measured?	OEPA watershed-wide monitoring is scheduled to be conducted again in the summer of 2020 with the TMDL Report being scheduled for 2023. OSU Extension and other agencies will be contacted for data on how many acres of cover crops have been established in this watershed
criteria e	Information & Education	This project will be promoted to the producers and other stakeholders with public meetings, news releases articles, social media and personal contacts from the Hancock SWCD, NRCS and the BRWP to eligible producers. The overall reduction and improvements will be shared with the public as well.

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Appendices

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Appendix A

Summary of the NPDES Permits - City of Findlay Riverside Park - Blanchard River Watershed					
Applicant Name	Facility Name	Permit Number	Issue Date	Average Design Flow (MGD)	Compliance History
Individual Permits					
No individual permits in the watershed					
Construction NOI Storm Water General Permit List					
First Federal	First Federal Findlay East Branch	2GC00041*AG	5/28/2003	Not Required	None reported
FMT Inc.	Riverside Executive Park	2GC00087*AG	6/23/2003	Not Required	None reported
C-International	C-International Findlay Distribution	2GC00111*AG	7/10/2003	Not Required	None reported
Owens Community College	Owens Community College - Findlay	2GC00245*AG	11/5/2003	Not Required	None reported
Winkoe	Winkoe Storage & Office Condos	2GC00260*AG	11/24/2003	Not Required	None reported
Timberstone Construction Inc	Covington Greens Subdivision	2GC00323*AG	1/26/2004	Not Required	None reported
Build Covington Greens LCC	Covington Green Apartments	2GC00337*AG	2/9/2004	Not Required	None reported
Timberstone Construction Inc	Covington Greens Subdivision Plat 2	2GC00392*AG	3/31/2004	Not Required	None reported
Arcadia Point Development	Point at Brookstone Phase 2	2GC00404*AG	4/12/2004	Not Required	None reported
Kohl's Department Stores Inc	Kohl's Department Store	2GC00417*AG	4/19/2004	Not Required	None reported
Petti Construction	Villas at Burberry	2GC00544*AG	8/17/2004	Not Required	None reported
Findlay One LLC	Hunters Crossing	2GC00592*AG	9/15/2004	Not Required	None reported
Weinko Inc	Forest Lake 6th Addition	2GC00882*AG	6/13/2005	Not Required	None reported
Weinko Inc	Forest Lake 5th Addition	2GC00883*AG	6/13/2005	Not Required	None reported

Summary of the NPDES Permits - City of Findlay Riverside Park - Blanchard River Watershed pg. 2					
Applicant Name	Facility Name	Permit Number	Issue Date	Average Design Flow (MGD)	Compliance History
Construction NOI Storm Water General Permit List					
CCA Inc	Winter Woods Estates	2GC00911*AG	7/5/2005	Not Required	None reported
Blanchard Valley Health Association	Construction Plans Replat of Lot 3 Eastern Woods Sub	2GC00998*AG	9/7/2005	Not Required	None reported
Paul Ballinger	Ballinger Commercial Subdivision	2GC01086*AG	11/15/2005	Not Required	None reported
Brookview Homes Inc	Somerset Park	2GC01242*AG	4/11/2006	Not Required	None reported
Primrose Retirement Housing	Primrose Retirement Housing	2GC01400*AG	8/1/2006	Not Required	None reported
Chris & Heidi Berry	N/A	2GC01479*AG	9/18/2006	Not Required	None reported
Country Club Acres	Hunter's Creek 11th	2GC01479*AG	9/26/2006	Not Required	None reported
LVP Development	Lakeview Park Estates - 13th Add.	2GC01595*AG	1/17/2007	Not Required	None reported
Best Construction	Villas at Hunters Creek - 1st Addition	2GC01933*AG	12/18/2007	Not Required	None reported
J William Hollington	Findlay Animal Rescue	2GC02304*AG	2/18/2009	Not Required	None reported
Diverse Development	Tireman Findlay	2GC02879*AG	4/27/2011	Not Required	None reported
Hutton Construction Inc	Proposed Family Dollar - Findlay, OH	2GC03390*AG	3/1/2013	Not Required	None reported

Appendix B: Acronyms and Abbreviations

The following acronyms and abbreviations were used in this NPS-IS Plan and are commonly used by agencies working to restore Ohio's watersheds.

A

ALU	Aquatic Life Uses

B

BMP	Best Management Practice
BRWP	Blanchard River Watershed Partnership

C

CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
CWA	Clean Water Act

D

DRP	Dissolved Reactive Phosphorus

E

ECBP	Eastern Corn Belt Plains
EPT Index	Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddisflies)
EQIP	Environmental Quality Incentives Program
ERIN	Earth Resources Information Network

G

GIS	Geographic Information System
GLB	Great Lakes Basin (Commission)
GLRI	Great Lakes Restoration Initiative

H

HRPC	Hancock Regional Planning Commission
HSWCD	Hancock County Soil & Water Conservation District
HSTS	Home Septic Treatment System
HUC	Hydrological Unit Code

I

IBI	Index of Biological Integrity
ICI	Invertebrate Community Index

M

MGD	Million Gallons per Day
Mlwb	Modified Index of Well Being
MWH	Modified Warmwater Habitat

N

NCWQR	National Center for Water Quality Research (located at Heidelberg University)
NPS-IS	Nonpoint Source Implementation Strategy
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resource Conservation Service

O

ODNR	Ohio Department of Natural Resources
ODOT	Ohio Department of Transportation
OEPA	Ohio Environmental Protection Agency

Q

QHEI	Qualitative Habitat Evaluation Index

R

RM	River Mile

T

TMDL	Total Maximum Daily Load
TSD	Technical Support Document (from OEPA)

U

USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey

W

WAP	Watershed Action Plan
WWH	Warmwater Habitat

Appendix C

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